A STUDY OF DYNAMIC FEATURES IN IRTA:HI SPOKEN ARABIC WITH PARTICULAR REFERENCE TO STRESS, RHYTHM AND INTONATION

BY

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likulli man safaḥa ḥabbata ˤaraqin ˤala: tura:bi bajja:ratina: ... waˀaxus̲s̲u biððikr wa:lidi: wa wa:lidati: ...

Abstract

The present study, as its title suggests, aims at investigating some of the dynamic features as employed in Irta:hi Spoken Arabic, an Arabic dialect spoken in a Palestinian village in the West Bank. It is based on a considerable corpus of material obtained from recordings made by native speakers, and considered as an attempt at demonstrating the relevance of the dynamic features concerned for studying the language structure. The thesis consists of eight chapters preceded by an introduction which includes a description of the dialect together with a concise definition of what the dynamic features actually are.

The first chapter provides a fairly detailed description of the dialect's vowel and consonant segments. It also includes a survey of some of the present syllable definitions that exist in addition to the one adopted in our study. Reference has also been made to word-structure in Ir.S.A. by describing the various syllable-patterns that operate within the dialect.

Chapter Two opens with a discussion of what is actually meant by stress followed by a study of stress-patterns in the dialect's isolated words and in its connected speech.

Chapters Three, Four, Five and Six examine some specific features of the dialect's speech-rhythm. In short, the following points have been discussed:

1. An examination of the hypothesis of isochronous feet has been tested in:

a - short utterances

b - a text recorded by employing two subjectively controlled degrees of tempo, i.e. fast and normal. However, in each case, care has been taken to ensure that the material is examined under what we may call similar external conditions of tempo and intonation contour in order to limit the effect of these features on our measurements to its minimal level.

2. An assessment of the effect of the following features on the duration of feet in the data:

a - the number and type of syllables included.

b - the nature of segments involved.

3. An attempt to study isochrony in speech production and perception.

Chapter Seven presents a description of the intonation patterns common amongst non-educated speakers of the dialect in their normal speech of every-day life. According to the theoretical framework adopted, the dialect's tones have been divided into simple, complex and compound patterns with further subclassification. Furthermore, the distinction between the different patterns has been established according to their tonal, grammatical and contextual functions.

Chapter Eight deals with some of the basic functions of intonation in Ir.S.A., with some emphasis on the correlation between grammar and tonal patterns in the dialect.

The conclusion outlines our findings and includes some suggestions for further research.

Of the three appendices attached to the thesis, the first includes instrumental support of our description of the dialect's segments as introduced in Chapter One. The second presents some of the spectrographic evidence that was employed while measuring feet in the data used for our study of speech rhythm, while the third consists of selected parts of three texts (together with their translation) given as further illustration of our intonation analysis, as well as mingograms referring to the various intonational patterns decided earlier in Chapter Seven.

Finally, the bibliography is arranged to include works that have been referred to in our study and others that are considered to provide a general background for the subjects dealt with.

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List of abbreviation

The following symbols are employed in our phonetical transcription of the data:

i	A short close front unrounded vowel
a	A short open front unrounded vowel
u	A short close rounded back vowel
i:	A long close front unrounded vowel
a:	A long open central unrounded vowel
e:	A long half-close front spread vowel
o:	A long half-close back rounded vowel
u:	A long close back rounded vowel
$\underline{t}$	A voiceless emphatic denti-alveolar stop
$\underline{d}$	A voiced emphatic denti-alveolar stop
$\underline{s}$	A voiceless emphatic alveolar fricative
$\underline{ð}$	A voiced emphatic dental fricative
$\underline{l}$	A voiced emphatic alveolar lateral
$\underline{m}$	A voiced bilabial emphatic nasal
t	A voiceless denti-alveolar stop
k	A voiceless velar stop
q	A voiceless uvular stop
b	A voiced bilabial stop
d	A voiced dental stop
g	A voiced velar stop
f	A voiceless labio-dental fricative
θ	A voiceless flat dental fricative
s	A voiceless grooved alveolar fricative
ʃ	A voiceless palato-alveolar fricative
x	A voiceless velar fricative
h	A voiceless glottal fricative
ḥ	A voiceless pharyngeal fricative
ð	A voiced dental fricative
z	A voiced alveolar fricative
ɣ	A voiced velar fricative
ʧ	A voiceless palato-alveolar affricate
ʤ	A voiced palato-alveolar affricate

m	A voiced bilabial nasal
n	A voiced alveolar nasal
l	A voiced alveolar lateral
r	A voiced alveolar trill
w	A voiced bilabial-velar approximant
j	A voiced palatal approximant
ʕ	A voiced pharyngeal approximant
ʔ	A glottal stop
/ /	Beside indicating a phoneme, they are also employed to mark feet-boundaries
// //	Indicate a tone-unit boundaries
ˈ	A stress mark
\	A falling tone
/	A rising tone
=	A level tone
/\	A rising-falling tone
\/	A falling-rising tone
/\/	A rising-falling-rising tone
\/\	A falling-rising-falling tone.

Introduction.

Following Abercrombie's (1967, 2) views, we believe that any language may be considered to consist of different mediums. A medium, therefore, is defined as a vehicle for language, which mediates between its speakers and listeners. Although the exact number of mediums that may exist within any language is not properly or definitely established, Abercrombie makes a distinction between an aural medium and a visual one. The first is believed to consist of the following components:

1. Segmental features.
2. Features of voice quality.
3. Features of voice dynamics.

In his description of the above features, Abercrombie (1967,90) maintains that " ... the segmental features of an utterance /are/ made up of complex auditory qualities which are in fairly rapid fluctuation, reflecting the rapid succession of the movements of the articulators. The strand of voice dynamics also consists of features which fluctuate in auditory quality, but considerably more slowly. Many of them are linked to the syllable-and stress-producing processes ... and are closely related to those aspects of sound that assume importance in music - things such as pitch, loudness, tempo and rhythm. The strand consisting of features of voice quality, in contrast to the two preceding, has a quasi-permanent character: it remains constant over relatively long stretches of time, and fluctuation here is much less apparent."

It has to be said that, for the last few years, interest in the study of speech dynamic features has been continuously increasing in the west; witness to such statement is found in the various publications that continue to appear (see our bibliography). Unfortunately, the situation differs regarding the Arabic language in all its forms i.e. colloquial or classical. The amount of research related to this topic is undoubtedly meagre.

One of the major causes that has contributed towards this situation comes as a result of the controversy that has been developing for the last few decades between two groups of linguists with contrasting views in respect of the present forms of Arabic.

So far, the predominent group consists of those who argue that Classical Arabic (henceforth Cl.A.) is the original, while the colloquial variety is no more than a distortion of the former. Colloquial speech, in this context, is usually associated with ignorance and illiteracy. Consequently, members of this group engage themselves in investigating linguistic matters within a traditional theoretical framework, as it had been established centuries ago by traditional Arab grammarians, without paying any attention to modern linguistic theories. Furthermore, this line of thinking has been stimulated by the assumption that the Arabic language is protected and maintained by fixed rules laid out in the Quran, which in fact restricts the activities of the language analyst.

In contrast to the above views, new ideas have continued to develop recently with the belief that:

(i) Modern colloquial dialects must attract the linguist's attention, simply because they are spoken by a great number of Arab speakers as their only means of communication.

(ii) Colloquial speech is actually derived from the classical language, and in order to understand the relationship between the two varieties, we must carefully study their structural patterns.

(iii) It is time for us to describe the present varieties of Arabic, in an attempt to establish their historical development, by comparing the present dialects with one another on one hand, and with the classical variety on the other.

Under these circumstances, we believe that there are many aspects of the Arabic language which until now have been unexamined. Therefore, the present study which aims at studying some of the dynamic features in <u>Irta:hi Spoken Arabic</u> (abbreviated as Ir.S.A.), in order to establish their importance in characterising this dialect may be considered as the beginning of a process that aims at bridging the gap caused by the absence of this type of study in the past.

Ir.S.A. is a Palestinian dialect named after the*village to which the writer belongs. However, this dialect is not restricted to this particular village. In fact, it represents a large proportion of Palestinian speakers as a whole. To be more precise,

* Further information about Irta:h is given in the text quoted on p.

we have to point out the dialectal division in Palestine is not based on geographical divisions as it is the case in Egypt for instance. Generally speaking, the dialects of Palestine may be divided into two main groups with further subdivisions. The two main varieties are:

(i) The spoken variety of the towns and cities
(ii) The spoken variety of the countryside.

However, a further subdivision will divide group (i) into:

(a) The spoken variety of those inhabitants who have been born and brought up in the towns and cities without leaving the area for long periods;

(b) The spoken variety of a particular sector of the community who have immigrated to settle in these towns and cities from surrounding rural areas, and who still manage to maintain a close social link with their native lands through regular and long-lasting holidays. Speakers who come under this category are known to have mixed speech habits from both group (i) and group (ii) above.

In order to give a detailed description of the general situation, it is necessary to make even further distinctions in which (i) and (ii) above are characterised by having two styles of speech:

(1) The educated style
(2) The non-educated style.

Both are largely recognised by the lexicon the speakers employ in their normal discourse. Moreover, educated speakers are known to be greatly influenced by Classical Arabic.

Our study of some of the dynamic features in Ir.S.A., which belongs to category (ii) is confined to what may be described as non-educated, colloquial or informal speech. It differs from other dialects in matters of vocabulary, syntax and the occurrence of assimilation and elisions. It may also be said that the different varieties and styles outlined above do not appear to have a lot in common in relation to some of their dynamic features such as intonation.

CHAPTER ONE

VOWEL, CONSONANT AND THE SYLLABLE IN Ir.S.A.

1.1 Aims of Study

In this chapter, our discussion is concerned with :

(1) A description of the vowel and consonant segments employed in Ir.S.A. Although the description is intended to define them in articulatory terms, reference will also be made to some of their acoustical features, (e.g. pp.98-102).

(2) An attempt to define the term syllable supplemented by a representation of the various syllable patterns which operate in this dialect.

1.2 The Vowels

Unlike Classical Arabic (henceforth Cl.A) which has the three short vowels /i/, /a/ and /u/ that contrast distinctively with their long counterparts, the dialect under study while retaining the same set of short vowels has increased the number of its long vowels to include /e:/which corresponds ordinarily to Cl.A. /aj/, thus,

/ ʃajx / becomes /ʃe:x / 'a priest'

/ bajt / becomes / be:t / 'a house'

and / o: / which normally corresponds to /aw/ in Cl.A. hence we have :

/ lawn / becomes / lo:n / 'a colour'

/ dawr / becomes / do:r / 'a turn'

In the following description of the vowel system, a broad transcription is adopted for exemplificatory words which means that different allophones of the same vowel are referred to by the same symbol in spite of the fact that different allophones may be located in varying cardinal areas. The actual position on the Cardinal Vowel chart of vowels denoted by our allophonic symbols is shown on graph (a) on page 18.

121. Allophonic Variations

In parallel with other contemporary dialects of Arabic, the range of allophonic variations in Ir.S.A's vowels is wide (see Blanc 1953, Johnston 1967, Ingham, 1971). Generally speaking, the phonetic realisation of any given allophone is largely determined or influenced by the surrounding sounds, see Gimson (1970, 47). Accordingly, it follows that the exact position of the tongue while producing a front vowel for instance, may become retracted if it is followed by an emphatic segment (for a definition of <u>emphasis</u> see p.25). In contrast, if the following sound is a bilabial segment, an open vowel may even become more open. It may also be said that in the vicinity of palatal segments vowels are associated with a fronter and a higher quality.

1.2.2. The Short Vowels

/i/ Its most common allophone is a short close front vowel unrounded, opener and more retracted than /i:/ viz [i̠] as in /si-miḥ/ 'kind'. Another possible allophone may be described as centralised [i̤]. In such cases the tongue's position is slightly lower than that of the preceeding allophone. The occurrence of the centralised allophone is restricted to emphatic sounds in its vicinity as in :

/s̲il-bi/ 'solid'
/d̲i-liʕ/ 'a rib'

/a/ is an open front unrounded vowel [a] in the vicinity of dentals and bilabials, e.g.

/maḥ-mu:d/ 'a singular masculine proper name'
/na-bi:l/ 'a singular masculine proper name'

It has a number of allophones depending mostly upon the surrounding sounds. For example, it becomes retracted [a̠] when it follows either a voiceless emphatic fricative or a voiced pharyngealized interdental fricative as in :

/s̲a-mad/ 'he resisted'
/d̲a-rab/ 'he hit'

Another possible allophone is a centralised [a̤] vowel in the contiguity of palatals as in :

/tʃabiʃ/ 'a sheep'.

/u/ shows the least number of allophones of short vowels in Ir.S.A. Its most common allophone is a close rounded vowel [u̠]. It is in a slightly lower and forward position as compared with [u:]. When it occurs finally as in /liʕbu/ 'they played' it becomes more open and the lips become more rounded [u̹ɔ].

12.3 The Long Vowels

In Ir.S.A. long vowels consist of /i:/, /a:/ and /u:/ which differ from their short counterparts primarily in matters of duration (see p.22 below). As stated above, in addition to these three vowels, /e:/ and /o:/ are also used. A brief description for each follows below :

/i:/ a long front close unrounded vowel [i:] as in

/sa-li:m/ 'a singular masculine proper noun'

/si:-du/ 'his grandfather'

Like the short vowel /i/, /i:/ has a set of allophones in complementary distribution depending upon the quality of the surrounding consonants. Thus, /i:/ becomes retracted [i̠:] in the vicinity of an emphatic as in :

/s̲i:-du/ 'hunt it'

It is also noticed that when /i:/ follows /t̲/ an emphatic voiceless dental stop, the tongue's position is then lowered to become almost half-close [i:] as it occurs in :

/t̲i:n/ 'mud'

/t̲i:-ru/ 'go quickly', [literally fly].

Another allophone is heard when /i:/ follows a bilabial stop. In such cases /i:/ may be located on the Cardinal Vowel chart at a point which may be described as fronter than that of /i/, accompanied by further spreading of the lips [i:] as in

/mi:n/ 'who'
/mi:na/ 'a port'

/a:/ is usually realised, except in the neighbourhood of an emphatic segment, as an open central unrounded vowel [a:] as in

/taʕ-ba:n/ 'tired'

Whenever flanked by an emphatic segment it becomes a fully back vowel [a:] as in

/xa:-ṯib/ 'engaged' : singular, masculine
/ẓa:- im/ 'a tyrant'.

It is also noticed that in the vicinity of certain consonants such as /tʃ/ and /dʒ/, /a:/ is phonetically realised as a fully front vowel [a:] e.g.

/ḥa-tʃa: - li/ 'he told me'
/dʒa:dʒi/ 'a chicken'

/u:/ a close back rounded vowel. It occurs in words like

/tu:t/ 'strawberry'
/ru:ḥ/ 'go'
/ṯu:b/ 'bricks'

As is the case with the short vowel /u/, the exact phonetic realisation of /u:/ depends upon the surrounding consonants. Accordingly /u:/ in the above examples is slightly advanced [u̟:] when it precedes the dental /t/, while it becomes retracted, when it follows the emphatic /t/ /u̠:/.

/e:/ a half-close front spread vowel. It corresponds normally to Cl.A /aj/. An example of [e:] may be perceived as being retracted [e̠:] when it precedes an emphatic segment as in

/be:ẓ/ 'eggs'

/o:/ normally corresponds to /aw/ in the classical language. Its most common allophone is a half-close back rounded vowel [o:] as in

/jo:m/ 'a day'

/ro:ḥ/ 'a spirit'

/do:r/ 'a turn'

The following graph is intended to show the approximate position of Ir. S.A. short and long vowels. It will also serve as a guide to the allophonic variation of these vowels.

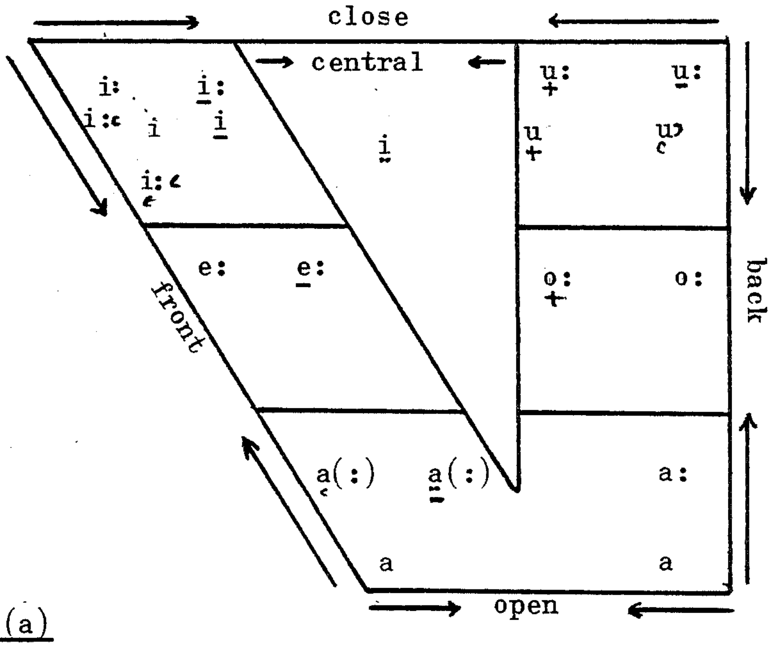

Chart (a)

The above graph serves to indicate the approximate position for the Irtahi vowel system as just described. The diacritical marks + and -, as adopted by the I.P.A. describe advanced and retracted varieties of various vowels, respectively. The marks . and c (placed below the letter) denote relatively close and open varieties respectively; c and ɔ (placed after the letter) denote lip-spreading and more lip-rounding respectively. Finally the mark .. placed under the letter is employed to denote a centralised variety.

1.2.4 Vowel-Duration

In our analysis of the vowel system in Ir.S.A. we believe that the short vowels differ from their long counterparts mainly in terms of quantity. In order to investigate this matter, we measured vowel-duration in the data presented later (p.93-4)for examining isochrony)in Irta:hi speech as it exists in:

(1) short utterances

(2) rapid and normal connected speech.

In addition, a spectrographic study was designed to enable us to examine vowel-duration in different settings. For this purpose spectrograms were made for:

(i) individual vowels

(ii) vowels occurring in conjunction with different types of consonants.

(The question of how these were actually measured is dealt with elsewhere, see p.97). The results of our study as presented below suggest that although long and short vowels undergo certain modifications in duration in connected speech, in all cases long vowels are always distinguished from the short ones in terms of duration. Table (1) below shows the mean duration of various vowels occurring in short utterances recorded by six informants: (the original figures appear in Appendix I).

Table (1)

No.	Vowel-duration in milliseconds		
1.	sxu:l	naṯṯaṯ	
	ccv:c	cvc-cvc	
	186.6	70 100.8	
2.	sa:lim	ḥa:sim	
	cv:-cvc	cv:-cvc	
	175 62	160 56	
3.	fhimtil	maɣza	
	ccvc-cvc	cvc-cv	
	63.3 50	70.8 104.1	
4.	mnim	ba:rḥil	ʕas̱ir
	ccvc	cv:c-cvc	cv-cvc
	54.0	147.5 40	50.8 70

5.	sa:lim cv:-cvc 157 40.8	ḥa:tʃim cv:-cvc 122.5 30.8	ḥa:sim cv:-cvc 124 48.3
6.	bard cvcc 81.3	ma:fi: cv:-cv: 95 78.8	zajju cvc-cv 62.5 68.8
7.	ma:lik cv:-cvc 158 53.3	malik cv-cvc 57.5 50.8	ḥaki:m cv-cv:c 54.2 146.7
8.	zajma cvc-cv 91.6 66.6	ruḥti cvc-cv 73.3 53.3	dʒi:ti cv:-cv 117 83.8
9.	sa:lim cv:-cvc 145 50	s̱a:ḥib cv:-cvc 110 54	xe:r cv:c 153
10.	jaḥmad cvc-cvc 50 51.5	ʕaddil cvc-cvc 75 56	nafsak cvc-cvc 61 85
11.	saḥar cv-cvc 67.5 89.2	bint cvcc 71.7	ḥilwi cvc-cv 55.8 72.5
12.	ṯi:zin cv:-cvc 94 50	nakkalat cvc-cv-cvc 52.5 37.5 52.3	ma:bakkalat cv:-cvc-cv-cvc 87.5 61 46 57.5

According to the above table, the following remarks may be made:-

(a) The duration of a short vowel depends upon the type of syllable in which it occurs. Accordingly the total mean duration of short vowels in long syllables which is 67.2 m.seconds equals 105% in comparison with those occurring in medium and short syllables. A long syllable refers to any syllable which has one of the following structures: cv:c, cvcc, ccvc, ccvcc, and ccv:c. In comparison, a medium syllable refers to syllables

which consist either of cvc or cv:, while a short syllable consists always of cv. This classification will be dealt with later, see p.46.
(b) The duration of a short vowel depends also upon the place of the syllable in the word in which it occurs. Table (2) below shows the mean durations of short vowels as they vary from one place to another.

Table (2).

No.	Description	Mean duration in milliseconds
1.	Short vowels in initial short syllables which appear in non-final words	52.3
2.	Short vowels in final medium syllables which occur in non-final words	53.00
3.	Short vowel in final short syllables in non-final words	59.5
4.	Short vowels in initial medium syllables in non-final words	66.7
5.	Short vowels in final medium syllables occurring in final words	69.3
6.	Short vowels in final short syllables occurring in final words	82.3

In addition to the above measurements we decided to examine short vowel duration in isolated words in two different settings:
(a) When they occur in stressed syllables, and
(b) when they occur in unstressed syllables.

The above measurements are thought to be necessary since our measurements of short vowels in the data presented by six native speakers (see p.97) show that the mean duration for stressed short vowels when they occur in short syllables of structure (cv) is 51.9 m.sec.; while it increases to 71.9 m.seconds, for those under category (b). This result contradicts our expectations that stressing would be a feature which contributes amongst other things towards giving a syllable prominence due to longer duration than would be the case if it is unstressed. In order to examine the validity of this suggestion, we decided to study duration of stressed and unstressed short vowels in isolated words. For this purpose forty disyllabic words were selected and recorded by the writer and spectrograms were made. According to our measurements of these spectrograms, 68% of stressed short vowels appear to be 10% longer than their unstressed counterparts. 12% are found to have semi-equal durations while the remainder are found to be 8% shorter in duration than the unstressed (reasons are suggested for this variation on p p.74 and 176-8.).

Thus one may be encouraged to say that in Ir.S.A. there is a strong tendency for stressed short vowels in their isolated words to have longer durations than their neighbouring unstressed syllables. However, for rhythmical purposes, it may be argued, such a principle does not fully apply in connected speech (for a detailed description of rhythm in Ir.S.A. see chapters 3,4,and 5.).

Duration of Long Vowels.

Due to the fact that long vowels in Ir.S.A words normally receive stress, their mean duration values have been calculated as to whether they occur

(a) finally or non-finally in non-final words of short utterances.

(b) finally or non-finally in final words of short utterances.

According to our measurements, the mean duration of long vowels in position (a) above is found to be around 125.8 milliseconds. This figure increases to reach 135 milliseconds in position (b).

To complete our study of duration in Ir.S.A. vowels, two different types of spectrographic measurements were made in which: (a) short and long vowels were pronounced in disyllabic nonsense words. These syllables were constructed so that different vowels were said in association with different consonants. These points are taken up in more detail in chapter5. The mean duration for each vowel is presented in Table (3) below:

Short vowels			Long vowels				
/i/	/a/	/u/	/i:/	/a:/	/u:/	/e:/	/o:/
43.1	52.2	49	95.4	135.9	102	111.3	-

Table (3) Mean duration in milliseconds of short and long vowels in connected speech .

Finally, to summarise our results, we calculated the total mean duration for short and long vowels according to the type of speech they had been tested in. These results are shown in Table (4) below, which would allow us to

(1) examine the relation between short and long vowels in the dialect under study

(2) compare our results with any other available studies in relation to Arabic vowel-duration.

1.	Isolated syllables	Short vowels	175.9 milliseconds
		Long vowels	338.4 "
2.	Short utterances	Short vowels	65.3 "
		Long vowels	130.4 "
3.	Connected speech	Short vowels	48.1 "
		Long vowels	111.2 "

Table (4)

1.3. Discussion

According to our measurement as summarised in Table (4), it becomes obvious that short and long vowels in Ir.S.A. are always distinguished in terms of duration under all circumstances. In all the different styles of speech we have studied, long vowels are found to last approximately twice the time required for producing short vowels. In principle, our results agree with those of Al-Ani (1970, 75), who argues that, with reference to duration "The difference between short and long vowels is approximately double or more". Nevertheless, our results appear to differ slightly from Al-Ani's regarding the actual time required to produce any single vowel, since the durational values indicated in his study (see pp. 23, 75) are much higher than ours. This in fact suggests that vowels, in Cl.A., which is the object of Al-Ani's study, are distinguished from those used in colloquial speech by lasting longer. According to the author's knowledge of both Classical Arabic and colloquial Arabic, this remark remains valid although a percentage of the variation between our measurements and those of Al-Ani may be attributed to varying degrees of tempo, specially that no reference has been made by him to this feature.

The other work to which reference is made here is that of Cowan (1970, 94-100). In his study of the vowels of Egyptian Arabic, Cowan expressed his disapproval of the normal distinction made between short and long vowels by writers on Arabic. According to his views, vowel length does not exist in normal speech. Our results strongly contradict Cowan's observation which presumes that "native speakers of Egyptian Arabic respond to vowel quality rather than vowel length when asked to make phonetic identification" (p.99). His statement is probably based on his belief that Egyptian vowels are slightly longer or shorter than a hypothetical length of his own invention (p.96). In contrast to Cowan's hypothesis, Abdalla (1962, 20-9) who measured vowel-duration in Egyptian colloquial Arabic has, reached through spectrographic evidence, similar conclusions to ours, thus putting Cowan's argument in doubt.

1.4. Consonants in Ir.S.A.

In describing the Arabic consonantal system writers have traditionally made a distinction between two sets of consonants. The first is normally referred to as being emphatic, which differ in articulatory as well as acoustic terms from what comes to be known as the non-emphatic (see Harris 1942, Ferguson 1954, Jakobson 1973, Blanc 1953, Cantineau 1956, Mitchell 1969, 1975, Gairdner 1965, Johnston 1967, Abdo 1969 and Ingham 1971). Although emphasis is regarded as the only criterion for making the distinction between the two sets of consonants, there seems to be no general agreement amongst the various writers on what actually constitutes emphasis. Generally speaking, all consonants of Ir.S.A. are the same as those of the classical variety with an exception of /tʃ/ which replaces /k/ in most places. All consonants are listed on graph (b) below, (see p. 39).

In our analysis a distinction is made between two groups of consonants:

(1) The emphatic sounds, and

(2) the non-emphatic sounds.

1.5. Discussion of Emphasis

In accordance with our views (see p29) some writers, such as Abdo (1969, 43) regard emphasis as a quality feature of particular consonants, which normally tends to affect the surrounding sounds phonetically. As it happens, the exact number of emphatic Arabic segments dealt with vary as much as the different approaches which attempt to define it. In this section, an attempt is made to select some of the various studies that so far have appeared in relation to this topic.

To start with, Abdo (1969,31) quotes Harrel's definition of emphasis as "a prosodic feature which occurs over segments of variable length, but which has a minimal domain of a consonant plus a neighbouring vowel. In these terms there would be no such things as emphatic consonant or vowel phonemes, but a prosodic feature, 'emphasis' which may co-occur with the various consonant - vowel phonemes". Such a view was originally adopted and developed by Firth who is regarded as the pioneer of prosodic analysis. Firth (1956, 134) believes that emphasis in Arabic must be treated as part of the prosodic rather than the phonematic system of the language.

In other words, emphasis is considered as a function of the syllable. Such a view assumes that information about any given segment is contained not only in that single segment of speech, but also in the sounds which either follow or precede it. Accordingly, the syllable is treated as the smallest unit in pronunciation.

For those writers who regard emphasis as a sound quality, the terms has been defined differently. For instance, for some (see Ferguson 1956, 446, Cantineau 1956,12, Ingham 1971) emphasis is equated with velarization; while Ladefoged (1973, 63-4) does not seem to be certain about a definite description of emphatic Arabic sounds: his terminology appears to be oversimplified and even vague. He argues, for instance, that "the distinction between emphatic and non-emphatic consonants is largely that the former are velarised or pharyngealised, whereas the latter are not". According to such a statement, it is hard to decide whether velarization and pharyngealisation are meant to be alternatives or whether they are intended to be two identical labels. If the first suggestion is intended, it becomes difficult to explain how an emphatic sound may either be velarized or pharyngealized since velarization and pharyngealization involve different areas of the vocal tract. A parallel uncertainty involves the R.P. 'dark l", see Abercrombie 1967, 63, Simpson 1979, 60-61.

Disagreement about defining emphatic Arabic sounds is not an unusual matter. For example, Catford (1977, 193) prefers to describe them as being uvularized rather than velarized. It is obvious that Catford's definition may be regarded as casual and lacking in precision. He, for example, maintains that emphasis may be referred to as velarization in some Arabic dialects without producing evidence. In spite of the fact that he prefers to equate emphasis with uvularization, he also equates it with velarization and pharyngealization without giving examples. Accordingly he maintains that "Arabic has a series of strongly modified consonants, usually called 'emphatics', among which are [t̴, d̴, s̴, z̴] and [ɫ]. Examples are [t̴i:n] 'mud' contrasting with [ti:n] 'figs', and [s̴e:f] 'summer' contrasting with [se:f] 'sword'. These Arabic sounds are often described as velarized, and it may well be that in some dialects they are velarized. More often than not, however, the whole back part of the tongue is pulled backwards, (rather than raised towards the soft palate), so that they may be more properly called uvularized or pharyngealized. Uvularized sounds are similar to velarized sounds, except that the secondary tongue-raising is lower and further back. As we have mentioned, the Arabic so-called velarized consonants may perhaps be more properly described as uvularized. There is no special symbol for uvularization, the diacritic /~/ being used for this purpose."

Furthermore, there is another group of writers who equate emphasis with pharyngealization. For instance, in his rather short reference to some Egyptian Arabic sounds, Abercrombie (1967, 62-3) describes the emphatic /m/ as being a voiced pharyngealized bilabial nasal. According to his views, pharyngealization, which is regarded the main articulatory feature of emphasis, is a sound quality which results from the retraction of the tongue towards the back wall of the pharynx. Similar views to those of Abercrombie appear in the literature such as that of Jakobson (1973, 159) who argues that in articulatory terms, emphatic phonemes are mainly characterised by a contraction of the upper pharynx. Acoustically, they may be perceptually marked by a lower pitch. According to his experimental study, it has been confirmed that emphatic consonants "display energy in a lower frequency region and affect the second formant of the following vowel in a downward direction". Jakobson's remarks have been supported by two investigator in this field. Firstly by Obrecht (1961, 151-2) whose results indicate that "the frequency lowering of the second formant is a necessary and sufficient cue for the perception of velarization, or emphasis". However, Obrecht disagreed with Jakobson's analysis in regarding the velar and not the pharynx area of the vocal tract to which the tongue must be raised when producing an emphatic sound. Secondly, the other investigator who fully agrees with Jakobson's result is Al-Ani (1970, 44). The results of his acoustical as well as physiological study of emphasis in Arabic challenges Obrecht's hypothesis. He rejects the view which suggests that the area of the vocal tract involved when pronouncing emphatics is the velar. Instead he suggests that the area involved is the pharynx and thus describes the emphatic consonants as being pharyngealized, thus supporting Abercrombie's views as quoted above.

So far, in considering the various views that have appeared in relation to emphasis, reference has been made to three particular areas of the vocal tract, namely, the velum, the uvula and the pharynx, as being the major factors for producing an emphatic sound. However, other investigators have correctly involved other areas in their descriptions. Thus, in his description of emphatic sounds in a Druzi dialect in northern Palestine, Blanc (1953, 53) argues that these sounds are "primarily characterised by a retraction of the tongue and a raising of its back towards the velum, as well as an advancing of the lips." In addition to lip-rounding and velarization, Blanc acknowledges other possible characteristics such as greater muscular tension and glottal construction.

Another study which is worth mentioning here is that of Lehn (1963, 31) which includes a detailed description of emphasis in the Arabic dialect of Cairo. In his study, Lehn confirms Blanc's description and offers more detailed observations. For example, he believes that emphasis in C.A (Cairene Arabic) may be defined "by the occurrence of the first and one or more others of the articulatory features:

"(1) Slight retractions, lateral spreading, and concavity of the tongue and raising of its back (more or less similar to what has been called velarization), (2) faucal and pharyngeal constriction (pharyngealization), (3) slight lip protrusion or rounding (labialization), and (4) increased tension of the entire oral and pharyngeal musculature resulting in the emphatic being noticeably more fortis than the plain segments."

To conclude our selection of previous studies of emphasis in Arabic, we would like to quote Mitchell (1969,162) who severely criticises the above studies by describing them as misleading. He argues that it is inappropriate to describe emphatic sounds as being either pharyngealized or velarized on the basis that such descriptions may confuse the system employed in classifying sounds. In other words, to describe the emphatic sound /ṣ/ as a voiceless pharyngealized postdental fricative, we may confuse pharyngealization in this instance, which is a secondary dimension, with the description of /q / for example, where pharyngealization is regarded as a primary dimension. There is little doubt that under the influence of his theoretical principles, Mitchell, a Firthian scholar would rather regard emphasis as a syllable prosody rather than treating it as a single segment quality. For a critical survey of Mitchell's views on the subject together with other related matters, see Abdo (1969, 29-48).

Finally, Lehn's definition of emphasis as stated on (p.28) is adopted here with some modifications. To begin with, the term is employed in this study to describe segmental sound qualities, whereas Lehn considers it as a syllable feature. Accordingly, a syllable in his opinion is either emphatic or plain. Certainly during the pronunciation of a syllable which includes an emphatic sound, the articulatory organs while producing the following or the preceding sound may assume a position that is characteristic of the emphatic sound i.e. a front vowel becomes slightly retracted and a back vowel becomes even more retracted, nevertheless, Lehn's views regarding emphatic syllables are rejected on the basis that for facetious purposes, speakers of this dialect may consciously use the 'wrong' vocalic allophone after an emphatic consonant.

However, Lehn's definition is adopted here because it appears to be more suitable than the remaining definitions in so far as it takes in its account most of the articulatory features which we hold to be involved in producing emphatic sounds. Nevertheless, we disagree with him when he equates emphasis with what he calls velarization plus either labialization or pharyngealization or increased tension of the vocal tract. According to our observation, emphatic sounds in Ir.S.A. are produced as a result of the co-occurrence of all four articulatory features outlined by Lehn. It is also observed that in producing Irta:ḥi emphatic sounds, the above articulatory features are not manifested similarly. For instance, the emphatic /s̱/ as in /s̱ali:b/ 'cross', involves more lip-rounding than /ṯ/ as in /ṯajjib/ 'nice'. It is obvious that none of the available adjectives involved so far in describing the emphatic sounds, i.e. velarizated, pharyngealized ... etc., seem to be appropriate. Instead this type of sound will be referred to in this study by the adjective 'emphatic', rather than anything else, in order to distinguish it from non-emphatic sounds.

1.6. Allophonic Variations:

Before proceeding any further to present a description of Ir.S.A's consonants, and in order to avoid needless repetition in that part of our description which deals with allophonic variations, it is appropriate to state the following general conditions which apply to the vast majority of the consonants in this dialect. It is also important to notice that our description applies to examples as they occur in the citation form:

(1) The devoicing of voiced consonants when they form clusters with voiceless consonants. Devoicing is most clearly noticeable when voiced consonants occur before a voiceless consonant in a word's initial position as in :

/dʒsu:ra/	'bridges
/bʃi:r/	'a proper noun, masculine singular'
/ms:him/	'a partner'

(2) Emphasis, which means that any segment in the word, occurring in conjunction with an emphatic sound will acquire such feature. Accordingly /l/ in the following examples may be described as clear in the vicinity of the non-emphatic fricative /s/, and dark when preceded by the emphatic fricative /s̲/:

/sali:b/	'stolen'
/s̲ali:b/	'cross'

(3) Consonant lengthening which involves the prolongation of consonants to no fixed durations. Such a phenomenon is particularly noticeable in fricatives and stops occurring in word-final positions, as in -

/haʃi:ʃ/	'grass'
/sa:s/	'foundation'.

Other allophonic variations will be introduced within the description made later for the various consonants.

1.7. Emphatic Consonants:

Ir.S.A. has at least four emphatic consonants described as follows:

/t̠/ A voiceless emphatic denti-alveolar stop. It occasionally becomes affricated depending upon its place in the word and whether it is released or not. For example, whenever /t̠/ occurs initially before a vowel or finally before a pause, it is known to be accompanied with friction as in -

/t̠i:n/ 'mud'

/na̠t̠t̠at̠/ 'she jumped'

However, friction disappears in cases where /t/ closes an initial syllable followed by another which opens with a /t̠/ as in /na̠t̠tat/ above.

/d̠/ a voiced emphatic denti-alveolar stop, e.g. /d̠urɣa:m/ 'a proper noun, masculine'. Its occurrence in this dialect is not as frequent as that of other emphatic sounds, due to the fact that Irta:ḥi speakers tend to use the emphatic /ð̠/ in its place unless it follows a nasal as in:

/nd̠ux/ 'to pump out'

/md̠am-mid̠/ 'a male nurse'.

/d̠/ is also known to occur in the vicinity of /ð̠/ as in:

/ð̠id̠ha/ 'against her'.

Similar to other stops /d̠/ may not be released when it occurs medially in a word as in /ʔid̠ha/ 'before noon'.

/s̠/ a voiceless emphatic alveolar fricative, e.g. /s̠a:ḥib/ 'a friend'. It contrasts with /s/ in words such as /s̠allaḥ/ 'he fixed, versus /sallaḥ/ 'he armed'.

/ð̠/ a voiced emphatic fricative, e.g. /ð̠a:lim/ 'a tyrant'. It normally represents the classical emphatics /d̠/ and /ð̠/. Accordingly, the words /ð̠ala:m/ 'darkness' and /bad̠a:ʔiʕ/ 'goods' in Cl.A becomes /ð̠ala:m/ and /bað̠a:jiʕ/ respectively.

Two other emphatics are also known to occur in Irta:ḥi speech. These are : /m̠/ and /l̠/ which are restricted in their occurrence to very few words. For example /l̠/ an alveolar emphatic lateral is observed to occur in the first syllable of few disyllabic words preceded by a glottal stop and the vowel /a/ as in :

/ʔaḻm̱a:z/ 'diamonds'
/ʔaḻm̱a:n/ 'Germans'
/ʔaḻḻa/ 'God'

In spite of the fact that in these instances /ḻ/ occurs to the exclusion of /l/, one still may be tempted to regard it as an allophone of the second if it were not for the minimal pair:

/waḻḻa/ 'I swear by God' versus /walla/ 'he went away'. In these examples /ḻ/ contrasts with its non-emphatic counterpart and hence forms the basis for being considered as a separate phoneme.

/ḻ/ is also noticed to occur regularly in disyllabic words which contain an emphatic segment in their final syllables as in: /baḻḻaṯ/ 'he tiled the ground' versus /ballat/ 'she soaked something in water. /ḻam̱m̱aṯ/ 'he confused things', versus, /lammạt/ 'she gathered things'.

/ḥaḻḻas/ 'he insisted on staying' versus /ḥallas/ 'he fixed the saddle'.

Finally, there are very few examples which suggest that speakers of this dialect make a distinction between the bilabial emphatic nasal /m̱/ and its non-emphatic counterpart /m/. Therefore, /m̱/ occurs not only in conjunction with other emphatics as in /ḻam̱m̱aṯ/ above, but also independently in words such as:

/m̱adrasi/ 'school'
/m̱o:dʒi/ 'a wave'
/m̱afru:ʃ/ 'furnished'
/m̱uɣɣe:ta/ 'catapult'

In addition, in the following two minimal pairs, /m̱/ contrasts with /m/ as follows:

/m̱aj/ 'water' versus /maj/ 'a female name, /jam̱m̱a/ 'mother vocative) versus /jamma/ 'or' which mostly occurs in connected speech.

1.8. The Non-Emphatic Consonants:

Stops.

In Ir.S.A. there are four voiceless and three voiced non-emphatic stops (for a definition of stops see Abercrombie, 1967; Catford, 1977). The first set include:

/t/ a voiceless dental stop, e.g. /tu:t/ 'strawberries'
/k/ a voiceless velar stop. Cl.A. /k/ is represented by /tʃ/ unless it occurs finally in a pronominal suffix as in the following examples where the suffix is underlined:

/ʕammak/ 'your uncle, masculine singular'
/baḥdalak/ 'he mistreated you'
/ʕamkum/ 'your (plural masculine) uncle'.

But /k/ may also occur initially to represent Cl.A /q/, a voiceless uvular stop as in:

/kurʔa:n/ 'Koran'
/kalbu/ instead of /qalbu/ 'his heart'.

/q/ a voiceless uvular stop, occurs in the classical variety of Arabic and is still retained in various Palestinian dialects such as that spoken in Nablus (a big town in the West Bank). In the dialect under study /q/ becomes /k/ unless it is preceded by an emphatic consonant. Thus /qalb/ becomes /kalb/ while /ṯa:qa/ 'a small window' remains unchanged. Similar examples are: /ṯo:qa:n/ 'a family name', /ṣadi:qu/ 'his friend'.

/ʔ/ a glottal stop. It occurs in all positions but is often dropped when it occurs finally in connected speech, e.g. /sama:ʔ zarka:ʔ/ becomes /sama zarka/ 'a blue sky'.

Amongst the voiceless stops it is noticed that the pair /t/ and /k/ are normally accompanied by aspiration when they occur initially in words, or whenever they precede a vowel. Such an aspiration is usually dropped before a pause and whenever these consonants form clusters with other consonantal segments. Accordingly /t/ in /tirḥi:l/ 'moving house' is aspirated while it loses aspiration in /tla:l/ 'hills'.

The second set of stops consists of the following voiced segments:

/b/ a voiced bilabial stop, e.g. /birtʃi/ ' swimming pool'
/d/ a voiced dental stop, e.g. /dam/ 'blood'.

As mentioned earlier (see p.30), voiced consonants become either partially or completely devoiced whenever they form a cluster with voiceless consonants as in /dxu:l/ 'entrance', /bsaʕ/ 'quickly'.

/g/ a voiced velar stop. Its occurrence in this dialect is extremely rare and restricted to borrowed words either from a foreign language such as /zangi:l/ 'very rich', from Persian, or from other contemporary Arab dialects such as /gadaʕ/ 'brave', from Egyptian Arabic or /gawwa:d/ 'bastard' which occurs in Iraqi Arabic.

Generally speaking, stops in final positions prepausally are in free variation as to whether they are released or not.

Fricatives:

As shown below, fricatives in Ir.S.A. are distinguished by an 8- term series in respect to their place of articulation. Various fricatives differ from each other according to whether they are voiced or not. Thus voiceless fricatives include:

/f/ a voiceless labio-dental fricative, e.g. /falla:ḥ/ ' a peasant'
/θ/ a voiceless flat dental fricative, e.g. /θo:m/ 'garlic'
/s/ a voiceless grooved alveolar fricative,e.g /sam/ 'poison'
/ʃ/ a voiceless palato-alveolar fricative, e.g. /ʃa:hid/ 'a witness'.
/x/ a voiceless velar fricative, e.g. /xa:lid/ ' a male name'
/h/ a voiceless glottal fricative, e.g. /haru:n/ 'a male's name. It is normally dropped when it occurs finally as in /fataḥu:h/ 'they (masculine) opened it'.
/ḥ/ a voiceless pharyngeal fricative, e.g. /ḥiliw/ 'sweet'

The second set of fricatives consists of the following voiced segments:

/ð/ a voiced dental fricative, e.g. /ða:n/ 'ear'
/z/ a voiced alveolar fricative, e.g. /zuhe:r/ 'a male's name'
/ɣ/ a voiced velar fricative, e.g. /ɣa:bi/ 'a forest'.

Fricatives are normally produced in the oral cavity by a narrow constriction which allows the escaping air-stream to produce strong friction. In Irta:ḥi speech, the amount of accompanying friction is considerably reduced when a fricative is followed by another consonant as in:

/θma:r/ 'fruit'
/fla:ḥa/ 'agriculture'
/sla:l/ 'baskets'.

Affricates:

Catford (1977, 211) defines an affricate as a stop released with close transition into a homorganic fricative. Abercrombie (1967, 147-8) also defines it as a stop whose articulators are separated slowly forming a stricture of close approximation causing some audible friction to be heard. The duration of the resultant friction is considered by Abercrombie to be the criterion for regarding the sequence as consisting of two segments. For similar views, see Gimson (1970, 171), Simpson (1979, 61).

In Ir.S.A. the following affricates are employed in the consonantal system:

/ʧ/ a voiceless palato-alveolar affricate, e.g. /ʧa:n/ 'was'
/dʒ/ a voiced palato-alveolar affricate, e.g. /dʒa:j/ 'coming'

These segments are characterised by the fact that their release is accompanied by a considerable amount of friction which occurs at the point of stricture. Moreover, the perceived amount of friction is noticeably shorter in duration than that which characterises other fricative sounds. In the dialect under study, the accompanied friction may be said to be influenced by the surrounding sounds. For instance, an affricate appears to be longer when it occurs before vowels (both short and long) than when it is followed by a consonant as in:

/ʧa:mil/ 'a male's name'
/ʧla:b/ 'dogs'.

Nasals:

In articulating nasal consonants, two cavities are normally used - oral and nasal. Thus when a complete closure at some point is made within the mouth, air remains free to pass out through the nose. In fact it is this combination that distinguishes nasals from other consonants. In Ir.S.A. the following nasals are employed in the consonantal system:

/m/ a voiced bilabial nasal, e.g. /malik/ 'king'
/n/ a voiced alveolar nasal, e.g. /nasi:m/ 'breeze'.

Apart from the few examples mentioned earlier in(p.31-2) where /m̲/ is treated as a separate phoneme, the above nasals are known to have pharyngealized allophones which tend to occur in the vicinity of an emphatic segment as in:

/maṯbu:x/ 'cooked'
/n̲ə̲i:f/ 'clean'

This in fact allows for phoneme-overlapping where non-emphatic /m/ is known to have the allophones [m] and [m̲], which overlaps with [m̲], an allophone of the emphatic /m̲/. The same thing applies to the emphatic and non-emphatic lateral /l/ where:

/l/ has [l] and [l̲] and,
[l̲] has [l̲].

Nasal consonants in Irta:ḥi speech are normally voiced but may lose their voicing in combination with voiceless consonants as in -

[n̥sa:fir] 'to travel, plural'
[m̥xammidʒ] 'rotten'

<u>Laterals:</u>

Laterals which are defined by Jones (1960, 173) as being "primarily articulated by the tip of the tongue touching the teeth-ridge in such a way that though there is a complete closure in the middle of the mouth, yet a passage for the air is left on one or both sides of the tongue; the soft palate is in its raised position; the vocal cords are made to vibrate so that 'voice' is produced". This description applies to both emphatic and non-emphatic alveolar laterals that operate in Ir.S.A. The non-emphatic lateral /l/ is known to occur in words such as:

/laḥmi/ 'meat'
/lamlam/ 'he collected'.

<u>Trill:</u>

A trill is defined by Abercrombie (1967, 49) as the type of segment which results from a stricture of intermittent closure.

In Ir.S.A., a repeated quick series of flaps of the tip of the tongue against the ridge behind the upper teeth forms the basis for this segment which we describe as the voiced alveolar trill /r/. It is noticed that when /r/ occurs in a word's final syllable, before a pause, it tends to become devoiced and accompanied by weak friction as in:

/wṣilnal-bar/ 'we arrived ashore'

<u>Approximants:</u>

According to Ladefoged (1973,46) and Abercrombie (1967,50) the term 'approximant' is employed to describe segments which are articulated "with central passage of the air-stream and open approximation of the articulators, so that no noise of friction is produced". According to such a definition, it may be said that Ir.S.A. has the following approximants:

/w/ a voiced bilabial-velar approximant as in

/walad/ 'boy'
/wla:d/ 'boys'

An allophonic variation is observed in the above examples where /w/ is produced with more lip-rounding when it precedes a vowel than when it is followed by another consonant.

/j/ a voiced palatal approximant as in /jiḥmil/ 'to carry'

/ʕ/ According to the International Phonetic Association's chart of consonant- symbols, and to previous studies of Arabic, /ʕ/ has been described as a voiced pharyngealized fricative. For similar views see Blanc (1953, 71), Johnston (1967, 2), Ingham (1971, 275). Other descriptions are also available including that of Al-Ani (1970, 62) who describes it as a voiceless (sic) stop. In our study, the description that seems most appropriate for this segment is that of Catford (1977, 163-4) who describes it as an upper pharyngeal or faucal approximant. His description is based on remarks made by Ibn Sina, a great phoneticion and Arabist who lived in the tenth century (980 A.D.). Therefore, other descriptions are, in our view, rejected on the basis that in Irta:ḥi speech /ʕ/ as in /ʕumma:l/ 'labourers' is not normally accompanied by friction, neither has it the characteristics of a stop. Nevertheless, it may be true to say that in Cl.A, and for stylistic purposes, when reciting verses from the Koran, or reading poetry aloud /ʕ/ may be accompanied with friction. What concerns us here is the mere fact that in Irta:ḥi speech such a feature does not occur.

All consonants are listed on a chart below (see page 39) which shows the place and manner of articulation for each segment plus the state of the glottis which is described as either voiced or voiceless.

Finally, for an acoustical description of Ir.S.A. consonants, see Chapter 3 pp.98-102.

Consonants	Bilabial	Labiodental	Dental	Denti-alveolar	Alveolar	Palato-alveolar	Palatal	Velar	Uvular	Pharyngeal	Glottal
Stops	b		d t	d̲ t̲				g k	q		ʔ
Nasals	m m̲				n						
Laterals					l l̲						
Trill					r						
Fricatives		f	ð θ ð̲		– s z s̲	ʃ		ɣ x		ḥ	h
Affricates						dʒ tʃ					
Approximants	w						j	w		ʕ	

<u>Chart (b)</u> : Consonants in Ir.S.A. are classified in the chart above according to the place and manner of their articulation. The state of the glottis during their production is also stated where voiceless consonants appear on the right hand side of the appropriate box to separate them from the voiced segments which appear on the left side.

1.9. The Syllable and Word-structure in Ir.S.A.

Attempts to define syllable in the literature devoted to the study of the term are primarily based on two views. On the one hand, we find some phoneticions who advocate a phonetic interpretation for syllable, while on the other, there are writers, as explained below, who adopt a phonological approach for defining it. Within the two distinctive approaches further subdivisions are easily recognisable.

Stetson's (1951, 200) views on the subject may be considered to represent the former approach. He, for example, maintains that a syllable is basically a pulmonic air stream forced upwards through the vocal tract by a chest pulse. "The syllable", he writes (p.33) "is constituted by a ballistic movement of the intercostal muscles. Its delimitation is not due to a point of minimum sonority, but to the conditions which define a movement as one movement. In the individuality of the syllable, the sound is secondary, syllables are possible without sound. Speech is rather a set of movements made audible than a set of sounds produced by movements".

Stetson's views have been criticised by a number of writers including Ladefoged (1967, 2) who maintains that "the major part of Stetson's work should be considered a hypothesis attempting to explain how the respiratory muscles might be involved in speech, rather than an account of the observed action of these muscles". In spite of Pike's (1967,54) adoption of the pulse theory, he argues that Stetson's theory suffers from the following defects:

(1) A failure to take what he calls the perceptual factor into consideration.

(2) A confusion caused by taking spelling considerations into account.

(3) Acceptance of other criteria than the chest-pulse for determining syllable-boundries. For example, Stetson believes that sounds such as [aia] or [ala] may constitute two syllables while produced by a single chest-pulse.

Similar criticism is also made by Gimson (1970, 52) who claims that Stetson's theory is misleading at the linguistic level. For instance, in words such as /si:ɪŋ/, which contains two vowels the second of which is weakly stressed, it is doubtful whether a chest pulse will be evident although it is clear that such a word consists of two linguistic units.

Amongst the writers who support a phonetic definition for stress, one may quote Jones (1960, 55), who believes that "In theory a syllable consists of a sequence of sounds containing one peak of prominence". He adds "Each sound which constitutes a peak of prominence is said to be syllabic, and the work or phrase is said to contain as many syllables as there are peaks of prominence".

Such an argument may be considered less appealing in comparison, for instance, with that of Stetson, on the basis that it relies on auditory and subjective criteria . It may be argued that such criteria are thought to be less decisive than a theory with some experimental backing - as that of Stetson - for determining the prominence of any given sound.

The Phonological Definition

A phonological interpretation for syllable is based on the assumption that a syllable consists of either one or more phonological units, namely phonemes. Accordingly, O'Connor (1975,200) explains "Our first acquaintance with the notion of 'syllable' probably involved the teaching that a syllable was something that contained a vowel with or without surrounding consonants. This gives a clue to a phonological treatment of the syllable". O'Connor approves of such a definition as it "enables us to account for the different ideas that speakers of different languages have about syllables". Similar views to that of O'Connor are presented by Hoenigswald (1944, 151-5) and Haugen. Haugen (1956,216) for example, defines the syllable as "the smallest unit of recurrent phonemic sequences". He argues that such a unit allows us to study and state the relative distribution of segmental and suprasegmental phonemes in a language. In his view, the syllable as such "becomes a purely phonological unit... which in turn enters into still longer stretches of speech, reaching up to the complete utterance".

One of the basic assumptions of the phonological theory is the failure of attempts to arrive at a general phonetic definition of the syllable, which would be applicable to all languages at all times. Instead, a phonological alternative is suggested which requires different criteria for the recognition of syllables in different languages. Such criteria, suggests Hoenigswald (1944,155), may include the domain of accent placement, the minimal admissible phoneme sequence and "juncture phonemes which in many languages determine syllable boundry". Furthermore, O'Connor and Trim (1953, 105), regard a syllable in phonology as "a structural unit most economically expressing the combinatory latitudes of vowels and consonants within a given language". Beside the complexity of the criteria outlined by Hoenigswald, such as stress placement, Pointon (1978, 46) discovers that by applying O'Connor and Trim's principle to the Greek language "no evidence can be adduced for calling one group of phonemes 'vowels' and another group 'consonants' on distributional grounds because of high combinability between all the phonemes".

According to O'Connor's definition of syllable as stated earlier on p. 41, vowels are regarded as central to the syllable, while consonants are peripheral. Nevertheless, Pointon (1978, 47) shows that in some Spanish words, such a definition is not applicable as the vowels /i/ and /u/ occur as non-syllabic.

Beside the fact that, in this study, we support Abercombie's (1967,34) statement in regarding Stetson's pulse theory as the most suitable amongst existing views, we also share Pulgram's (1970, 16) observation in considering the syllable as an operational unit in linguistics due to its involvement with other structural features. According to such a view, a syllable must be realised as a basic unit in speech. As a matter of fact, it may be argued that a proportion of the inadequacies in speaking a foreign language may be caused by faults of syllabification rather than ascribing it to difficulties in producing individual sounds. For instance, it is common amongst some Arabs when speaking English to say /sitri:t/ and /sikwe:r/ instead of /stri:t/ and /skweə/, respectively. By doing so, Arab speakers of English find themselves applying syllable rules of their native language, rather than following new rules.

In studying the dynamic features of Ir.S.A., it has been confirmed that stressing (see Chap.2), for example, may not be properly investigated without relating it to syllabification. Accordingly, it is shown that stress placement is mostly determined according to syllable types and their patterning in an utterance. Furthermore, it has also been found that the syllable forms the basis of the present dialect's rhythmic structure (see p.89). For example, syllables occur in different types and shapes which would ultimately lead to variation in their duration. Hence, different sequences of syllables constitute various rhythmic patterns. In addition, the significance of the syllable as a unit stems from the fact that it is also employed as the carrier of the tone in a tone-unit (see p.203). On this basis, a syllable may be described as the smallest tone-bearing unit that lends itself to identification and classification.

The following section is a description of the syllable and its different patterns which operate in Irta:ḥi speech.

In Ir. S.A. every syllable begins with a consonant and must have a vowel. Accordingly, the number of syllables in a word is determined according to the number of vowels included. It must be added that the approximants /w, j/ function as consonants, eg. /wikif/ 'stopped', and /jirmaḥ/ 'to run'.

Words either suffixed or not are chosen as the frame of reference for studying syllable types and quantities.

The following syllable types exist in Ir. S.A.

(1) CV

It occurs initially in forms of structure: CV.CVC as in /ʕilim/ 'knowledge' or CV-CV:C as in /sa-li:m/ 'a proper noun'. It also occurs medially in forms of structure CVC. CV. CV(C) as in
/ˈbak-ra-tak/ 'your cow' and
/ˈbak-ra-tu/ 'his cow'.

It has to be noted that while the present dialect allows forms like CV-CV-CV, which contains a sequence of 3-syllables of the same type, many of the contemporary dialects of Arabic do not allow it.

Thus we find /ma-sa-tʃu/ 'he caught him' in Ir. S.A., while the equivalent in Egyptian Arabic is /mis.ku/.

(2) CV: as in

/si:-dak/ 'your grandfather'
/na:-mat/ 'she slept'
/ru:-ḥi/ 'you (feminine singular), go away'
/ma-li:-ḥa/ 'it is nice'
/nis-wa:n/ 'ladies'
/war-ri: / 'show him'

Thus, this syllable type occurs

(i) initially in forms of structure CV:-CV(C)
(ii) medially in forms of structure CV-CV:-CV
(iii) finally in forms of structure CVC-CV:

In contrast to other Arab dialects, Ir.S A. does not allow in its 4-syllabic words the occurance of this syllable twice (see El-Hassan, 1965, 62) e.g. in Dasdi (a Jordanian dialect) we have /ma- fa:-ti:hu/ 'his keys' while in Ir. S.A. we have /ma-fa-ti:-hu/

(3) CVC as in

/ʃuf-tu/ 'I saw him'
/kut-bak/ 'your books'
/ʔa-xað-ha/ 'he took it'
/ħa:-jik/ 'a lover'
/ʔa-xað-na:-hum/ 'we took them'
/fat-taḥ/ 'he opened'
/ti:-nit-hum/ 'their fig tree'
/stal-mat-hin/ 'she received them'.

According to the above examples, CVC occurs

(i) Initially in forms of structure: CVC-CV(C)
(ii) medially in forms of structure: CV-CVC-CV,CCVC-CVC-CVC and CV-CVC-CV:-CVC
(iii) finally in forms of structure CV:-CVC, CV-CVC-CV:-CVC and CCVC-CVC-CVC.

(4) CV:C as in

/ʕi:sak/ 'your bag' (masculine singular)
/xa:l-tu/ 'his aunt'
/dʒa:b-lu/ 'he brought to him'

/ʕa-ʃiːk-tu/ 'his mistress'
/bi-ʃuːf-kum/ 'he will notice you' (masculine plural)
/fal-la-ḥiːn/ 'peasants'
/maf-tuːḥ/ ' it is opened'
/maːr-kiːn/ 'passing by' (masculine plural)

Thus, CV:C occurs

(i) initially in forms of structure CV:C-CV(C)
(ii) medially in forms of structure CV-CV:C-CV(C)
(iii) finally in forms of structure CVC-CV:C, CV:C-CV:C

certain forms of CV:C are monosyllabic forms e.g. /leːʃ/ 'what for?, /ruːḥ/ 'go'

The nucleus of this syllable type commutes in a system of five long vowels : /iː,eː,aː,oː,uː/

(5) CVCC as in

/kult-lu/ 'I told him'
/fa-taḥt-lu/ 'I let him in'
/ba-ʕaθt-hin/ 'I sent them'
/sadʒ-dʒalt-hum/ 'I registered them'
/ʕadʒ-dʒazt/ 'becoming old'

Thus, CVCC occurs

(i) initially in forms of structure CVCC-CV(C)
(ii) medially in forms of structure CV(C)-CVCC-CV(C)
(iii) Its final occurence is restricted to the form CVC-CVCC.

(6) CCVC as in

/stal-mat-hin/ 'she received them'
/ṯmaṯ-waḥ/ 'staggering'
/staʕ-dʒal/ 'he was in a hurry'
/smiʕ-tu/ 'I heard him'
/kṯub-ha/ 'take up a hem'

As is noticeable, this syllable type occurs initially in bisyllabic and trisyllabic forms of structure : CCVC-CCVC-CV(C), CCVC-CVC-CV.

(7) CCVCC as in

/smiʕt-ha/ 'I heard it'
/lbist-hin/ 'I wore them'
/fhimt-ha/ 'I understood her'
/rbiḥt/ 'I won'

This type occurs either in monosyllabic forms or, initially in forms of structure : CCVCC CV(C). As it happens the nucleus of these forms is always /i/.

(8) <u>CCV:C</u> as in
/dˈxu:l/ 'entrance'
/ḥˈru:b/ 'wars'
/ʕˈtu:r/ 'perfumes'

This type occurs either in isolated forms or suffixed, but like example number (7) above, it only occurs initially.

Unlike classical Arabic and other contemporary dialects, the Ir. S.A. is found to have eight different types of syllables, which are classified into three classes according to their quantities as follows :

(i) Short CV
(ii) Medium CVC, CV:
(iii) Long CV:C, CVCC, CVCCC, CCVC, CCVCC and CCV:C.

CHAPTER TWO

STRESS IN Ir.S.A.

2.1. General Introduction:

The term stress is very familiar, but is it something a speaker does or something a listener hears, or neither? It is indubitable that this phenomenon has acquired several interpretations over the years. For long, it has simply been thought of as an increase in loudness. Thus, Sweet (1910) writes "Stress is organically the result of the force with which the breath is expelled from the lungs; acoustically, dependent on the size of the sound vibrations, the bigger the waves, the louder the sound, the greater the stress." Similarly, Jones (1960, 245) believes that "Stress may be described as the degree of force with which a sound or a syllable is uttered. It is essentially a subjective action. A strong force of utterance means energetic action of all the articulating organs; it is usually accompanied by a gesture with the hand or head or other parts of the body; it involves a strong 'push' from the chest wall and consequently strong force of exhalation; this generally gives the impression of loudness. Furthermore, Gray and Wise (1939, 303-310) define stress as "intensity or loudness depending on the amount of breath expounded, proper use of the resonators..." In addition, Pike (1967, 250) refers to it as the "degree of intensity upon some syllable which makes it more prominent or louder than an unstressed syllable".

Following Stetson (1951), the physiological interpretation of stress has been investigated by Ladefoged (1967) who discovers that an increase in the activity of the intercorstal muscles may take place immediately before a stressed syllable (p.22); he also remarks the same sort of activity may accompany unstressed voiceless sounds. Thus, it may be said that the only definite conclusion Ladefoged arrives at is summarised in his own terms "It is apparent that every stress is accompanied by an extra increase in the subglottal pressure". (p. 46). This line of research is at present being pursued by J. Anthony of Edinburgh University.

To accept Jones' definition of stress as outlined above, i.e. "the degree of force with which a sound or a syllable is uttered ... a subjective matter", which only a speaker can properly evaluate, we must ask the question that such a definition poses, namely, how could a listener, particularly a non-native, identify stress? Writers on the subject suggest that other factors beside energy may influence a listener's judgement about stress, such as fundamental frequency, syllable-duration and phonetic quality. Accordingly, Gimson (1970, 96) argues (without justifying his argument) that "It is not difficult to show that stress defined in terms of efforts or loudness, is not an efficient means of rendering a syllable prominent. Much more easily appreciated by a listener are variations in qualities and quantities and pitch".

However, a debate has always arisen on the different cues that may charaterise a stressed element in speech. Schramm (1937,49-56), for example, argues that fundamental frequency provides us with the major cue. Others, such as Tiffin & Steer (1937,69-74) argue that duration, more than anything else, is the dominant one. In another study, Fry (1955, 765) maintains that "duration and intensity ratios are both cues for judgements of stress and that, in the material studied, duration ratios is a more effective cue than intensity ratio". Furthermore, Brown and McGlone (1974 971) demonstrate that the predominant parameter related to stress variations is fundamental frequency. At the same time, they believe that other parameters may be employed as indicators of stress.

In a recent article, Jassem and Gibbon (1980, 1-15) attempt to redefine stress and argue that this is a necessity that stems from the "lack of understanding of what stress is, and the possibility that stress is not simply to be found in phonetic relations of greater length, higher pitch, and particularly not in greater articulatory force". (p.2). They also criticised the the "subjective" interpretation of stress on the ground that it is theoretically vulnerable and lacks experimental evidence. As a result, Jassem and Gibbon make a distinction between accent which they regard as a textual, concrete and observable category and stress, which in their views is an abstract, possibly lexical, and analytical category. To them, accent, which has different kinds and degrees, is a purely phonological concept and definable in relation to utterances. "Stress, on the other hand, is a phonological property of words and their sequences as grammatical (syntactical) entities and as such belongs to morphology and syntax rather than - what they call - phonology proper". (p. 9).

Jassem and Gibbon's statement about stress may be criticised on the basis that:

1) Their intention of re-defining stress seems to be too ambitious since their views do not appear to depart in any distinctive way from previous attempts to explain this phenomenon, (see, for example, Bolinger's (1961) views regarding this topic.)

2) It is mentioned above that Jassem and Gibbon reject the subjective view of stress mainly because it is theoretically vulnerable and lacks experimental evidences. Similarly, their argument is open to criticism since we have not been shown any experimental evidence to justify their classifications of accent into primary, secondary and tertiary.

Despite their agreement about the definition of stress, both linguists and phoneticians seem to be able to distinguish between the stressed and unstressed syllables of any given word with which they are acquainted. The reason behind this, explains Vanvik (1961), may lie in the fact that "the actual concept of stress may be wider than all variable definitions..." He adds, "in my opinion, therefore, the description of stress should be so wide so as to admit of no exceptions".

2.2. Theoritical Approach and Aims of Study.

Abercrombie has already been quoted earlier in this thesis (see chapter one, p. 42) to the effect that a syllable is an "audible movement" of speech organs. Yet, it is possible that such a movement may be accompanied by an "exceptionally greater muscular action", which would automatically produce "a louder noise", thus marking a stressed syllable. Generally speaking, Abercrombie's views about stress as presented in his article "Stress and some other terms" (1976, 51-53) are adopted here. Accordingly, stress, following Stetson, is regarded as "a reinforcement of a breath-pulse, a muscular action which produces a higher sub-glottal pressure (of which the speaker is kinesthetically aware and of which the listener may be aware, by empathy"), Abercrombie (1976, 51). Nevertheless, in our definition, we still believe that, while speaking, bodily gestures such as the movements of the head or hand(s) may be regarded as cues for marking a stressed syllable in order to distinguish it from an unstressed one,hence, disagreeing with Abercrombie who denies this phenomenon. Our views, as presented here are based on observations of native speakers' behaviour while studying stress - patterns in the dialect under study.

As is the case with many languages of the world, the syllables of an Arabic utterance seem not to be produced with equal degrees of loudness. Certain syllables stand out to the ear more than others, and are referred to as stressed syllables. Although loudness is assumed to be the basic feature for identifying a stressed syllable, it is by no means the only one. Thus, features such as duration (see chapters 1&5) as well as pitch features (see Chapter 7) are found to contribute towards making a distinction between stressed and unstressed syllables.

In this chapter, we are concerned with examining the stress phenomenon in Ir.S.A. But before describing the stress-system in this dialect, a brief description of previous studies that deal with this topic, both in Classicsl Arabic and various contemporary dialects is presented.

2.3. Previous Works on Arabic Stress.

With the exception of Abdo's (1969) work, references to stress in Arabic have always appeared in short studies and brief commentaries. This in fact suggests that a comprehensive study of such a phenomenon is still badly required. Although a comprehensive consideration of stress systems in Arabic does not fall within the scope of the present discussion, it may be pertinent to observe that what actually constitutes stress in Arabic has never been really determined. Most of the available literature seems inadequate in this respect.

Among the non-native writers on stress in Arabic (see below), some appear to adopt a historical approach for their assessment. But due to the absence of studies concerning stress, particularly colloquial speech, in the words of traditional Arab grammarians, such historical approaches do not, in our view, seem to be very promising as they remain speculative guesses without any certain contributions. A typical example of such studies is that of Birkeland (1954, 36) who argues that "the fixed word-stress used in most parts of the Arab World and by European scholars when reading Classical Arabic is secondarily introduced into this language from the colloquial, in which (what he calls), purely phonetic and occasional stress gradually developed from a speech phenomenon stabilized in fixed relations to quantity. Originally the constant prosodic opposition within the single words of the classical language consisted only in the opposition between short and long vowels. No fixed syllable of the separated word acquired any special emphasis of the same kind as it acquires in the chief modern dialects. The pattern of a fixed stress developed in the culturally central areas in the East became productive for the whole Arab World".

The above quotation contradicts Blau's (1972, 483-4) statement summarised below, in that:

(a) Blau recognises the existence of stress even before the appearance of Islam;

(b) He argues that the present system of stress has initially been developed in the Western rather than the Eastern part of the Arab World. Blau summarises the results of his short study on the history of stress in Arabic by maintaining that "ancient south Palestinian Christian texts (3) and Violet's psalm fragment (4) show that in north Palestine and Syria in the first centuries of

Islam a stress pattern prevailed which, generally, though not in particulars, corresponded to the ancient Maghribi (North African dialects) one, yet one must not simply identify the Maghribi system with that of Cl.A. Besides some not very conclusive indications (5) of stress corresponding to the Maghribi pattern, there are others that attest, prima facie, to a system similar to the Syrian - Lebanese one. Nevertheless, these indications are not conclusive either".

Birkeland recognises here the fact that various contemporary spoken Arab dialects have descended from Cl.A. and he later shows that these present dialects have acquired new laws of elisions and vowel reductions similar to those of other Semitic languages. He, nevertheless, fails to point out that, in the process of their linguistic development, at least some dialects depart from Cl.A. For instance, Ir.S.A. is shown above to possess a set of vowel phonemes, which differ from those of the Classical language and are meaningfully distinctive, i.e., the use of any of these vowels rather than others may lead to a change in meaning. Furthermore, Ir.S.A. is also shown to have a set of syllable-patterns which characterise and distinguish it from both Cl.A. and various other dialects, such as the Egyptian Colloquial Arabic (henceforth E.C.A.). In failing to make such a distinction, Birkeland draws the following conclusions as summarised by Ferguson (1956, 385):

"(1) Arab grammarians do not mention any phenomena which could be interpreted as stress (13).

"(2) In other Semitic languages many elisions and reductions of vowels took place in connection with the development of systems of stress. Classical Arabic was remarkably conservative in this respect, preserving the proto-Semitic vowel system until far into the Christian era. The modern dialects, however, show elisions and reductions similar to those of the other Semitic languages. Therefore, it is likely that a system of stress (connected with or 'causing' these changes) developed between Classical Arabic and the modern dialects. (36-8).

"(3) In certain modern dialects (e.g. Horan, Palmyra, Jewish Central Yemenite) stress is vague and unstable. These dialects may represent the earlier stage before the present stress system came into force (16, 17).

"(4) Classical Arabic words ending in - cvc (pausal form) are continued in modern dialects with stress on the final syllable - cvc. But Classical Arabic words of this kind where the final consonant is a glottal stop (-cv́ʔ) have no final glottal stop in modern dialects and are stressed on the preceding syllable (-́cv). If the stress had already been on the final in Classical Arabic, the loss of a final glottal stop would probably have left the stress on the final long vowel. Therefore, the glottal stop must have been dropped before the system of stress developed (9-12)"

Ferguson's interpretation and criticism of the above assumptions seems to be appropriate. For instance he regards assumption (1) above as having a considerable importance. He rightly observes the fact that traditional Arab grammarians have focused their attention on studying the sounds of the language more than anything else. While the second and third assumptions are referred to (p.385) as "nice supporting arguments but can not be regarded as offering anything like solid proof".

Finally, Birkeland's fourth assumption, which is referred to by Ferguson (p. 385) as "highly ingenious"; may apply to the Egyptian dialect, with which the writer seems to be familiar. But it certainly does not apply to Ir.S.A. which makes clear the impossibility of any attempts at generalisation that rely on limited evidence.

Generally speaking, writers on stress in Arabic may be classified into two main groups:

(1) Those who believe that, in some examples, stress must function as a phoneme in order to differentiate between identical pairs of words. Harrel (1960,10), for instance, maintains that "phonemically stress has a low functional load in E.R.A. (Egyptian Radio Arabic). The position of (´) in a microsegment is usually a function of the syllabic structure of the microsegment and therefore redundant. However, the position of (´) in the microsegment is not always redundant (i.e. there are some

microsegments in which the position of (ˊ) is not correlated with any other phonological phenomenon), and [ˊ] must consequently be analysed as a phoneme". According to this view, stress is normally accounted for in terms of rules and exceptions. Blanc (1953, 27), another supporter of this view, finds stress to be phonemic in some examples of a Druze Arabic dialect in North Palestine. He states that "In so far as a general tendency can be discovered, it is toward a fairly strong and fairly regular stress; in what seems to be the vast majority of cases, word stress is easily discernible and placed according to the familiar rules (see below), but a number of phenomena, still in the state of evolution (esp. anaptyxis, the reduction of /h/ to zero, the fall of /:/) have introduced a number of hesitations and exceptions and even tend to make stress phonemic."

Erwin (1963, 40-43), in his study of stress in Iraqi Arabic, makes a distinction between two types of stress. He argues that "In the great majority of words, stress is determined by, and can be predicted from, the word's consonant-vowel structure; this is automatic stress. In certain types of words, however, stress deviates in some way from this norm; it is then called non-automatic stress. The distinction between these two categories depends upon the phonological and grammatical structure of the word, i.e. non-automatic stress applies mainly to words containing prefixes and suffixes, and in few words ending in -aa, while automatic stress applies to words which are free of affixation." As far as automatic stress is concerned, Erwin argues that it is predictable according to the following formula : "Stress is on the syllable containing that long vowel, or short vowel followed by two consonants, or a double consonant, which is nearest the end of the words; in the absence of such a vowel, stress is on the next-to-last syllable in two-syllable words and on the third-from-last in all others". Similar rules are formulated for non-automatic stress which takes into consideration whether the word is affixed or not. The following example from Erwin's study illustrates the point:

In the second person masculine singular and first person singular of perfect tense verbs, when no pronoun suffix is attached, stress is on the syllable preceding the suffix - <u>it</u> as in :

/darrasit/ 'you (masculine) taught'.

but if a pronoun suffix is attached to such forms, either the /i/ is dropped or stress is shifted to it, resulting either way in automatic stress, as in :

/darrasta/ 'you (masculine)/ taught him'.

/darrasitha/ ' you (feminine) / taught her'.

Further rules are provided.

In his discussion of stress in E.C.A., Abdalla (1960, 18) assumes that "every lexical item in Egyptian Colloquial Arabic has one and only one inherently stressable syllable. The degree of stress of this syllable is not a function of the lexical item itself, but a function of the superfix (superfix is used technically to refer to the stress pattern of the whole utterance) of the utterance of which the lexical item may be the only component, or one of several components". Abdalla, one of the very few writers to have discussed stress in connected speech, recognises different degrees of stress. According to his views, the distribution of the various degrees of stress may be approached as follows (p. 19):- "When an utterance consists of a single lexical item, the inherently-stressed syllable of that item receives a degree of stress which will henceforth be called primary and transcribed /ʼ/. When an utterance consists of two or more lexical items, the inherently-stressed syllable of only one of the lexical items receives primary stress while the other inherently-stressable syllables receive a lesser degree of stress than than primary, and which will henceforth be called SECONDARY and transcribed /ʌ/ (sic).

"In polysyllabic utterances, the syllables that do not receive either primary or secondary stress receive lesser degrees of stress than primary and secondary. For the purpose of the present study, various degrees will be grouped together under the collective tag of MINIMUM stress, and the syllable that receive them will be referred to as minimally stressed syllables."

According to Abdalla's analysis, the occurrence of the minimum stress is restricted to grammatical words such as prepositions, connectives and the like. **However, he** maintains that grammatical words may receive a primary stress for contrastive emphasis. As far as the distribution of primary and secondary stresses is concerned, Abdalla does not offer any definite rules. Thus, the matter remains vague and open to speculation. He accordingly argues (p. 19) that "The position of primary or secondary stress is predictable only in the sense that any inherently-stressable syllable in an utterance consisting of two or more lexical items (not including connectives, prepositions and adverbs) receives either primary or secondary stress. However, one can not predict which lexical item will receive primary or secondary stress. Hence, the validity of positing /´/ and /^/ as two phenomes."

(2) The second group of writers on stress include all of those who oppose the view that stress may function phonemically in order to distinguish different meanings of minimal pairs.

Among other writers, Abdo (1969), who adopts a generative framework for his analysis of Mukabbir dialect (north of Jerusalem), disagrees with the view that stress may, in some instances, have a distinctive function in Arabic colloquial speech. His analysis appears to be basically inspired by his belief that the phonological representation of sounds and stress rules in his dialect is identical with their representation in other dialects of Arabic, such as, for example; E.C.A. Thus, he claims (p. 96) that "The discrepancy between stress in the spoken dialects and the Cl.A. may be attributed to certain independently motivated phonological changes, e.g. certain vowel and glide deletions, insertion of anaptyctic vowels, etc." Consequently, a great proportion of his thesis is devoted to the discussion of these phonological phenomena. The discussion of these phenomena is apparently intended to establish their relevance to the extraction of stress-rules.

He rejects other writers' views on the subject and argues that (p. 159) "Both Blanc and Harrel give stress 'phonemic status' in spoken Arabic. Blanc (op.cit., p. 29) says that "stress has a phonemic role in such oppositions as /minsawwiy/ 'we do' (pre pausal) vs. /minsawwiy/ 'we do it' ". Harrell (The Phonology of Colloquial Egyptian Arabic 1960, 15) says "The position of this stress is not completely predictable in terms of other phonological elements and must be accepted as a phoneme." He later on (p. 16) comments on the two words /sikit/ 'he became silent' and /sikit/ 'I became silent' saying : This provides a minimal contrast for illustrating the significance of stress." ʿAbdo goes on to assert that (pp. 86-88, and pp. 151-153) "that such 'minimal pairs' are misleading, and that the stress rule along with the other rules account for the difference in stress in such pairs if these rules apply in a specific order to the phonological representation ... Stress in spoken Arabic, as in Cl.A., is predictable. That is, it is not phonemic".

According to this analysis, stress-position in Mukabbirt dialect is determined by a number of rules (see p. 168) that must apply in conjunction with other rules in 'a specific order'. For instance, he assumes that a rule which shortens a final long vowel in a word must precede the stress rule, while a rule that deletes an optionally final vowel in Cl.A. must follow. Furthermore, while a rule which metathesizes certain suffixed pronouns in some spoken dialects must precede the stress rule, the rule that introduces an anaptyctic /i/ must come after the stress rule.

Abdo's way of illustrating his argument seems to be rather confused; the confusion is praticularly evident in his misleading choice of examples. He, for instance, selects many colloquial words, which are never known to occur in Cl.A., and presents them as if they belong to the lexicon of that variety. He then proceeds to apply their derivation cycle as in similar patterns. For example /ʃa:f/ 'see', which occurs on (p. 100) is said to have the following derivations:

/ʃaaf + at + ka/ 'she saw you', said to a male

/ʃaaf + at + ki/ 'she saw you', said to a female.

It should be pointed out that the above examples are disallowed in Cl.A. (the word /ʃa:f/ is not known), while in colloquial speech they are permitted but with a different syllabic division, as follows: /ʃa:-fa-tak/ and ʃa:-fa-tik/ respectively, (final vowel is dropped prepausally). The equivalent verb of /ʃa:f/ in Cl.A. is /raʔa:/. Consequently, it may be said that Abdo bases his argument on imaginary examples, which are not known to occur in the dialect.

Furthermore, it is noticed that in order to trace the different derivations for each word, Abdo ignores the existing difference between Cl.A. and colloquial speech. For example, in pp. 133, 134, he quotes the verb /tardatak/ 'she expelled you'. He then shows how different rules may be applied before arriving at the final form. In order to do so, the above example is split into its syllabic constituents, i.e. /tarad : at + ka/. However, in this particular case, we are not told whether this derivation applies to Cl.A. or the dialect under study. Whatever type of speech is intended, the above example remains misleading simply because:

(a) The second syllable of the above example is shown to be initiated by a vowel, while a syllable in Arabic must always be initiated by a consonant.

(b) The first syllable is shown to include two vowels and that contradicts the general rules of syllabification in Arabic, where a syllable is not allowed to contain two vowels.

(c) This suggests that Abdo's syllabic division is inaccurate. The above example is said to have the following syllable division when it occurs in colloquial speech : /tar-da-tak/ and /ta-ra-dat-ka/ in Cl.A.

Abdo is obviously wrong to assume that (see p.96) stress-rules and other phonological phenomena in Mukabbiri can account also for the Egyptian dialect studied by Harrel and the Iraqi dialect studied by Erwin." In spite of his recognition of the existence of exceptions, he seems to be too optimistic in making such a generalisation which is primarily based on his inadequate knowledge, as a non-native speaker, of both dialects.

Finally, the application of Abdo's rules to Ir.S.A., results in a great number of exceptions which render these rules ineffective. This observation is shared by Johnson (1979, 153) who believes that "A number of linguists (Abdo 1969: Cole 1973: Brame 1974) have proposed or accepted for Palestinian Arabic a simple, purely phonological stress rule that suffers, however, from numerous surface violations because of the subsequent insertion of vowels in certain contexts".

Another writer who denies the phonemic character of stress in Arabic, is Johnson (1979, 153-168), whose study on stress in Palestinian Arabic adopts an approach similar to that of Abdo's (1969) in which ordered rules are posited to explain the placement of stress in the studied dialect. A summary of Johnson's findings opens his article which argues that "previous studies of Palestinian Arabic have posited a simple, phonologically conditioned stress rule opaquely ordered (Johnson's term) before certain vowel-insertion processes. The dialect described here would yield to this analysis too if it had not in some instances analogically extended inserted vowels and opaque stress patterns beyond their original, phonetically motivated sites. The speakers of this dialect seem to be forgetting the origin of the inserted vowels and inferring from the surface patterns a new, more complex stress rule rensitive to morphological categories".

Due to the numerous errors in Johnson's discussion, his conclusions can hardly be taken seriously. The main objections to his approach may be summarised as follows:

(1) The data used for the investigation is exclusively drawn from one single informant, referred to as F.H., a graduate student of Palestinian origin who was born in Amman, Jordan. The colloquial Arabic spoken in Amman can in no way be considered Palestinian. Furthermore, Johnson argues (p. 153) that "F.H.'s dialect is similar to the urban Palestinian described by Bauer (1926), the lower Galilean recorded and discussed by Palva (1965), and to a lesser extent, the Mukabbir dialect analysed in a generative framework by Abdo." Such an assumption can be proved utterly untrue by comparing some of the examples which appear in Johnson's paper (p. 159) and their equivalent, for instance, in Galilean Arabic (in the northern part of Palestine), which resembles, to a great extent, Ir.S.A. The following forms represent "active participles" as they occur in both dialects. In Johnson's examples, the bar above the vowel represent long vowels.

F.H.'s dialect	Meaning	Galilean
ˈfāhem	'one who understands'	/fa-ˈhi:m/
ˈrākeb	'one who rides'	/rak-ˈki:b/
ˈmāsek	'one who grasps'	/mas-ˈsi:k/
ˈhābeb	'one who loves'	/hab-ˈbi:b/

The difference between the two varieties implies that the title of the paper i.e. 'Stress in Palestinian' is rather misleading since the discussion does not account for the differences between the various dialects of this type of spoken Arabic.

(2) Johnson's choice of examples seems almost to be designed to account for erroneous conclusions. Thus, he chooses to discuss stress patterns in plural nouns in F.H.'s dialect as applies only to the form Co Co C as in /kotob/ and, in doing so, he disregards many other patterns which exist in the dialect.

(3) The phonological description of many of Johnson's examples seems to be odd. He argues (p. 162), for instance, that "The New Stress Rule and its consequent of exceptional forms explain the anomalous behavious of /kotob/ [books] and /malek/ [king]. Continuing to be underlying as indicated, they continue to undergo syncope in only the normal places, hence they do not syncopate before a word beginning with a vowel, for example, /kotob el walad/ [the boy's books], /malek el balad/ [the country's king]. On the other hand, the New Stress Rule will now derive /kotobna/ and /malekna/ from underlying /kotob + na/ and /malek + na/, respectively".

This statement, which refers to words beginning with a vowel, in this case /el/, contradicts the general rule in Arabic referred to above : That no word begins with a vowel. This betrays Johnson's failure to extract a true phonological representation of the above examples and similar ones quoted later, which generally challenge the accuracy of his analysis. Amongst the supporters of the phonological approach for studying stress, is Mitchell (1960, 369-89), whose work on the subject remains a valuable source of reference. According to his views "the primary and fundamentally interesting linguistic fact about stress is not that it is necessary to handle it in terms of such abstractions as c and v ... but that it is part of the total syllable pattern of the form". (<u>Form</u> is used here to refer to the different derivations of the same word). In other words, it may be argued that the placement of stress in any <u>form</u> in Arabic is determined according to its syllabic structure as a whole. Accordingly, Mitchell recognises a system of syllabic-quantities to accommodate all possible syllable-occurrences in the different words of the language. Hence, any syllable may be described as either:

(1) Long, referred to by the symbol (L), if it consists of cv:c, or cvcc, or cv:cc, or cv: in final positions . (C) refers to a consonant, (V) to a vowel and (V:) to a long vowel.

(2) Not long, referred to as ($\underline{L}$) if its structure does not conform to any of those under (1).

(3) Short, referred to as (S), if it consists of (cv) only.

(4) Not short, referred to as ($\underline{S}$), if its structure is other than (cv).

Mitchell maintains that the facts of prominence in Arabic can be exhaustively stated within the framework of a 7-term system of patterns, which with reference to 6-places of final syllables may be displayed as below:-

(1) ../../../../../ $\underline{L}$/ paroxytonic, as in /taḥt/ 'underneath'

(2) ../../../../ $\underline{S}$/$\underline{L}$/ paroxytonic, as in /mal-ʕab/ 'a playground'

(3) ../../../ $\underline{S}$/S/$\underline{L}$/ paroxytonic, as in /mar-ḥa-ba/ 'hello'

(4) ../../ $\underline{S}$/S/S/$\underline{L}$/ proparoxytonic, as in /ʔin-sa-ḥa-bu/ 'they withdrew'.

(5) ../$\underline{S}$/S/S/S/$\underline{L}$ paroxytonic, as in /ʔuɣ-ni-ja-tu-hu/ 'his song'

(6) $\underline{S}$/S/S/S/S/$\underline{L}$ proparoxytonic, as in /ʔu -ni-ja-tu-hu-ma:/ 'their (dual masculine) song'

(7) S/S/S/S/S/$\underline{L}$ paroxytonic, as in /ʕa-ra-ba-tu-hu-ma:/ 'their (dual masculine) carriage'.

Mitchell's approach to stress in Egyptian (Classical and Colloquial) Arabic and Cyrenaican Arabic forms the main basis for the phonological description later made by El-Haleese (1971, 81-89) in his analysis for Yatta dialect (a small town beside Hebron in the West Bank). To a great extent El-Haleese's findings fall in accord with the findings of El-Hassan (1969, 148), a student of Mitchell who adopts the latter's approach in his analysis of DASD (a dialect spoken in De:r Abu Sʕi:d, a village in northern Jordan). El-Hassan relies on the description of the stress pattern in the following examples:

(a) /wi-riθ-ku/ 'he inherited you'
(b) /wi-riθ-ku/ 'your (plural) heritage'

(see El-Hassam 1969,151) to argue that according to these examples, a structuralist may be tempted to regard prominence in this dialect as phonemic. He adds "However, such contrasts as exhibited by the above pairs are in fact superficial from a phonological standpoint. Thus, in terms of the vowel categories $\underset{+}{v}$, $\underset{-}{v}$ and ə (briefly, elidable, non-elidable and anaptyctic respectively) recognised elsewhere (cf. chapter II), the forms (a) and (b) are structurally equivalent to: (a) $c\underset{-}{v}c\underset{+}{v}cc\underset{-}{v}$ and (b) $c\underset{-}{v}c\text{ə}cc\underset{-}{v}$. The difference between (a) and (b) in respect of the incidence of prominence is, perhaps, more meaningfully accounted for by the observation that, unlike $\underset{+}{v}$, the anaptyctic vowel (ə) is never associated with prominences except in the two contexts stated below".

In the light of the above statement, the following conclusions may be drawn:

(1) Although the writer tries to discuss stress-patterns in relation to phonological features such as elision and anaptyctic vowels, his analysis does not disprove the fact that stress remains the only feature that makes possible the recognition of the different meanings involved in identical pairs of words.

(2) Similar to those of Abdo's and Johnson's, El-Hassan's phonological rules remain unreliable because the number of exceptions made to these rules contrasts their validity.

2.4. Stress Patterns in Ir.S.A.

In our description of stress in the present dialect, reference will be made to its patterns in -

(a) Isolated words.

(b) Connected speech.

As has already been mentioned (see p. 61), Mitchell (1960), amongst other writers, observes a regular correspondence between the place of stress in an Arabic word and its syllabic structure. This relation of regular correspondence is also obtained in the dialect considered here. It may, therefore, be useful to begin our analysis of stress-patterns in isolated words by considering all the different syllabic occurrences which operate in this variety of speech. In order to account for these syllable-clustering patterns within words, it is necessary to employ again the quantitative system of syllable-types introduced on (p. 46). Accordingly, syllables in Ir.S.A. are either -

(1) Short when the structure is cv

(2) Medium when the structure is cvc or

(3) Long, when the structure is one of the following: cv:c, cvcc, ccvc, ccvcc and ccv:c. It has to be noted that the type ccvc is considered long in spite of the fact that it is closed by a single consonant.

Following Blanc's (1953) description of a Druze dialect in north Palestine, it will be shown below that stress-patterns in Ir.S.A., with some exceptions, conform to a definite set of rules. Whenever an exception occurs, stress appears to be phonologically distinctive.

Before describing the set of stress-rules in the dialect under study, it is appropriate to point out the number of syllables in a great majority of words in Ir.S.A. (whether suffixed or not) does not exceed four. By considering their varying arrangements, the following rules are found to be applicable:

(1) Irrespective of the number of syllables that go into the formation of a word and irrespective of the position of these syllables, initial, medial or final, stress tends to fall on the long syllables as can be seen in the following examples:

/ḥama-lu:k/	'they carried you'
/baʕ-de:n/	'later on'
/fa-ta-ḥu:h/	'they opened it'
/btʃe:f-kum/	'as you wish'
/lʕib-na/	'we played'

However, it can be noticed that the occurrence of long syllables in medial positions is not as frequent as in other positions; this can be instanced by such words as :

/sa-la:m-tak/	'your safety'
/ʕa-la:m-tak/	'your grade'.

(2) When the syllabic-constituents of any given word includes more than one long syllable (incidentally no more than two long syllables can occur in one word), stress normally falls on the final long syllable as in:-

/mxad-di-te:n/	'two pillows'
/mhad-di-te:n/	'two hammers'.

(3) When the final syllable in bisyllabic words is not long, the stress usually falls on the opening syllable no matter what type it belongs to. Thus we have:-

/baʕ-du/	'next to him'
/ʔux-tu/	'his sister'
/mal-ʕab/	'a playground'
/ha:-tu/	'bring it'
/sal-ma/	'a female's proper name'.

(4) When the final syllable of a 4-syllable word is not long and is preceded by a short one, the stress tends to fall on the antepenultimate syllable as in:-

/bit -sal - la-ḥu/	'they are arming themselves'
/ʔis-taʕ-dʒa-lu/	'he rushed him'
/bit-ʕal-la-mu/	'they are learning'.

5 (a) In trisyllabic words, stress normally falls on the first syllable. In such cases, it is necessary that none of the constituent syllables is long, as in:

/ˈsa-ka-tu/	'they became quiet'
/ˈfa-ta-ḥu/	'he opened it'
/ˈta-ba-xu/	'they (masculine) cooked'
/ˈʃa-dʒa-ra/	'a tree'

5 (b) The above rule continues to apply in trisyllabic words initiated by a medium syllable, instead of a short one, as in:

/ˈʃadʒ-ra-tu/	'his tree'
/ˈfat-ḥa-tu/	'she opened it'
/ˈbak-ra-tu/	'his cow'
/ˈmal-ḥa-mi/	'a fight'

5 (c) It is also noticed that stress tends to fall on the first syllable in trisyllabic words consisting of a short syllable followed by two medium syllables as in:

/ˈtʃi-sib-kum/	'your (plural) earnings'
/wi-riθ-kum/	'your (plural) heritage'
/ˈsa-xil-tak/	'your goat'
/ˈli-bis-hum/	'their clthes'
/ˈsi-ʕir-hum/	'your(plural) price'

5 (d) Stress, though, falls on the medial syllable in trisyllabic words which consist of a medium syllable occurring between two short ones as in:

/sa-ˈkat-tu/	'you (plural) became quiet'
/ta-ˈbax-tu/	'you (plural) cooked'
/fa-ˈtah-tu/	'I opened it'
/ra-ˈtʃaḍ-tu/	'you (plural) ran'

(6) In trisyllabic words which consist of either (a) a medium + a medium + a short syllable or (b) three consecutive medium syllables, the stress falls on the penultimate

syllable as in:

/ʃadʒ-ràt-na/	'our tree'
/ɣur-fìt-na/	'our room
/sam-tʃàt-ha/	'her fish'
/saʔ-làt-ha/	'she asked her'
/fat-ḥìt-ha/	'Its outlet'
/tʃat-bàt-ha/	'she wrote it'
/xuḑ-rùt-ha/	'her vegetable'
/ʕin-bìt-hum/	'their vine tree'
/mit-nàʕ-niʃ/	'feeling fresh'
/dʒib-tìl-hin/	'I brought them (females)

(7) In disyllabic words which consist of a short syllable followed by a medium one, stress falls on the first syllable as in the following examples:

/mà-kar/	'a headquarter'
/mà-far/	'escaping'
/sì-lit/	'a wire'
/sà-biʕ/	'brave'
/xà-baz/	'he baked'
/tà-bax/	'he cooked'
/fù-run/	'an oven'
/bà-ʕid/	'still'
/fà-raḥ/	'joy'

(8) Let us now consider the following words which consist of four syllables, that is the maximum number of syllables allowed in Irta:hi words, as in:

/ʔaj-ja-dàt-na/	'she gave us her support'
/far-fa-ʃàt-na/	'it refreshed us'
/sa-ja-rìt-na/	'our car'.

If we use the symbol (m) to refer to a medium syllable, and

(s) to a short one, it can then be said that the first two examples under (8) above have the consistent pattern : m + s + m + s, while the third example has the pattern : s + s + m + s. What is noticeable about these forms is that stress falls on the penultimate syllable. This in fact may encourage us to assume that in this dialect's long words (words that consist of 4-syllables), stress tends to occur towards the end of the word. Nevertheless, this statement may be only partially accurate if we consider that examples of (4) above, where patterns like m + m + s + s are stressed on the antepenultimate. It is only partially accurate because the present assumption is challenged by another factor, namely syllabic quantity. Thus, it appears that in examples which contain a sequence of s + m or m + s syllables, it is more likely that an (m) syllable, rather than an (s) will receive stress. Accordingly, the assumption that a stress may occur towards the final part of the word seems to have to be taken in conjunction with a consideration of syllable quantity. Hence, in the pattern m + m + s + s, stress falls on the second medium syllable.

So far, one may argue that in the vast majority of cases, word-stress in Ir.S.A. is predictable in accordance with our rules as stated above. However, a careful examination of further examples show that some of these rules do not seem to be applicable. For example, according to rule (1) above, the following words are stressed initially :

(I)	/smiˈʕ-tu/	'I heard him'
	/fhiˈm-tu/	'I understood him'
	/zhiˈk-tu/	'I hated him'
	/rbiˈh-tu/	'I won it'.

The problem, however, arises when we discover that if we shift the stress on these sequences of segments to the final syllable, the result is then a new set of different grammatical words. Thus we have :

(II)	/smiʕ-tuˈ/	'did you (masculine plural) hear?'
	/fhim-tuˈ/	'did you (masculine plural) understand?'

/zhik-tu/ 'did you (masculine plural) hate him?.
/rbiḥ-tu/ 'did you (masculine plural) win it?.

In order to study the factors that determine stress-patterns occurring in words under categories (I) and (II) above, the equivalents of these words in Cl.A. are introduced so that some helpful clues can be achieved through comparison :

	Colloquial	Classical
(I)	/smiʕ-tu/	/sa-miʕ-tuh/
(II)	/smiʕ-tu/	/sa-miʕ-tum/
(I)	/fhim-tu/	/fa-him-tuh/
(II)	/fhim-tu/	/fa-him-tum/
(I)	/zhik-tu/	/za-hiq-tuh/
(II)	/zhik-tu/	/za-hiq-tum/
(I)	/rbiḥ-tu/	/ra-biḥ-tuh/
(II)	/rbiḥ-tu/	/ra-biḥ-tum/

It has to be noted that all examples under (I), in both speech varieties,differ grammatically from those under (II) in that each word consists of a verb + prominal subject suffix + another suffix which refers to the object, whereas each of the examples under (II) consists of a verb + a pronominal suffix. In considering the various stress-patterns the two varieties have, the following points may be made :

(a) According to Cl.A. syllabic-structure rules (see Firth 1956, 128-9; Tammam 1974, 141), no more than a single consonant is allowed to occur in front of a vowel in the same syllable, whereas in Irta:ḥi speech such a rule does not apply. Accordingly, the first syllable in the above colloquial examples includes two consecutive consonants occurring initially.

(b) It is noticed that with reference to the above examples, and as a result of a tendency to reduce the number of syllables in its lexicon, the vowel /a/ is dropped which causes the amalgamation of the first and second syllables into one when the above examples are adopted in the colloquial form.

(c) The other factor that has led to the situation where, in the present dialect, different grammatical words have identical segmental manifestations, result from dropping the consonants /h/ and /m/ when they occur finally. As shown in the examples under the colloquial variety, it is clear that these examples are divided into pairs where each consist of what appears to be two identical pairs. This, in fact, would probably explain why Irta:ḥi speakers find themselves compelled to resort to the use of stress in order to resolve the semantic ambiguity of these segmentally identical pairs.

It is mentioned above that when a word consists of s + m + m syllables (see examples of 5 (c) above), stress falls normally on the initial syllable. However, there are cases in which the rule does not apply, i.e. the stress does not fall on the expected syllable. A number of these exceptional cases are presented below in which the stress is shown to fall either initially or medially as shown in table (1) below :

Ref. No.	Example	Syllable-stressed	Meaning
1(a)	/wi-ˈriθ-kum/	medial	he inherited you (plu.)
1(b)	/ˈwi-riθ-kum/	initial	your (plural) heritage
2(a)	/tʃi-ˈsib-kum/	medial	he won you (plu.) over
2(b)	/ˈtʃi-sib-kum/	initial	your (plural) earnings
3(â)	/si-ˈlim-kum/	medial	he avoided your trouble
3(b)	/ˈsi-lim-kum/	initial	your (plural) peace.

Table (1)

Strictly speaking, stress patterns under (a) and (b) above refer to two distinct grammatical categories, namely verbs and nouns, both respectively suffixed; yet, the distinction between the two sets of examples is not made on a grammatical basis. In other words, not all suffixed nouns of this dialect are distinguished from suffixed verbs by the stress-patterns as indicated above. Due to their rare occurrence in the dialect, patterns such as those under (b) are considered to be exceptional cases resulting from the fact that the dialect under study has acquired and developed its own distinctive rules of syllabification. In addition, there exist some phonological features such as vowel change and vowel and consonant omission when they occur in particular places, which have contributed towards producing identical pairs of words like the above, and in which stress functions as the only factor for making a distinction between the different forms involved. The effect of these features upon our examples is best explained by presenting the equivalent of these examples in Cl.A. as shown in table (2) below :

Ref.No.	Examples in Cl.A.	Examples in Ir.S.A.
1(a)	/wa-ˈri-θa-kum/	/wi-ˈriθ-kum/
1(b)	/ʔir-ˈθu-kum/	/ˈwi-riθ-kum/
2(a)	/ka-ˈsi-ba-kum/	/tʃi-ˈsib-kum/
2(b)	/ˈkas-bu-kum/	/tʃi-ˈsib-kum/
3(a)	/sa-ˈli-ma-kum/	/si-ˈlim-kum/
3(b)	/ˈsil-mu-kum/	/ˈsi-lim-kum/

Table (2)

In reference to the syllabic structure of the above examples, the following remarks are presented to summarise our discussion, the aim of which is to discover the reasons for the presence of identical pairs of words in Ir.S.A. :

(1) In comparison to Cl.A, there is a strong tendency in this dialect to reduce the number of syllables in words. Thus, all Ir.S.A. examples under category (a) have one syllable less than their Cl.A. counterparts. Furthermore, there are instances in this dialect where the total number of syllables in an isolated word is cut down by two as in :

Classical words		Colloquial words	Meaning
/mu-ta-xa:-si-mi:n/	becomes	/mit-xas-mi:n /	'They are not talking to each other'
/ʃa-dʒa-ra-tu-na: /	becomes	/ʃadʒ-rat-na /	'our tree'.

We regard this phenomenon as being the first factor which ultimately leads to producing identical words in the dialect concerned.

(2) There is substantial evidence based on the high frequency of occurrence that Ir.S.A. favours initiating its words with medium closed syllables (as against short open ones in Cl.A.). Hence we have /ʃadʒ-ˈrat-na/ instead of /ʃa-dʒa-ˈra-tu-na:/.

(3) In a great number of words of this dialect, the vowel /a/, which normally occurs initially in disyllabic words of Cl.A., of the form /fa-ʕi:l/ is dropped when such words are employed by Irta:ḥi speakers. Thus :

/ka-ˈbi:r/ becomes /tʃˈbi:r/ 'big'
/s̱a-ˈɣi:r/ becomes /sˈɣi:r/ 'small'.

(4) It is also possible that /a/ in the Classical may be repeated in different syllables of a single word as in /sa-li-ma-kum/. In such instances, /a/ becomes /i/ in colloquial speech. Accordingly the form (faʕilakum) CaCiCaCuC becomes (fiʕilkum) i.e. CiCiCCum in Irta:ḥi speech. By examining such forms in Irta:ḥi speech, we realise that as a result of reducing the number of syllables in the colloquial variety, the second /a/ is omitted whereas the consonant /m/ which precedes it becomes a part of the second syllable. In order to achieve vowel-harmony, it may be argued that speakers of this dialect prefer the use of /i/ twice in the form /si-lim-kum/, rather than having /a/ and /i/ as in /sa-li-ma-kum/ which occurs in Cl.A. However, it is worth mentioning that /a/ is not systematically assimilated as /i/ in Ir.S.A. For example, it remains in initial syllables occurring in the forms (fa-ʕu:l) and (fa -lu) i.e. Ca-Cu:C and CaC-Cu respectively as in :

/da-ˈlu:l/ 'a guide'
/ˈdal-lu/ 'he guided him'.

In accordance with our previous statement which indicates that stress in Ir.S.A. can be explained in terms of rules which may have exceptions, we would like also to draw the attention to the third rule outlined on p. 64, which states that stress in disyllabic words falls on the penultimate syllable unless the final syllable is long. Nevertheless, there are few exceptional cases in the dialect where stress falls on the ultimate syllable of disyllabic words. In such cases, the dialects employs that particular stress pattern in order to make a distinction between words which have identical segments but carry different meanings as in :

1(a)	/ˈʔis-wad/	'black
1(b)	/ʔis-ˈwad/	'became black'
2(a)	/ˈʔiḥ-mar/	'red'
2(b)	/ʔiḥ-ˈmar/	'became red'
3(a)	/ˈʔiz-rak/	'blue'
3(b)	/ʔiz-ˈrak/	'became blue'
4(a)	/ˈʔiʕ-wadʒ/	'bent'
4(b)	/ʔiʕ-ˈwadʒ/	'became bent'

In the table (3) below, the above examples are presented together with their equivalent in Cl.A. :

Ref. No.	Colloquial Words	Cl.A. Equivalents	Meaning
1(a)	/ˈʔis-wad/	/ˈʔas-wad/	see above
1(b)	/ʔis-ˈwad/	/ˈʔis-wad/	"
2(a)	/ˈʔiḥ-mar/	/ˈʔaḥ-mar/	"
2(b)	/ʔiḥ-ˈmar/	/ˈʔiḥ-mar/	"
3(a)	/ˈʔiz-rak/	/ˈʔaz-raq/	"
3(b)	/ʔiz-ˈrak/	/ˈʔiz-raq/	"
4(a)	/ˈʔiʕ-wadʒ/	/ˈʔaʕ-wadʒ/	"
4(b)	/ʔiʕ-ˈwadʒ/	/ˈʔiʕ-wadʒ/	"

Table (3)

It is important to note that our discussion of stress patterns as occur in the above examples is restricted to words which are initiated by a glottal stop. However, the main distinction between the above classical and the colloquial forms relies on the fact that, while each pair of examples in the colloquial speech consists of identical segments, the distinction between nouns and verbs in the classical language is made by using different vowels in the first syllable of each example. For contrast, /ʔˈas-wad/ 'black' has an /a/ and /ʔis-wˈad/ has an /i/. On the other hand, Ir.S.A. resembles Cl.A. in using /i/ to mark past tenses. It also differs from Cl.A. as a result of the absence of /a/ following a glottal stop in all its nominal forms that describe colours. In other words, in these forms /a/ is replaced by /i/ whenever it follows a glottal stop. Consequently the dialect depends on stress in order to distinguish between its nouns and past tenses which have identical segments. In this sense, stress can be said to be phonologically distinctive.

2.5. Stress in Irta:ḥi Connected Speech.

So far, stress in Ir.S.A. has been investigated in reference to isolated words. In this section, an attempt will be made to study stress as it occurs in connected speech, i.e. sentence sequences.

References have been made above to Abdo's word on stress (1969) in a Palestinian dialect and to Abdalla's observations regarding stress in E.C.A. (1960, 18-21). Both writers adopt an American approach and seem to agree upon viewing stress as being substantially a matter of loudness. By adopting such a view, they appear to be encouraged to assign three different degrees of stress to connected speech with slight differences in terminology.

In spite of the fact that Abdo (p.70, 73) makes a distinction between primary, secondary and tertiary stresses, no attempt has been made to define them in precise terms. Such a classification remains vague simply because the writer avoids discussing any definite rules of distribution for these varying degrees of stress. In his analysis of phrase-stress in the Mukabbiri dialect (p. 163), Abdo argues that in accordance with word stress, any given phrase acquires a single primary stress, which normally falls on the final word while other primary stresses which usually mark words in isolation are reduced. Once again, Abdo's argument is vague and incomplete. For example, he does not fully explain the relationship between word-stress rules and phrase-stress rules. He also does not explain to what extent primary stresses of words which do not bear primary phrase-stress are reduced. Furthermore, both Abdo's and Abdalla's analyses of stress in Arabic must be criticised on the basis that they largely depend upon subjective judgement that lacks experimental backing, and thus cannot be taken for granted. In our analyses, on the other hand, a distinction is made between stressed and unstressed syllables, i.e. syllables are either stressed or not. According to our experimental study (see p.176-8), stressed syllables appear in general to last longer than their unstressed counterparts. Since in our study, we did not find a definite correspondence between stress and duration, we were led to presume later (see p.178) that other clues beside duration, such as intensity, may serve as other indicators of stress. Moreover, it will be shown later that stressed syllables are liable to acquire even more prominence because of the interconnection between stress and other dynamic features. Bearing this in mind, it will be demonstrated that native speakers of this dialect tend to divide their speech into stress groups called feet, (see p.89). Each foot must begin with a stressed syllable which tends to occur at more or less regular intervals of time (for a description of rhythm in Ir.S.A., see chapter 3, 4, 5 and 6). In addition, stressed syllables are believed to acquire more prominence as a result of receiving pitch (see p.203). For similar views, (see El-Haleese 1971,89).

A concise account of stress in Irta:ḥi connected speech shows that stressed syllables of an utterance i.e. a sequence of words followed by a pause, are decided according to the nature of the words involved. Similar to many studies of English, (see, for example, Gimson 1970, 260), a distinction is made here between content and form words. The first refers to lexical items which include nouns, verbs, adjectives and adverbs while the second refers to grammatical words, such as prepositions, conjunctions and particles. Generally speaking, Ir.S.A. is similar to English in that form words tend to lose their stressing whenever they occur in an utterance, while content words in connected speech receive a stress each. This probably explains the fact that these form words tend to amalgamate and become fused with surrounding content words. Instances from the dialect under study show amalgamation to occur in two ways; they either become proclitics or enclitics of the following or preceding content words as in the following examples (proclitic and enclitic syllables are underlined).

(1) /ma-ʃuf-ˈtu:ʃ mnil-ˈʕa-sir/

'I have not seen him since the afternoon'

(2) /ʕal-ˈlamt-ha bil-ˈka-lam/

'I marked it with the pen'

(3) /ra-ˈme:t-tit -ˈta:bi ʕa-ˈðah-ril ˈhe:t/

'I threw the ball on the roof of the wall'

(4) /ʔiʃ-tik-ˈna:-lak ja-ˈsi:-di/

'we missed you, friend(literally my master).

The underlined proclitics include: /ma:l/, a negative particle which occasionally loses its length when it occurs initially; the prepositions /mnil/ from, /bi/with and /ʕa/ 'on'. These are equivalent to /min, bi andʕala:/ respectively in the classical language. It is important to note that, in the present dialect, when a preposition precedes a definite article, both become fused in one syllable. Thus, when /min/ in example (1) above precedes /ʔil/, they become /mnil/ after dropping both /i/ and the glottal stop.

In Ir.S.A., a rule may be constructed to account for the occurrence of different prepositions and the definite article in connected speech. Such a rule may be designed to suggest that whenever a preposition precedes a content word including a definite article, both the preposition and the definite article become amalgamated in a single syllable and constitute what is known as the proclitic. On the other hand, when a definite article initiates a content word that follows another content word, the definite article tends to join the preceding content word thus becoming its enclitic as in /til/ in example (4) above, and the following:

(5) /dax-xa-ˈlu:l ˈmus-taʃ-fa/
'they admitted him to hospital'

According to the above examples, our statement about stress in connected speech in relation to form words can be summarised in the following notes :

(i) In the dialect under study, affixed form words, i.e. proclitic never receive stress in connected speech. In other words, the rules outlined in the previous section still apply regardless of affixed form words i.e. stress is determined in the word as if the proclitic did not exist.

(ii) In Ir.S.A., enclitics may receive stress in exceptional cases. These exceptional cases are determined according to whether the enclitic occupies an individual syllable on its own or whether it is fused with the other sounds of the word i.e. the enclitic plus other sounds constitute a single syllable. In the first case, enclitics do not receive stress, while in the second case, stress is determined according to the whole syllabic structure of the word. Thus /lu:l/ which consists of /lu:/ as the original sounds of the content word and /l/ which is left from the preposition /lil/ 'to', receives the stress because it is the longest syllable of the word.

(iii) In Ir.S.A. form words may receive stress in connected speech due to emphasis as in :

(6) /ˈsitʃ-tʃar ˈmaʕ ˈruz/ 'sugar with rice'.

In such cases form-words are allowed to stand on their own instead of being affixed to other content words. Nevertheless, if the Irta:ḥi speakers do not wish to put emphasis on /maʕ/, the utterance (6) becomes :-

/ˈsitʃ-tʃar maʕ-ˈruz/.

To complete our argument about stress in connected speech, reference will now be made to stressing in relation to content words. Our results suggest that stress patterns of this type of word are straightforward in the sense that each Irta:ḥi content word in connected speech preserves its stress which has been determined in accordance with its syllabic structure, as in :

(7) /ˈri-tʃib saˈli:m sajˈja:r-tu/
'Sali:m drove his car'

In example (7) we notice that in the content words /sa-li:m/ and /saj-ja:r-tu/ stress falls on the long syllable /cv:c/; while it falls on the opening short syllable /ri/ of the first content word /ri-tʃib/. This in fact conforms to our rules stated under (1) and (7) on pp. (64) and (66) respectively.

Finally, it has to be said that, in accordance with our intention stated at the beginning of this section (see p.50, 63), our study of stress in Ir.S.A. is doubtless capable of elaboration. Nevertheless, we believe that the present description is fairly sufficient for the description we intend to make in the remaining part of the dissertation regarding other dynamic features of the dialect under study (see chapters on rhythm and intonation).

CHAPTER THREE

RHYTHMIC FEATURES IN Ir.S.A.

3.1. Introduction

It may be appropriate to open our discussion in this chapter, which is concerned with the rhythmical features of Ir.S.A., with an attempt to understand the general meaning of the term. By considering its various definitions as stated in the several encyclopedias and dictionaries we may be able to trace the historical interpretation of this phenomenon.

The Encyclopedia Britannica (11th edition, 227) defines rhythm, which comes from the Greek verb pέir, meaning "to flow", as the measured flow of movement or beat. This flow of movement is clearly manifested in verse, music or by analogy in other connections, e.g. "rhythm of life". In another article that appears in a later edition, the same source defines rhythm similarly as "the measured flow of movement", but goes on to elaborate by saying that the term "may be defined subjectively as an innate faculty for apprehending time. In music, dancing and poetry, rhythm is an objective feature that characterizes their internal organization which is based on periodical recurrences". (13th edition, p. 679). (Seashore (1938) is quoted by the same source defining rhythm in psychological terms as "an instinctive disposition to group recurrent sense impressions vividly, and with precision, mainly by time or intensity of both in such a way as to derive pleasure and efficiency through the grouping." Similar to other definitions, some of which are presented below, the one quoted here regards periodicity and accent to be the main features that characterize rhythm. Although it does not explain what is meant by accent, it is fair to say, in comparison with other traditional views, the present definition goes a step forward in acknowledging that 'rhythm has two aspects : perception and action'. In other words, rhythm must be investigated as a phenomenon which is featured in production and perception of speech. This observation will be dealt with in detail later in the thesis, see pp.179-196.

According to the Oxford Dictionary (Vol. VIII, 636), rhythm is employed in prosody to refer to "the measured recurrence of arsis and thesis determined by vowel quantity or stress, or both combined, a kind of metrical movement as determined by the relation of long and short, or stressed and unstressed syllables in a foot or a line". While generally, it is used to refer "to the movement marked by the regulated succession of strong and weak elements, or of opposite or different conditions". The Shorter Oxford English Dictionary (3rd Ed. vol.II, p.1733) defines rhythm simply as "a kind of metrical movement, as determined by the relation of long and short or stressed and unstressed syllables". Other dictionaries such as Collins English Dictionary (1979, 1252) offer a similar definition by describing it as "the arrangement of the relative durations of and accents on the notes of a melody, usually laid out into regular groups (bars) of beats, the first beat of each bar carrying the stress". It adds that the term is employed in poetry to refer to the "arrangements of words into more or less regular sequence of stressed and unstressed or long and short syllables". Furthermore, the term is analogically used to describe different aspects of life, e.g. "any sequence of regularly recurring functions of events, such as the regular recurrence of certain physiological functions of the body", i.e. heart beating or walking. The last definition matches that of Sonnenschein (1925, 16-16) who maintains that "rhythm is the relation of successive events in time". He believes that such a phenomenon "produces on the mind of the observer the impression of proportion between the durations of the several events of which the sequence is composed".

More recent rhythm definitions continue to ascribe this phenomenon basically to the assumption that rhythm is movement. Accordingly, Abercrombie (1967, 96) maintains that "Rhythm, in speech as in other human activities, arises out of the periodic recurrence of some sort of movement, producing an expectation that the regularity of succession will continue". Similarly, Fogerty (1936, 92) believes that "The fundamental conditions of rhythm are time, force and space, combined under the direction of intention. These are also nothing less than the fundamental conditions of movement itself". Fry (1964, 217) is another scholar who considers "movement to be the essence of rhythm and syllabification in speech".

In the following section, we will discuss some of the various views that have appeared so far in the literature, and dealt with the nature of this movement as defined above. These views may be summarized as follows:

(1) First we describe the quantitative approach. This assumes that rhythm in any language results from the occurrences of sequences of long and short syllables. There is no doubt that, for some time, this view had a great universal acceptance. Specialists, both in the West and the East, came to believe firmly that poetry is formed according to this principle. Thus, we find Al-Farahi:díy, (8th century) an ancient Arab prosodist, constructing a number of rules based on syllable quantity, in order to demonstrate that any poem in Arabic is formed as a result of employing one of these rules to the exclusion of the rest. He designated the term /baḥr/ 'sea' for each rule, which must consist of a definite number of long and short syllables, arranged in a particular order. According to him, a short syllable consists normally of a consonant plus a short vowel, whereas a long one consists of at least three segments, i.e. a vowel either short or long preceded and followed by a consonant.

In his study of the Arabic prosodic rules as constructed by Al-Farahi:diy, Weir (1960, 676) notes that quantity alone can not have been a decisive feature in rhythm. Therefore, "with it we have not only in a regulating but in a shaping capacity stress, these two together, in an indivisible and unchangeable unit, form the rhythmic core of the feet and metres".

According to the quantitative approach, rhythm in verse results from alternating long and short syllables. Consequently, verse may be described as proper whenever it has an even number of alterations, whereas broken verse is said to have an uneven number of these alterations. To many at the time, English verse (since our survey is largely confined at this stage to works written in the English language) is characterized by feet, like that of classical verse. Hence, Omond (1921, 1) comments "Our critics were wholly possessed by classic precedent, and sought to interpret English metre in terms of Latin and Greek..". He (p.1.35) quotes Herries (1773, 185) who argues in favour of the quantitative view by saying "I see no reason why the same accents, intervals, pauses, and cadences that occur in any Greek or Latin verse may not be introduced into the English...".

Objections to the quantitative approach as applied to English, and for that matter, Arabic, were always based on two factors.

(i) The false assumption of an existing similarity between Latin, for example, and English. Guest (1938, 110) after defining quantity (p.105-110) concludes by saying "These observations may show how inapplicable to our tongue are the laws which regulate the quantity of the Greek and Latin".

(ii) Its failure to take into consideration the phonetic facts of the language. For example, Sumera (1968, 136) criticizes Frazer's attempt to redefine English prosody (1959, 58) by applying the quantitative approach. She points out that in his study "Foot-boundaries appear at various places in the stretch of speech: between unstressed syllables, after stressed syllables, before a stressed syllable : the only unifying feature being a numerical division into feet consisting of two syllables each ... Foot boundaries are not correlated with stress; syllable quantities, where they are correct, are based only on the ratio existing in Latin and Greek, but not in the English language".

Thomson (1926, 28), another opponent of this approach, raises similar objections by arguing that "Quantity without a basis of accent, and quantities without syllicts, are as unthinkable as environment where there is no inheritance to be environed. The two are inseparable, the one is nothing without distances".

(2) The second approach employed in rhythmic analysis came to be known as the <u>non-temporal approach</u> (as opposed to the temporal approach which is described later). According to this approach, stress or accent, instead of syllables, is the main factor that should be considered in determining rhythmical effects. Accordingly, metrical feet are based on regular alternation of strong and weak stresses. Sweet (1913, 11-12) believes that mere alternation does not give rhythm without the additional element of regulating in time. He maintains that "The origin of rhythm

is in no doubt to be sought in the natural tendency to alternate strong and weak stress. Rhythm in fact is nothing but the utilization of this instinct for aesthetic purposes by making it regular and symmetrical".

Other supporters of this approach are Guest (1838), Draat (1909) and Chatman (1965). Guest (1838, 111), for instance argues that "It has been said that our English rhythms are governed by accent, I moreoever believe this to be the sole principle that regulates them". Similarly, Draat (1909, 9) believes that "The first and essential condition for the securing of rhythmical movement is the avoidance of two strest (sic) syllables in immediate succession". In other words, rhythmical effects should be considered by examining the arrangements of stressed and unstressed syllables in speech. Furthermore, Crystal (1969, 26) quotes Barkas (1934) who distinguishes between three subdivisions of this approach - with particular reference to verse. In each case the subdivision is determined according to the number and arrangement of strong and weak stresses within a line.

(3) The third and final approach, which is known as the <u>temporal approach</u>, is designed to give a fuller and more exact account of rhythm as a result of the failure of the previous approaches to provide us with an accurate and reliable analysis. This approach is based on the assumption that neither syllable quantity nor stress alone can be regarded as the real factors for creating rhythmical effects. Instead, attention is focused on time as being the strongest measure for determining rhythmical realities.

*Steele (1775) is considered by many writers to be the founder of the temporal approach to rhythmical analysis (see for example Sumera 1968, 21). Equipped with a fairly accurate knowledge of the phonetical aspects of his language, Steele (1775, 69) rejects the quantitative approach. He is convinced, for instance that "neither would the Greek feet, under all their various names, answer in any suitable degree to the rhythmus of our language, for the commentators have told us, their long and short syllables were in proportion to each other, only as 2: 1; whereas in our rhythmus we have the several proportions of 2. 1. $\frac{1}{2}$. $\frac{1}{4}$ and 3. 1. $\frac{1}{3}$. ."

* See Steele, J. (1775) <u>Prosodia Ratioalis</u>. London.

According to Steele (1775, 68), the measure of speech, both in prose and in poetry, is governed by a "pulsation of emphatic and remiss", which divides it into bars or cadences. In English, he argues, the 'cadences' are of equal length. In other words, the pulsation is either periodic or tends to be so.

Steele's views had been faithfully adopted by Chapman ** who enriches them by providing his own observations. He (1818, 26) defines rhythm as "the general term under which cadence is a division ..., and defines cadence as "the space of time between each pulsation and the next succeeding pulsation" (p.29). Furthermore, he (p. 46) makes a distinction between prose and verse on the basis that "verse is constituted of a regular succession of similar cadences, divided by grammatical pauses and emphasis, into proportional clauses, so as to present a sensible response to the ear, at regular proportioned distances. Prose differs from verse, not only in the proportions, or in the individual character of its cadences but in the indiscriminate variety of the feet that occupy these cadences; and in the irregularity of its clausular divisions. It is composed of sorts of cadences, arranged without attention to obvious rule, and divided into clauses that have not obviously ascertainable proportion, and present no responses to the ear, at any legitimate or determined intervals".

Another adherent to the temporal approach is Patmore, who maintains (1857, 224) that "Metre, in the primary degree of a simple series of isochronous intervals, marked by accents, is as natural to spoken language as an even pace to walking". In comparison, "Verse is but an additional degree of that metre which in inherent in prose speaking". His remarks regarding timing relationships in speech are carefully and accurately stated. For example, he (1856, 238) argues that "the equality or proportion of metrical interval between accent and accent is no more than general and approximate".

It is unfortunate that neither time nor space would allow us to present a summary of all views that advocate a temporal approach to rhythmical analysis. However, it may be appropriate to pay tribute by naming some of those writers. The list may be

** Chapman, J. (1818) The music or melody and rhythmus of language. Edinburgh.

extensive, but at the top appear names such as Young (1790), Thelwall(1812), Lecky (1884) and (1885-1887), Thompson (1904), (1923), Croll (1925), Bolton (1894), Taig (1929), etc.

What all these studies have in common is the fact that they are mostly placed within the nineteenth century and the early decades of the twentieth century. Although it must be said that a great deal of what they wrote contributed considerably, in one way or another, to our present knowledge of the subject, one cannot resist the temptation of raising some criticism regarding their work. One cannot deny, for example, the fact that the linguistic discussion within the temporal approach seems to have produced a fair amount of agreement about its nature and function. By the same token, no denial can be made of the equally valid fact that any reached agreement has greatly and unnecessarily become obscured in the various publications that appeared within this area, mainly by:

(1) Disagreement about what may be called a stable terminology;

(2) the lack of any comprehensive and satisfactory definition of central concepts such as stress and foot, that become involved in the various discussions,

(3) the unchallenged failure to recommend or even suggest any procedures of analysis that may be capable of producing anything empirically open to verification.

Furthermore, it must be said that within any individual discussion of rhythm, prosodists, including many of those mentioned above, are normally considered to be an indispensable source of information and reference. What we seem to forget, however, is the fact that prosodists of the past are partly to be blamed for confining primarily the scope of their studies to poetry, and by doing so, disregarding other language forms. Their actions suggest their failure to realise that poetry is no more than what we may call a "stylized form of prose". It is so simply because in its essence poetry is based on prose and can in no way go against the speech patterns of any language. In fact, there is no doubt that poetry acquires its status mainly by regularizing and reinforcing speech patterns as known and used by us. By failing to acknowledge what we have just stated, prosodists of the past are partly to blame for their unintentional act of hindering rhythmic studies as practised at the present time.

3.2. A New Outlook

Some of the various studies which had appeared in the first, second and third decades of the twentieth century together with subsequent research up to the present time, may be truly regarded as constituting a new phase in the history of the subject. The temporal approach begins to assert itself with varying degrees of emphasis as the natural approach for any rhythmical considerations. Writers such as Wallin (1911), Croll (1925), Sonnenschein (1925) and Taig (1929) had expressed some reserved ideas about the concept of isochrony (a concept which describes the regular occurrence of equal intervals of time between stresses). For instance, Taig* regards rhythm as "a stream of sensations distributed in such a way that they set up in the mind a more or less regular pulsation". His caution becomes more obvious when he claims (p.22) that "the belief that all rhythm is the subdivision of the time-stream into equal periods is definitely misleading".

Similar views are presented by Sonnenschein (1925, 16) who argues that rhythm is "that property of a sequence of events in time which produces on the mind of the observer the impression of proportion between the durations of the several events or groups of events of which the sequence is composed".

The last two definitions mentioned above undoubtedly mark their authors' interest in psychology and its consequent influence on their thought. According to their definitions, both writers seem to be more interested in defining the psychological realities of the movement involved in rhythm rather than its physical manifestations.

Other cautious views regarding isochrony have been adopted by

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* Taig,T. (1929) Rhythm and metre. Cardiff. University of Wales press.

writers such as Classe(1939),Jones(1960),O'Connor(1968),Crystal (1969)and Gimson (1970). These writers differ from those mentioned in the previous paragraph for not being psychologically orientated. Thus Classe (1939, 13) defines rhythm as the occurence of more or less regular intervals of any one given phenomenon". Classe (1939,85) believes that isochrony exits under what he calls favourable circumstances such as"the groups concerned must not contain very different numbers of syllables; the phonetic structure of the component syllables must not differ too widely; the grammatical connexion between the groups and the grammatical structure of these groups must be similar." Meanwhile, Jones, O'Connor and Gimson prefer to define it in terms of a tendency of strongly stressed syllables to occur at approximately equal intervals. In a footnote, Gimson (1970), for example, comments on isochrony by saying "it should be emphasized that such isochrony is of a very approximate kind." Crystal (1969, 162) another opponent of strictly isochrony in English argues that "if one means by isochrony a direct perception of regular beats of prominence running through all the utterances of the individual, then English is not isochronous:careful measurements plus elementary statistics show such regularity to be the exception, not the rule."

There is no doubt that Pike's (1945) statement on rhythm combined with Abercrombie's remarks (1967) form the foundation for most contemporary studies that deal with this phenomenon. Both writers agree about making a distinction between two types of languages on the basis of their rythmic structure. the first type is reffered to as stress-timed language where stressed syllables recur at equal intervals of time., i.e. they are isochronous. English, Russian and Arabic are normally quoted (see Abercrombie1967, 97) to represent this type. In the other type which is reffered to as syllable-timed language, it is said that syllables recur at regular intervals of time as is the case with most Romance languages, Japanese, etc.

Besdies generating a great deal of research, rhythm becomes an issue that cannot be ignored. In other words, the claimed distinction made between stress and syllable-timed languages serves as a valuable impetus to initiate studies in order to examine the extent to which this distinction is true. For example, Pointon (1978) (1980), argues that, with reference to Spanish, the division of languages into stress and syllable-timed has proved to be unsatisfactory. His judgement is based on the assumption that Spanish has more affinity to English than to French in the sense that both English and Spanish have contrastive stresses in their lexicon. This suggests that it is more sensible to classify English and Spanish under the same category when it comes to discussing their rhythmical system, rather than regarding Spanish and French as being syllable-timed, as opposed to English which is stress-timed. Under these circumstances, Pointon proposes a third type of timing which he describes as follows (1980, 293) "... close examination of the figures from the experiment, leads me to the conclusion that we are dealing with a language which is neither stress-timed nor syllable-timed, but in which each segment has a 'standard duration', dependent on its phonetic context (including stress to some extent), with no distortion of the duration to produce either isochronous syllables or isochronous stresses".

Another writer who questions the validity of Pike's division is *Balasubramanian (1980, 449-467) who in a series of experiments conducted to study rhythm in Tamil (a Southern Indian language) reports that "The results show that Tamil can be called neither stress-timed nor syllable-timed. What is striking is that syllables of particular structures have regular and therefore, predictable durations. It is possible, one feels after studying the results of the experiments, to establish a hierarchy of Tamil syllables, depending on their structure". (p. 449).

For the last few decades, linguistic researchers have been contributing greatly to rhythmic analysis. This comes as a result of widening the scope and outlook of the subject. One of the main issues with which most writers become engaged includes a discussion about the nature and domain of isochrony. We have already quoted some views that have appeared in relation to this topic and shown that Pike's views on rhythm have been received

* Balasubramanian, T. (1980), 'Timing in Tamil' in J. of phonetics 8, pp. 449-67.

differently by writers. For example, a less restricted interpretation of isochrony talks of a tendency for equal interstress intervals without insistance on exact equal durations. Accordingly, *Jones (1967, 125-6) argues that "In stress languages there is usually a tendency to make the strong stresses follow each other at fairly equal intervals, whenever this can be conveniently done". Other writers who insist on exactly equal duration between feet-sequences question the validity of the concept as a result of not obtaining results that would fit their definition. For example, Nakatani et al. (1981, 84-106) by studying American English speech rhythm using reiterant speech with the prosody of normal speech but without its segmented variation (p. 84), noticed that word duration increased linearly with word size, which contradicts their prediction that in order to create isochrony, big words must be spoken more rapidly than small ones (p. 103). This leads them to conclude "isochrony should show up best in reiterant speech because there is no perturbation of the underlying rhythm by segmental variation. Hence, our failure to find supporting evidence is, we believe, a serious problem for isochrony as traditionally defined". Other views regarding isochrony are dealt with by Sumera (1968), Rees (1975) Umeda (1974), Lea (1975), Lehiste (1972),(1975),(1977).

Other features that have attracted the attention of writers in the field include speech perception and production, see for example Lehiste (1973), (1979, 313-316), Klatt (1979, 279-312), Smith (1979,39), Umeda et al (1981, 1), Stone (1981, 109), Allen (1975, 75), Cooper et al (1975, 87).

Many of the questions raised in these discussions will be dealt with later in our study (see chapters 3,4,5, and 6).

3.3. Rhythm: Motor Definition.

In speaking, listening and reading we do not create rhythmical pattern arbitrarily; the basic features of the spoken language control our rhythmizing while we speak, and the rhythms we perceive as listeners or silent readers are guided, and sometimes controlled, by objective features of the sound sequences and the

* Jones,D. (1967). The phoneme,3rd edition,Heffer,England.

usages of the particular languages.

In Arabic stress is the main feature that gives a syllable its relative prominence in the rhythmical unit. The mechanism of stress is illustrated by Abercrombie (1965, 17): "The air-stream producing sounds comes in chest pulses (depending on the intercostal muscles), each pulse constituting a syllable; in addition there occur less frequent stress pulses, more powerful contraction of the breathing muscles which coincide with one of the chest pulses and cause a greater and more sudden rise in air-pressure. These reinforcing movements consitute the system of stress pulses". He concludes, "the rhythm of speech is a rhythm of these two systems of pulses, which are present when all languages are spoken, but languages coordinate them in different ways" (p. 17).

Thus statements about rhythmic beat are usually regarded by phoneticians as statements about the speakers' muscular behaviour. Stetson has been quoted earlier arguing that it is not the temporal relations but the movements involved that are the basic things to study if we tend to understand the phenomenon. He regards the human body as a device for producing rhythm. Abercrombie holds the same view (1965, 19). "The rhythm of speech, therefore, is primarily muscular rhythm, a rhythm of bodily movements, rather than a rhythm of sound". For Fry (1958, 129), "rhythm of all kinds has a powerful motor component".

Finally, one can conclude by defining rhythm as "the structure of temporal intervals in a succession of events". The events are stresses and syllables. No other phonetic units suggest themselves as a third candidate for speech rhythm.

3.4. Aims of Study.

Up to the present day, rhythm, one of the important features of the prosodic level of speech, has not been studied thoroughly in any variety of the Arabic language. It is true that many scholars, both natives and foreigners, have dealt with some prosodic features of the language (Gairdner 1965, Anis 1973 , Mitchell 1957, Tammam 1970, El-Haleese 1972, Soraya 1965, Badawi 1968, El-Hassan 1968), but the first experimental attempt to study the rhythm of one of the spoken varieties of Arabic, namely Egyptian, was carried out by Dr. Heliel in his Ph.D thesis.

Palestinian colloquial Arabic is less fortunate than, for example, Egyptian Arabic in that its prosodic features have been left unexamined. Thus, the present work comes as an attempt to explore by experimental means the main features of the rhythm of a spoken variety of Arabic as spoken by Irta:ḥi speakers, to distinguish them from other speakers in the rest of the Arab world, and to distinguish the present dialect from C.A. and other contemporary dialects.

This study aims at investigating rhythmical aspects in Ir.S.A. through spectrographic analysis. The data under analysis consists of samples representing various styles of speech including what we may call relatively rapid and slow speech. Our main aim is to examine the concept of isochrony, trying to work out whether it exists or not and if it does, to what extent. Studying isochrony means also examining foot durations, and the relations between different types of feet in terms of the number of syllables per foot, in addition to providing information on sound durations. If we permit tempo to vary it will then be interesting to ask the questions of how much a tendency to isochrony will still exist? and whether it is important to introduce distinctions in time.

According to many studies, some of which are referred to below, the foot in Arabic is characterized by isochrony, in other words, there is a tendency for salient syllables to occur at roughly regular intervals regardless of the number of unstressed syllables that may occur between two stressed syllables. Each foot, by definition, starts with a stress and consists of what may follow it, either up to silence, if the foot is prepausal, or, up to but not including the next stress if the foot is not prepausal. Thus each foot has two elements of structure; <u>ictus</u> and <u>remiss</u> in this order - each ictus must begin a foot. It is not obligatory that each foot must have a remiss (Abercrombie, 1965,28).

Following Abercrombie, Hassan and Soraya classified Egyptian Arabic as stress-timed. Hassan (1955, 163) argues that "the distance between primary stresses tends to be almost the same, and this is what we mean by rhythm".

Soraya (1966, 23) quoted the following examples:-

/ga:d/ kallim a/ xu:h / "Gaad talked to his brother".
/sa:mi / kallim a / xu:h / "Saami talked to his brother".
/ʃalabi / kallim a / xu:h / "Shalabi talked to his brother".
/sa:mi bij / kallim a / xu:h / "Saami is talking to his brother"

suggesting that there is a tendency for each of the above examples, when spoken normally, to be broken up by the stresses into three portions of fairly equal duration, irrespective of the number and quantity of the syllables contained between successive stresses.

Rammuny (1965, 31) argues that "like General American English, colloquial Jordanian Arabic is stress-timed; the time lapse between major stresses is approximately equal, hence the duration of each stress group is about the same".

In his analysis of a Saudi dialect, Badawi (1965, 21-40) argues that "stress may be considered as a pulse of energy which occurs in the speech continuum at fairly regularly recurring points in time". His illustration is supported by spectrographic evidence. He adds "One fact remains, however - the actual figure obtained from actual measurements of real utterances show clearly that although 'stress-intervals' within tone may be of different syllabic quantities, they are of approximately equal duration" (p.38).

Heliel (1977, 31) believes that "intelligibility amongst all Arabic varieties except the North African ones, may be due to the fact that the former are stress-timed whereas the latter are syllable-timed".

In parallel with the above hyphothesis, one may argue that in Ir.S.A. some kind of periodicity exists which produces an overall effect of regular rhythm. To the ordinary observer, stress seems to occur with a certain degree of regularity. An obvious example is that of men lining up to perform folk dances, they stamp their feet on the ground at fairly regular periods. Thus one may presume that stamping is meant to coincide with the stressed syllables in the words they are singing. These stresses are apparently fairly regular. Other supporting evidences occur when native speakers point their fingers downwards or move their hands while having an ordinary conversation, or even bending their heads in the same direction during religious ceremonies, at equal intervals, in a way that certainly coincides with stressed syllables. Accordingly, one is led to believe that Ir.S.A., like many other stress-timed languages or dialects, organizes the timing of its utterances in terms of stress-groups.

3.5. Isochrony in Short Utterances:

The object of the investigation reported in this section is to test the hypothesis of isochrony in short utterances. It is the starting point of our investigation which may serve to clarify the various aspects of various issues to be dealt with later. At present, the main aim is to test isochrony in the most favourable circumstances for it and to see what the latitude of duration is in a situation where the speaker feels that he is keeping a strict rhythm. For this purpose, I constructed a total of eleven short utterances. Utterances were phonetically transcribed and divided into rhythmic feet. The foot, it has to be noted, is non-grammatical and non-lexical, and so does not bear any relation to word integrity, i.e. foot boundaries may split words. In all examples foot-boundaries are marked by a slash, a pause is indicated by a caret, ʌ , at the begining of the foot.

As far as recording the data is concerned, each speaker was recommended to repeat the utterances once or twice before recording them in order to adjust the speaker to a particular tempo and secondly, to avoid any possible nervousness. If the latter were the case, I believe that the recording could become unnatural.

Consequently, I was aware that recording must be made under the same normal conditions with which we could become accustomed in normal speaking.

In order to keep the intrinsic duration of the measured feet without external influence, variability in duration due to features such as pitch and tempo are eliminated. To fulfil this condition the recorded examples as read by all informants are designed to have identical intonational patterns and a fixed rate of delivery. There is no doubt that absolute resemblance is not attainable but it was agreed that all informants would try to use falling tones as much as they could. As far as tempo is concerned, the examples were recorded firstly by the writer who attempted to impose a subjectively controlled rate of delivery using a particular style normally employed by teachers teaching school children at the ages of between 6 - 10. All the informants are very familiar with this particular style and some of them were teachers teaching children who belong to that age group. In addition, all the informants had the chance to listen for a long time to the examples recorded by the writer before participating in the experiment.

The examples of the experiment were chosen at random. In selecting and recording them, we made sure that they should be free from all features such as hesitation, stammering, incompleteness, etc. The examples are of varying length and of different syllabic structure. The syllables also vary in quantity, being short, i.e. structures cv (symbolized: ⌣), medium i.e. structures cvv, cvc (symbolized: ∩), and long, i.e. structures cvvc, cvcc or any structure except the two kinds mentioned earlier (symbolized: —).

The utterances are given below together with their phonetic transcription and rhythmic notation. Their syllabic structure is indicated too.

1. /sxu:l /naṭṭaṭ/ "goats jumped"

   ccv:c cvc-cvc

   — ∩ ∩

2. /sa:lim /ḥa:sim/ "Sa:lim (a proper noun) is decisive."

   cv:-cvc cv:-cvc

   ∩ ∩ ∩ ∩

3. /fhimt til/ maɣza / — "I understood the theme"
ccvcc cvc cvc-cv
— ∩ ∩ ∪

4. /sa:lim/ ha:tʃim/ ḥa:sim/ — "Sa:lim is a decisive governor"
cv:-cvc cv:-cvc cv:-cvc
∩ ∩ ∩ ∩ ∩ ∩

5. /ma:lik/ malik ḥa/ ki:m — "Ma:lik (a proper noun) is a wise king"
cv:-cvc cv-cvc-cv cv:c
∩ ∩ ∪ ∩ ∪ ∩

6. /saḥar/ bint/ ḥilwih/ — "Sahar (feminine proper noun) is a beautiful girl"
cv-cvc cvcc cvc-cvc
∪ ∩ — ∩ ∩

7. /sa:lim/ s̠a:ḥib/ xe:r — "Sa:lim is a generous man"
cv:-cvc cv:-cvc cv:c
∩ ∩ ∩ ∩ —

8. /mnim / ba:rḥil /ʕ as̠ir/ — "Since yesterday afternoon"
ccvc cv:c-cvc cv-cvc
— — ∩ ∪ ∩

9. / ward / ma:fi: / zajjuh/ — "There is nothing like these roses"
cvcc cv:-cv: cvc-cvc
— ∩ ∩ ∩ ∩

10. /ti:zin / nakkalat / ma:bak / kalat /
∩ ∩ ∩ ∪ ∩ ∩ ∩ ∪ ∩
cv:-cvc cvc-cv-cvc cv:-cvc cv-cvc

A proverb which means, "if you keep changing places while collecting plants, it is ulikely that you would collect much." The nearest English proverb is "A rolling stone gathers no moss"

11. /ti:ti / zajma / ruḥti / dʒi:ti /
∩ ∪ ∩ ∪ ∩ ∪ ∩ ∪
cv:-cv cvc-cv cvc-cv cv:-cv

/ti:ti/ is a nonsense word which may be replaced by a proper noun. Its use in the dialect is restricted to this proverb which means "You came back the same as you went" i.e. "you don't seem to be successful in what you are attempting to do."

3.6. Discussions:

Although Classe's (1939) views in relation to isochrony are presented above (p. 86), we would like to quote him again at this point. Classe believes that isochrony exists under favourable circumstances. He (1939, 85) argues that these conditions take place when "the groups concerned must not contain very different numbers of syllables; the phonetic structure of the component syllables must not differ too widely; the grammatical connexion between the groups and the grammatical structure of these groups must be similar".

On these basis, our examples are chosen to fulfil, with varying degrees, Classe's conditions. In spite of the fact that the examples include monosyllabic feet and various types of disyllabic feet in various positions and classified according to rules outlined by Abercrombie (1965, 26-34), nevertheless, the similarity between these examples is very obvious. Example 2, for instance, consists of two feet which are repeated in the fourth example. In addition, identical feet (in terms of number and type of syllabes that occur within each foot) appear in examples 5 and 7. Generally speaking, our examples may be divided into three groups according to the number of feet included in each example. Thus, the first two examples consist of two rhythmic units each. The following seven examples consist of three rhythmic units each, compared with the final two examples which contain four rhythmic units each.

The eleven examples were produced by six native Irta:ḥi speakers including the writer and his brother. The remaining four informants are all postgraduate students studying in different Universities in Scotland.

Recording of the above examples by the informants was made before broad band spectrograms were made by using the Kay Sona-Graph Sound Spectrograph.

Following Lehiste (1973, 45) and according to Abercrombie's definition, with which we agree, we decided that our measurements of each foot from spectrograms must begin from the beginning of a stressed syllable, up to but not including the following stressed one. Our results are presented in tables (1 - 13) below.

3.7. Types of Measurements:

In measuring rhythmic units from spectrograms, a high percentage of accuracy is required in order to give reliable results. Measurement is not difficult in itself, what is more important is to know what to measure i.e. fixing the points where one would measure from and to. This process in fact requires a fair amount of knowledge in identifying speech segments. But before we deal with the problem of segmentation, a decision has to be made regarding the measurement procedure. According to the approach adopted in our analysis, a foot is recognized as a unit which occurs between two stresses i.e. it is measured from one stress to the following which is not included. The question which may arise at this point is:from what point should we start measuring each foot? The decision is of course related to our own understanding of the domain of stress within the syllable or the word. Consequently a decision has to be made as to whether the stress is confined to the vowel or whether it extends over the surrounding consonants. In order to reach a decision, researchers in the field have adopted various views. For example, Thomson (1923, 185) believes that the rhythmic beat falls normally on the syllabic, and not on the consonantal elements. On the other hand, Lehiste (1970,147) argues in terms of probability that "from what is known of the activity of the intercostal musculature, it appears probable that the smallest unit that may carry stress must be approximately the size of a syllable". She justifies her belief by arguing that "The muscular gesture that underlies stress production requires a certain time for its realization, and there are time delays in the system that make it extremely unlikely that stress can be 'turned on' to coincide with the duration of a single segmental sound".

Corresponding with Thomson's views as reported above, Allen (1968, 42-46) believes that the point from which we should measure duration is not the onset of the syllable, but the onset of the nuclear vowel. His statement is based on observing subjects who had been asked to indicate, by means of tapping, the beginning of a syllable. His experiment shows that subjects have responded by placing the taps somewhere between the release of the pre-nuclear consonant and the onset of the vowel.

To overcome this discrepancy, some researchers in the field tried to avoid relying upon one type of measurement alone. Thus, Sumera (1971, 173-4) employed three different types of measurement in her study of English verse structure as set out in her Ph.D. thesis. In type (A) as she calls it, she measured the duration of each foot including the initial consonants of stressed syllables while in type (B) she decided to ignore the initial consonants and measured from the stressed vowel. Finally, in type (C) she started measuring from the onset of consonants preceding vowels only if they were voiced on the basis that voicing is a factor that may possibly influence the perception of duration.

Pointon (1978, 59) in his study of rhythmic aspects in six recordings made by native Spanish speakers reading the story of "The North Wind and the Sun" chooses the syllable as a unit of measurement on the basis that:-

(1) It is an easily recognized and easily legible unit.
(2) He is encouraged by other investigators who employ the same method. Consequently this would assist him in making comparisons.
(3) His study shows that measuring from the onset of the syllable does not differ substantially from the results obtained by measuring from vowels onsets. He quotes Uldall (1971, 205) who in turn quotes O'Connor (1965) to show that both writers have reached the same conclusions.

Bearing in mind the distinction we made between syllables as either being stressed or unstressed, we have decided to carry out our measurements by measuring each foot from the beginning of each stressed syllable to the beginning of the next stressed one without icluding pauses.

3.8. Segmentation

Segmentation or identifying the spectral display for each segment is essential for our measurements. Peterson and Lehiste (1960, 694) argue that "segmentation has long been and continues to be a major problem in speech analysis". For purposes of measuring rhythmic feet in our data, it is obviously necessary to employ some procedure for segmentation which will serve as a guideline. In this section, a description is presented of some of the major cues we used in deciding the boundaries i.e. the beginning and end of each foot of our measurement. In doing so we were guided by many studies in the field such as that of Potter, Kopp and Green (1946), Hughes and Halle (1956), Halle, Hughes and Rodley (1957), Fant (1959), Sumera (1971) and the available studies on Arabic including that of Al-Ani (1970) and Heliel (1977).

3.9. Major Cues for Fixing Rhythmic Units:

(1) Rhythmic units including stops:

As I mentioned earlier, stops are physiologically characterized by two features (Al-Ani (1970, 31) : firstly, the formation of a closure within the vocal cavity by one or more articulators where the air pressure is blocked, and secondly, by the sudden release of that pressure (which appears on spectrograms as a gap for voiceless stops). Voiced stops are indicated by the appearance of a voice bar on the baseline. The release appears as a burst. The essential difference between voiced and voiceless stops lies in the fact that in the production of the latter more pressure is built up behind the closure than in the production of the former, (see Halle, Hughes and Radley, 1957, 107). This results in higher intensity bursts and accounts for the fact that fully voiceless /t/ and /k/ bursts are followed by aspiration. Whenever a stop begins a foot without being preceded by any other segments our cue will be a burst if the segment is voiceless. However, the appearance of a voice bar alongside the baseline will mark the voiced stops, see utterance no.6 . (Spectrograms of the various utterances are shown in appendix II). As is the case with all consonants, if a stop is preceded by a vowel, the end of the formant structure of the vowel will mark the point from which we begin measuring. In examining the spectra of a stop, we note that the three classes of stops associated with different places of articulation differ from each other as follows:

a) labial stops have a primary concentration of energy in the low frequencies (500-1500) see utterance no. 6.
b) an alveolar stop has a spectrum in which higher frequencies predominate above 4000 cps, aside from an energy concentration in the region of 500 cps. (see utterances 1,3 & 9).

c) palatal and velar stops show strong concentration of energy in intermediate frequency regions (1500-4000 cps.). Compare /t/ and /k/ spectra in utterances no. 10 &11), and the quality of the vowel segments surrounding it. However, the differences amongst the three classes of fricatives (labial, dental and palatal) are quite consistent (see G. Hughes and Halle, 1956,303). If a fricative begins a rhythmic unit its duration is measured from the beginning of the random noise (see utterances 1,2&3). If a fricative follows a vowel its beginning is marked soon after the end of the formant structure of that vowel. (see utterance 11). This cue becomes important especially when the random noise does not appear quite clearly on the spectrogram. If a fricative follows a nasal, its beginning is marked by the end of the voice bar on the baseline and the start of the random noise.

The starting point for measuring a rhythmic unit initiated with a voiced fricative is characterized by a low voice bar, which is another cue beside the spreading of the random noise, (see utterance no. 9). As is clear from the spectrograms made, voiceless fricatives usually possess a high random noise (see utterance no. 2), while voiced fricatives usually possess weak resonance structures appearing as a shadow of weak formants with little noise intervening (see utterance no.9referred to above). The strongest of these formant structures, indicating the voicing, appear along the baseline.

In cases when /ʕ/ was preceded by another consonant (as in example No. 8), we regard the formant structure characteristic of the pharyngeal as a marker of the beginning of the rhythmic unit.

If a fricative ends a rhythmic unit, the end of the visible friction is taken as the marker to the end of that unit (see utterances 6 & 9).

<u>Rhythmic units starting with nasals and Laterals:</u>

Nasals as well as laterals are recognised on spectrograms by the appearance of voicing on the baseline, together with the characteristic formant of these segments which can be seen more clearly with laterals. Whenever these segments follow a vowel, their start is marked by the end of the vowel formants. It was noticed that when lateral and nasal segments occur initially or medially, they are signalled by voicing on the baseline and the low position of their first formant (see utterances 1 & 3). It is also noticed that when nasals occur finally, their formants tend to disappear while voicing continues to show on the baseline. Accordingly, the voice bar plus any visible traces of higher formants signal the end of these segments (see utterances 2,4,5 and 7).

Rhythmic units with taps or trills:

Taps always appear on spectrograms as a short vertical gap which is interpreted physiologically as a result of a tap by the tip of the tongue against the alveolar ridge where energy is being cut off. It was noticed that occasionally more than a single gap appears too; presumably in such cases the speaker was producing a trill. It was also observed that rhythmic units ending with /r/ are characterized by a period of friction (see utterance 7). Generally speaking the /r/ duration when it precedes a vowel ends before the emergence of the formant pattern for the next vowel.

Rhythmic Units with Approximants:

It is fairly easy to mark the beginning of a foot initiated by an approximant, with its first formant showing on the baseline (see utterance 9); But because these segments possess formant structures similar to those of the vowels, it becomes more difficult to delimit their beginning and end when preceded and followed by vowels. Example 9 illustrates the /w/ formant glide in the following vowel.

As shown above, all syllable types of Ir.S.A. are initiated by consonants, and terminated either by a consonant or a vowel. This suggests that every foot must start with a consonant and may or may not end with a consonant. Whenever a foot is closed by a consonant, the following one must start with another consonant, thus resulting in clusters of consonants. The material used so far shows the following combinations and cues for marking them.

a) Combination of Lateral and Nasal.

The only clear distinction between these two segments is shown by the disappearance of higher formants of the nasal while visible traces of higher formants of /l/ still show clearly. However, a bar of voicing appears on the baseline for both nasals and laterals. (see utterances 1&3).

b) Combination of Nasal and Voiceless Fricatives.

The cue is the end of voicing on baseline, together with the appearance of friction for fricatives (see utterance 2).

c) Combination of Two Stops.

As mentioned above, voiceless stops appear on spectrograms as a gap and a burst, a voiced stop differs by the appearance of voicing on the baseline. However, if a combination of two voiceless stops occurs between two vowels, their duration would last from the end of the formant structure of the first vowel to the appearance of the burst and the beginning of the formant structure of the second vowel. In such combinations, each segment may be easily distinguished if there is evidence that the first is released, otherwise the area between the two vowels is divided arbitrarily into two equal parts. (see utterance10).

d) Combination of a Stop and a Fricative.

Again, if we have a voiceless stop at one end of a rhythmic unit and a fricative at the start of another, the end of the burst which marks the release of the segment - if it is released - marks the end of that unit, while the beginning of friction will mark the beginning of the second unit. Voicing on the baseline in both cases is an additional cue for signalling voiced segments. (see utterances 2,4&7).

e) Combination of a Trill and Voiced Stops.

The cue in this case is the end of the formant structure of the /r/ and its friction if it exists; and the appearance of voicing for stops. (see utterance no.6).

3.10. Material and Results.

Before introducing our final conclusions regarding isochrony in short utterances, we would like to present the actual measurements taken from spectrograms which appear as follows:-

(1) Tables (1) - (6) below show feet-durations, in milliseconds, for each informant. Underneath each duration, the percentage between the smallest duration and the longest is indicated. For instance, in example 11 in table (1), we calculated the percentage between the final foot, which is the longest in this case, and the remaining units. As a result, the first foot in this instance is found to equal 86% of the longest. This process is intended to give us a fair idea about the existing variations between the durational values for each informant's feet in each example separately. At this point we have to point out that there are instances when points of measurements were hard to establish. In such cases, our calculations were made without involving the corresponding feet. All readings from the six tables below are reproduced in table (7) to enable us to compare the six informants' performance. Thus, table (7) makes it easier for us to study each foot duration in any example as read by all informants. In short, this table will assist us in drawing the general conclusions regarding this experiment.

(2) In table (8) we calculated the mean duration of each foot in all examples for each informant separately which would allow us to compare the mean duration of each foot first in relation to neighbouring feet, and second it would allow us to compare different feet as read by different informants. The percentage values are calculated horizontally with emphasis on comparing the durational values of the same foot as performed by all informants. For example, by examining this table we notice that the main duration of the first foot in all examples as read by the first informant appears to be the longest in relation to the remaining feet and with comparison to other informants.

(3) In table (9) we calculated the mean duration of all feet for each informant separately. The percentage indicated underneath each reading shows the durational percentage amongst all informants, i.e. it provides us with information as to how far the mean duration varies amongst them.

(4) In our attempt to display our results by all available means, we believe that the calculations referred to above do not suffice in providing us with a detailed picture which would allow us to draw our final conclusions. In our effort to compensate for this, we decided to widen our calculations by measuring the mean duration for each foot in all examples as read by all informants accompanied by its standard deviation and the percentage between the latter and the mean as shown in table (10). In addition, we calculated the mean duration of all rhythmic feet for each informant showing in each case the standard deviation of the mean and the percentage between the two. This is shown in table (11).

(5) Finally, in order to explain our results by graphic means, we decided to analyse our data by employing what is known in statistics as the grouped distribution frequency law. This involves dividing our readings into various groups. The durational variance between one group and the following is fixed at 29 milliseconds. The number of feet that fall within each group is then calculated and its percentage to the total number is given as presented in table (12) below.

(6) The results obtained from table (12) are plotted on graph (a) which shows on its vertical axis the percentage of members of each group in relation to the total number of our feet. Durational values are given in milliseconds on its horizontal axis.

In our tables below, the symbol(f) and the figures that follow it are employed to refer to feet and their actual positions in our examples. Thus, F1 refers to first foot, F2 to the second foot..etc.

Informant no.1

No	Example	F1	F2	F3	F4
1	sxu:l naṯṯaṯ ccv:c cvc-cvc	450 85.7%	525 100%	-	-
2	sa:lim ḥa:sim cv:-cvc cv:-cvc	550 97.8%	562 100%	-	-
3	fhimt til maɣza cvcc cvc cvc-cv	400 100%	400 100%	-	-
4	sa:lim ha:ʃim ḥa:sim cv:-cvc cv:-cvc cv:-cvc	445 97.8%	450 98.9%	455 100%	-
5	ma:lik malik ḥa ki:m cv:-cvc cv-cvc cv cv:c	492 100%	490 99.6%	475 96.5%	-
6	s̱aḥar bint ḥilwih cv-cvc cvcc cvc-cvc	425 96.6%	440 100%	440 100%	-
7	sa:lim sa:hib xe:r cv:-cvc cv:-cvc cv:c	485 100%	450 92.8%	435 89.7%	-
8	mnim ba:r ḥil qas̱ir ccvc cv:c-cvc cv-cvc	-	400 100%	380 95%	-
9	ward ma:fi: zajjuh cvcc cv:-cv: cvc-cvc	500 92.2%	542 100%	500 92.2%	-
10	ti:zin nak kalat ma:bak kalat cv:-cvc-cvc cv-cvc cv:-cvc cv-cvc	440 100%	335 76.1%	400 90.9%	415 94.3%
11	ti:ti zajma ruḥti dʒi:tih cv:-cv cvc-cv cvc-cv cv:-cvc	340 86%	365 92.4%	310 78.4%	395 100%

Table (1).

<u>Informant no.2</u>

No	Example	F1	F2	F3	F4
1	sxu:l nat̲t̲at̲ ccv:c cvc-cvc	450 81.8%	550 100%	-	-
2	sa:lim ḥa:sim cv:cvc cv:cvc	425 85%	500 100%	-	-
3	fhimt til maɣza cvcc cvc cvc-cv	400 99.5%	402 100%	-	-
4	sa:lim ḥa:tʃim ḥa:sim cv:-cvc cv:-cvc cv:-cvc	400 80%	400 80%	500 100%	-
5	ma:lik malik ḥa ki:m cv:-cvc cv-cvc cv cv:c	-	370 100%	370 100%	-
6	ṣaḥar bint ḥilwih cv-cvc cvcc cvc-cvc	395 88.7%	375 83.2%	445 100%	-
7	sa:lim sa:hib xe:r cv:-cvc cv:-cvc cv:c	382 95.5%	395 98.7%	400 100%	-
8	mnim ba:r ḥil ʕaṣir ccvc cv:c-cvc cv-cvc	-	345 90.7%	380 100%	-
9	ward ma:fi: zajjuh cvcc cv:-cv: cvc-cvc	400 100%	395 98.7%	400 100%	-
10	ti:zin nak kalat ma:bak kalat cv:-cvc-cvc cv-cvc cv:-cvc cv-cvc	370 83.1%	315 70.7%	348 78.2%	445 100%
11	ti:ti zajma ruḥti dʒi:tih cv:-cv cvc-cv cvc-cv cv:-cvc	-	-	-	-

Table (2).

<u>Informant no.3</u>

No	Example	F1	F2	F3	F3
1	sxu:l naṯṯaṯ ccv:c cvc-cvc	450 90%	500 100%	-	-
2	sa:lim ḥa:sim cv:cvc cv:-cvc	555 98.7%	562 100%	-	-
3	fhimt til maɣza cvcc cvc cvc-cv	500 90.9%	550 100%	-	-
4	sa:lim ha:tʃim ḥa:sim cv:-cvc cv:-cvc cv:-cvc	495 99%	490 98%	500 100%	-
5	ma:lik malik ha ki:m cv:-cvc cv-cvc cv cv:c	455 94.3%	482 100%	350 72.6%	-
6	s̠aḥar bint ḥilwih cv-cvc cvcc cvc-cvc	480 80.6%	428 71.9%	595 100%	-
7	sa:lim s̠a:ḥib xe:r cv:-cvc cv:-cvc cv:c	375 83.3%	352 78.2%	450 100%	-
8	mnim ba:r ḥil ʕas̠ir ccvc cv:c-cvc cv-cvc	355 88.8%	390 97.5%	400 100%	-
9	ward ma:fi: zajjuh cvcc cv:-cv: cvc-cvc	-	-	-	-
10	ti:zin nak kalat ma:bak balat cv:-cvc-cvc cv-cvc cv:-cvc cv-cvc	390 93.9%	300 72.2%	335 80.7%	415 100%
11	ti:ti zajma ruḥti dʒi:tih cv:-cv cvc-cv cvc-cv cv:-cvc	465 100%	450 96.7%	300 64.5%	400 86%

Table (3)

<u>Informant no.4</u>

No	Example	F1	F2	F3	F4
1	sxu:l naṭṭaṭ ccv:c cvc-cvc	395 86.8%	455 100%	-	-
2	sa:lim ḥa:sim cv:-cvc cv:-cvc	500 100%	460 92%	-	-
3	fhimt til maɣza cvcc cvc cvc-cv	410 95.3%	430 100%	-	-
4	sa:lim ḥa: tʃim ḥa:sim cv:-cvc cv:-cvc cv:-cvc	450 98.9%	405 89%	455 100%	-
5	ma:lik malik ḥa ki:m cv:-cvc cv-cvc cv cv:c	450 100%	448 99.5%	330 73.3%	-
6	ṣaḥar bint ḥilwih cv-cvc cvcc cvc-cvc	400 100%	250 62.5%	400 100%	-
7	sa:lim ṣa:ḥib xe:r cv:-cvc cv:-cvc cv:c	485 98.9%	390 80.6%	490 100%	-
8	mnim ba:r ḥil ʕaṣir ccvc cv:c-cvc cv-cvc	-	395 100%	370 93.6%	-
9	ward ma:fi: zajjuh cvcc cv:-cv cvc-cvc	440 100%	430 97.7%	415 94.3%	-
10	ti:zin nak kalat ma:bak kalat cv:-cvc-cvc cv-cvc cv:-cvc cv-cvc	335 76.1%	325 73.8%	288 65.4%	440 100%
11	ti:ti zajma ruḥti dʒi:tih cv:-cv cvc-cv cvc-cv cv:-cvc	407 89.4%	345 75.8%	275 60.3%	455 100%

Table (4).

Informant no.5

No	Example	F1	F2	F3	F4
1	sxu:l naṭṭaṭ ccv:c cvc-cvc	400 83.3%	480 100%	-	-
2	sa:lim ḥa:sim cv:-cvc cv:-cvc	435 85.2%	510 100%	-	-
3	fhimt til maɣza cvcc cvc cvc-cv	420 100%	400 95.2%	-	-
4	sa:lim ḥa:tʃim ḥa:sim cv:-cvc cv:-cvc cv:-cvc	360 86.7%	350 83.3%	415 100%	-
5	ma:lik malik ḥa ki:m cv:-cvc cv-cvc cv cv:c	340 97.1%	350 100%	330 94.2%	-
6	ṣaḥar bint ḥilwih cv-cvc cvcc cvc-cvc	355 89.8%	330 83.5%	395 100%	-
7	sa:lim ṣa:ḥib xe:r cv:-cvc cv:-cvc cv:c	382 97.9%	322 82.5%	390 100%	-
8	mnim ba:r ḥil ʕasir ccvc cv:c-cvc cv-cvc	-	385 97.4%	395 100%	-
9	ward ma:fi: zajjuh cvcc cv:-cv cvc-cvc	280 77.3%	320 88.3%	362 100%	-
10	ti:zin nak kalat ma:bak kalat cv:-cvc-cvc cv-cvc cv:-cvc cv-cvc	300 87.7%	282 82.4%	300 87.7%	342 100%
11	ti:ti zajma ruḥti dʒi:tih cv:-cv cvc-cv cvc-cv cv:-cvc	282 75.2%	375 100%	235 62.6%	362 96.5%

Table (5).

Informant no.6

No	Example	F1	F2	F3	F4
1	sxu:l naṯṯaṯ ccv:c cvc-cvc	460 100%	460 100%	-	-
2	sa:lim ḥa:sim cv:-cvc c̣v:-cvc	450 90%	500 100%	-	-
3	fhimt til maɣza cvcc cvc cvc-cv	395 98.8%	400 100%	-	-
4	sa:lim ha:t im ḥa:sim cv:-cvc cv:-cvc c̣v:-cvc	450 94.7%	425 89.4%	475 100%	-
5	ma:lik malik ḥa ki:m cv:-cvc cv-cvc c̣v cv:c	440 97.7%	450 100%	365 81.1%	-
6	s̱aḥar bint ḥilwih c̱v-c̣vc cvcc c̣vc-cvc	355 88.8%	275 68.8%	400 100%	-
7	sa:lim s̱a:ḥib xe:r cv:-cvc c̱v:-c̣vc cv:c	400 100%	400 100%	400 100	-
8	mnim ba:r ḥil ʕasir ccvc cv:c-c̣vc cv-cvc	-	437 100%	365 83.5%	-
9	ward ma:fi: zajjuh cvcc cv:-cv cvc-cvc	300 77.9%	340 88.3%	385 100%	-
10	ti:zin nak kalat ma:bak kalat cv:-cvc-cvc cv-cvc cv:-cvc cv-cvc	350 88.6%	315 79.7%	385 97.4%	395 100%
11	ti:ti zajma ruḥti dʒi:tih cv:-cv cvc-cv c̣vc-cv cv:-cvc	365 91.3%	400 100%	400 100%	370 92.5%

Table (6).

No.	Example	Informant 1				Informant 2				Informant 3				Informant 4				Informant 5				Informant 6			
1	/sxu:l / naṯṯaṯ / ccv:c cvc-cvc	395	455	–	–	445	550	–	–	450	555	–	–	400	480	–	–	450	525	–	–	460	460	–	–
2	/sa:lim / ḥa:sim / cv:-cvc cv:-cvc	500	460	–	–	555	562	–	–	425	500	–	–	435	510	–	–	550	562	–	–	450	500	–	–
3	/fhimt til / maɣza / ccvcc cvc cvccv	410	430	–	–	495	550	–	–	400	402	–	–	420	400	–	–	400	400	–	–	395	400	–	–
4	/sa:lim / ha:tʃim / ḥa:sim / cv:cvc cv:cvc cv:cvc	450	405	455	–	495	490	500	–	400	400	500	–	360	350	415	–	445	450	455	–	450	425	475	–
5	/ma:lik / malik ḥa / ki:m / cv:-cvc cv-cvc-cv cv:c	450	448	330	–	455	482	350	–	–	370	370	–	340	350	330	–	492	490	475	–	440	450	365	–
6	/s̱aḥar / bint / ḥilwih / cv-cvc cvcc cvc-cvc	400	250	400	–	480	428	595	–	395	375	445	–	355	330	395	–	425	440	440	–	355	275	400	–
7	/sa:lim/ sa:hib / xe:r / cv:-cvc cv:-cvc cv:c	485	390	490	–	375	352	450	–	382	395	400	–	382	322	390	–	485	450	435	–	400	400	400	–
8	/ mnim / ba:r ḥil / ʕas̱ir / ccvc cv:c cvc cv cvc	–	395	370	–	355	390	400	–	395	345	380	–	–	385	395	–	–	400	380	–	–	437	365	–
9	/ward / ma:fi: / zajju / cvcc cv:cv cvc cv	440	430	415	–	–	–	–	–	400	395	400	–	280	320	362	–	500	542	500	–	300	340	385	–
10	ti:/zin nak / kalat/ ma:bak/kalat cvc-cvc cv-cvc cv:-cvc cv-cvc	335	325	288	440	390	300	335	415	370	315	348	448	300	282	300	342	440	335	400	415	350	315	385	395
11	/ti:ti/zajma/ruḥti / dʒi:ti / cv:cv cvccv cvccv cv:cv	407	345	275	455	465	450	300	400	–	–	–	–	282	375	235	362	340	355	310	395	365	400	400	370

Table (7) Feet-duration (in m.secs.) in 11 short utterances as spoken by six informants.

	1st informant	2nd informant	3rd informant	4th informant	5th informant	6th informant
F1	452.7 100%	451 99.1%	427.2 94.4%	401.8 88.7%	355.4 78.5%	396.5 87.5%
F2	449.9 98.9%	455.4 100%	393.9 86.5%	404.7 89%	373.1 81.9%	400.2 87.8%
F3	424.3 100%	418.5 98.5%	377.8 89.1%	406.1 95.7%	352.7 83.2%	396.9 93.5%
F4	405 90.6%	407.5 91.1%	447 100%	445 99.5%	352 78.8%	382.5 85.6%

Table (8) The above table represents the percentage between the shortest and longest foot for the six informants. The vertical line refers to the number of the foot, while the horizontal shows the duration (in milliseconds) and percentage for each foot for each informant.

	1st informant	2nd informant	3rd informant	4th informant	5th informant	6th informant
F1	452.7 100%	451 99%	427.2 95.6%	401.8 90.3%	355.4 95.3%	396.5 99.1%
F2	449.9 99.4%	455.4 100%	393.9 88.1%	404.7 90.9%	373.1 100%	400.9 100%
F3	424.3 93.7%	418.5 91.9%	377.8 84.5%	406.1 91.3%	352.7 94.5%	396.9 99.2%
F4	405.0 89.5%	407.5 89.5%	44.7 100%	445 100%	352 94.3%	382.5 95.6%

<u>Table 8(a)</u> Indicates the percentage between the longest and shortest foot for each informant. The table must be read vertically to show the relation between the length of the feet in each example as spoken by each informant.

1st informant	2nd informant	3rd informant	4th informant	5th informant	6th informant
433.1	432.9	419	414.4	394	358.3
100%	99.9%	96.7%	95.6%	90.9%	88.9%

Table (9) General mean (in m.seconds) of the total number of feet for each informant together with their percentage.

Foot No.	Mean duration in milliseconds	Standard Deviation	% of S.D. to the G. mean.
1	433.33	28.2	6.5
2	485.8	57.7	11.9
3	420.0	37.8	9.0
4	433.3	46.9	10.8
5	424.5	57.4	13.5
6	401.6	47.1	11.7
7	418.1	52.4	12.5
8	375.0	28.3	7.5
9	384.0	93.2	24.3
10	364.1	48.2	13.2
11	371.8	69.0	18.6
12	503.3	43.8	8.7
13	515.7	39.8	7.7
14	430.3	59.8	13.9
15	418.3	50.7	12.1
16	431.7	58.3	13.5
17	349.7	78.5	22.5
18	384.8	43.9	11.4
19	392.0	29.5	7.5
20	405.4	87.9	21.7
21	312.0	18.8	6.0
22	387.0	40.4	10.4
23	466.7	32.3	6.9
24	370.0	54.1	14.6
25	445.8	76.2	17.1
26	427.5	38.4	9.0
27	381.7	13.7	3.6
28	412.4	52.7	12.8
29	342.7	44.67	13.0
30	304.6	60.1	19.7
31	408.7	37.4	9.2
32	396.4	36.5	9.2

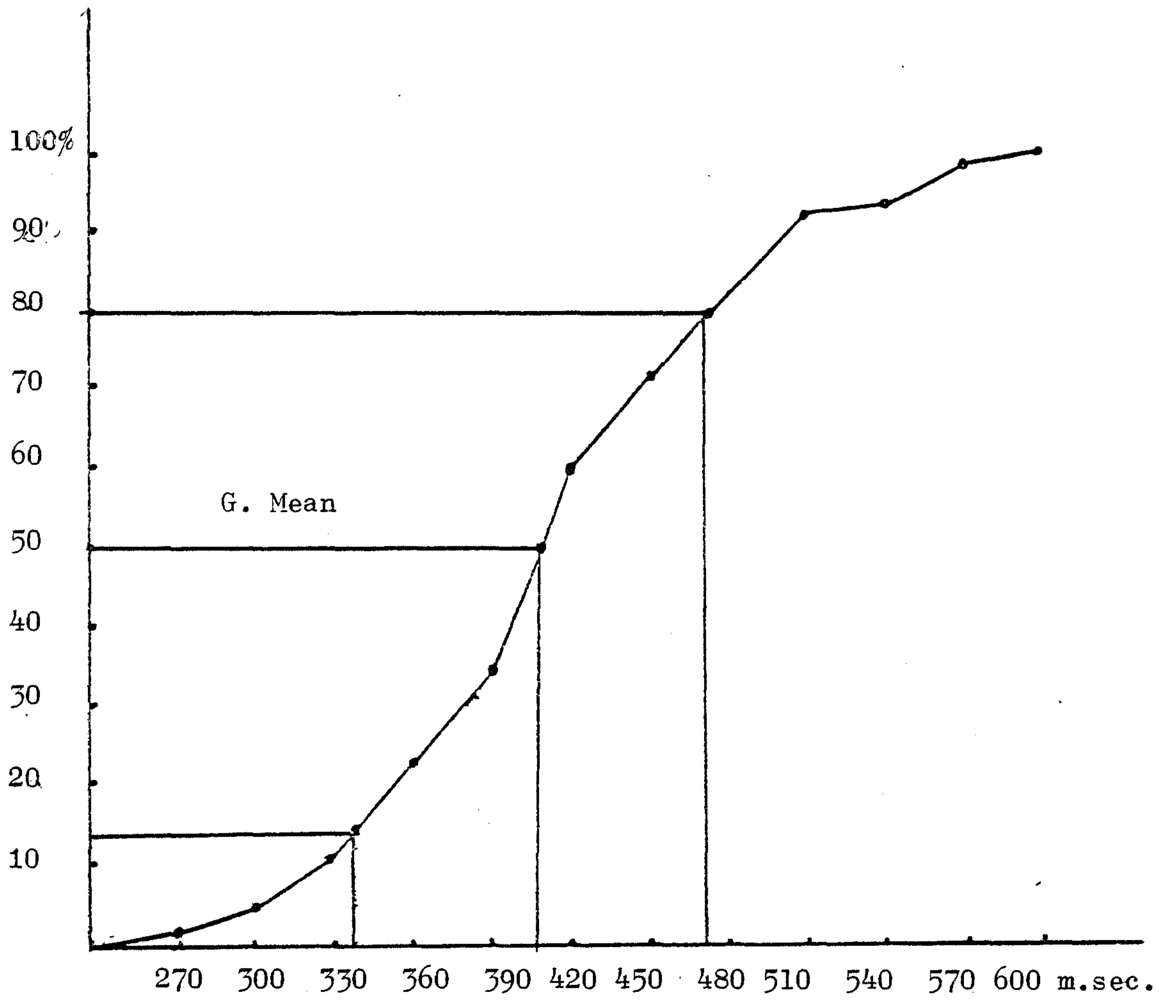
Table (10). The mean duration of each foot as read by six informants together with its standard deviation and the percentage between both.

Informants No.	Total Mean in milliseconds	Standard Deviation	% of S.C. to the mean
1	400.7	65.87	16.5%
2	441.7	80.03	18.1%
3	405.6	50.36	12.4%
4	360.7	58.94	16.3%
5	441.6	62.5	14.2%
6	397.0	51.54	12.9%

Table (11) The above table indicates the mean duration of all feet as read by each informant. It also shows the mean's standard deviation and the percentage between the mean and the S.D.

Unit in milliseconds			Number	Running Total	% of Running total
-	-	269	2	2	1.1%
270	-	299	6	8	4.4%
300	-	329	11	19	10.6%
330	-	359	22	41	22.8%
360	-	389	21	62	34.4%
390	-	419	46	108	60%
420	-	449	21	129	71.7%
450	-	479	20	149	82.8%
480	-	509	19	168	93.3%
510	-	539	2	170	94.4%
540	-	569	9	179	99.4%
470	-		1	180	100%

Table (12)



Graph (a). The above graph is designed according to information from table (12) to show the relation between each group on the horizontal line and its percentage of occurrence in the data as shown on the vertical line.

3.11. Conclusions:

In a previous section (p.85) we have demonstrated that views in relation to isochrony in stress-timed languages may generally fall into two main groups. On one hand, there are writers who argue that it exists in terms of a tendency, while on the other, there are those who deny its existence altogether. Representatives of the first group are writers such as Classe (1939), Pike (1945), Abercrombie (1965), (1967), Uldall (1971) and Lehiste (1970) (1972), (1973), (1977).

Shen and Peterson (1962), who are considered to represent the second view, in a study of isochronism in English discovered that intervals between primary stresses, for instance, in material recorded by three informants, varies from 410-1820 milliseconds for one informant, and from 380-2500 for another. On the basis of these measurements, they decided (1962, 34)

"In brief, we did not find isochronism in our limited data and therefore cannot say that there is isochronism in English."

Similarly, Bolinger (1965) decides after examining rhythm in a short amount of data (he used six informants to read two long utterances) that factors such syllable-number in a foot, its position in an utterance in addition to the relevant semantic importance of parts of the data are more effective than rhythm in determining the duration of an interval between two accents. For a more detailed account of other views regarding this topic see Lehiste (1977, 253-63).

What concerns us here is to search for appropriate means hoping that they would assist us in explaining our results. Hence, various principles and views as adopted by writers quoted above, will be taken into our consideration hoping that this will enable us to make a comparison between our results and theirs. This, however, would ultimately lead us to determine whether isochrony exists in our tested data or not and, if it does, to what extent.

Amongst others, reference will be made to some of Bolinger's remarks as stated above in order to establish the effect of the foot's size and place on its duration. This will be included within our description below of the results that appeared in the tables above.

According to our measurements as arranged in table 1 - 12 and as shown in figure (a), one may conclude by pointing out:

(1) Strict isochrony i.e. equal duration between consequent feet does in fact exist partially. As shown in table (7), 23 different feet out of a total of 181 units which constitutes 12.7% of our data, when produced by different informants are shown to last for 400 milliseconds. In addition, a careful examination of the same table reveals that by studying the various measurements either horizontally or vertically, each informant is shown to have a minimum of two exact durations (out of a maximum of eleven) in each column. The number, however, is greater in some cases.

(2) Feet with 15 milliseconds difference of duration form 31% of our data. This means that 43.7% of the rhythmic units in our examples are either equal or almost equal in their duration. This may be regarded as a strong cue for the existence of isochrony in the dialect in this particular style of speech.

(3) Tables 8 and 8(a) above show that the mean duration of different feet does not vary to any great extent between the six informants on one hand, and between the consequent feet as produced by each informant on the other. For instance, the mean variation percentage between the different feet, as calculated for each informant first and then for them all is found to be 6.6%. In other words on average, each foot's duration varies from the surrounding feet by 6.6%, which is a very low percentage. In comparison, the total variation mean between informants increases slightly to reach 10.1% i,e., the mean duration of the first foot in all examples as produced by each informant varies (on average) from that of another by 10.1%. This in fact is regarded as a strong proof for showing(according to our measurements) that native speakers tend to produce rhythmic units with semi-equal duration, particularly when they are performing short utterances. It is also important to notice that the variation percentage

increased when we compared each informant's performance with the rest . This appears to be caused as a result of employing varying rates of tempo by the different speakers in spite of their attempt to keep it under control.

(4) The mean duration for each foot (a total of 32) as produced by all informants is presented in table (10) together with its standard deviation and the percentage between both. The serial numbering of the feet corresponds to the numbers given for each foot as shown in table (7). In other words, reading No. 1 refers to the first foot of the first example and No. 2 refers to the first foot of the second example, while No. 12 refers to 2nd foot of the first example etc., until we reach number 32 which refers to the 4th foot of the final example. A close look at this table shows that the difference between the longest mean and the shortest is not very big. The mean duration of foot number 21, which is the shortest,equals 60.5% of the mean duration of foot 13, the longest. With the exception of these two feet and very few similar ones, we realise that a large majority of our feet have a mean duration that is concentrated around the total mean. The total mean duration of the data, which is calculated independently for 180 readings taken from tables 1 - 6 is found to be 407.03 milliseconds. The total standard deviation for the same data is found to be 67.50 milliseconds.

Both feet mean duration and standard deviation as given in table No. (11) are considerably smaller in our study than their equivalents as reported by Uldall (1971) and Lea (1974) and quoted by Lehiste (1977, 254-5). In spite of the fact thst the difference between the duration of the shortest and the longest feet in her data is 610 milliseconds, Uldall (1971, 205-210) still admits the existence of a tendency towards isochrony.

A close look at table (12) shows that the number of feet that last for less than 300 milliseconds, constitute less than 4.5% of the total amount of our data. On the other hand, the percentage of the feet which last for over 500 milliseconds is found to be 6.6%. Accordingly, we discovered that the percentage of feet that are ± 100 milliseconds from the general mean equal 11.1% of our examples which remains a fairly small proportion of the data. In comparison, figure (a) above which is designed to explain the figures and percentages that appear in table (12) is also meant to show that, if we measure the percentage of the data that occur within the general mean duration ± the general standard deviation we find that :

$$407.03 + 67.50 = 474.53 \text{ milliseconds}$$
$$407.03 - 67.50 = 339.53 \text{ milliseconds}$$

By plotting these two values in their appropriate places on the chart, we realise that 80% of our data last up to 474.53 milliseconds, while about 14% of the 80% and the whole data last up to 339.53 milliseconds. Thus by deducting the second figure from the first, we discover that 66% of our rhythmic feet lasted for 67.5 milliseconds more or less than the general mean. This in itself is a strong evidence of a strong tendency towards isochrony in this type of speech.

(5) Finally, by attempting to check some of Bolinger's notions as stated above (p.117) we discovered that:

(a) In short utterances and with reference to tables (8) and 8(a), the position of a foot cannot be regarded as a reliable factor in determining its duration. This conclusion is emphasized by the fact that in our examples the longest and shortest feet tend to occur at random in different places without any fixed rules. In other words, there is no general agreement amongst our informants to produce any particular rhythmic foot - either initial, medial or final - and distinguish it from the remaining units according to its place.

(b) In this type of speech, there is contradicting evidence which supports and challenges the accuracy of Bolinger's statement regarding the relation between syllable-number and foot-duration. Thus while one cannot deny that in some of our examples (see, for instance, examples 5, 6) the duration of each foot depends upon the number of its syllables. As a result we find that in the final foot of example 5 is shown by all informants to last less than its neighbouring feet, mainly because it consists of a long syllable compared with 3 syllables.

in the second foot and two in the first. Similarly, the 2nd foot in the sixth example has the smallest duration by all informants since it has the least number of syllables. On the other hand, we find contradictory evidence to what has been said when we notice that some different foot types i.e. monosyllabic and disyllabic have either identical durations as in example 1 table (6) or have remarkably similar duration. This point will be discussed in more detail in the next section (see chapter 5).

(c) As for Bolinger's other remark concerning the syllable structure, we can say that at this stage of our analysis syllable structure does not seem to contribute effectively towards foot-duration. It is true that relative durational values may be assigned to different syllables that occur in the same environment i.e. quantitive rules, similar to those of Abercrombie (1965, 26-34). Nevertheless, our measurements at present suggest that there is not such a thing as what we may hypothetically call the inherent length of any syllable pattern. This assumption is supported by the fact that, at present, there is no absolute linguistic measure against which durations of various syllables could be checked or measured. There are only various occurrences of various syllable patterns. None of these occurrences could be considered more original than the rest. To demonstrate this we decided to construct what we may call a hypothetical measure which will be obtained by converting the three syllabic quantities - short, medial and long - as set up earlier (see p.46) - into what we may call durational units (DU). On the basis of their quantity, a short syllable may be regarded to constitute 1 D U while a medium one may be given $1\frac{1}{2}$ DU compared with 2 units for a long syllable.

Consequently, if a syllable quantity has any effect on foot duration, we should be able to predict the length of each rhythmic unit on the basis of the number of its durational units. In other words, the average foot-duration as supposed to occur in our data will be indicated by dividing the whole length of the spectrogram of any example by the total number of its durational units. Thus, the 1st example of our data consists of two feet the first of which includes a long syllable, i.e. two durational units while the 2nd foot consists of 3 durational units (because it contains two medium syllables). By dividing the total length of the spectrogram as read by informant 5 (see table 6) by 5 we find that the average duration of the first foot should be 184 x 2 = 368 milliseconds, compared with 552 milliseconds for the second. However, the actual durations, as reported in table (6) show that despite the considerable differences between the average durations, the actual measurements obtained show the two feet to have identical durations. Table (3) below shows the actual and the average duration of each foot as read by informant (5). Once again a comparison between the actual and the average durations, as applied to short utterances, lead us to believe that in Ir.S.A. whenever short or medium syllables occur in conjunction with long syllables to constitute different feet (as in example 3), speakers appear to produce the various types with approximately similar time intervals i.e. short syllables are lengthened while the durations of long ones is reduced to balance between their actual durations. The same phenomenon applies also when feet differ in terms of the number of syllables they contain. Examples 1, 3, 5, 6, 7 illustrate our observations.

Utterance number	Actual duration of F1	Actual duration of F2	Actual duration of F3	Actual duration of F4	Total duration of utterance	Average duration of F1	Average duration of F2	Average duration of F3	Average duration of F4
1	460	460	-	-	920	368	552	-	-
2	450	500	-	-	950	475	475	-	-
3	396	400	-	-	795	463.8	331.2	-	-
4	450	425	475	-	1350	450	450	450	-
5	440	450	365	-	1255	442.9	545.6	295.2	-
6	355	275	400	-	1030	443.3	274.7	412	-
7	400	400	400	-	1200	450	450	300	-
8	-	437	365	-	802	-	467.8	334.2	-
9	300	340	385	-	1025	256.3	384.4	384.3	-
10	350	315	385	395	1445	394.1	328.4	394.1	328.4
11	365	400	400	370	1535	383.8	383.8	383.75	383.75

Table (13) The above table shows the actual duration of eleven short utterances as spoken by the writer. In addition and for comparative purposes, the examples' average duration which corresponds to their syllable-quantity is also given.

CHAPTER FOUR

ISOCHRONY IN NORMAL AND FAST IRTA:HI CONNECTED SPEECH

4.1. Introduction

A distinction between fast and normal speech results normally from employing different rates of speech delivery i.e. different degrees of tempo. The term tempo is defined by Abercrombie (1967, 96) as the speed of speaking. He believes that this feature may be used to characterise (i) individuals, and (ii) languages. Accordingly, it may be said that on the individual level, each speaker has a norm which distinguishes his speech from that of others. Within any community, it does not take an observer long to notice that different speakers employ varying degrees of tempo i.e. some speakers speak faster or slower than others. It is also equally true that the same speakers are accustomed to using contrasting degrees of tempo to suit the nature of their messages. Therefore, we may speak faster under stress or when excited. It is also true that we may occasionally speak slower to generate anxiety and attention. This process of either speeding up or slowing down will undoubtedly affect our units of speech in the sense that rhythmic units will differ in duration according to the tempo change.

Crystal (1969, 153-156) regards tempo as a major factor in the English prosodic system that affects the remaining components within that system. He produce a set of tempo-rules in which a distinction is made between simple and complex systems. The simple tempo system is manifested both in monosyllables and polysyllabic stretches of utterances; while the complex system is applied exclusively to polysyllabic stretches in the form of two features: accelerando and rallentando (p. 256).

Although it is important to admit that Crystal must be given the credit for attempting to design rules of tempo-variations in spontaneous speech, something which has not been studied extensively so far, it may be argued that his rules remain insufficient as long as they are not supplemented by supporting evidence. To start with, nobody can guarantee (Crystal included) that his rules are practised and perceived identically by all native speakers or at least the majority of them. This difficulty may indeed stem from the fact that his theory does not cater for an individual's variations in speech tempo. Furthermore, Crystal is unable to show that each division postulated has any special characteristics that distinguish it from the rest. His argument besides being unsatisfactory as demonstrated by his choice of examples (see p. 153) remains as a whole open to criticism. For example, clipped & drawled syllables are described in relation to a norm which is not properly defined. Similarly, he argues (p.156) that "the tempo of the beginning-point may be normal, 'allegro', or 'lento', or even 'allegrissimo' or 'lentissimo'; acceleration may take place from lentissimo to lento, lento to norm, norm to allegro..." It is obvious that his technical terminology is employed without giving a definite value and a clear explanation for each term, which in fact suggests the arbitrariness of the system. Moreover, the occurrence of each system is not fully outlined or illustrated.

In a study of segmental timing control in speech production, Allen (1973, 219-37) attempts to explore the aspects involved hoping this will enable him to specify the nature of timing control mechanisms as enforced by the speech motor control programme (p.221). In his analysis, Allen (p.222) relies on the hypothesis that in speech two interrelated and functional kinds of timing exist. The first which he calls "global time control", refers to speech tempo or "the average rate at which syllables, words and phrases are uttered". The second is defined as the "local time control" which he believes specifies durational values of smaller units that are related to higher ones such as segments within syllables and syllables within rhythmical feet.

Without considering the effect of varying speech rate, Allen (p.223) centres his investigations on cases where speakers attempt to speak at a fixed rate. By using nine speakers repeating the two sentences "you could work up to a whole new day" and "you could wake up to a whole new dawn", 30 times at one occasion and 80 times on the other, Allen (p.235) concludes that "under the condition that a speaker tries to speak at a fixed rate, measured segment durations are largely a function of the accuracy of the segment timing mechanism. Even at a fixed intended rate, however, there are small fluctuations, too small to be observed by either speakers or listener, and so a different measure of variability must be used in order to separate the amount of durational variance due to rate away from that due to segmental timing".

Another type of fluctuation is referred to by Lira (1974, 16) who examines phonetic correlates of a rapid colloquial style of pronunciation in R.P. Besides confirming Crystal's tempo-divisions, his results show that in the complex tempo system of this type of speech, allegro, allegrissimo and normal are the prevailing varieties. His conclusions also suggest that rapid speech in R.P. is not rapid throughout. This means that "if a person is addressing somebody else in a rapid style of pronunciation, it does not mean that he is using a simple, stable rate of delivery from beginning to end. For instance, some parts of his utterances, possibly ungrammatical, disorganized and repetitive, will start off at a rapid rate, will continue rapidly after a very short pause, then will be slowed down to something which could be labelled as 'normal', which will eventually become even slower ..."

Bolozky (1977, 217-238), who deals with tempo on a more general level, concentrates on the theoretical implication of increase in the rate of speech with particular reference to Hebrew. In his study reference is regularly made to English and occasionally to Japanese.

One of the major assumptions in his study, which is made within a framework of natural generative phonology, is that "speech tempo is relative, i.e. that one man's normal rate of speech may be another man's fast speech tempo". This does not prevent him, however, from making a distinction between fast and normal speech on the basis that there exists a number of constraints which are considered to be unique to each style (p.218). He, for instance, shows that in Hebrew, / n /as in /mankal/ , 'general director', may be assimilated in normal speech to the following velar, thus in normal speech becoming/maŋkal/. However, this choice remains optional in the normal variety. Thus a rule may be formed suggesting that /n /becomes obligatorily velarized in fast speech whenever it is preceded by a stressed vowel or followed by another consonant (p.219). In addition to assimilation, other phonetic constraints are shown to be variable in normal speech but obligatory in the fast variety (see p.226). On the other hand, Bolozky (p.221) demonstrates that while "there are processes unique to fast speech, so there are also normal speech phonetic processes that do not apply in fast speech and normal speech constraints that are relaxed in fast speech".

Although Bolozky's remarks have a fair chance to fully apply to Hebrew, as he claims, they cannot be taken for granted to apply to other languages. In Ir.S.A. one may be tempted to search for phonetic constraints similar to those mentioned above. By doing so, it may be argued that phonetic features such as dropping of the glottal stop and /h/ when they occur finally, plus shortening of long vowels, should be regarded as markers for a fast speech tempo. The situation differs in our case simply because although these features normally occur it is still possible for Irta:ḥi speakers while employing a very fast tempo to retain vowel length and the remaining features.

According to what is said above, one is led to believe that at the present time, we cannot speak of different degrees of tempo in absolute terms. Unless linguistic research progresses to bridge the gap, our divisions regarding tempo will remain largely arbitrary.

4.2. Aims of Study

In the previous chapter we have shown that in Irta:ḥi short utterances isochrony exists with various degrees. For example, more than 10% of our data is shown to have strict isochrony, i.e. exact duration of rhythmic feet. Slightly less than 45% of the data is shown to have feet which are semi-equal with reference to their duration. This leads us to suggest that in that particular style of speech there appears to be a strong tendency to isochrony. On this basis, we find enough evidence to presume that Irta:ḥi speech in general is organized and performed with a stress-timing rhythm. Under such circumstances we regard rhythm as a structure upon which other aspects of the speech signal (such as tempo) are imposed. It may follow then that since such a structure is established independently, changes in other aspects of speech utterances should not affect its natural pattern. In other words, changes in speech tempo are not expected to affect the regularity of the rhythmic pattern. In order to examine the validity of this hypothesis we have decided to examine isochrony in a text that is read and recorded several times by the writer; on each occasion either fast, or normal tempo (as they occur in daily conversation) was employed. Finally, two recordings were selected to represent the two styles before spectograms were made for measurement .

It is important to note that in recording the data of this experiment, the writer relied on constant subjective control over tempo.

Tempo variations as applied to individuals do not interest us here since we are concerned with discussing the interrelation between tempo and rhythm on a more general level. We are hopeful, however, that further research in the future will deal with this dynamic feature in detail.

To rely on subjective constant rate is not, in our view, the ideal method for controlling speech speed. But, in spite of the availability of other methods, we still regard ours as most appropriate and effective. Heliel (1977, 220, 221), for example, refers to some of these methods and discusses their suitability. The first he quotes is Lehiste's (1972) method of normalization which suggests that "To normalize for variations in tempo, the average duration of all words are computed and a subset of utterances whose durations are closest to the mean duration is extracted for each word". Heliel rejects this method on the basis that it involves a large amount of work and measuring which would increase according to the amount of data included. In addition to Heliel's reservations, the method may be criticized since it does not appear to solve the problem. How, for instance, can we control our production of the words in order to calculate the mean ? The procedure is obviously circular. It makes for a dilemma similar to the one that involves the question of which came first, the chicken or the egg? Similarly, are we supposed to calculate the mean of different words to control tempo, or should we control tempo when producing words before calculating their mean ? Another method referred to by Heliel is the one which involves using pips aa measured intervals to be followed by the utterances analysed, i.e. the following word is "... " . Once again this method is rejected by Heliel on the basis that "all the items under study would come in a phrase-final position". This, according to him, would lead to articulatory as well as acoustical variations between the parts of the utterance examined. Therefore, Heliel (1977, 221) decides to adopt O'Connor's method i. e. the <u>sentence frame</u>. According to this method utterances are introduced within a frame where identical items precede and follow them. Hence the duration of these items would **serve** to indicate the tempo of the utterance examined. Like the other two methods, this one is doomed to failure simply because:

(1) The tempo rate of the frame items is not fixed according to any given criteria. In other words, they cannot be used to assist us in deciding the exact degree of the tempo employed. They may only allow us to compare their tempo with the one used for the examined utterances.

(2) This method if proved to be practical, which is not the case, may be applied for short utterances only. In data like ours, for example, where the text consists of 61 feet (see p.131) there is no guarantee that the tempo will not fluctuate to the extent that comparison between the <u>measured item</u>, and the data, becomes extremely complicated. In addition, whenever the data increases there is no guarantee that the second part of the frame item will not be influenced

by the tempo of the data that precedes it, and thus prevent us from using it as a reliable measure.

(3) Under any condition, the accuracy of this method, as well as those mentioned above, is not reliable since the actual tempo degree is decided in relative terms against absolute.

For all of these reasons we decided to rely on constant subjective control over tempo since in performing the experiment the reader is forced to depend on his speech habits in order to make a distinction between normal and fast tempo. However, the distinction remains relative and not absolute.

In order to test isochrony in connected speech under the influence of varying degrees of tempo, we constructed the following passage which is phonetically transcribed and divided into its rhythmic feet. As described above it was recorded by the author twice. After making spectrograms, the duration for each foot is shown in Tables (1) and (2) below; first in normal speech and then in fast speech. It is appropriate to remind our reader at this point that our measurements include filled feet only, which means that pauses and silent stresses, if they occur, are excluded from our calculation.

<u>The text</u>

1 2 3 4 5 6 7

ba /ladna / simhar / ta:ḥ /ʕadada / hilhar / baʕta / la:f /.

8 9 10 11 12 13

ʕiʃ / ri:n fil / mijji / minhum / biʃtiɣ/ lubil / xa:ridʒu /

14 15 16 17 18 19

/ muʕð̲amil / ba:ki / fal la / ḥi:n biʕ / timdu ʕaz / ra:ʕaw /

20 21 22 23 24 25

/ bizraʕu / muʕð̲aman / wa:ʕil / xuðra wil / fa:k hal / lib s̲ad /

26 27 28 29 30

/ ru:ha lal / xa:ridʒ /. fiba / ladna / mad ras / te:nuʕ /

31 32 33 34 35

/ ja:dit / s̲iḥḥaw madʒ / mu:ʕit datʃa / tʃi:n /. ʔil / baḥrib /

36 37 38 39 40 41 42

/ bʕi:d / ʕan nab / θaman / ki:lumit / ra:t / wakrab ma / di:ni ʕa/

43 44 45 46 47 48 49

/ le:na / simha / t̲u:l tʃar / mil lib / tib ʕid / ki:lu / mitir /

50 51 52 53 54 55

/wa:ḥad /. ba / ladna / fi:ha / baʕ ð̲ila / θa:r ril ka / di:mi /.

56 57 58 59 60 61

/ t̲aks̲ha / ḥiliw / waḥla lif / s̲u:l ʕin / narra / bi:ʕ /

<u>The English translation of the text:</u>

The name of our village is /ʔirta:ḥ /, and its population has reached 4,000 inhabitants. 20% of the inhabitants work abroad. The majority of the remaining are farmers, who depend for their living upon agriculture. They grow different kinds of fruit and vegetables, which they produce for export to other countries.

There are two schools in our village, as well as a health centre, and the nearest town, Tulkarm, is 1 km distant. There are some ancient monuments around the village. The climate is good, with spring being the best season.

4.3. Results of feet measurements in the data:

Tables (1 & 2) below are designed to show the duration of each measured foot as it occurs in normal and fast speech respectively. In addition to the duration of each foot, its content is also shown.

Foot ref. No.	Content of foot	Number of Syllables	Duration
1	ladna	2 cvc-cv	255 m.sec
2	simhar	2 cvc-cvc	310
3	ta:ḥ	1 cv:c	400
4	ʕadada	3 cv-cv-cv	345
5	hilhar	2 cvc-cvc	360
6	baʕta	2 cvc-cv	380
7	la:f	1 cv:c	395
8	ri:nfil	2 cv:c-cvc	450
9	mijji	2 cvc-cv	355
10	minhum	2 cvc-cvc	450
11	biʃtiɣ	2 cvc-cvc	355
12	lubil	2 cv-cvc	400
13	xa:ridʒu	3 cv:-cv-cv	500
14	muʕʒ̱amil	3 cvc-cv-cvc	350
15	ba:ki	2 cv:cv	500
16	falla	2 cvc-cv	355
17	ḥi:nbiʕ	2 cv:c-cvc	380
18	timduʕaz	3 cvc-cv-cvc	552
19	ra:ʕaw	2 cv:cvc	400
20	bizraʕu	3 cvc-cv-cv	500
21	muʕʒ̱aman	3 cvc-cv-cvc	500
22	wa:ʕil	2 cv:-cvc	450

Foot ref. No.	Content of foot	Number of Syllables	Duration
23	xuḏrawil	3 cvc-cv-cvc	450
24	fa:khal	2 cv:c-cvc	475
25	libsad	2 cvc-cvc	400
26	ru:halal	3 cv:-cv-cvc	400
27	xa:ridʒ	2 cv:-cvc	452
28	ladna	2 cvc-cv	300
29	madras	2 cvc-cvc	350
30	te:nuʕ	2 cv:-cvc	400
31	ja:dit	2 cv:-cvc	400
32	ṣiḥḥawmadʒ	3 cvc-cvc-cvc	565
33	mu:ʕitdatʃa	4 cv:-cvc-cv-cv	550
34	tʃi:n	1 cv:c	450
35	baḥrib	2 cvc-cvc	390
36	bʕi:d	1 ccv:c	350
37	ʕannab	2 cvc-cvc	475
38	θaman	2 cv-cvc	350
39	ki:lumit	3 cv:-cv-cvc	445
40	ra:t	1 cv:c	500
41	wakrabma	3 cvc$\frac{3}{4}$cvc$\frac{3}{4}$cv	500
42	di:ni:ʕa	3 cv:cv-cv	395
43	le:na	2 cv:cv	395
44	simha	2 cvc-cv	408

Foot ref. No.	Content of foot	Number and type of syllable	Duration in m. sec.
45	ṯu:l tʃari	2 cv:c-cvc	450
46	millib	2 cvc-cvc	360
47	tibʕid	2 cvc-cvc	450
48	ki:lu	2 cv:cv	460
49	mitir	2 cv-cvc	300
50	wa:ḥad	2 cv:-cvc	460
51	ladna	2 cvc-cv	345
52	fi:ha	2 cv:-cv	300
53	baʕʒila	3 cvc-cv-cv	550
54	θa:rilka	3 cv:-cvc-cv	505
55	di:ni	2 cv:-cv	415
56	ṯaksha	2 cvcc-cv	350
57	ḥiliw	2 cv-cvc	345
58	waḥlatif	3 cvc-cv-cvc	600
59	ṣu:lʕin	2 cv:c-cvc	450
60	narra	2 cvc-cv	320
61	bi:ʕ	1 cv:c	400

Table (1) Shows the duration of each foot in milliseconds in normal speech. The content of each foot (i.e. number and type of syllables included), is also indicated.

Foot ref. No.	Content of foot	Number and structure of Syllables	Duration in m. sec.
1	ladna	2 - cvc-cv	220
2	simhar	2 - cvc-cvc	255
3	ta:ḥ	1 - cv:c	400
4	ʕadada	3 - cv-cv-cv	295
5	hilhar	2 - cvc-cvc	292
6	baʕta	2 - cvc-cv	275
7	la:f	1 - cv:c	305
8	ri:nfil	2 - cv:c-cvc	255
9	mijji	2 - cvc-cv	200
10	minhum	2 cvc-cvc	305
11	biʃtiɣ	2 - cvc-cvc	310
12	lubil	2 - cv-cvc	190
13	xa:ridʒu	3 - cv:-cv-cv	450
14	muʕʒ̱amil	3 - cvc-cv-cvc	345
15	ba:ki	2 - cv:-cv	240
16	falla	2 - cvc-cv	215
17	hi:nbiʕ	2 - cvc-cvc	350
18	timduʕaz	3 - cvc-cv-cvc	395
19	ra:ʕaw	2 - cv:cvc	200
20	bizraʕu	3 - cvc-cv-cv	400
21	muʕʒ̱aman	3 - cvc-cv-cvc	385
22	wa:ʕil	2 - cv:-cvc	205

Foot ref. No.	Content of foot	Number and structure of Syllables	Duration in m. sec.
23	xuð̱rawil	3 - cvc-cv-cvc	340
24	fa:khal	2 - cvc-cvc	360
25	libs̲ad	2 - cvc-cvc	300
26	ru:halal	3 - cv:-cv-cvc	310
27	xa:ridʒ	2 - cv:-cvc	400
28	ladna	2 - cvc-cv	225
29	madras	2 - cvc-cvc	310
30	te:nuʕ	2 - cv:-cvc	340
31	ja:dit	2 - cv-cvc	310
32	s̲iḥḥawmadʒ	3 - cvc-cvc-cvc	500
33	mu:ʕitdatʃa	4 - cv-cvc-cv-cv	440
34	tʃe:n	1 - cv:c	305
35	baḥrib	2 - cvc-cvc	297
36	bʕi:d	1 - ccv:c	180
37	ʕannab	2 - cvc-cvc	235
38	θaman	2 - cv-cvc	255
39	kilumit	3 - cv-cv-cvc	350
40	ra:t	1 - cv:c	350
41	wakrabma	3 - cvc-cvc-cv	300
42	di:niʕa	3 - cv:-cv-cv	250
43	le:na	2 - cv:-cv	200
44	simha	2 - cvc-cv	200

Foot ref. No.	Content of foot	Number and structure of foot	Duration
45	ṯu:ltʃar	2 - cv:c-cvc	340
46	millib	2 - cvc-cvc	275
47	tibʕid	2 - cvc-cvc	270
48	ki:lu	2 - cv:-cv	200
49	mitir	2 - cv-cvc	180
50	wa:-ḥad	2 - cv:-cvc	375
51	ladna	2 - cvc-cv	225
52	fi:ha	2 - cv:-cv	200
53	baʕḏ̣ila	3 - cvc-cv-cv	305
54	θa:rilka	3 - cv:-cvc-cv	375
55	di:mi	2 - cv:-cv	310
56	ṯaksha	2 - cvcc-cv	300
57	ḥiliw	2 - cv-cvc	200
58	waḥlalif	3 - cvc-cv-cvc	305
59	s̠u:lʕin	2 - cvc-cvc	305
60	narra	2 - cvc-cv	225
61	bi:ʕ	1 - cv:c	225

Table (2) shows the duration of each foot in milliseconds in fast speech. The content of each foot (i.e. number and type of syllables included) is also shown.

Tables (3) and (4) below, show the consecutive readings of feet involved in the experiment as they occur in normal and fast speech. It also shows the general mean of duration for each type plus its general standard deviation all in milliseconds. Finally the percentage of the standard deviation in comparison with the general mean, is calculated and presented in both tables, for both styles. The tables are followed by figures (a) and (b) on pp.141-2,showing a visual display of the length of each foot (for both styles) as read by the writer. On the vertical axis of each figure appear different durational values. The difference between each two consecutive values is 100 milliseconds. A systematic display of all feet according to their appearance in the text is plotted on the horizontal axis. Accordingly, each column in each figure represents the length of one foot in both styles.

Duration of the consecutive feet in(milliseconds) as measured in normal speech	
255 , 310 , 400 , 345 , 360 , 380 , 395 , 450 , 355 , 450	
355 , 400 , 500 , 500 , 500 , 355 , 380 , 552	
400 , 500 , 500 , 450 , 450 , 475 , 400 , 400 , 452 , 300	
350 , 400 , 400 , 565 , 550 , 450 , 390 , 350 , 475 , 350	
445 , 500 , 500 , 395 , 395 , 408 , 450 , 360 , 450 , 460	
300 , 460 , 345 , 300 , 550 , 505 , 415 , 350 , 345 , 600	
450 , 320 , 400 ,	
Total number of feet :	61
Mean duration :	418.9
Standard deviation :	79.5
Percentage of S.D. in comparison to the general mean :	18.97%

Table (3)

Duration of the consecutive feet (in milliseconds) as measured in fast speech	
220 , 255 , 400 , 295 , 292 , 275 , 305 , 255 , 200 , 305	
31o , 190 , 450 , 345 , 240 , 215 , 350 , 395 , 200 , 400	
385 , 205 , 340 , 360 , 300 , 310 , 400 , 225 , 310 , 340	
310, 500 , 440 , 305 , 297 , 180 , 235 , 255 , 350 , 350	
300 , 250 , 200 , 200 , 340 , 275 , 270 , 200 , 180 , 375	
225 , 200 , 305 , 375 , 310 , 300 , 200 , 305 , 305 , 225	
225 ,	
Total number of feet :	61
Mean duration :	292.7
Standard deviation :	72
Percentage of S.D. in comparison to the G. mean :	24.6%

Table (4)

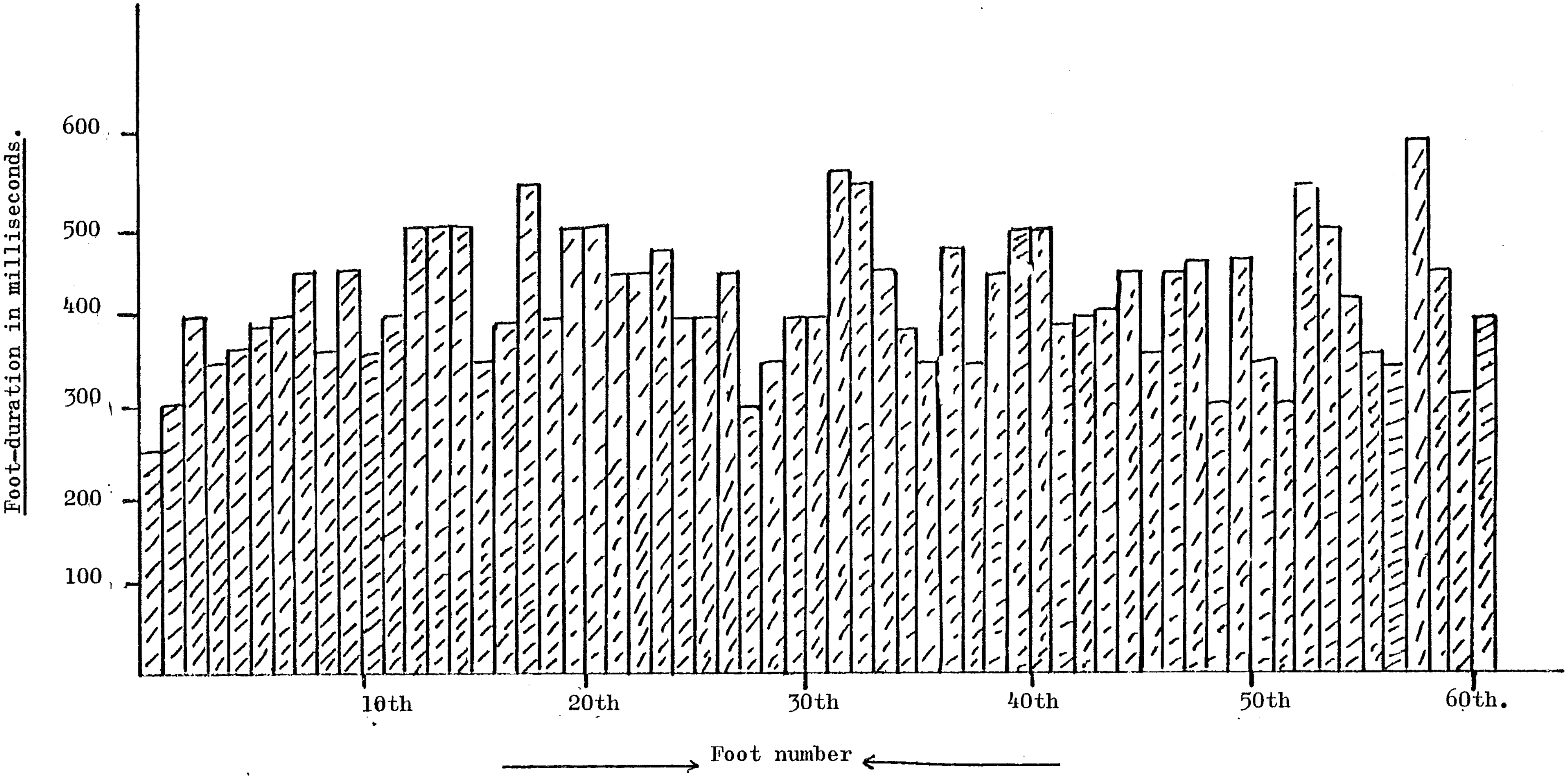


Figure (a) Distribution of feet duration in normal speech.

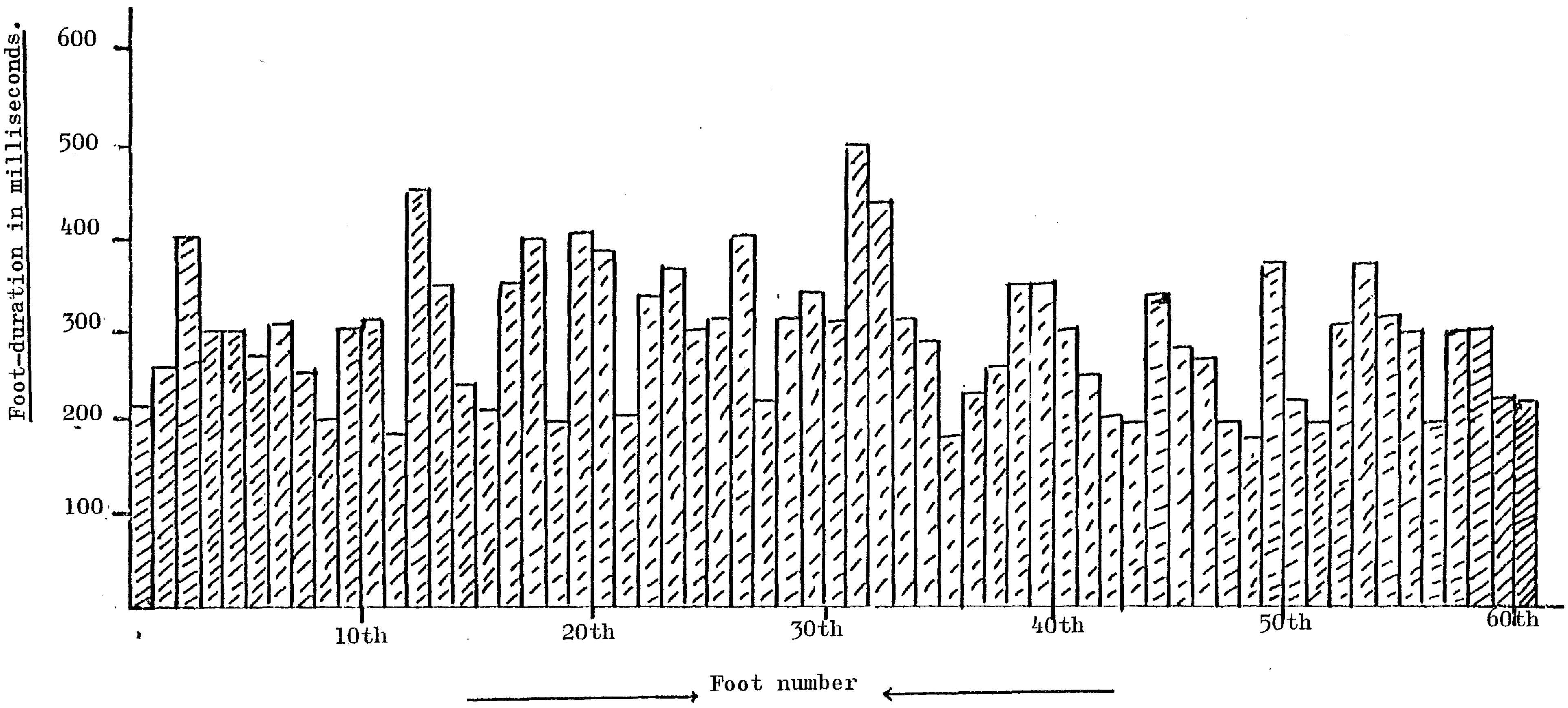


Figure (b) Distribution of feet duration in fast speech.

4.4. Discussion:

To explain the data in hand, we can calculate the mode which is the observation in the sample which occurs most frequently. In our case, however, this turns out to be impractical since in both normal and fast speech we have more than one mode, i.e. two or more equal readings occur the same number of times, or more frequently than any of the other units, so, there is not much point in doing this. We may face the same kind of problem if we calculate the range, which is the simplest measure of dispersion. By definition, the range equals the largest foot minus the smallest. It is easy to find after the data have been arranged in order. As it is clear from the above tables, the range in normal speech equals 600 milliseconds - 255 milliseconds = 345 milliseconds. In fast speech it equals 500 milliseconds minus 180 milliseconds = 320 milliseconds.

One major objection to the range is that it does not make use of all the observstions, in the experiment, thereby disregarding much available information. It only uses two of the observations; namely, the largest and the smallest ones, while neglecting the remaining units. Therefore, other possible means must be considered in order to assist us in explaining our data. To start with, the mean and deviation from it (known as standard deviation), have been calculated, but this does not seem to provide us with satisfactory results. Hence, we realised that considerable information can be obtained by grouping our data into classes with fixed intervals as is explained in the following paragraph. However, we are aware that by doing so, we lose the identity of each individual foot in the data - which is of little importance at the moment.

Accordingly, the 61 feet are divided into 8 classes - for both normal and fast varieties. As shown in tables (5) and (6) below, the difference between the shortest and longest foot in each class is 49 milliseconds. In each table feet are represented together with their syllabic structure and duration, which would generally allow us to point to the number of rhythmic feet included in each class. In dividing the data into groups as shown below, we have been guided by the size and nature of our samples. Our main concern is to allow the width of each class to be large enough, so that the 8 classes accommodate the data as a whole.

All rhythmic feet in normal speech are divided into 8 classes according to their length, and shown in the table below. The length-range of each class is measured in m.secs. , and appear at the top of each column. Underneath each category,we listed the duration of each foot and its number in the text. The syllabic content of each foot is also shown.

225-274 m. secs.	275-324 m. secs.	325-374 m. secs.	375-424 m. secs.	375-424 m. secs.	425-474 m. secs	475-524 m. secs.	525-574 m. secs.	575-625 m. secs.
255(1) cvc-cv	310(2) cvc-cvc	345(4) cv-cv-cv	380(6) cvc-cv	400(30) cv:-cvc	445 (39) cv:-cv-cvc	475 (37) cvc-cvc	550 (53) cvc-cv-cv	600 (58) cvc-cv-cvc
	300(28) cvc-cv	345(57) cv-cvc	395(7) cv:c	400(31) cv:-cvc	450 (18) cv:c-cvc	475 (24) cv:c-cvc	550 (33) cv:-cvc-cv cv	
	300(49) cv-cvc	354(51) cvc-cv	380(1) cv:c-cvc	408(44) cvc-cvc	450 (10) cvc-cvc	500 (13) cv:-cv-cv	552 (18) cvc-cv-cvc	
	320(60) cvc-cv	360(5) cvc-cvc	390(35) cvc-cvc	415(55) cv:-cv	450 (22) cv:-cvc	500 (15) cv:-cv	565 (32) cvc-cvc-cvc	
	300(52) cv:-cv	355(11) cvc-cvc	395(42) cv:-cv-cv	400(61) cv:c	450 (23) cvc-cv-cvc	500 (20) cvc-cv-cv		
		355(9) cvc-cv	395(43) cv:-cv		450 (34) cv:c	500 (21) cvc-cv-cvc		
		355(16) cvc-cv	400(3) cv:c		450 (45) cv:c-cvc	500 (40) cv:c		
		350(29) cvc-cvc	400(12) cv-cvc		450 (47) cvc-cvc	500 (41) cvc-cvc-cv		
		350(36) ccv:c	400(19) cv:-cvc		450 (59) cv:c-cvc	505 (54) cv:c-cvc-cv		
		350(38) cv-cvc	400(25) cvc-cvc		452 (27) cv:-cvc			
		360(46) cvc-cvc	400(26) cv:-cv-cvc		460 (48) cv:-cv			
		400(61) cv:c			460 (50) cv;-cvc			

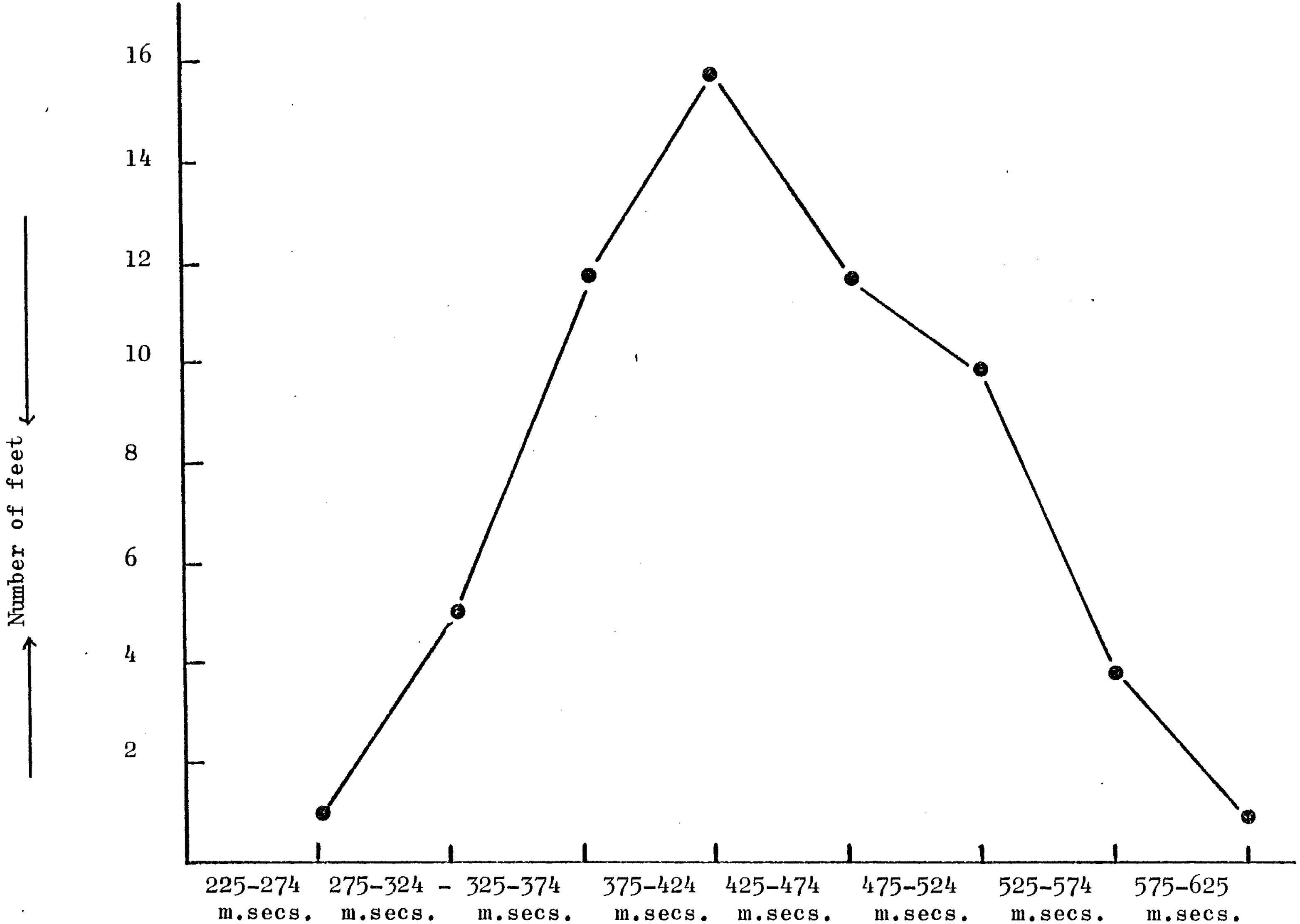
Table (5)

175 - 224 m.secs.	225 - 274 m.secs	275 - 324 m.secs.	275 - 324 m.secs.	325 - 374 m.secs.	375 - 424 m.secs.	425 - 474 m.secs.	475 - 524 m.secs.
190 (12) cv-cvc	235 (37) cvc-cvc	295 (4) cv-cv-cv	310 (55) cv:-cv	345 (14) cvc-cv-cvc	375 (50) cv:-cvc	440 (33) cv-cvc-cv-cv	500 (32) cvc-cvc-cvc
180 (36) ccvc	225 (28) cvc-cv	292 (5) cvc-cvc	300 (25) cvc-cvc	340 (23) cvc-cv-cvc	375 (54) cv-cvc-cv	450 (13) cv:-cv-cv	
180 (49) cv-cvc	225 (51) cvc-cv	290 (15) cv:-cv	305 (58) cvc-cv-cv	340 (30) cv:-cvc	395 (18) cvc-cv-cvc		
220 (1) cvc-cv	225 (60) cvc-cv	297 (35) cvc-cvc	300 (41) cvc-cvc-cv	340 (45) cvc-cvc	385 (21) cvc-cv-cvc		
200 (9) cvc-cv	225 (61) cv:c	275 (6) cvc-cv	300 (56) cvcc-cv	360 (24) cvc-cvc	400 (3) cv:c		
215 (16) cvc-cv	255 (2) cvc-cvc	275 (46) cvc-cvc	300 (59) cvc-cvc	350 (17) cvc-cvc	400 (20) cvc-cv-cv		
200 (19) cv:-cvc	255 (8) cvc-cvc	305 (7) cv:c		350 (39) cv-cv-cvc	400 (27) cv:-cvc		
205 (22) cv:-cvc	255 (38) cv-cvc	305 (10) cvc-cvc		350 (40) cv:c			
200 (43) cv:-cv	250 (42) cv-cv-cv	310 (26) cv-cv-cvc					
200 (44) cvc-cv	270 (4) cvc-cvc	310 (29) cvc-cvc					
200 (48) cv-cv		310 (31) cv-cvc					
200 (52) cv:-cv		305 (34) cv:c					
200 (57) cv-cvc		305 (53) cvc-cv-cv					

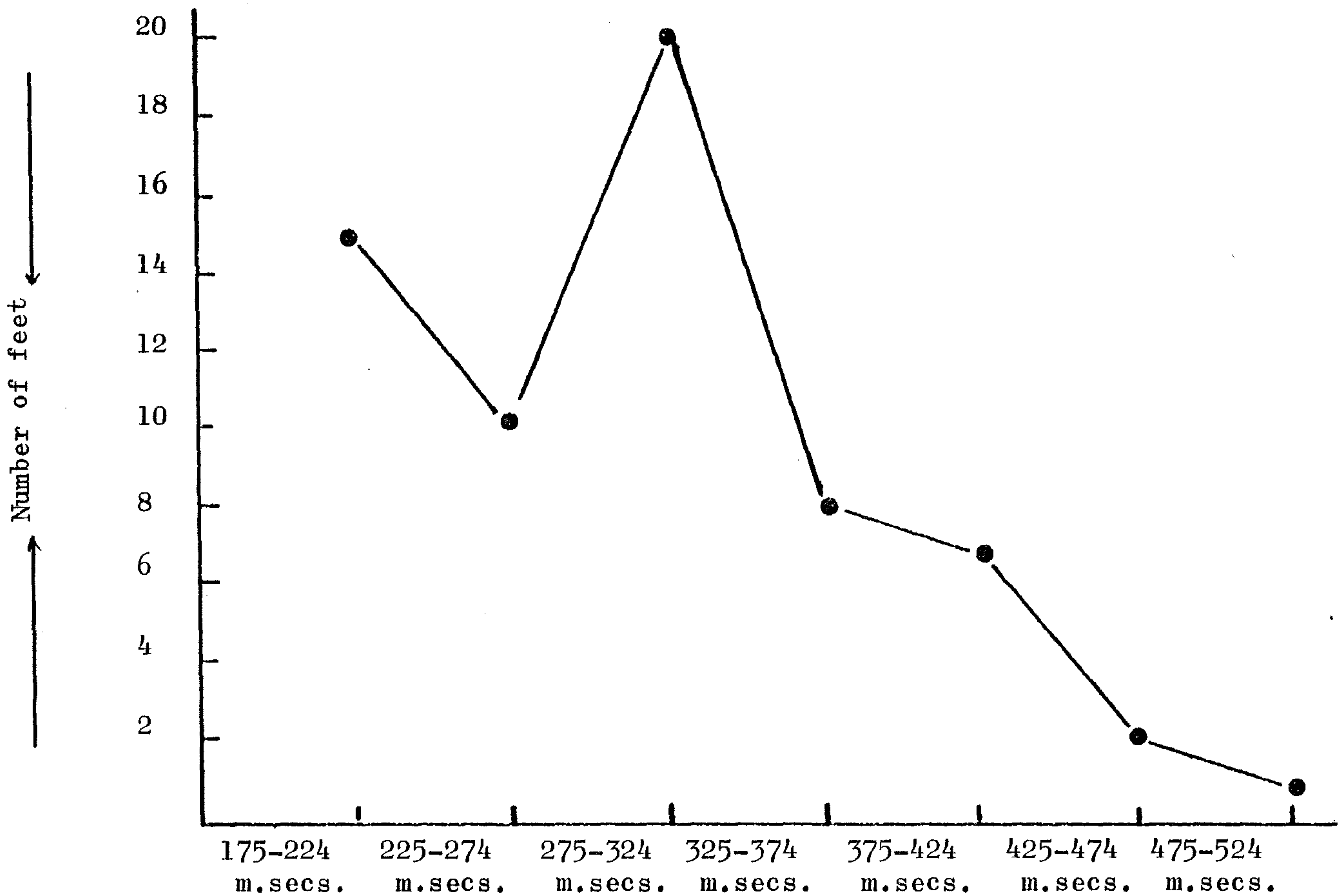
Table (6) All rhythmic feet in fast speech are divided into 7 classes according to their length,and shown in the above table. The length-range of each class is measured in m.secs.,and appear at the top pf each column. Underneath each category,we listed the duration of each foot and its number in the text. The syllabic content of each foot is also shown.

We are in no doubt that the information provided by a frequency distribution in tabular form is easier to grasp if represented graphaically. Most people find a visual representation beneficial in comprehending the essential features of a frequency distribution.

As demonstrated below, a useful way of representing our data in graphic form is by means of a frequency polygram as shown on figures (c) and (d) below. These graphs are based on information extracted from tables (5) and (6) above. On the axis of each graph, we have shown two features: on the horizontal axis, the eight classes of intervals are plotted, while on the vertical axis we plotted the number of rhythmic units in each class. Thus by looking at the graphs, we can find out the number of occurrences for each interval. For instance, the number of rhythmic feet with duration between 274-324 milliseconds, in fast speech as shown on figure (d), is 20, while feet with durations between 475-524 milliseconds, number two. By examining both figures below, it becomes obvious that the largest number of units is concentrated around the G. mean for each style as presented in p.155.



Figure(c) The above graph shows the number of occurrences of each class(see tables 5&6) as they occur in normal speech.



Figure(d) The above figure shows the number of occrrences of each class (see tables 5&6) as they occur in fast speech.

As pointed out above, the aim of this experiment is to investigate any possible existence of isochrony in Ir.S.A's normal and fast speech. To reach a reliable conclusion, we must examine the entire data - which includes 61 feet. This, of course, would be impractical and difficult to achieve in most situations. Instead, we take a sample of the measurements of interest and use the information contained in this portion of the data to decide whether isochrony exists or not. Evidence from this portion, which is inconsistent with the requirement of proving its existence leads to the rejection of the hypothesis, whereas evidence supporting the hypothesis leads to its acceptance. We should make it clear, at this point, that the acceptance of the hypothesis is a result of insufficient evidence to reject it.

The part of the data which interests us is the <u>mean</u>, i.e. all rhythmic feet with durations fluctuating around the mean. In other words, we would like to find out the percentage of rhythmic units that have durations equal to the general mean, in addition to all other units with duration = mean $\pm$ standard deviation. We start by arranging the data in normal speech first, into classes, with 15 milliseconds difference between one class and the next, as shown in table (7) below. In table (8) which follows and represents the data in fast speech, the variation between one class and the following is 20 milliseconds. For example, tables (7) and (8) below are arranged to read as follows: the number of rhythmic feet, in normal speech, with durations up to 300 milliseconds are 4. The percentage of these units to the total data is 6.55%. This process is continued until we reach the final reading which shows that the number of units with durations up to 600 milliseconds, are 61, i.e. 100%.

Duration in m.secs.			No. of occurrences	Percentage
up to	-	300	4	6.55%
301	-	315	5	8.19%
316	-	330	6	9.83%
331	-	345	10	16.39%
346	-	360	18	29.50%
361	-	375	18	29.50%
376	-	390	22	36.66%
391	-	405	33	54.09%
406	-	420	34	55.09%
421	-	435	34	55.09%
436	-	450	43	70.49%
451	-	465	47	77.04%
466	-	480	49	80.32%
481	-	495	57	93.44%
496	-	510	57	93.44%
511	-	525	59	96.72%
526	-	540	59	96.72%
541	-	555	60	98.36%
556	-	600	61	100.%

Table (7)

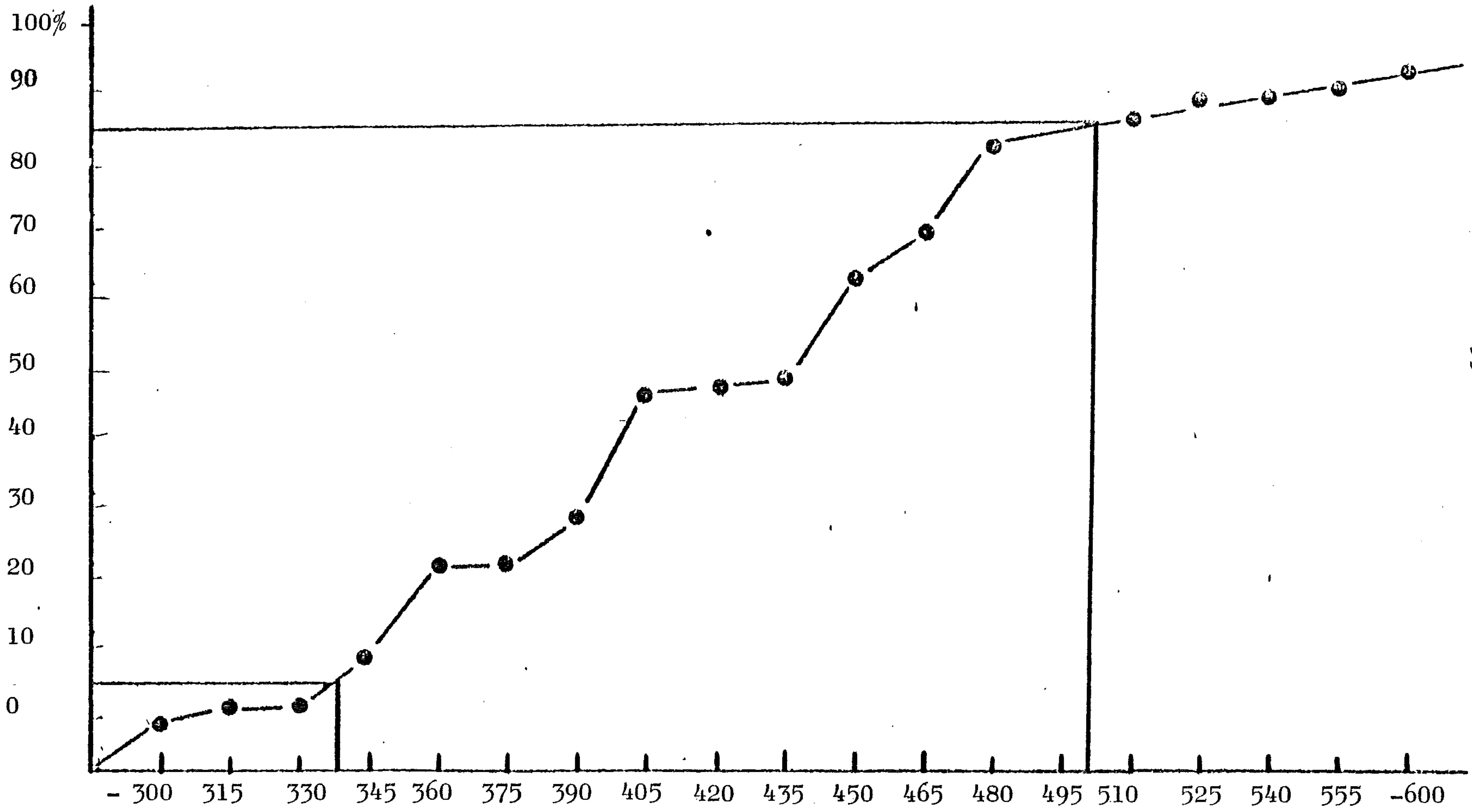
Duration in m.secs.			No. of occurrences	Percentage
Up to	-	200	10	16.39%
201	-	220	13	21.3%
221	-	240	20	32.78%
241	-	260	25	40.98%
261	-	280	28	45.90%
281	-	300	34	55.73%
301	-	320	45	73.77%
321	-	340	47	77.04%
341	-	360	51	83.60%
361	-	380	53	86.88%
381	-	400	58	95.08%
401	-	420	58	95.08%
421	-	440	60	98.3%
441	-	460	60	98.3%
461	-	480	60	98.3%
481	-	500	61	100.0%

Table (8)

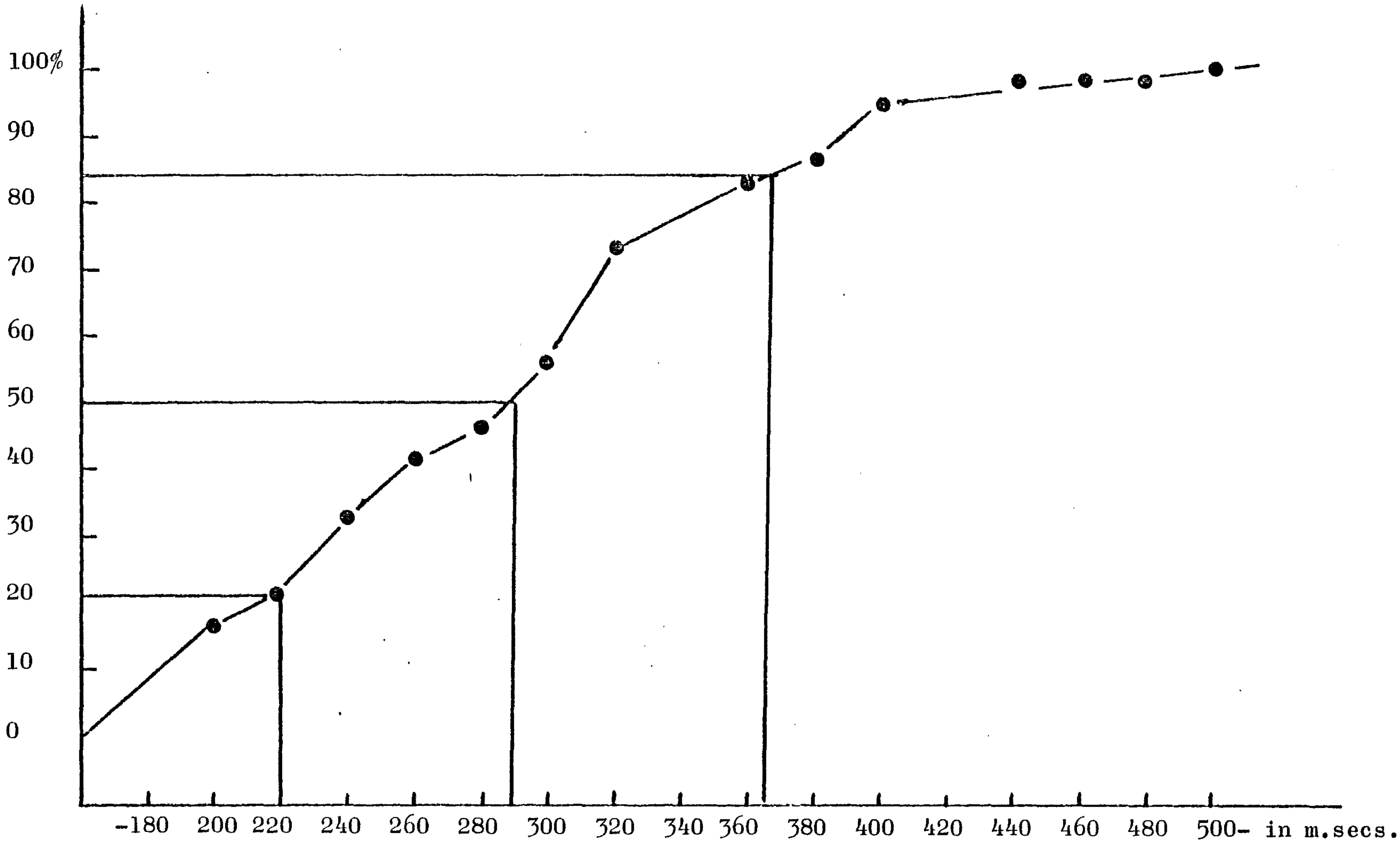
The results of tables (7) and (8) above are shown in graphs (e) and (f) below. Graph (e) shows that rhythmic feet with durations equal mean + standard deviation, i.e. 418.9 + 79 = 498.39 milliseconds constitute 93% of the whole population. In comparison, rhythmic feet with durations equal mean minus standard deviation, i.e. 418.9 - 79.49 = 339.41 milliseconds constitute 13% of the whole data. This means that if we subtract 13 from 93, this will give us the percentage of rhythmic units which spread with one standard deviation from the mean. In so doing, it has been found that 80% of rhythmic units in normal speech in our text scatter around the mean.

In contrast, Graph (f) below, which is related to fast speech, shows that 64% of data scatter around the mean. By employing the same method we find that rhythmic feet with durations equal mean + standard deviation, i.e. 292.7 + 72 = 364.7 constitute 84% of the data, while feet that equal mean - standard deviation constitute 20% of the data.

In spite of the fact that the general standard deviation of the total number of feet in normal speech is found to be slightly higher than its equivalent in fast speech, evidence for isochrony is shown to be fairly strong in normal speech. According to our results, graph (e) below indicates that 80% of our rhythmic units last for durations which do not vary greatly from the mean. Compared to our results in the previous chapter (see p. 120), which confirm the presence of a tendency towards isochrony, based on the fact that over 60% of feet in short utterances then have durations which cluster around the general mean; and according to the present results, one can conclude by saying that a similar tendency to isochrony exists in Ir.S.A. connected speech. This tendency is found to be fairly moderate in fast speech since 60% out of the whole data have approximately similar durations. However, such tendency increases noticeably in normal speech where 80% of the feet are found to have more or less similar durations. The difference in percentage between the two styles may be due to the fact that in fast speech tempo, variations fluctuated extensively in spite of the effort to keep the rate constant. In other words, the speaker's control over tempo becomes less decisive; as a result isochrony becomes weaker.



Graph (e) The above graph shows the percentages of feet according to their duration in in normal speech.



<u>Graph (f)</u> The above graph shows the percentages of feet according to their duration in in fast speech.

4.5. General Conclusions:

The results of our analysis of the duration of rhythmic feet in the text under study in both normal and fast speech as explained earlier, can be presented in table (9) below for discussion:

Type of speech	Longest foot	Shortest foot	Range	Mean	S.D.
Normal speech	600 m.s.	255 m.s.	345 m.s.	418.9 m.s.	79.4 m.s.
Fast speech	500 m.s.	180 m.s.	320 m.s.	292.7 m.s.	72.0 m.s.

Table (9).

From the above figures, one can conclude by saying that strict isochrony does not exist. However, if we compare these results with results from similar studies, we find that while the range, as defined earlier, (see p.143) in our measurements of normal speech is found to be 345 milliseconds compared to 320 milliseconds in fast speech; Heliel's (1977,343) results from an experiment in which he measured 77 filled feet in a text of colloquial Egyptian Arabic is found to be 704 milliseconds. In addition, the general mean of the S.D. in his data is reported to reach 166.4 milliseconds which is much higher than the S.D. in our data as shown in table (9) above. In spite of the high degree of variation in his data, Heliel still argues that a tendency to isochrony does in fact exist. Other references were made earlier to Uldall's (1971), (1978) results from experiments on English rhythm (see p.156). Although broad variance exists in her data, Uldall maintains that isochrony exists in terms of a tendency. Consequently, and in view of our findings, where variance between duration of different feet are found to be much smaller than those of Heliel's and Uldall's, we conclude by saying that, in Ir.S.A. connected speech, there is a fairly strong tendency to isochrony. This is manifested by the rather low standard of deviation and the fairly high percentage of approximately equal feet.

CHAPTER FIVE

THE DURATION OF A FOOT IN RELATION TO THE DURATION OF ITS COMPONENTS.

5.1. Introduction:

In a study of timing patterns in French, Crompton (1980,205) argues that "The observed timing pattern of an utterance reflects a number of linguistic factors, including rate of utterance, accent, and phonological units such as segment, syllable, stress group ..." He adds (p.206) "It seems clear that the durational characteristics of an utterance will depend on the number and type of segments of which it is composed, and also on the way these are organised into syllables. Above this level are further phonological categories about which little is yet known".

Similar conclusions were reached by writers such as Classe (1939), Uldall (1978) and Heliel (1977). For example, in her study of rhythm in very rapid R.P. speech, Uldall (p.397) discovered that the duration of each foot in the text she examined corresponds to the number of the syllables it contains. In her data, a great increase is noticeable when the number of syllables in a foot exceed three. Likewise, in a study of rhythm in colloquial Egyptian Arabic, Heliel (1977, 257) conformed Crompton's observations by showing that "Constraints on foot duration constitute a complex of:

a. The number of syllables in the foot.
b. The syllabic structure of the foot in terms of the number of the segments and the order in which they succeed each other.
c. The type of segment the foot contains".

For the last few decades, interest in speech temporal aspects has been rapidly increasing. However, it is noticeable that the great majority of research that is done in relation to this topic is exclusively restricted to segmental levels without including connected speech. Generally speaking, writers have shown a greater interest in investigating what is known as the intrinsic length of each segment in any given language. The number of scholars who dealt with this point is very large and for reasons of brevity, reference will be made here to only some of them.

To start with, one may refer to some of the principles that are taken for granted in the majority of phonetics textbooks. An example of these is Jones's statement (1950, 114) in which he argues that in English "Some sounds are by nature of limited duration. In particular the plosions of the plosive consonants and the flaps of the flapped consonants are necessarily extremely short; sounds of a gliding type are susceptible to lengthening but they cannot be held on indefinitely". In other words, when duration has no significant function (as it has in long Vs short vowels), a segment's duration varies according to its nature. This principle matches that of Fant (1962) who believes that the recognition of a segment shows that "Every segment has a certain duration in the time domain; at the same time, the duration may be contrastive i.e. characterizes the segment as being distinctively short rather than long". Similarly, Ohala (1973) maintains that "The units of speech are executed according to some underlying programmed time schedule". An argument that runs along these lines is presented by Bell-Berti et al. (1981, 9-20) who offer a model of speech production designed merely to apply to segments, and in which he considers "time and time relationships to be intrinsic to speech motor organisation and the units of speech to be inherently dynamic gestures rather than static vocal tract configurations or invariant commands to the articulators"(p.9).

In contrast, Lehiste (1976,226) believes that there is no underlying time-programme. Accordingly, a given speech gesture is simply executed after the preceding gesture has been completed successfully. Liberman et al. (1967) adopt similar views by maintaining that "Unlike letters of the alphabet, the speech sounds are not physically discrete, but rather are shingled into an intricate, continuously changing pattern". Nevertheless, Lehiste (1976, 226) still regards the phonetic nature of the segments preceding and following any sound as being the major cue for deciding that sound's duration. In addition, she maintains that (p. 227) the duration of vowels appear to be related to the tongue height. Hence, "Other factors being equal, a high vowel is shorter than a low vowel. Evidence of this has emerged from experimental studies of many and diverse languages, including English, German, Danish, Swedish, Thai and Spanish".

Other studies show that considerable variation in segmental durations are due to the influence of neighbouring segments on one another. For example, in a study of vowel duration in a Scottish accent, McClure (1977, 10-17) discovers that "allophones of any vowel in Scottish English except /ɩ/ and /ʌ/ are shorter before plosives and voiceless fricatives than before voiced fricatives".

Similarly, Peterson and Lehiste (1960,693-703) found that in 118 minimal pairs, the average duration of vowels before voiceless consonants is 197 milliseconds, while it reaches 297 milliseconds when vowels are followed by voiced consonants. In the same study it was found that the place of articulation of a consonant contributes also to the length of the preceding vowel. According to their measurements, the average duration of a short vowel is found to be 147 milliseconds before /t/, 197 before /ʃ/, 216 before /n/, 206 before /d/ and 262 before /z /. This shows that when the consonant's point of articulation occurs in the back of the vocal cavity, the duration of the preceding vowel increases. Kong-On Kim (1975, 259) derived similar results from his experiments on spoken Korean. He discovered, for instance, that the duration of a consonant in Korean has a systematic relationship with the adjacent vowel. Thus, he maintains that (p. 261) "Different consonants affect the duration of vowels adjacent to them to different degrees. Such influences of consonants on the duration of vowels have been described in terms of phonetic feaaures of the consonants such as stop, fricative, voice, bilabial articulation, etc., since such phonetic features may have a close relationship with the duration of the consonants themselves, it might be the case that the duration of the consonants as well as their phonetic features are systematically related to the durations of the vowels".

Another relevant point is made by Al-Ani (1970, 72) who discovered as a result of carrying out an experimental work on Arabic phonology that the duration of a consonant in Classical Arabic depends upon the position of that segment in an utterance i.e. whether it occurs initially, medially or finally. It also depends on the segment's manner of articulation i.e. whether it is aspirated, released or not. According to his measurements he finds, for example, that stops in medial positions last longer than voiceless initial stops. He also argues that the duration will be even greater if the segment is aspirated.

In many languages stress is regarded as a major factor that may affect the duration of a segment or a sequence of segments. This means that a stressed syllable should regularly be longer than its unstressed neighbours. Evidence for this statement is found in Morton and Jassem's experiment (1965, 159-181) in which they discovered that their informants' judgements while distinguishing between stressed and unstressed syllables tend to be influenced by the actual length of the appropriate syllable. Similar views that attempt to show how stress actually contributes towards the timing pattern of an utterance appears, for example, in Fry's 1955 and 1958 studies.

In our attempt to introduce as many views as possible regarding timing effects in speech (an aspect that concerns us in studying rhythm in Ir.S.A.) finally, reference is made here to two studies. Firstly, we quote Fonagy (1966, 14-21) and 1980, 375-378), who in the latter publication, studied the association between sound pressure level and duration both in Hungarian and French speech. His results in both cases suggest that duration of consonants and vowels is noticeably affected by the level of their loudness. Loudness as such, must then be regarded as a feature worth considering in examining timing in speech.

Secondly, reference is made to another cue related to our subject as introduced by Hawkins (1979, 235-267). In his study, durations of clustered and unclustered consonants were measured oscillographically in monosyllabic words as pronounced by children (14 month old plus 4 - 7 years old) and adults. Hawkins' results provide evidence of an existing difference in durational relationships between consonants in different contexts amongst the two groups of informants. In his views, this difference is basically related to age. Thus, Hawkins shows that adult speakers of British English impose, while speaking the language, a certain degree of organisation upon the segments of consonant clusters. In children's speech, however, such a feature is not well established. Nevertheless, it exists with varying degrees depending upon the age of the informant, i.e. the time scheme in the speech of older children is better than that of the younger ones.

For further views on segmental timing, see Port et al. (1980, 235-252), Lubker (1981,51) Cooper et al (1981, 106 - 116), Kohler (1981) and Ohala (1981).

5.2. Aims of study and material

As we know, a foot consists of varying numbers of syllables and segments. The total length of time for these elements equals the length of the foot when spoken. In the experiments we have carried out so far (see Chapters 3 and 4 above), we noticed that:

(1) A certain percentage of the feet in our data have exact durations.

(2) Another proportion of the feet in the data in each experiment have semi-equal durations, i.e. the difference between the various feet of this proportion does not exceed 10 milliseconds.

(3) In the remaining proportion, isochrony between consecutive feet exists in terms of tendency which is strong at times but weaker at others.

Our main concern in this chapter is search for causes which may contribute towards the existing variance between the different feet in our data. Generally speaking, the chapter is divided into two sections. In the first section a study is made of the relationship between the duration of each foot and the number and type of syllables it is comprised of. In the second section, our study includes an investigation of what we may call here the conditioning factors that may contribute to and influence the duration of each segment.

5.3. The Duration of a Foot in Relation to its Syllabic Components.

In order to study the correspondence between the duration of each foot with reference to its syllabic components, we rearranged the rhythmic feet that occurred in the text studied in the previous chapter (see p. 131). Accordingly, tables (1) and (2) below are designed to show separately :

(i) The number of syllables included in each foot.

(ii) The number of segments that each foot contains

(iii) The number of occurrences for each foot according to the number and type of its syllabic structure. For example, monosyllabic feet of the type /ccv:c/ is shown to occur once in the data and in both styles.

(iv) The duration in milliseconds of each foot.

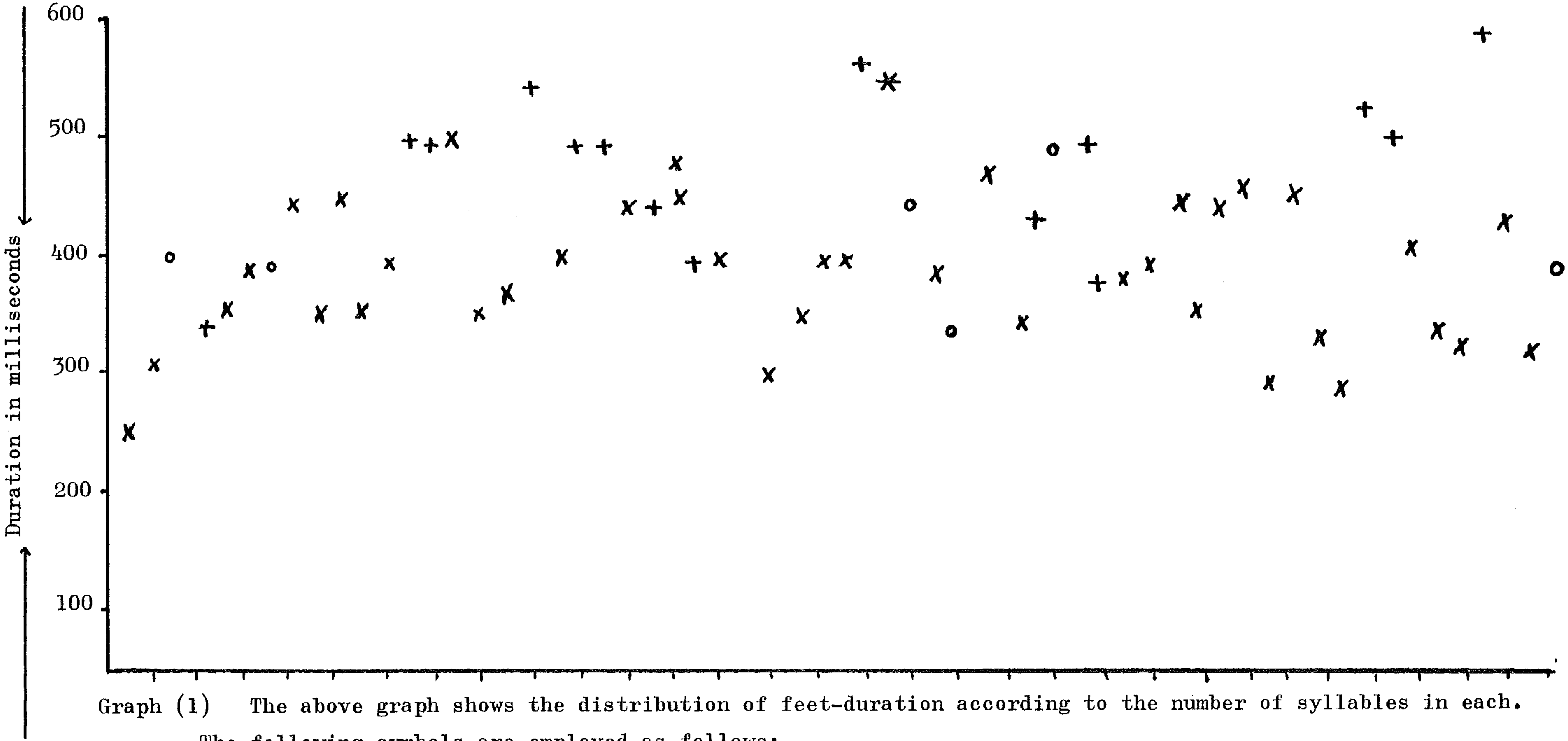
Each table below represents a different style of speech, i.e. normal and fast.

No.	Syllabic structure of foot	No. of segments	No. of syllables	No. of occurrences	Mean-duration in m.secs.
1	CVC-CV	5	2	3	321
2	CV-CV-CV	6	3	1	345
3	CV-CVC	5	2	4	348.8
4	CVC-CV	5	2	5	350.6
5	CCV:C	4	1	1	360
6	CVCC-CV	6	2	1	360
7	CVC-CVC	6	2	10	374.5
8	CV:-CV-CVC	7	3	2	400
9	CV:-CV	4	2	5	414
10	CV:C-CVC	6	2	5	414
11	CV:-CVC	5	2	6	427
12	CV:C	3	1	5	429
13	CV:-CV-CV	6	3	2	447.5
14	CVC-CVC-CV	8	3	1	500
15	CV:C-CVC-CV	8	3	1	505
16	CVC-CV-CVC	8	3	5	520
17	CVC-CV-CV	7	3	2	525
18	CV:-CVC-CV-CV	9	4	1	550
19	CVC-CVC-CVC	9	3	1	565

Table (1)

No.	Syllabic structure of foot	No. of segments	No. of syllables	No. of occurrences	Mean-duration in m.secs.
1	CCV:C	4	1	1	180
2	CV-CVC	5	2	4	206.3
3	CVC-CV	5	2	8	223.1
4	CV:-CV	4	2	5	240
5	CVC-CVC	6	2	12	288.6
6	CV-CV-CV	6	3	1	292
7	CVC-CVC-CV	8	3	1	300
8	CVCC-CV	6	2	1	300
9	CV:-CVC	5	2	6	305
10	CV:C	3	1	5	317
11	CV:C-CVC	6	2	3	330
12	CV:-CV-CVC	7	3	2	330
13	CV:-CV-CV	6	3	2	350
14	CVC-CV-CV	7	3	2	352.5
15	CVC-CV-CVC	8	3	5	354
16	CV-CVC-CV	7	3	1	375
17	CV:-CVC-CV-CV	9	4	1	440
18	CVC-CVC-CVC	9	3	1	500

Table (2)



Graph (1) The above graph shows the distribution of feet-duration according to the number of syllables in each.

The following symbols are employed as follows:
o to refer to 1-syllable feet
x to refer to 2-syllable feet
+ to refer to 3-syllable feet
* to refer to 4-syllable feet.

Since it is the relation between feet of varying numbers of syllables which concern us here, we tried to examine the existing relation between the feet in our data. From the previous tables, we calculated the mean duration for rhythmic groups which we divided according to the number of syllables they contain. Table (3) below, shows the mean duration for each group in both styles and the percentage between them.

Description	1-syllable feet	2-syllable feet	3-syllable feet	4-syllable feet
Mean duration in normal speech	394.5 m.secs.	376.3 m.secs.	475.9 m.secs.	550 m.secs.
Percentage	71.8%	68.3%	86.5%	100%
Mean duration in fast speech	248.5 m.secs.	270.5 m.secs.	356.7 m.secs.	440 m.secs.
Percentage	56.6%	61.3%	81.1%	100%

Table (3)

The above figures demonstrate that, on average, each foot has a tendency to increase in duration according to the number of syllables it contains. Nevertheless, it is also noticed that by examining each individual foot, the increase does not appear to be systematic. Thus, in our text, some of the feet which consist of a single syllable are found to last longer than, for example, two-syllable feet, and occasionally two-syllable feet last longer than three-syllable ones. According to the above figures, the fact remains that four-syllable feet vary with a higher percentage from the rest. This becomes even clearer by calculating the deviation of the general mean of each group from the total mean of the whole data as shown below:

First: in normal speech:-

(a) The deviation of 1 - syllable group = 418.9 minus 394.5 = - 24.4 milliseconds.

(b) The deviation of a 2 - syllable group = 418.9 minus 376 = - 42.9 milliseconds.

(c) The deviation of 3 - syllable group = 475.9 minus 418.9 = + 57 milliseconds

(d) The deviation of 4 - syllable group = 550 minus 418.9 = + 131.1 milliseconds.

Second: by applying the same rule, we discover that in fast speech, the deviation of each of the four groups is as follows:

(a) Deviation of 1 - syllable = 292.7 - 248.5 = - 44.2
(b) Deviation of 2 - syllable = 292.7 - 270.2 = - 22.5
(c) Deviation of 3 - syllable = 356.7 - 292.7 = + 64
(d) Deviation of 4 - syllable = 440 - 292.7 = + 147.3

The above figures indicate that there is a strong tendency to isochrony between feet which consist of one, two, or three syllables since the mean duration of these units does not vary to a great extent from the general mean of the whole data. This tendency is strengthened when we discover that a foot which consists of a single syllable lasts in duration as long as a 3 - syllable foot. (To study the distribution of feet according to the duration and number of syllables, see graph (1) p.164). This phenomenon applies also to two - syllable feet. What we cannot deny is the fact that four - syllable feet vary much more that the rest from the general mean. This would ultimately lead to weakening the tendency to isochrony in the dialect.

In order to explain our data properly, we realized that by calculating the percentage of occurence of each syllable group in relation to the whole data, we will be able to assess the extent of the tendency to isochrony in the dialect under study. Thus, by re-examining tables (1) and (2) above, it has been found that:

(i) 1 - syllable units occur 6 times in the data and constitute 9.8% of it.

(ii) 2 - syllable units occur 39 times and constitute 63.9% of the data.

(iii) 3 - syllable units occur 15 times and constitute 24.5% of the data.

(iv) 4 - syllable units occur once and constitutes 1.6% of the data.

Once again the above figures are regarded as an evidence for a strong tendency to isochrony in Ir.S.A. This tendency is clearly associated with 1 -, 2 - and 3 - syllabic feet which constitute over 98% of our data. However, if the number of syllables increases, isochrony gets weaker. But by bearing in mind the fact that in Irta:hi speech the maximum syllable numbers allowed in each word is four, it may be said then that the tendency to isochrony is well maintained.
This conclusion is supported by another tendency in the dialect where 4 - syllabic words occur in very few examples.

5.4. The Duration of a Foot in Relation to its Segments

To describe all conditioned variation in the duration of segments requires a great deal of experimental work which is not indispensable for our purposes. Instead, we believe that it is important to examine some of the features that may contribute to segmental timing such as the phonetic nature of each segment and the influence that different segments may have on each other when they occur in a work or in a foot. In short, we would like to examine the following:

(1) The intrinsic duration of vowels and segments according to their place and manner of articulation. For this purpose, we measured segments occurring in similar phonetic contexts in order to establish the duration of each. Vowels and consonants that have identical stress and intonational patterns were recorded. Recording was repeated twice and an average duration from spectrograms was calculated for each segment. In each case the utterance consists of three feet. The number of syllables and syllabic structure remain constant. In addition, all segments in the utterances compared were kept similar except the segment we are testing in the experiment. It is important to point out that in this experiment all tested segments occur in initial stressed positions.

(2) Segments occurring in final unstressed syllables. As mentioned above, throughout the experiment all phonetic and prosodic features were kept constant apart from the segment under examination.

In general the results of the two experiments reported under (1) and (2) above will enable us to study:

(a) The intrinsic durational value for each segment. By doing so, it becomes possible for us to classify Ir.S.A. segments according to their length values.

(b) The effect of stress on segment-duration

(c) The effect that Irta:hi vowels and consonants may have on each other.

Tables (4) and (5) below show the results obtained after measuring Irta:hi consonants in two different positions. In table (4) we present measurements of consonants where each consonant occurs in a stressed syllable within a foot. In each case, this foot is preceded and followed by a foot on each side. The initial and final feet remain constant in each test. Each segment was measured twice i.e., two broad-band spectrograms were made for each utterance as a result of being recorded twice. The duration as obtained from each reading appears in a separate column. The general average duration for each segment is also shown. Finally, the general average of each consonantal group (each group is established in articulatory terms) is calculated in order to study how each class can affect the foot - duration.

Our measurements as presented in table (5) are carried out in similar circumstances. The only difference, however, is that segments in this case are examined as they occur in unstressed syllables.

Segments in initial stressed syllables:-

Segment		1st reading in m.sec	2nd reading	Average	Total Average of the class
Voiceless Stops:	/saʔalu / tana / le:ʃ/	60	72	66	68.3
	/ tana /	59	60	59.5	
	/ kana /	78	75	76.5	
	/ qana /	75	73	74	
	/ ʔana /	56	75	65.5	
Voiced Stops:	/ bana /	55	57	56	50.8
	/ dana /	49	40	44.5	
	/ d̠ana /	51	53	52	
Voiceless Fricatives:	/ fana /	60	75	67.5	72.5
	/ θana /	75	74	74.5	
	/ sana /	75	72	73.5	
	/ s̠ana /	74	72	73	
	/ ʃana /	75	75	75	
	/ xana /	83	78	80.5	
	/ hana /	59	60	59.5	
	/ ḥana /	73	79	76	
Voiced Fricatives:	/ ðana /	60	59	59.5	61.9
	/ ð̠ana /	50	58	54	
	/ zana /	57	61	59	
	/ ɣana /	75	75	75	
Voiceless Affricates	/ tʃana /	68	66	67	67
Voiced Affricates	/ dʒana /	72	68	70	70
Nasals:	/ mana /	59	60	59.5	55.2
	/ nana /	52	50	51	
Lateral:	/ lana /	62	50	56	56
Trill:	/ rana /	25	28	26.5	26.5

Table (4)

Segments in final unstressed syllables:-

Segment		1st reading in m.sec.	2nd reading	Average	Total Average of the class
Voiceless Stops:	/saʔalu /sata/ le:ʃ /	58	60	59	57.2
	/saṯa/	58	56	57	
	/saka/	62	61	61.5	
	/saqa /	50	50	50	
	/saʔa/	58	58	58	
Voiced Stops:	/saba/	46	41	43.5	44.5
	/sada/	40	46	43	
	/s̱aḏa/	46	48	47	
Voiceless Fricatives:	/safa/	50	58	54	62.9
	/saθa/	63	64	63.5	
	/sasa/	62	68	65	
	/sas̱a/	70	66	68	
	/saʃa/	63	61	62	
	/saxa/	69	65	67	
	/saha/	70	68	69	
	/saḥa/	55	55	55	
Voiced Fricatives:	/saða/	60	60	60	56.6
	/saḏ̱a/	49	51	50	
	/saẕa/	55	52	53.5	
	/saɣa/	61	65	63	
Voiceless Affricates	/satʃ a /	63	65	64	64
Voiced Affricates	/sadʒ a /	46	49	47.5	47.5
Nasals:	/sama /	46	39	42.5	38.25
	/sana/	33	35	34	
Lateral:	/sala /	50	49	49.5	49.5
Trill:	/sara/	20	22	21	21

TABLE (5)

By presenting the results of our measurements in order, Ir.S.A. consonants can be arranged according to their length into groups as follows:

(1) : in initial stressed syllables:

Voiceless fricatives ; voiced affricates ; voiceless stops ; voiceless affricates ; voiced fricatives ; laterals ; nasals ; voiced stops ; trills.
(The first group to appear in the list is the longest while the last group is the shortest).

(2) : in final unstressed syllables:

Voiceless affricates ; voiceless fricatives ; voiced fricatives ; voiceless stops ; lateral ; voiced affricates ; voiced stops ; nasals ; trills.

According to the above results, voicing in this dialect seems to be an important feature in contributing towards a segment's length. Apart from one exception (voiced fricatives under (1)), all voiceless consonants of each class last longer than their voiced counterparts. For example, if we compare the average of the total length of voiced stops in both lists, with that of voiceless stops, we discover that the first category lasts for 83.4% of the time required to pronounce any member of the second group.
The percentage increases slightly to reach 90% in the case of voiced and voiceless fricatives. However, there are cases where we discovered that the voiced /ʕ/ lasts longer than the voiceless /ḥ/. In this case, it may be argued that the place of articulation rather than voicing seems to be the decisive feature for contributing a longer duration since /ʕ/ is pronounced more to the back of the vocal cavity than /ḥ/.

The intrinsic duration values of Ir.S.A. consonants could be represented in table (6) below by calculating the mean of the total averages of each class occurred in the two tested positions, namely, initially stressed and finally unstressed. Accordingly, the durational value for each group is shown below:

Class	Average duration in initial stressed positions	Average duration in unstressed final position	Mean in m.sec.
Voiceless fricatives	72.5	62.9	67.7
Voiceless affricates	67	64	65.5
Voiceless stops	68.3	57.2	62.75
Voiced fricatives	64.4	58.8	61.6
Voiced affricates	70	47.5	58.5
Laterals	56	49.5	52.75
Voiced stops	50.8	44.5	47.6
Nasals	55.2	38.5	46.7
Trills	26.5	21	23.75

Table (6)

According to the above table, the effect of Ir.S.A.'s consonants on foot durations could be rearranged in rank order as follows:

voiceless fricatives ; voiceless affricates ; voiceless stops ; voiced fricatives ; voiced affricates ; laterals ; voiced stops ; nasals ; trills.

The order within each group which has more than a segment is as follows:

voiceless fricatives: /x/ ; /ʃ, s, θ, / ; / s̲ / ; /ḥ/ ; /f/ ; /h/. (Accordingly, the first sound is the longest while the last one is the shortest).

voiceless stops: /k/ ; /q/ ; /t/ ; /ṯ/ ; /p/

voiced fricatives: /ɣ/; /ð/; /ð̣/; /z/.

voiced nasals: /m/ ; /n/

voiced stops: /b/ ; /d/ ; /d/.

It is important to mention that approximants were excluded from our study due to the difficulty in measuring their durations from spectrograms since their formant structures tend to mix and disappear with the formants of the surrounding vowels.

5.5. Stress and Segment - Duration

In order to examine the effect of stress on segment - duration, we calculated the total of the average duration for each consonant - group as it occurs firstly in initial stressed positions and secondly in final unstressed syllables. We then calculated the percentage between the mean duration for segments in the two cases. Our results suggest that the percentage of segment - duration when the segment occurs finally in an unstressed syllable, constitutes about 83.4% of its length when occurring in stressed positions. This in fact suggests that stress must be regarded as one of the factors that contribute to the timing of an utterance in this type of speech.

5.5.1. Segment - Duration in Relation to Place of Articulation

As far as the relationship between intrinsic consonant - duration and its place of articulation is concerned, we discovered that in the majority of cases the length of each segment corresponds to a great extent to its place of articulation since we discovered that the further back the tongue makes the contact in the vocal cavity, the duration of the segment increases as Table (7) shows below:

Stops	/b/	/d/	/k/
Duration	49.75	50	69
Vl. fricatives	/f/	/s/	/x/
Duration	60.8	69.2	73.8
Vd. fricatives	/z/	/ɣ/	
Duration	54	71	

Table 7

5.5.2. Vowel - Duration in Connected Speech

The question of to what extent vowel - duration is conditioned by the following consonant segment has been investigated by many writers. A number of the studies we referred to above (see pp.156-160)have stated that voicing characteristics of the consonant is a significant cue to the duration of the vowel that precedes it. Chen (1970, 157) , for instance, concludes his article by maintaining that "Measurements obtained from 376 spectrograms taken from recordings of four languages led us to conclude that it is a language - universal that vowel duration varies as a function of the following consonant."

Gandure et al. (1980, 149) measured the durations of vowels preceding voiced and voiceless stops in utterances produced by 3 oesophageal speakers, together with another 3 normal speakers, aiming at investigating whether the increase in vowel - duration before voiced consonants is a physiologically governed, or a linguistically governed behaviour. Their results agree with House's (1961, 1147) views, who argues that "The lengthening of vowels before voiced consonants in English is a language specific characteristic of the phonological system of the language. The differential influence of the consonant environment is not simply a function of inherent physiological features of the articulatory process, but is a language specific speech characteristic learned by speakers of the language."

As far as Ir.S.A. vowels are concerned, we examined their length variation under various conditions. (See Chapter 1, p.21) In this section, our measurements include studying the length of Irta:hi long vowels as they appeared in the same utterance. In recording (by the present author), care was taken to ensure identical prosodic patterns for each vowel. Spectrograms and measurements were made for each vowel segment. The results are presented in table (8) below :

Long Vowels	Duration in m.secs.
d/i:/ril hadʒ	174
d/e:/ril hadʒ	175
d/a:/ril hadʒ	173
d/o:/ril hadʒ	175
d/u:/ril hadʒ	176

Table (8)

We also measured the three short vowels / i, e, u / as they occured in the same phonetic context trying to find out the durational value for each vowel. The results are shown in table (9) below:

Short Vowels	Duration in m.secs.
l/i/x be:ə̰	100
l/a/x be:ə̰	95
l/u/x be:ə̰	95

Table (9)

It is clear from tables (8) and (9) above that members of long and short vowels have more or less equal durations within each group when tested in similar phonetic contexts. It has to be said at this point that all measurements regarding vowel - length in this section are extracted from recordings and spectrograms made subsequently by the author alone. On the other hand, all measurements made regarding Irtaḥi vowels as presented in the first chapter (see pp. 21-23), are taken from spectrograms made from recordings produced by the author, together with other five informants.

According to the present measurements, it was found that the duration of each long vowel, as it fluctuated, occurred in the above examples (see table (8)), around 175 m. sec., while the duration of a short vowel reached approximately 100 m. sec.
We then decided to measure vowels in slightly different situations firstly by changing the consonant segment which directly follows the measured vowel. According to the spectrograms made, it becomes obvious that voicing affects the duration of the preceding vowel, since the duration of /e:/ in front of /t/ lasted less that /e:/ when it was followed by the voiced stop /d/. Before /t/, the duration of /e:/ remains the same as it appears in table (8) above, i.e.175 m. secs. But when it was measured before /d/, its duration increased to about 200 m. secs. i.e. it increased by 12.5%. In general, it appears that 12.5% is the minimum increase that a long vowel may acquire before a voiced consonant.
In other instances, it was noticed that the increase reaches 22%.

In the last experiment, we measured vowels followed by different consonants in otherwise identical phonetic contexts, as the example below shows.
The consonants are chosen to show what effect they may have on vowel - duration in relation to their place of articulation. Accordingly, we select for our experiment - bilabial,alveolar lateral,palato-alveolar and pharyngeal consonants as in:

/ na:m sa /ʕi:d / " Saʕi:d (sing. mas.) slept."
/ na:l sa /ʕi:d / " " " won something."
/ na:ʧ sa /ʕi:d / " " " made love."
/ na:ḥ sa /ʕi:d / " " " wept."

The duration of / a: / together with the following consonant is indicated in table (10) below :

Utterance	v c	Vowel - duration	Consonant - duration
/na:m/	/a:/ /m/	163	54 m.secs.
/na:l/	/a:/ /l/	172	41 "
/na:ʧ/	/a:/ /ʧ/	175	45 "
/na:ḥ/	/a:/ /ḥ/	156	74 "

Table (10)

According to the above table, /a:/ in 3 cases out of 4 demonstrates quite clearly that its duration tends to increase according to the point of articulation of the following consonant. In other words, the measurements indicate that the further back the tongue makes contact in the vocal cavity, the greater the increase in the duration of the vowel. However, the fourth example shows that the rule does not apply to /a:/ and /ḥ/. In this case, duration of the vowels seems to correspond to that of the consonants, i.e.its length decreases because the consonant's duration is much higher than the remaining three consonants.

In addition to what has been reported so far, the following remarks can be made regarding vowel - duration in Ir.S.A.:

(1) In connected speech, vowels tend to become longer when they occur finally or non - finally in final words. (see Chapter 1, p.21).

(2) Generally speaking, open short and long vowels last longer than close vowels. (see Chapter 1, p. 22).

(3) Although long and short vowels undergo certain modifications in duration in connected speech, both types are always distinguished in terms of duration since long vowels tend to last double the amount of time taken to produce their short counterparts.

(4) Vowel - duration in this dialect depends also upon the type of syllable in which it occurs. For more details, (see Chapter 1, p 21).

(5) Stressed vowels tend to last longer that unstressed ones. However, in 12% of (40) examples examined in order to study the relation between stressing and vowel - length, it was discovered that stressed vowels last less than their unstressed neighbours. This may suggest that in Ir.S.A., duration alone may not be regarded as the only cue for stressing. In such case, tensity and fundamental frequency may be suggested as other alternatives. This however, remains at this point open to further investigation.

5.6. General Conclusions :

According to the results of the experiments reported in this chapter, one may conclude :

(1) The duration of a foot in Ir.S.A. corresponds normally with the number of syllables and the segments included in each.

(2) The foot - duration depends also upon the type of segments and syllables included.

(3) The effect of each segment on foot - duration depends mainly on its articulatory feature. According to our measurements, we discovered for example, that the voiceless fricative /x/ seems to affect foot - duration the most; while the trill /r/ affects it the least. Furthermore, it has also been found that open vowels tend to lengthen the foot more than close vowels.

(4) Phonetic environment is another important feature which contributes to foot - length in the sense that:

(a) If vowels are followed by voiced consonants rather than voiceless, the durational value of the vowel increases.

(b) The number of voiceless segments in a foot can also affect its total duration since our measurements show that voiceless consonants last longer than voiced segments.

(c) Generally speaking, stress may be regarded as another feature that contributes to foot - duration.

(d) Examples from our data provide evidence where speakers of this dialect compensate for short feet (feet consisting of 1-, 2- syllables), by increasing their length to match that of the longer units and thus to produce an overall equal foot - duration.
Further supporting evidence is shown in the case where length of a back consonant is shortened because it is followed by another fairly long syllable, (see p. 176).

CHAPTER SIX

ISOCHRONY IN PRODUCTION AND PERCEPTION.

6.1. Introduction:

It was pointed out earlier (chapter3) that many investigators including Stetson (1903 ; 1905), Wallin (1911), Ruckmich (1913), Swindle (1913), Classe (1939), Fry (1958), Jones (1960), Vanik (1961) and Abercrombie (1965, 1967) maintain that rhythm is basically a motor activity, and the organization of the temporal sequences is carried out in the motor system rather than the auditory.

Accordingly, Stetson, for example, notes that in order to understand this phenomenon, attention must be focused on studying the movements involved in speech rhythm, rather than the temporal relations that may exist. He emphasises his argument by referring to the existence of irregular intervals between consecutive units without destroying their rhythm. This, in fact, has led him to believe that it is not difficult to organise many of the facts of rhythmic perception under the motor theory. In other words, rhythm as such, is regarded as a feature of speech production.

In addition to Bingham (1910, 83) and Knieger (1910, 22), who share Stetson's views about rhythm and its motor component, other researchers such as Swindle (1913, 202) argue that "In the development of rhythm, the motor activity of the skeletal muscles plays the most important part."

In order to examine the extent of applicability of the above views, investigators accounting for rhythm in production and perception concentrated on matters such as the nature of stress, trying to reveal how it can link both the speaker and the listener in communication. The natural question which may be raised in this instance is, how is it we perceive the rhythmic stress when we are listeners? (See Adams and Munro, 1978). Other central questions are: what cues native speakers make to mark the rhythmic pulse, and to what extent does the listener respond to these cues? For a full discussion of these issues, see Fry (1958, 126 -52), Mole and Uhlenbeck (1965, 205), Morton and Jassem (1965), Bolinger (1965) and Studdert - Kennedy (1974, 235).

Meanwhile, to accept the motor - theory of speech - rhythm, does not mean that we should not investigate how this phenomenon is perceived by native speakers of the language. Hence, one may argue that the manner in which speech rhythm is perceived is important. It is so, simply because, if speech rhythm exists, it probably is as important to the listener as it is for the speaker. Thus, it becomes necessary to find out whether listeners are capable of imposing temporal organisation on sequences of stretches of speech.

As far as rhythmic perception is concerned, Woodrow (1909, 66) maintains that "Rhythmic grouping is determined by the duration of the subjective intervals, not by the objectively measurable intervals, but the subject's consciousness of these intervals."

In the various studies that attempt to present a comprehensive study of speech perception, reference has normally been made by different scholars to other relevant aspects. For instance, Heliel (1977, 32) quotes Fogerty, who argues that, "Auditive rhythms in speech, musical sound, song, verse - speaking or reading aloud are not perceived purely by the mechanism of the ear. They have to be 'learnt' kinaesthetically." He adds, "The value of rhythmic training begins with the first models placed before the infant in cradle songs,nursery rhymes or lilts; since our memory of speech sounds is a kinaesthetic memory, the motor patterns presented to the child tend to arouse similar motor patterns in a listener. We feel, rather than we hear ourselves speak."

Similar views to those of Fogerty are also held by Abercrombie, who maintains (1967, 23) that " The sound of speech, on the one hand, and the movements producing the sound, on the other, are in fact closely linked both for the speaker and the hearer ... The speaker ... is simultaneously also a hearer (he must be, for the normal conduct of speech); but the hearer is, in a way, simultaneously also a speaker (at least when listening to his mother tongue) in so far as he'empathetically'enters into the speaker's sound - producing movements." He adds, " Recognition of this'identity of speaker and hearer' 'phonetic empathy', is important in understanding various problems in the perception of speech, particularly in connection with its rhythmic features."

According to Abercrombie (1967, 23) "Everything to do with the mechanism of talking has, with normal people, become quite unconscious through long habit, and indeed it is necessary for the efficient functioning of spoken language that this should be so."

It may be appropriate at this point to refer to Fry's views on perception, which, generally speaking, do not vary from those of Abercrombie. Fry (1970, 31) argues that "When we take in a spoken message, it is necessary for our ears to receive sound - waves originating with the speaker; this is far from being sufficient to ensure our decoding of the message. However ... these sound - waves and the information that the brain is able to extract from them, form no more than a rough guide to the sense of the message, a kind of scaffolding upon which the listener constructs or reconstructs the sentences originating in the speaker's brain. He is able to perform this feat of reconstruction, because of the store of prior knowledge about the language with which his brain is stocked." In short, Fry believes that our perception of speech depends on our knowledge of the language's phonological system which we gain and become accustomed to as a result of a long language - learning process.

Speech perception, which, according to Abercrombie's and Fry's views as stated above, is shown to be acquired by long habituation of speech and by learning processes. In addition, it may be achieved through other means. Thus, Abercrombie (1967, 167), quoting Stephen Jones (1932); notes that, "it is possible to exaggerate the importance of the ear in speech. There is also a visual - kinaesthetic stimulus ... From certain observed facts, it would seem that the listener refers what he hears to how he would say it."

The contribution of the kinaesthetic stimulus in rhythmic perception has long been acknowledged by many investigators in this field. For instance, Wallin (1912, 295) believes that "Practically all the subjects made use of kinaesthetic factors - movements of the body, or head, or finger." Miner (1951,210) remarks that "The advantage of the kinaesthetic thesis, is that it gives a satisfactory mode of approach for other problems ... It plays the most prominent part in rhythmical perception, and its development." Furthermore, Ruckmich (1913, 309) states "By far the greater number of investigators and systematic writers on the subject of rhythm emphasise the primary importance of kinaesthesis and of motor response in rhythmical perception." He also quotes MacDougal, accounting for the temporal element in the rhythmical perception on the basis of organic activity and of kinaesthesis.

6.2. Previous Studies on Isochrony in Production and Perception.

There is no doubt that, so far, the concept of isochrony has never been fully accepted by the majority of researchers in the field. We have already shown earlier (see Chapter 3) how a controversy has always arisen in reference to this topic. As a result, there are still many writers who reject the concept altogether, by denying its existence. This, undoubtedly, has led to a situation where little attention has been devoted to studying the manifestation of isochrony in speech, in general. i.e.either in production or perception. However, reference is made here to two exceptional studies.
Firstly, it appears that Classe (1939), was amongst the earliest writers to discuss the matter. His views are made clear by maintaining that "An English sentence is normally composed of a number of more or less isochronous groups, which include a varying number of syllables ... in other words,isochronocity is "generated by the natural tendencies of the language, which comes into play whenever English is spoken." (1939, 132). He adds, (p. 133) "In speech, long groups, provided other circumstances which are not too unfavourable, will tend to be made subjectively isochronous by the reader or listener, because of his speech habits." In other words, speakers are claimed to speak and receive speech in isochronous units.

Secondly, Lehiste examined in a series of studies the concept of isochrony, in order to establish whether this notion is a feature of production or perception. In two of these studies which appeared in (1973,1128) and (1977, 253 - 63), Lehiste seems to be confident in suggesting that isochrony is primarily a perceptual phenomenon. Her decision is fundamentally based on the outcome of an experiment she designed, where 30 listeners were asked to judge the duration of different metric feet in 17 sentences, each of which consists of 4 rhythmic feet.

She then performed the same task with non - speech material, consisting of sequences of voice bursts and noise - filled intervals, duplicating the rhythm structure of the 17 sentences, see Lehiste (1973, 1228). In the case of spoken utterances her results show that listeners had considerable difficulty in identifying the feet which were actually the longest, or the shortest. With non - speech materials, the corresponding intervals were identified with much greater success. Accordingly, Lehiste concludes by writing (p. 1233), "The fact that listeners performed better in judging the durations of non - speech materials, shows that the same differences in duration, are not equally perceptible when listening in a speech mood, more specially in listening to spoken English. If the listeners cannot focus on the differences in the duration of spoken rhythmic units, it seems reasonable to assume that they hear these rhythmic units as being in some sense of equal duration. It is likely that there is a connection here between production and perception."

6.3. Aims of Study and Material

It was shown earlier, (pp.117-22, Chapter 3, and p. 155 in Chapter 4) that Irta:hi speakers tend to organise their speech by employing what may be called here 'isochronous rhythm. In other words, it is obvious that speakers of this dialect produce the various rhythmic feet, in both short utterances and connected speech, with a clear tendency towards equality in duration between them. Consequently, and as a result of discovering supporting experimental evidence to demonstrate the existence of isochrony (or occasionally a strong tendency towards it), one is encouraged to regard isochrony in Ir.S.A. as a feature of speech production. Therefore, the question which may arise at this moment is : if we accept the results as they appear, would it not be reasonable then, to predict, that a parallel pattern of rhythm must also be perceived by native speakers and listeners, on the basis that they learn and acquire these patterns through what Fry (see p.181) calls, the 'language learning process', and also as a result of other elements, such as speech habits, and the kinaesthetic factors, we referred to earlier.

In order to investigate the extent of truth in this prediction, this section is devoted to a consideration of isochrony in both perception and production, hoping to show it as a feature of both. To examine such matter, we employed the eleven short utterances which were recorded on tape by the author,and were presented to 12 informants (all Ir. native speakers). In this experiment, we mainly aimed at testing whether isochrony may be realised as a perceptual phenomenon. Each informant was asked to mark on a special sheet, the longest and shortest foot in each example, if he felt that there was a variation between the successive feet. The informants were also asked to point out whether all feet, or some of them, appear to be equal in duration. This means that while some of the feet have equal durations, others could possibly be either longer or shorter. Thus, we have the three different durational values: longest, medium, and shortest. Accordingly, we used the symbol — to stand for two values:

(i) To denote equal feet
(ii) Or alternatively, to refer to medium durations.

We also used the symbol 0 to denote the shortest foot,while the symbol √ denotes the longest. The results of our experiment are presented in Table (1) below, which is designed to show each informant's judgment of each foot in each example. Thus, the table shows how many informants perceived each foot as being the longest, medium or shortest. In all tables appearing below, S is used to refer to the shortest foot, while M refers to either medium or equal feet, and finally L refers to the longest foot.

In order to be able to draw conclusions from table (1) which describes our informants' perceptual impressions of feet-duration in our data, we decided to present table (2) below, which shows the actual feet duration of the same data as produced by six informants, and reported elsewhere see chapter 3, pp.93-4. By using the same symbols as employed in this section, table (2) shows the length of each foot as produced by each informant. It shows, for instance, that the first foot in the first example took less time when produced by five informants out of six. This would ultimately mean that the second foot of the same example lasted longer when produced by the same informants. Consequently, it is shown on the table as being the longest. Finally, and with reference to the same example, table (2) shows that one informant out of six produced both feet with equal durations. Thus the figure L appears beside M. In general, table (2) is designed to show the actual feet-duration as produced by the informants, and measured from spectrograms. (These durations are reported in Chapter 3, pp.104-10. In addition, we must point out at this stage, that all tables below are numbered according to the occurrence of each example on p 93. This means that number 1 in each table refers to the first short utterance, while number 11 refers to the final short utterance.

The results obtained from tables (1) and (2) below, are transferred into percentages as shown in table (3). This table is primarily designed to allow us to compare the percentage of the informants, in relation to judgements of feet-duration in one case, and feet-duration in relation to informants' production in the other. Thus, by examining this table we realise that, for example, 83.3% of the six informants produced the first foot in the first example as being the shortest, while actually 25% of our twelve informants judged it as being so. In comparison, 25% of the twelve informants judged the second foot of the same example as being the longest, while 83.3% of our informants produced it as being so. However, 15.7% of our six informants produced both feet with equal durations, whereas 25% and 33.3% out of twelve informants perceived both feet as either equal in duration or had medium durational values.

4.	S:3	– – – –	S:4	– 0 – 0	S:	– – – –
	M:7	0 – – –	M:4	✓ 0 ✓ 0	M:9	– ✓ – –
	L:2	0 0 ✓ ✓	L:4	✓ – ✓ –	L:3	✓ – – ✓
5.	S:1	– – 0 –	S:3	✓ ✓ – –	S:7	0 0 – 0
	M:9	– ✓ – –	M:4	0 – ✓ 0	M:1	✓ 0 ✓ 0
	L:2	– – – ✓	L:5	✓ ✓ 0 –	L:4	✓ 0 ✓ 0
6.	S:4	– – – –	S:4	– 0 – 0	S:-	✓ ✓ ✓ ✓
	M:7	– – ✓ 0	M:7	– 0 – 0	M:4	– ✓ – ✓
	L:1	0 0 – 0	L:1	– – ✓ –	L:8	– ✓ ✓ –
7.	S:3	– 0 – –	S:1	– 0 – –	S:3	– – ✓ 0
	M:5	✓ ✓ 0 0	M:8	– – ✓ –	M:4	✓ 0 ✓ 0
	L:4	✓ – – ✓	L:3	✓ – ✓ –	L:5	✓ – ✓ –
8.	S:7	0 0 – 0	S:-	✓ ✓ ✓ –	S:2	– 0 – 0
	M:5	– 0 0 0	M:3	– ✓ ✓ ✓	M:9	– – – –
	L:-	– – 0 –	L:9	✓ ✓ ✓ –	L:1	– – ✓ –
9.	S:8	0 0 0 –	S:-	✓ ✓ ✓ –	S:1	– 0 – ✓
	M:4	– – 0 0	M:5	– ✓ ✓ –	M:9	– – – –
	L:-	0 0 – 0	L:7	✓ ✓ – –	L:2	– – ✓ –

1.	S:3	✓ 0 ✓ 0	S:5	– 0 – 0
	M:3	✓ 0 ✓ –	M:4	– 0 ✓ 0
	L:6	✓ – ✓ –	L:3	✓ 0 ✓ –
2.	S:4	– 0 – 0	S:2	– 0 – 0
	M:6	– 0 – 0	M:6	✓ – ✓ –
	L:2	✓ – ✓ –	L:4	✓ – ✓ –
3.	S:-	✓ – ✓ ✓	S:11	0 0 0 0
	M:1	✓ ✓ ✓ ✓	M:1	0 0 0 0
	L:11	✓ ✓ ✓ ✓	L:-	0 0 – 0

10.	S:1	0 – – –	S:6	0 0 0 0	S:1	0 – – ✓	S:6	0 0 0 0
	M:3	✓ ✓ ✓ ✓	M:6	0 – 0 –	M:2	✓ ✓ ✓ ✓	M:6	0 – 0 –
	L:8	✓ ✓ ✓ ✓	L:-	– – – –	L:9	✓ ✓ ✓ ✓	L:-	– – – –
11.	S:3	0 0 0 –	S:2	0 – 0 –	S:5	0 0 0 0	S:-	– – – –
	M:4	– – – ✓	M:4	– ✓ – ✓	M:6	0 – – –	M:9	– – – –
	L:5	✓ ✓ ✓ ✓	L:6	✓ ✓ ✓ ✓	L:1	– – – ✓	L:3	– ✓ ✓ ✓

<u>Table (1)</u> The above table is designed to show twelve native listeners' judgement of feet-duration in eleven short utterances.

4.	S : 1	o -	S : 4	o o	S : -	✓ ✓
	M : 5	- -	M : 2	o o	M : -	✓ ✓
	L : -	- -	L : -	- -	L : 6	✓ ✓
5.	S : -	- -	S : -	- -	S : 5	o o
	M : 4	- -	M : 3	- ✓	M : 1	o o
	L : 2	✓ ✓	L : 3	✓ ✓	L : -	o -
6.	S : -	- -	S : 5	o o	S : -	✓ ✓
	M : 5	- -	M : -	o o	M : -	✓ ✓
	L : 1	✓	L : 1	o ✓	L : 6	✓ ✓
7.	S : 1	o -	S : 3	- -	S : 1	o -
	M : 4	- -	M : 3	- o	M : 1	✓ ✓
	L : 1	- ✓	L : -	o o	L : 4	✓ ✓
8.	S :		S :	- -	S : 3	o o
	M :		M : 3	- ✓	M :	o ✓
	L :		L : 3	✓ ✓	L : 3	✓ ✓
9.	S : 3	o o	S : -	- -	S : 1	o -
	M : 1	o -	M : 5	- -	M : 1	✓ ✓
	L : 2	✓ ✓	L : 1	- ✓	L : 4	✓ ✓

1.	S : 5	o o	S : -	✓ -
	M : 1	o o	M : 1	✓ ✓
	L : -	o -	L : 5	✓ ✓
2.	S : 5	✓ o	S : 1	o ✓
	M : -	o o	M : -	✓ ✓
	L : 1	o o	L : 5	✓ ✓
3.	S : 4	✓ -	S : 1	o -
	M : 1	o o	M : 1	✓ ✓
	L : 1	o o	L : 4	✓ ✓

10.	S : -	- -	S : 5		S : 1	o -	S : 1	- ✓
	M : 5	- -	M : 1		M : 5	- -	M : 1	✓ ✓
	L : 1	- ✓	L : -		L : -	- -	L : 5	✓ ✓
11.	S : 1	o -	S : 1	o -	S : 4	o o	S : -	- -
	M : 4	- -	M : 3	- -	M : 1	o o	M : 3	- ✓
	L : 1	- ✓	L : 2	✓ ✓	L : 1	- ✓	L : 3	✓ ✓

Table (2) The above table shows feet-duration in eleven short utterances as spoken by six native speakers. The symbols (as explained on p.184) will allow us to examine the length of feet involved in each example.

		pro. %	per. %		pro. %	per. %		pro. %	per. %
4.	S	16.7	25.0	S	66.7	33.3	S	-	-
	M	83.3	58.3	M	33.3	33.3	M	-	75.0
	L	-	16.7	L	-	33.3	L	100	25.0
5.	S	-	8.3	S	-	25.0	S	83.3	58.3
	M	66.7	75.0	M	50.0	33.3	M	16.7	8.3
	L	33.3	16.7	L	50.0	41.7	L	-	33.3
6.	S	-	33.3	S	83.3	33.3	S	-	-
	M	83.3	58.3	M	-	58.3	M	-	33.3
	L	16.7	8.3	L	16.7	8.3	L	100	66.6
7.	S	16.7	25.0	S	50.0	8.3	S	16.7	25.0
	M	66.7	41.7	M	50.0	66.6	M	16.7	33.3
	L	16.4	33.3	L	-	25.0	L	66.6	41.7
8.	S	-	58.3	S	-	-	S	50.0	16.7
	M	-	41.7	M	50.0	25.0	M	-	75.0
	L	-	-	L	50.0	75.0	L	50.0	8.3
9.	S	50.0	66.7	S	-	-	S	16.7	8.3
	M	16.7	33.3	M	83.3	41.7	M	16.7	75.0
	L	33.3	-	L	16.7	58.3	L	66.6	16.7

		pro. %	per. %		pro. %	per. %
1.	S	83.3	25.0	S	-	41.7
	M	16.7	25.0	M	16.7	33.3
	L	-	50.0	L	83.3	25.0
2.	S	83.3	33.3	S	16.7	16.7
	M	-	50.0	M	-	50.0
	L	16.7	16.7	L	83.3	33.3
3.	S	66.6	-	S	16.7	91.7
	M	16.7	8.3	M	16.7	8.3
	L	16.0	91.7	L	66.6	-

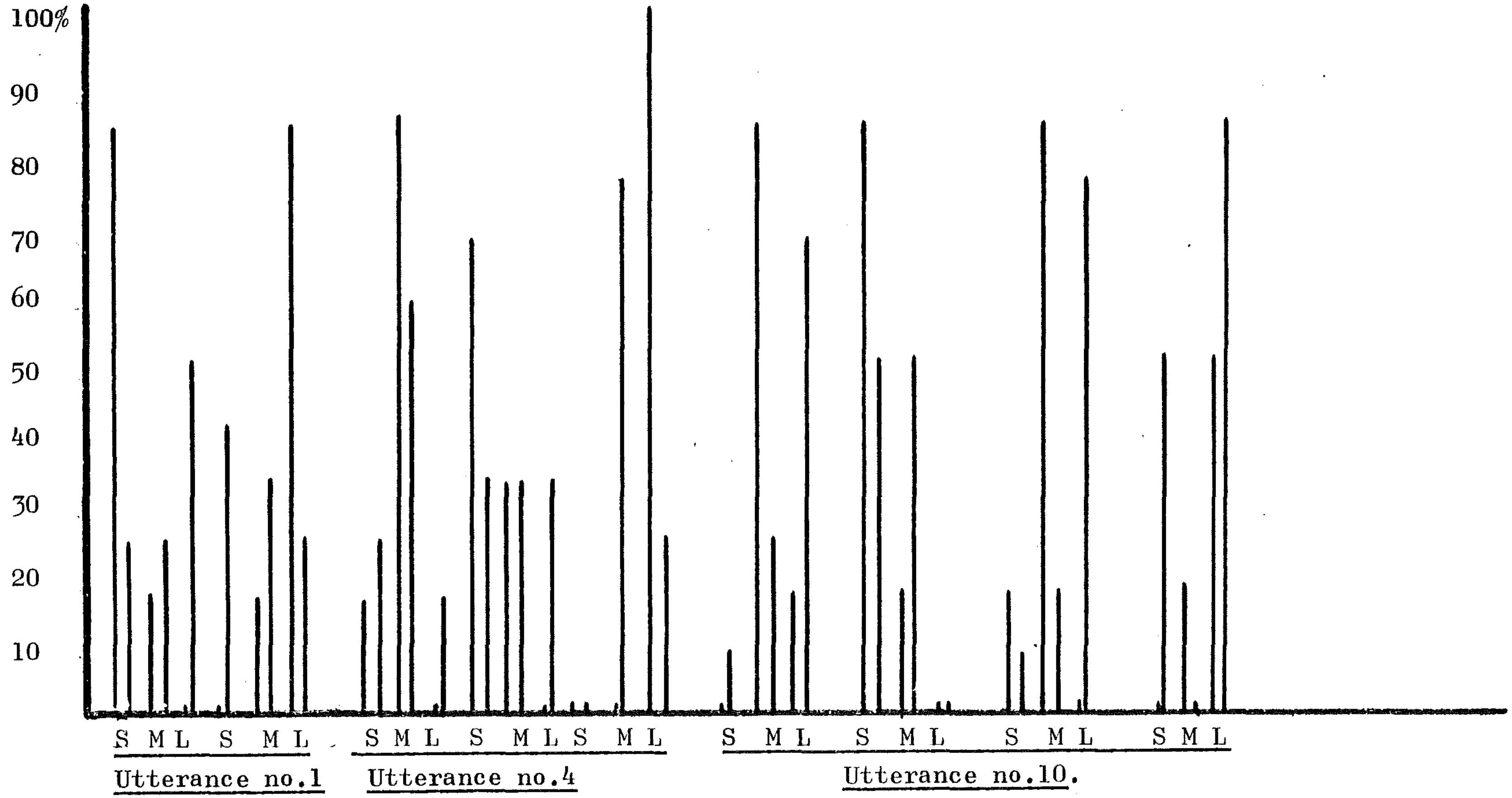
		pro. %	per. %		pro. %	per. %		pro. %	per. %		pro. %	per. %
10.	S	-	8.5	S	83.3	50.0	S	16.7	8.3	S	-	50.0
	M	83.3	25.0	M	16.7	56.0	M	83.3	16.7	M	16.7	50.0
	L	16.7	66.6	L	-	-	L	-	75.0	L	83.3	-
11.	S	16.7	25.0	S	16.7	16.7	S	66.6	41.7	S	-	-
	M	66.6	33.3	M	50.0	33.3	M	16.7	50.0	M	50.0	75.0
	L	16.7	41.7	L	33.3	50.0	L	16.7	8.3	L	50.0	25.0

Table (3) In the above tables, each foot-duration in eleven short utterances is transferred into percentages that correspond to twelve informants' perception and six informants' production. The terms 'perception' and 'production' are abbreviated as 'per.' and 'pro.' respectively.

We feel that it is important to explain at this point that, while investigating isochrony in perception, we were careful at all times to keep our twelve informants from understanding the actual aims of the experiment in order to eliminate the effect of suggestibility on their part. In other words, we made sure that they were in no way influenced by what they thought we expected from them. We intended to rely on their quick impressions without giving them enough time or opportunity to reason out the factors which influenced their perception. In this sense, no one can be absolutely certain that expectancy did not contribute towards their judgements. Other previous studies proved that expectancy plays a major role in speech perception, see for example Miller (1951) and McEntee (1973).

By comparing the results of our experiment regarding isochrony in both perception and production as shown in tables (1), (2) and (3) above, it becomes obvious that only partial similarity exists between our informants' perception of isochrony and the results obtained from actual measurements of our data, i.e. the percentage of the informants' judgements when compared to the actual measurements appear far from being identical. For instance, in the first example, in table (3), 83% of the actual measurements shows that the second foot is the longest, i.e. five informants out of six read it longer than when spectrograms were made. However, when a recording of the example was presented to the twelve informants, three out of the total number, i.e. 25% judged the same foot as being longer in duration that the first. Moreover, if we take example 2, (Table 3), we notice that 16.7% from each group of informants demonstrated that the second foot is the shortest. Nevertheless, results differed when it came to showing which is the longest. Thus, 33.3% of the twelve listeners believed that the first foot was the longest compared to 83.3%, i.e. five informants out of six who actually read it longer according to our measurements as taken from the spectrograms.

In order to illustrate our data by visible means, we decided to select, without any definite order, a part of our results as listed in table (3) above, for the sake of presenting them graphically, as shown in graph (a) below. In this graph, percentages obtained from measurements and judgements of our two groups of informants, with reference to three short utterances (1, 4 and 10) are indicated by means of vertical lines. The lines are arranged so that each two refer, respectively, to measurements of production and perception of each foot in each appropriate example.



Graph (a) The above graph shows native speakers' judgement & production of feet duration in three utterances as transferred into percentages.

Throughout the experiment it became obvious that one of the reasons that contributed towards failing to find strong evidence to meet the requirements of our predictions as outlined earlier (see p.183), may be fundamentally attributed to the fact that our twelve informants were in no way familiar with the linguistic analytical approaches as undertaken in this study. All informants are science-students, and according to their previous school education, they had no idea whatsoever about features such as stress, rhythm etc., in addition, it has to be said that dynamic features are neglected to a great extent in all Arab countries without exception. As a result of this, combined with the fact that our informants were not given an explanation of the aims and issues involved in the study, we realised that our informants were guided by inappropriate stimuli. For example, we learned later that they based their judgements in accordance with the phonetic structure of the data. Accordingly, they were inclined to regard feet which contain long vowels as being longer than the rest. Moreover, in cases where different feet in particular sentences had an equal number of long vowels, informants would then rely on the number of segments in each foot.

Under these circumstances, we were encouraged to explain to our informants at length the aims of the experiment together with other relevant issues which are closely related to our subject. All informants responded with enthusiasm and curiosity. They even went as far as to check with me, the division of the data into its rhythmic feet. The experiment was then repeated under new conditions where informants were under no time restrictions. This meant that they could listen to the recording as long as they wanted before passing a judgement. The new results are presented in table (4) below,which shows the percentage of informants in relation to their judgement of each foot-duration. Percentages of our measurements with reference to the first group of informants is also indicated.

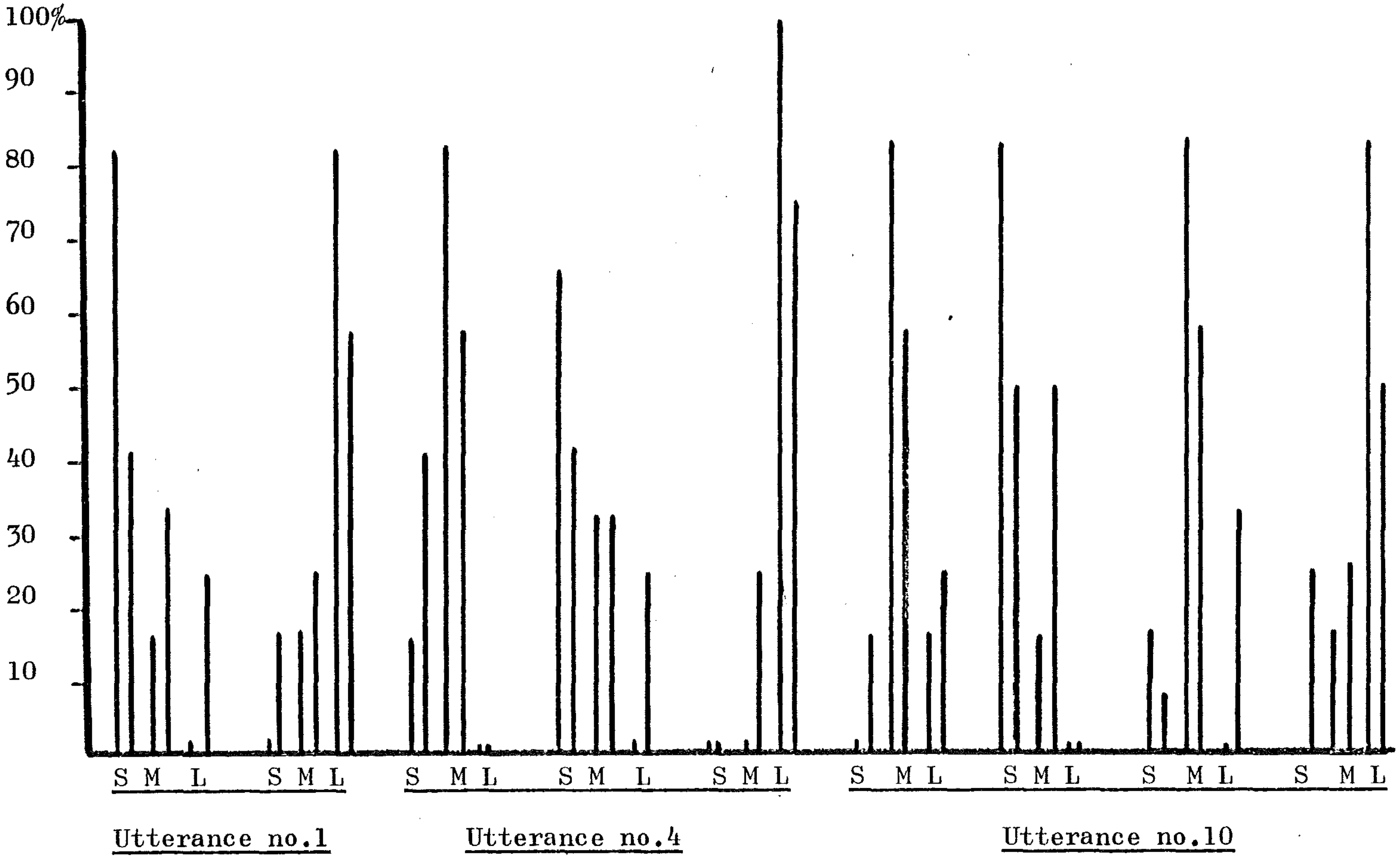
Graph (b) which follows below was extracted from table (4) and designed on the same basis as outlined when we presented graph (a) above,see pp.189-91.A comparison between the two graphs, in addition to information contained in tables (3) and (4) would no doubt assist us in drawing some remarks and conclusions related to isochrony in both production and perception.

		%	%		%	%
	S	83.0	41.6	S	-	16.6
1.	M	16.7	33.3	M	16.7	25.0
	L	-	25.0	L	83.3	58.3
	S	83.3	41.6	S	16.7	16.6
2.	M	-	33.3	M	-	8.3
	L	16.7	25.0	L	83.3	75.0
	S	66.6	33.3	S	16.7	16.6
3.	M	16.7	58.3	M	16.7	41.6
	L	16.7	8.3	L	66.6	41.6

		%	%		%	%		%	%
	S	16.7	41.66	S	66.7	41.6	S	-	-
4.	M	83.3	58.3	M	33.3	33.3	M	-	25.0
	L	-	-	L	-	25.0	L	100	75.0
	S	-	-	S	-	8.3	S	83.3	58.3
5.	M	66.7	75.0	M	50.0	41.6	M	16.7	16.6
	L	33.3	25.0	L	50.0	50.0	L	-	25.0
	S	-	16.6	S	83.3	50.0	S	-	-
6.	M	83.3	75.0	M	-	41.6	M	-	25.0
	L	16.7	8.33	L	16.7	8.3	L	100	75.0
	S	16.7	16.66	S	50.0	16.6	S	16.7	16.6
7.	M	66.7	58.3	M	50.0	66.6	M	16.7	41.6
	L	16.4	25.0	L	-	16.6	L	66.6	41.6
	S	-	50.0	S	-	-	S	50.0	25.0
8.	M	-	50.0	M	50.0	33.3	M	-	50.0
	L	-	-	L	50.0	66.6	L	50.0	25.0
	S	50.0	50.0	S	-	-	S	16.7	16.6
9.	M	16.7	33.3	M	83.3	58.33	M	16.7	50.0
	L	33.3	16.6	L.	16.7	41.6	L	66.6	33.3

		%	%		%	%		%	%		%	%
	S	-	16.6	S	83.3	50.0	S	16.7	8.3	S	-	25.0
10.	M	83.3	58.3	M	16.7	50.0	M	83.3	58.3	M	16.7	25.0
	L	16.7	25.0	L	-	-	L	-	33.3	L	83.3	50.0
	S	16.7	16.6	S	16.7	25.0	S	66.6	58.3	S	-	-
11.	M	66.6	41.6	M	50.0	50.0	M	16.7	33.3	M	50.0	75.0
	L	16.7	41.6	L	33.3	25.0	L	16.7	8.33	L	50.0	25.0

Table (4) The above tables show the percentage of informants (both speakers and listeners) in relation to their judgement and production of foot-duration in eleven short utterances.



Graph (b) The above graph shows native speakers' judgement & production of feet duration in three short utterances as transferred into percentages.

6.4. General conclusions

In referring to the results presented in tables 1-4, and graphs (a) and (b), the following remarks could be made:

(1) A carefull examination of table (4) and graph (b) above, togother with their equivalents, i.e. table (3) and graph (a) reveals evidence suggesting a growing similarity between the listeners' judgements of feet-duration when compared to percentages obtained from spectrograms made earlier. For example, when our twelve informants were asked to judge feet-duration for the second time, 58.3% i.e. eight out of twelve believed that the second foot of the first example to be the longest, compared to 25% i.e. three out of twelve who judged it to be so in the first place. In addition, another three informants judged the first foot of the same example as being the longest in coparison to 50% (six out of twelve), in the first test. Bearing in mind that 83.3% (five out of six) of our speakers produced the second foot as the longest, it becomes clear that there is an increasing rate of harmony between native speakers' perception and production Of feet-duration. Other clearer evidences apply to the majority of our examples (see table 4 above) showing that our informants' perception of feet-duration is becoming closer to the corresponding duration in production.

(2) No claim is made here to suggest identical results between feet-duration as produced and perceived by the native speakers of this dialect. Nevertheless, it may be suggested that our listeners appeared to produce more positive results, perhaps when they had the chance to rely on their speech habits, which resulted from taking amle time (lasting for few days in some cases), to listen repeatedly to the recording. It was obvious that when the speakers related what they heard to their own speech, and the way they would produce the material, they were able to make more precise judgements. I It is also important to emphasise that while wathing our listeners throughout the experiment, we became covinced that kinaesthetic factors must not be ruled out as an important feature for influencing perceptual decisions.

Hence, our findings support Heliel's (1977, 32) statement in which he argues that "Kinaesthesis is taken by many authorities to be the bridge between production and perception." For similar views see, for example, Abercrombie (1967) and (1976).

(3) It was shown earlier (see p.117), that a high degree of isochrony existed between the various feet in the eleven short utterances as produced by six native speakers. Judging by our present results as shown in table (4) - where the same set of utterances are employed for a listening test, it has been noticed that there was a fair degree of similarity between the outcome of the listening test and the results obtained from the actual measurements. Consequently, one may be encouraged to conclude by reporting that in Ir.S.A., isochrony, or the tendency towards it, is an aspect that is featured in both production and perception, thus agreeing with some previous studies, such as that of Classe (1939).

CHAPTER SEVEN.

THE INTONATION SYSTEM IN Ir.S.A

7.1. Aims of Study:

The object of this chapter is to touch on some of the broad aspects of the dialect's intonation system by means of classifying and differentiating the various tones it has.

As in any other variety of spoken language, Ir.S.A. has a limited number of tonal patterns which are as unique to it as its segmental system. The setting up of these patterns involves the identification of well-defined shapes and movements of pitch. In this part of the thesis, we intend to discuss the following topics :

(1) We shall describe the "tonal patterns" of the dialect. By "tonal patterns" we mean the pitch features that characterize an utterance consisting of one tone-unit. The aim is to set up as many contrasting tones as are needed for the analysis. The basic condition on which the division is based is that the selected tones must exhaust the meaningful contrasts observed in the data. By doing so, the classification must take account of the form and function of each tone. Examples of tones operating in Ir.S.A. will be given and illustrated by appropriate examples showing the context in which each tone occurs.

(2) Our second major concern is to discuss some of the basic characteristics of Ir.S.A. tone-units,such as their structural complexity and the position they occupy in relation to each other together with the occurrence frequency of each class.

7.2. The Corpus:

In the process of collecting the data, we have taken care that the material should be selected from spontaneous conversations in a large variety of settings. But of course, we do not claim to have reached the ideal requirement (as becomes clear later in the discussion) in collecting our data, since achieving such a thing seems to be impossible.

(i) Our statements about pitch variations are based, in part, on data obtained from information available from the writer's knowledge of the language as a native speaker who was born and brought up in the village. All through his residenc abroad, he has always lived with members of his immediate family. The writer, however, can speak the language of both educated and non-educated members of the community. On non-formal occasions, the writer always uses the variety of speech under investigation as his means of communication.

(ii) In collecting the data, several methods and approaches were tried. We started by recording a series of utterances selected beforehand and spoken by the writer in which different attitudes are conveyed, and the utterances used in different contexts of situation. The recording was listened to many times before selecting the appropriate parts for the experimental analysis.

(iii) Our data is basically designed to provide us with a large range of attitudes and various pitch patterns. We realise that in addition to the limitation of the corpus, it does not fully represent the speech situations that exist in the normal course of daily conversations. For this reason, the second type of recording was made in which the writer together with other native speakers,including a brother and another relative,participated in recording sessions lasting for long periods. In these, the conversation covers a large number of topics that relate to matters such as social habits, farming, education, etc.

(iv) Bearing in mind the possibility that some valid linguistic regularities could simply escape the linguist's introspection and intuition, the writer decided to involve other native speakers and engage them in lengthy discussions for two reasons :

(a) To observe their intonational behaviou in order to arrive at more reliable conclusions.

(b) To present them with sections from our recorded data in order to study their reactions and attitudes.

7.3. The Theoretical Model:

In choosing a theoretical model for the analysis of the intonation system of Ir.S.A., a decision had to be made as to whether the description could either be given within :

(a) An American frame of reference, in which analyses are carried out in terms of pitch levels organized into phonemes, or

(b) To follow the British approach in which analyses are carried out in terms of functional units within pitch contours.

Bearing in mind the criticism focused on the "pitch level approach" as stated in Bolinger (1951, 199) and Crystal (1969, 197), one is encouraged to adopt a theoretical model within the British tradition. However, approaches to intonation within the British school vary and a decision has to be made as to which theoretician's method should be adopted. Bearing all this in mind, we decided that the data in hand together with the issues dealt with must guide us to the most suitable approach. However, use is made of some of Halliday's model and terminology such as tonality, tonicity and tone. His views on information unit, as shown below are adopted. On the other hand, works of other theoreticians are found to be another useful source of guidance. For instance, tones of Ir.S.A. are classified according to Crystal's classification of English tones into simple, complex and compound.

7.4. Notation:

Pitch marking of the tonal units will be made by graphic means of dots and strokes. Dots are used to indicate the pitch of unstressed syllables whereas the strokes will indicate that of the stressed ones. Two parallel lines are used to represent the upper and lower limits of the voice range used by speakers for normal conversational purposes (voice range is what Abercrombie 1967, 99,calls tessitura). Between these two lines are placed two other equidistant lines impressionistically determined to represent equal pitch intervals, so as to make the levels indicated three in all. The lines may be numbered upwards from one to four. Each line, or level, may then be referred to by its number. The relative positions of dots and strokes on the stave indicate the relative pitch of the syllables corresponding to them, in relation to each other and to the bottom line as well. Strokes, on the other hand, are meant to show the "direction" (i.e. whether rising, falling or level) of the tones indicated. The choice of this graphic representation in which 4 parallel lines containing three spaces in between corresponds to the fact that pitch features of Ir.S.A. fall roughly within what may be considered as 3-pitch regions, namely, high (between lines 3 and 4) and mid (between lines 2 and 3) and low (between lines 1 and 2).

7.5. Tone-Unit Division

The description of the Ir.S.A. intonation system, which is mainly based on the contrasts found in the data, begins with the notion of the tone-unit and the divisibility of speech into units according to specific criteria. The tone-unit is shown to consist of two main elements namely, the pretonic and the tonic. In fact a further step on the descriptive scale shows the tone-unit to consist of four constituent elements at the maximum and one at the minimum. In each case every tone-unit is found to contain an obligatory element referred to as the nucleus. The remaining elements which are optional are referred to as prehead, head (which togother are referred to by the term pretonic) and tail.

One of the most obvious phonetic features that one perceives in listening to Ir.S.A., as indeed to many other dialects and languages, is that a speaker's whole speech is not uttered in continuous flow but in a number of stretches with pauses in between. A close phonetic examination of these stretches and pauses demonstrates clearly that the divisibility of speech into its constituent units is marked in a systematic way. The name tone-unit is thus given to any utterance which is systematically delimited.

A close examination of the data reveals that each tone unit contains a peak of prominence in the form of a pitch glide referred to as the tone. One can, in fact, argue that a tone-unit boundary may be signalled mostly with reference to one or all of the following phonetic cues:

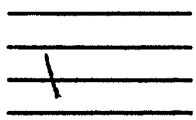
(a) A change in the pitch in terms of height and glide, in other words, the pitch of the starting point of a tone unit is judged to be different from the pitch of the preceding tone-unit.

(b) The presence of a pause (defined as silence, for a similar view(see Crystal, 1969, 17) which may be accompanied by any one or a combination, of other junctural features such as: variation in the length of a segment, devoicing of vowels and voiced consonants.

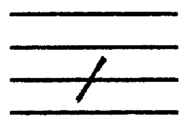
Although the above phonetic features very often coincide at tone-unit boundaries there are, nevertheless, instances in the data where, due to the increase in tempo, no perceptible pause is observed but a change in the pitch height does take place. In such cases, a change of pitch height can be evoked as a cue to the tone-unit boundary. On the other hand, other supplementary criteria may be required to resolve ambiguous cases. Should such cases arise, one could then turn back to semantic criteria to overcome the difficulty. Semantically speaking, a tone-unit is said to equal a unit of information (see Halliday 1970, 162) and from this point of view it may be said that a speaker organizes his speech into information units. Finally, in the course of conversation, the speaker may mark his tone-units with what has come to be known as silence fillers. Examples of this, in the case of English, are such expressions as "you know", "I mean" and so on. Consequently, these silence fillers when used by native speakers may be taken to indicate tone-unit boundaries. In the case of Ir.S.A., it is observed, for instance, that the tone units are quite regularly marked by phrases like/ ʃa:jif / you see, /me:xiə ba:lak / are you paying attention? / ko:ltin aj naʕam / so we say ... etc.

7.6. Internal Structure of Tone-Units

A tone unit in Ir.S.A. must,by definition,contain a peak of prominence, referred to as a tone. This obligatory tone is termed the nucleus. The syllable or syllables which carry the nucleus may be called the nuclear syllable or the tonic. Each tone-unit contains a single nucleus or tone, and such a tone, as will be shown later, may either be simple, complex or compound. The domain of a simple tone usually depends upon the syllabic structure of the word on which it falls; in all cases it may either spread over a single syllable as is the case with the majority of our examples, or it may start on one and continue on the following, while the domain of the complex tone is either one or two. A compound tone, however, must spread at least over two syllables. According to this,one may conclude that while a tone-unit contains a single nucleus, it may have more than one nuclear syllable depending upon the type of tone. In Ir.S.A. the minimum number of syllables in a tone-unit is one as in:

(a) 

?a: 'yes'

(b) 

la? 'no'

It follows that in such cases the available syllable becomes the domain of the obligatory element of the tone-unit, namely, the nucleus. On the other hand, polysyllabic tone units, besides having an obligatory nucleus, may also consist of one or more of the three optional elements, namely, prehead, head, and tail. The components of a tone unit may, therefore, be said to have the following structure:

(prehead) (head) nucleus (tail)

in that order, abbreviated as:

(P) (H) N (T)

The brackets indicate optionality, and the formula as a whole accounts for possible combinations such as PN, HN, NT, PHN, HNT, PHNT. As we pointed out above, all the optional elements in a tone-unit are normally identified in relation to the nucleus. It is advisable to illustrate to which part of any given tone-unit each optional element belongs:

(P) (H) (N) (T)
/?iwhan-na:s ba؟id ha??uhrij-ja:t jaḥmad/
'And the people in the afternoon, my dear Ahmad (a boy's name).

In this example which represents a tone-unit that consists of the maximum number of elements, the prehead is the unstressed syllable at the beginning of the tone-group. The head in the above example precedes the nucleus and stretches from the first stressed syllable /na:s/ up to, but not including, the nuclear syllable /ja:t/. A head consists of an unspecified number of syllables some of which are stressed while the remaining are not. The tail may be defined as the stretch of a tone-unit following the nucleus and consisting of an unlimited number of syllables which may either be stressed or not. Different types of these elements will be referred to later in our main discussion of tones in Ir.S.A.

7.7. How to locate the Nucleus of a Tone-Unit

Currie (1980, 329) carried out a pilot study to test notions according to which tonics would be identified. Her results suggest that several main parameters function as cues for identifying the tonic elements of English utterances including -

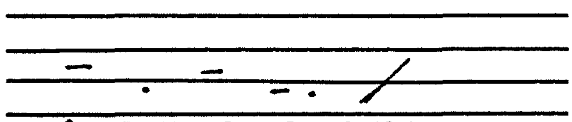
(a) The culmination of physical maxims
(b) The arrangement of the lexical items involved
(c) The movement and height of pitch.

The problem of locating the nucleus of a tone-unit arises in cases when the tone-unit contains a large number of syllables. To overcome this difficulty, a number of criteria, similar to those above, are employed. First of all, we believe that the obligatory element of a tone-unit operates at the point where there is a peak of prominence. This peak of prominence is normally due to the fact that it takes place on stressed syllables, i.e. it never occurs on unstressed syllables. This fact is also emphasised by another phenomenon where stressed syllables are shown to last longer than unstressed ones, thus, contributing to the syllable prominence (pp.174-8). Furthermore, stressed syllables require further prominence as a result of bearing the "tone movement", that is, the pitch moves either upwards or downwards or first in one direction and then in the other. In any case, such syllables are perceptually more prominent than any non-nuclear syllables. We must point out that the degree of prominence referred to is viewed in relative rather than absolute terms. The prominence of any given syllable in an utterance is judged in relation to the other syllables that occur in the unit. This would lead us to say that there is not an absolute norm or a fixed degree of prominence for the nuclear syllable. Generally speaking, the prominence of the nuclear syllable wholly depends upon the degree of prominence of the surrounding syllables.

There can be no doubt that other criteria may be brought in, in the process of tonic-identification. Currie's (1980, 230) reference to lexical arrangements, referred to above, is worth mentioning again. A careful examination of our data reveals that in a large number of tone-units, the tonic falls on lexical rather than grammatical items. This distributional feature may, therefore, be taken into account as a supplementary criterion for locating the "tone".

Finally, as was mentioned earlier, the division of connected speech into tone-units is in effect equal to the distribution of information units. We may add, however, that not all words within an information unit are of equal importance. Let us now consider the following examples:

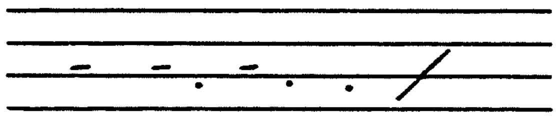
(a)



ʃu: bitku:l ȷabu fatḥi

'what are you saying, Abu-fathi ?'

(b)



ʃu: jabu fatḥi bitku:l

Abu fathi (proper name literally; father of Fathi) what are you <u>saying</u>?

In example (a) above, the speaker puts more emphasis on the personality of the listener, while in (b), the speaker is seriously interested in what Abu-fathi would have to say. Thus, such words may be considered focal points of information. In all these utterances the <u>information focus</u> serves to guide the analyst to mark the tonic in a tone-unit. Following Halliday's views (1970, 163; 1970 2, 40), items which are 'new' or are newly introduced into discourse are likely to be points of information focus while the words which are given, or already mentioned, are usually kept out of focus unless the communication situation requires their reintroduction as centres of information.

<u>7.8. The Instrumental Analyses</u>

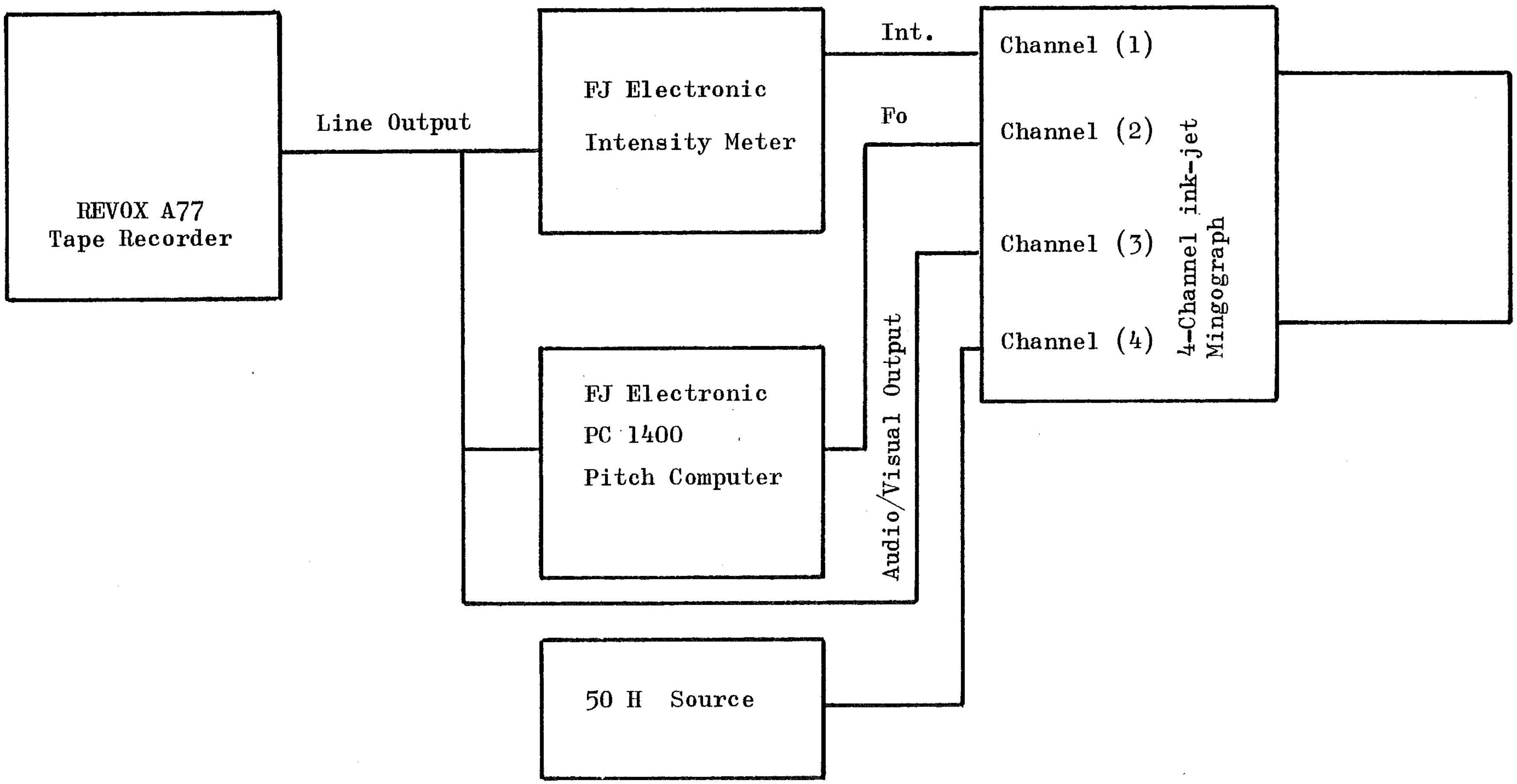
Our data was examined instrumentally by using a combination of instruments that work in co-operation, including the F-J Electronics real-time Pitch Computer, type PC 1400, which allows the analysis of speech signals of unlimited duration. By employing such equipment, we were able to obtain a real-time trace registration of fundamental frequency of the data examined. In addition, we used the F.J. Electronic intensity meter which produces an electrical voltage in order to register in dB the exact physical insensity of the sound wave in our data. This instrument, in combination with the pitch computer, allowed studying the relation between the data's physical intensity and fundamental frequency.

Both equipments were employed in connection with :

(a) the professional REVOX A77 tape recorder which is designed to have various outputs,

(b) 4-channel ink-jet mingograph apparatus for registration.

As illustrated in graph (a) below, the output of the tape-recorder is shown to be connected to the input of both the pitch computer and the intensity meter. In turn, Channel 1 and 2 of the ink-jet mingograph are connected to the output of the intensity meter and the pitch computer respectively. Meanwhile, Channel 3 is shown to be connected to the output of the tape recorder in order to provide us with an audio-visual display of the data examaned. This will no doubt assist us in making a distinction between vowel and consonant segments on one hand, and between voiced and voiceless segments on the other. Finally, Channel 4 of the ink-jet mingograph, as illustrated on graph (a) below, is shown to be connected to 50 Hz sinc wave source which is employed in order to measure the length of the data outcome as presented in the above three channels.


REVOX A77
Tape Recorder
Line Output
FJ Electronic
Intensity Meter
FJ Electronic
PC 1400
Pitch Computer
50 H Source
Int.
Fo
Audio/Visual Output
Channel (1)
Channel (2)
Channel (3)
Channel (4)
4-Channel ink-jet
Mingograph

<u>Figure (a)</u>

7.9. Tones of Ir.S.A.

A simple way of demonstrating the function of pitch in Ir.S.A. is to examine an utterance (the term "utterance" is used to refer to a stretch of spoken language preceded and followed by a pause or interruption of any sort) by saying it in a number of different ways where in each time a different pitch pattern is employed. Thus, if we take an example like /ʃu: ?ismak/ "what is your name?" and repeat it several times including a change in the direction and level of the pitch on /?is/, we discover that the utterance will give us a different meaning every time it is spoken. In other words, a careful and systematic examination of these substitutions will show that pitch has a linguistic function. The above example said with a rising pitch is normally used as a general question, but if it is said with a falling pitch, it is found to have a different meaning. This can be instanced by the situation where two speakers hardly know each other; in such a situation, a change in the direction of the pitch does not alter the lexical meaning of the word, but it delimits the situation in which it is used and expresses the speaker's attitude towards his message or his listener. It is after a systematic observation of such cases that one comes to the conclusion that pitch-direction is used functionally in the dialect under study. Other examples that occurred in our data and quoted below, show that pitch direction as well as its height are used functionally and distinctively in this dialect.

The term "tone" is given to any contrastive pitch movements occurring in Ir.S.A., so that one can talk of a "falling tone", a "rising tone" ... etc.

From the present data, the dialect under analysis is shown to have a finite number of such contrastive tones as shown below. However, further research on a larger corpus may add to the number of tones described here.

It has been found useful to classify the tones of Ir.S.A. into three categories similar to those of Crystal (1969, 211), namely simple, complex and compound. Before we proceed any further, it should be pointed out that in our description of the tones, we have not followed Crystal's model in all its details. Accordingly the basic criteria on which we have depended for our classifications are :

(i) The direction of the tone
(ii) The relative height of the tone.

7.10. The Simple Tones

This category includes three types of unidirectional pitch movement, namely falling, rising and level. Our data shows that the domain of this type can be a single syllable, but in a few examples the tone may spread over adjacent syllables. However, the notation system followed in this thesis, shows clearly whether the spread of the tone covers a single syllable or more.

7.10.1. The Falling Tones

The falling tones which represent about 19% of our recorded text, are always characterized by the fact that each tone ends its fall on a lower pitch level than that at which it commences its fall, with no significant rise in pitch intervening.

Falling tones are classified into a secondary set of tones selected according to the degree of the fall of its tonic. According to this, falling tones occurring in our data may be subdivided into:-

(i) The High fall (HF) 25%
(ii) The Mid fall (MF) 40%
(iii) The Low fall (LF) 35%

The percentage alongside each group indicates its occurrence - frequency in the data. This classification is based on the meangingful distinction each tone has in comparison to the rest. Each tone-group displays tonal, grammatical and contextual characteristics as in the examples below.

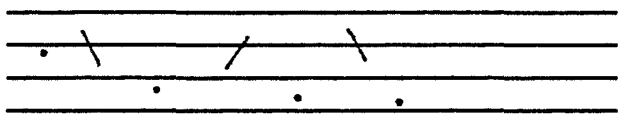
High-Falling Tones (HF)

High-falling tones appear in our data in two forms :

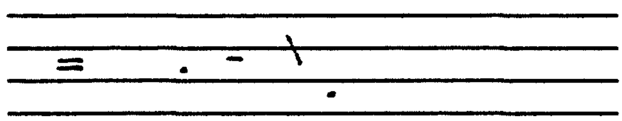
(i) Curtailed or suspended (SF) symbolized by (ˋ)
(ii) High-low (HL) symbolized by (\).

Although both tones share the same point at which the glide is initiated, their termination point varies. It is thus deduced that the spread of the SF does not reach the bottom pitch of the speaking voice. Its level of initiation, which varies from one utterance to another, has been found to be normally above the 300 Fo region, ranging between 300 - 500 Fo. Its termination point, which also varies, reaches a point which does not go below the 100 Fo region. On the other hand, the HL falling tone is opposed and distinguished from the above type by the fact that its termination point reaches the bottom pitch, a feature which is also shared by mid-falling (MF) and low-falling (LF) tones, as will be shown below, (see pp.212-14).

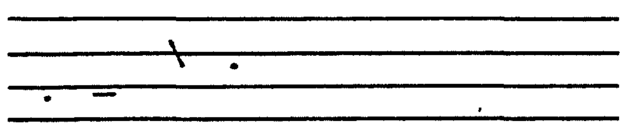
Another distinguishing feature between the two varieties of the high fall is manifested on the horizontal line on which HL tones appear to have longer durations than the SF. The two varieties may be associated with examples 1 - 7 below. Throughout our discussion, explanatory examples are numbered consecutively.

(1)


‖ ʕaleːʃ jaxuːj ‖ miʃʕaːrif
'what for brother? don't you know that?'

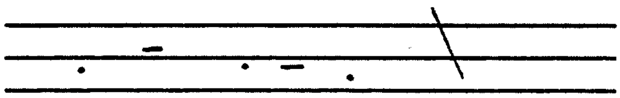
(2)


‖ tʃeːf ‖ maniʃ daːri
'How? I don't know'

(3)


biʃuːf ʔahlu
'He'll visit his family'

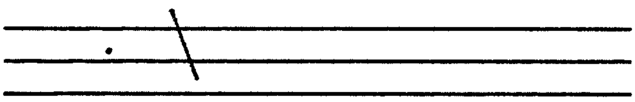
(4)



haʒo:l liwla:diz- ɣa:r

'Those young men'

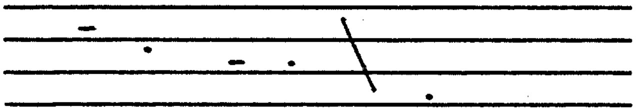
(5)



?itʃ ba:r

'The old ones'

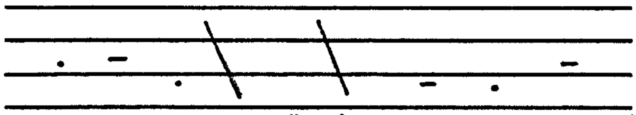
(6)



walla hassa me:kli

'I have just eaten'

(7)



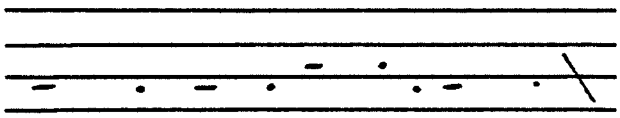
\\bidu:n tikbi:r \\ tʃi:f bidhat tsi:r \\

'Without burying it (referring to the stalk of a tomato plant). How can that be?'

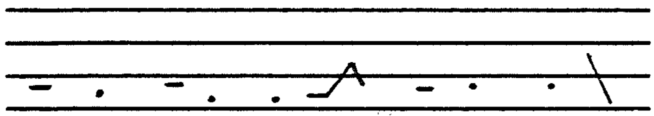
The Mid Fall (MF)

As we stated above, the MF tones comprise 40% of the falling tones in our data and thus giving them the largest proportion. MF tones are common in:

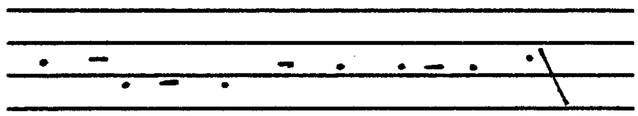
(i) Commands as in (8) and (9) examples below
(ii) Non-particle interrogatives as in (10)
(iii) Particle interrogatives as in (11)
(iv) Declaratives as in (12, 13 and 14)

(8) 

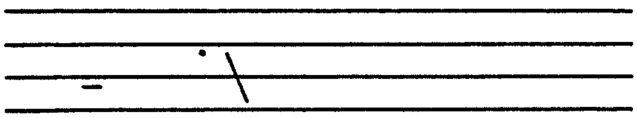
ru:ḥ dawwirlak ʕa bas̱ala:t θa:nja:t
'Go and find yourself another kind of onion

(9) 

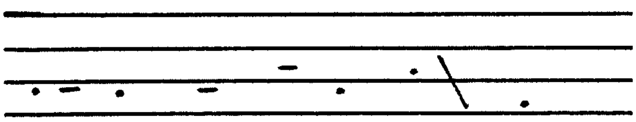
//kultlak kabil matna:m// satʃ ri -ʃiba:tʃ //
'I told you to close the window before going to bed'

(10) 

waʃu:fu s̱a:rim-ʃarrif laʕindi laho:n
'And suddenly I'll find him coming home'

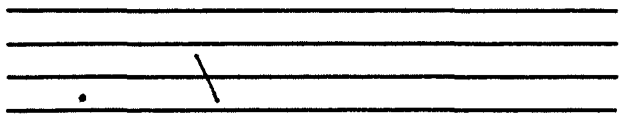
(11) 

ʃu: biddak
'What do you want?'

(12) 

la?innul ?arð̣ da:fji-btitḥammal
'Because the soil will be warm enough for it'

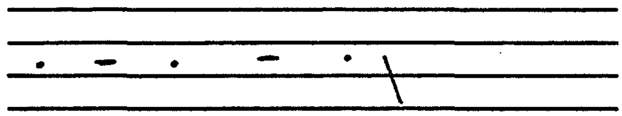
(13)



mnil- xo:f

'Because of fear'

(14)



dʒini:ni ja: batti:x

'Watermelons from dʒini:n (a proper noun)

MF tones which are common in utterances that occur in final positions in connected speech are used in contexts where the speaker is asking questions, as in (10) and (11) above, in order to appeal for comments and advice. They occur in declaratives to state a fact or to comment on another statement by either contradicting or agreeing with its contents. They may also be used in declaratives to point out and highlight a particular idea out of many. Finally, they occur in imperatives as in (8) above to express a command.

Tonal Features

In MF tones the fall starts from a point slightly below the third line and reaches the bottom pitch line. The duration of this tone appears to be longer than the duration of the HS falls. It is also noticed that nuclear syllables bearing this tone are strongly articulated and characterized by being fairly long in duration in comparison to the rest of the tone-unit. Furthermore, the onset of the nucleus is the pattern peak, this is demonstrated by the fact that both stressed and unstressed syllables preceding the nucleus are pitched on a level lower than that at which the fall is initiated. However, unstressed syllables in the prehead and the body are pitched at a level equal to that of the surrounding stressed syllables or slightly lower. However, if the tone unit has the structure PN as in example (13) above, the prehead must then have a very low pitch.

Low Falls

The LF tones which compose 35% of the falling tones in our data seem to occur in a wide range of grammatical structures that may appear in both final and non-final positions in connected speech. These include declaratives, commands, conditionals, negatives and interrogatives. They are associated with contexts in which the speaker may express one of the following attitudes:

(a) To state a fact through warning or protesting in declaratives as in 15,16 & 17 under (1) below

(b) "Considered" comment and advice in command.

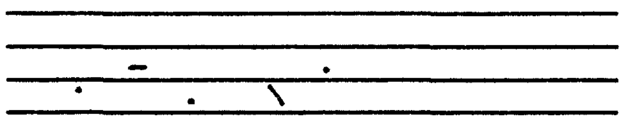
(c) To ask questions seeking yes/no answers in a friendly manner, as in (18) below.

(d) To deny or refute a statement made by another speaker as under (20) below.

The following examples are typical of the above cases:

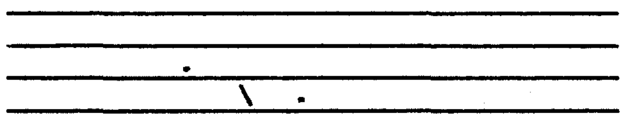
1. Declaratives

(15)



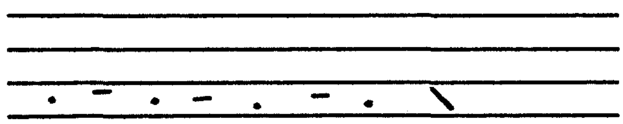
halbalad fa:∂̲jih
'The village is almost empty'

(16)



binimkit
'One gets upset'

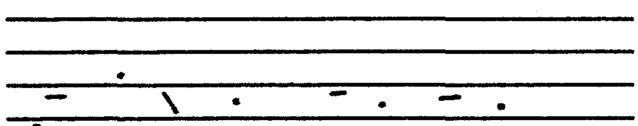
(17)



?iddinja s̲a:rat̲ nus̲s̲il- le:l ...
'It is after midnight'.....

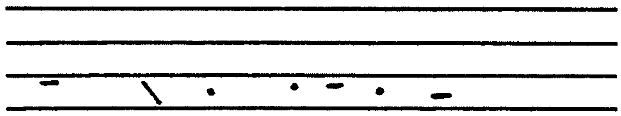
2. Particle-interrogative

(18)



ʃu: barna:mdʒak ja:bu fathi
'What is your plan for the future Abu fathi?'

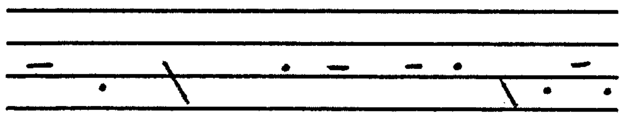
3. Conditionals

(19) 

?a:n ʃa:lla jabubrahi:m

'If God wishes me to, Abu Ibrahi:m'

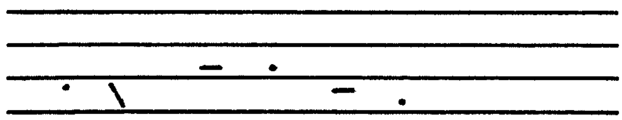
4. Negatives

(20) 

//bassil- lo:z// malu:ʃ ri:ḥa ja:bu fatḥi//

'but almond trees... They have no smell', Abu Fatḥi '

5. Affirmatives

(21) 

bitmu:n ja:bu fatḥi

'As you wish, Abu Fatḥi'

Tonal Features

The fall of the nucleus commences at a point slightly below the second line to reach the bottom pitch line, i.e. the first, where the tone is reduced to whisper. The duration of the tonic syllable is shorter than those of MF and HF. Generally speaking the nucleus duration seems to be tied to

(i) the position of the tone-unit in connected speech, i.e. final tonics are longer in duration than non-final ones, as in examples (15) and (16) under declarative where (15) occupies a final position;

(ii) the structure of the tonic syllable, where nuclei falling on long syllables last longer than those which fall on short ones (compare (16) and (17) under declaratives.

Syllables which occur in the head and prehead of LF tones seem to start on a pitch-level lower than that of the tonic and continue rising to reach a level which is either equal to the tonic onset or slightly higher, whereas tails form another peak of prominence as shown in some of our examples. This results from the fact that syllables occurring in that part are pitched at a level higher than that of the nucleus while the unstressed syllables are low in pitch.

7.10.2. The Rising Tones

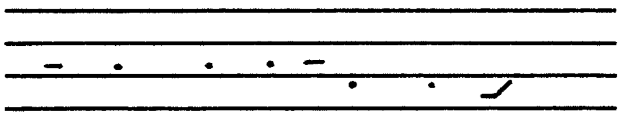
Simple rising tones are characterized by the fact that the glide always ends at a level higher in pitch than that at which it has been initiated; there is never any perceptible fall in pitch. Unlike other tones where the glide is initiated at the tonic syllable, the rise of these tones may or may not take place at the nuclear syllable. This depends largely upon whether the nuclear syllable is followed by other syllables or not. As we pointed out above, tonic syllables in our data may consist of :

(i) a single stressed syllable, or
(ii) a stressed syllable followed by an extension of unstressed ones.

In simple rising tones, the second structure is distinguished by the fact that the rise will be initiated at the tonic syllable and maintained at the following syllables until the end of the utterance. Examples will be provided below.

Generally speaking, simple rising tones which form about 12% of our recorded data may occur in a context where the speaker intends to continue in speech. It may also be used in asking questions. In the former contexts, simple rising tones are distinguished from the latter by having a different phonetic realization where the 'rise' is preceded by a level pitch (e.g.) while in the contexts where a question is asked, the pitch rises from the beginning (e.g. /). Moreover, the nuclear syllable carrying the rising tones of the latter type cannot be lengthened as is the case with the first type. However, if the nucleus is lengthened, the whole tone group may sound either unnatural or may have a different function (i.e. it becomes a question with other connotations). To illustrate the above argument, three examples are provided in which (22) and (23) represent rising tones in non-final positions, while example (24) represents the second type.

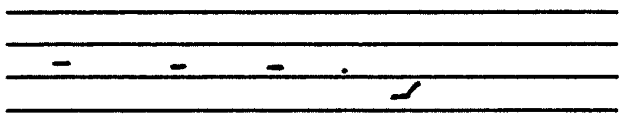
(22)



la:tʃin- ibtit̲t̲allaʕ- lalkib:l

'But when you look towards the south...'

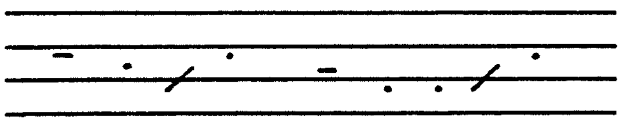
(23)



we:n fi: filmim- li:ḥ

'Wherever there is a good film'

(24)



//ʕindkum miʃmiʃ// ʔintub tizraʕu//

'Do you have plum trees? Do you plant them?'

In Ir.S.A. rising tones can occur in two more contexts in addition to those mentioned above. The tone is used in 1) rhethorical questions, 2) in an echoed question.

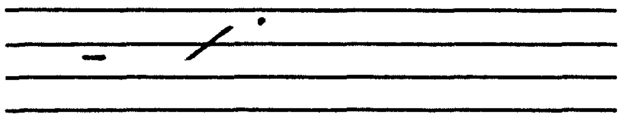
In order to give a comprehensive description of rising tones, a distinction is made between the following three different classes.

I <u>The High Rise (HR)</u>

The main characteristic feature of this tone is the dominance of high pitch on the tonic syllable and on the whole tone group in general. The point at which the rise commences varies from one utterance to another, but on the whole, the point of initiation occurs somewhere above the 2nd and continues to end at a point lower than the 4th line.

HR tones are common in short utterances which often tend to occur finally to mark the end of an utterance in connected speech. This tone is used by Irta:ḥi speakers to ask questions or to show their response to a piece of news they have just heard. A typical example of this tone is :

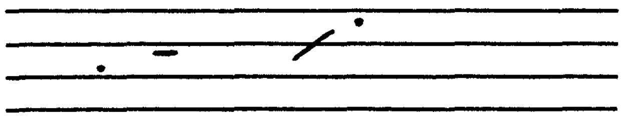
(25)



ʃu: ?ismak

'What is your name?'

(26)



?abu:k wis̠il

'Did your father arrive?'

The generalized contextual feature of HR tones may be pointed out by the possible association of the phrase /walak kulli/ 'you tell me' within the given instances. The underlined part of the phrase may be replaced by an alternative term as the speaker/listener relationship may allow. Possible alternatives are :

a) /ja si:di / 'my master' which reflects a casual relationship between a buyer and a seller.
b) /ja: ?axi/ 'my brother' which reflects a friendly approach (between strangers).
c) /min fad̠lak/ 'if you please' which expresses a polite attitude.

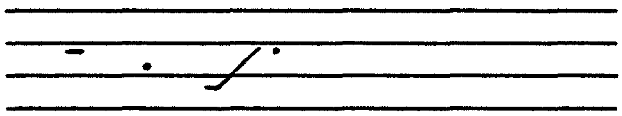
Tonal features

The pitch of the nucleus starts rising from a point above the second line and rises sharply and steadily to reach a point near or at the top line. The tonic syllable in particular, and the whole tone-group in general has a brief duration, comparable to that of HF tones. It is also noticed that in these tones stressed syllables in the head are pitched lower than the tonic syllable, but slightly higher than the pitch of the prehead.

The Mid Rising Tones (MR)

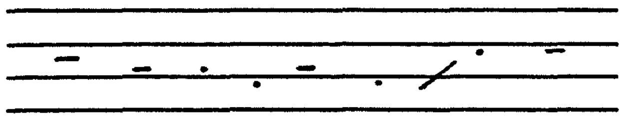
This tone is characterized by the fact that it commences at a pitch level either below or slightly above line two and reaches a point below the third line. In order to study the structure and the contexts in which this pattern occurs, let us consider the following examples:

(27)



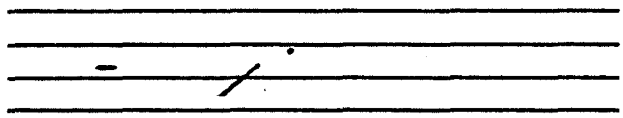
biddak to:kil
'do you want to eat?'

(28)



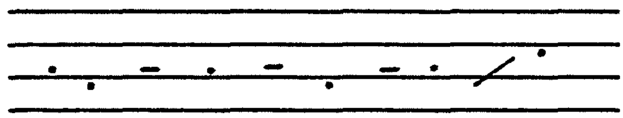
hu: ba:kim-nizla:m limli:ḥa tku:l
'he is not good enough to rely on'

(29)



ru:ḥ rawwiḥ
'Go home'

(30)



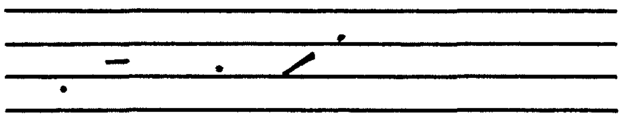
matinsa:ʃ jaxu:j- ilbas̲al lixḏar
'Don't forget my brother the spring onions'

As the above examples show, the MR tones occur finally in yes/no questions as in (27) above, and in statements and commands as in (28) and (29) in that order. MR. tones also occur in non-final positions in statements and listing patterns as in (30). In all these examples, the whole tone-group seems to be distinguished by being pitched on a level similar to that of the tonic.

Many utterances associated with this tone are always responses to preceding ones. As a result, the whole tone group may be either a complete or a partial repetition of the preceding utterance. To set the scene in which these tones occur, we will be referring to a part of a dialogue that takes place between an employer and an employee. It must be understood that /xali:l/ and /sali:m/ are two business partners employing (x) as an assistant in their store. In the absence of /xali:l/, and in an argument about payment and related matters, /sali:m/, to his surprise, has learned that(x)has been paid by his partner, contrary to a private arrangement between the two partners. Thus, the dialogue is initiated by the employee who says :

xali:l dafaʕli '/xali:l/ paid me' /sali:m/reacts with disbelief and amazement by repeating the whole utterance as if talking to himself, in which the utterance intonation will take the following shape

(31)



xali:l dafaʕli

'xali:l paid me'

Partial repetition may also occur in similar contexts with the same intonation.

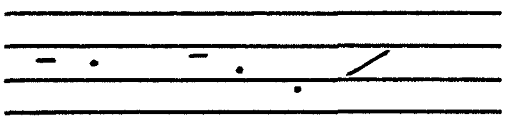
MR tones are also common in contexts where the speaker may face a question which, for one reason or another, does not seem to be clear. In this case, the speaker responds by answering the question in the form of another question until he finally gives the right answer. The following conversation will clarify the situation, in which the writer is asked a question by another native speaker, here only utterances carrying MR tones will be marked.

Speaker A: kade:ʃ baka jidʒi:k fiʃʃahar?

'How much money did you use to get per month?

Speaker B.

(32)



kaṣdak kabil sante:n

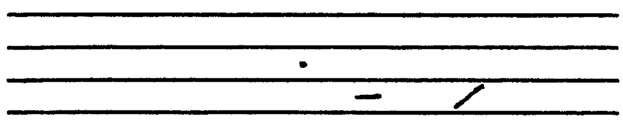
'Do you mean two years ago?'

The Low Rise Tones (LR)

These tones are characterized by the fact that they are initiated at a point above the first line and rise to the second line. For their occurrence, LR tones are known to occur in utterances with various grammatical structures. They occur for instance in:

Yes/no questions as in :

(33)

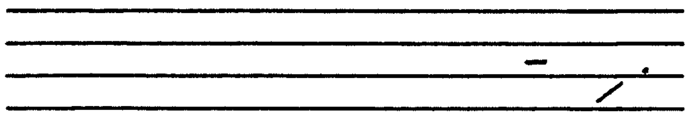


// ʃu: bitku:l // nabi:l na:m //

'What are you saying? Is /nabi:l/ asleep?

Imperatives as in :

(34)

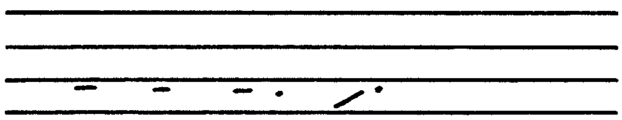


// ?iʕmal ?illi biddak ?ija:h // bas-indzah //

'Do whatever you like, but be sure to pass your exams'

In order to avoid confusion, the tone-units which occur with a different tone from the ones discussed here will be left unmarked. In the above examples, LR tones are found to occur in utterances that occur finally. In addition, LR tones are common in commands and in conditional sentences, the main clauses of which are left unexpressed as in :

(35)



law bas ?ana ʃu:fu

'If only I can see him'

In these structures, LR tones are used to indicate that the speaker intends to continue speaking.

Tonal Features

In the majority of the examples we quoted above, LR tones are marked by a certain degree of intensity which clearly reflects the speaker's mood. Tonic syllables of this pattern are found to last for longer durations than those of the MR patterns. It is also found that the pitch of the head of this tone is higher than the onset of the nucleus whether it comes early in the example or immediately before it.

7.10.3. The Level Tones

These tones are distinguished from other tone groups by the fact that the pitch of the nucleus does not perceptibly change. Simple "Level" tones of Ir.S.A. which compose 13.2% of our recorded data, occur in two different tone-units:

(i) Finally, to indicate that the speaker has completed his message.

(ii) Non-finally, when the speaker intends to continue.

Gramatically, final level tones may occur in:

(1) General questions as in:

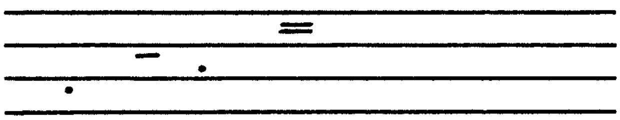
(36)

mumtʃin walla:hi- iddilni ʕada:ra-bulʕabid
'Is it possible, if you don't mind, to direct me to Abul-ʕabid's house?'

It is important to mention that LT are represented by double strokes to distinguish them from other stressed syllables.

(2) Imperatives as in :

(37)

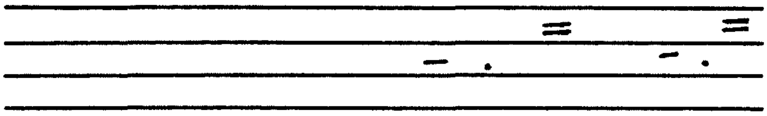


daʃʃirniw- ru:ḥ
'Leave me alone'

(3) They also occur with less frequency in statements and affirmatives. Non-final level tones on the other hand are found to be common in the following grammatical structures :

(a) In the recitation of short stories, speakers of the present dialect are observed to restrict the use of level tones in association with structurally similar members of the same grammatical unit as in :

(38)



//wallah ja:buʃ- ʃaba:b // ha:tu - xuə // ha:tu - xuə //

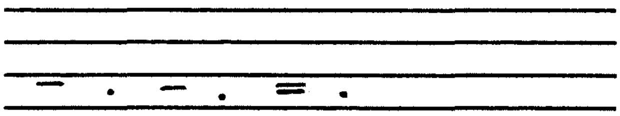
'I swear by God, after a great deal of give and take, give and take'

In the above example, level tones occur twice on a repeated verbal phrase which are separated by the particle /ʔu/ 'and'.

(b) In certain utterances of certain grammatical structures, e.g. those constructed round such pairs as /jimtʃin ... ʔujimtʃin/ 'may be ... or may be', and /ja: ... ja:/ 'either ... or, / la:.... wala/ 'neither .... nor'

(c) In the first part of a conditional sentence as in :

(38a)

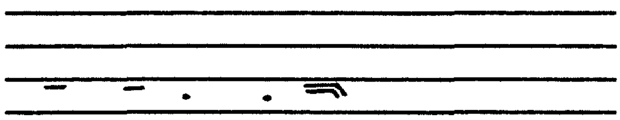


lawwid dinja matrat

'If it rained' ...

It should be noted that simple 'level' tones occurring in our recorded data have different phonetic realizations depending on whether each tone-unit occurs in a final or a non-final position. In the first instance the tone falls slightly towards the end, while in the second there is a slight rise i.e. (⌐) and (⌣) as in examples (39 & 40) respectively:

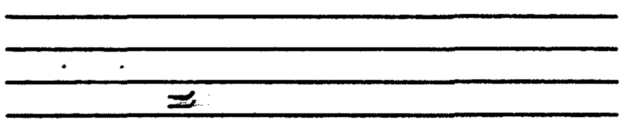
(39)



ʃu: biddak ʔaku:l

'What do you want me to say? implying; I have nothing to say.

(40)



hiərijja: ...

'They were aware' ...

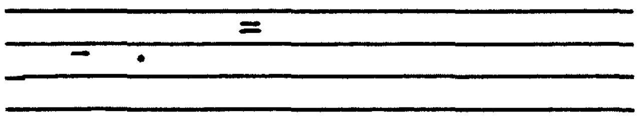
Phonologically speaking, no other tone has been observed to replace a level tone in a final tone unit with the same connotations such as impatience, annoyance, as in example under (39) in p.223, whereas a rising as well as a level tone have occurred in non-final tone-units to indicate continuity (see rising tones above). However, a careful examination of the non-final level tones reveals that in many cases the tone occurs on grammatical words, such as conjunctions and demonstratives. Therefore, it may be said that although a level as well as a rising tone can be used in Ir.S.A. to indicate continuity, nevertheless, it may be possible to refer to grammatical considerations to differentiate between the above tones in a context where both indicate continuity.

According to the pitch height of the nucleus, level tones in Ir.S.A. may be classified as :

(i) High Level tones (HL)

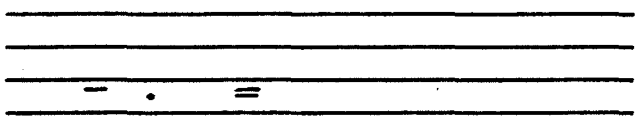
(ii) Low Level tones (LL)

Although both tones may occur in similar grammatical structures and share the same conditions of distribution, they differ in their attitudinal functions as well as in tonal features. (This can be illustrated by means of an example), where the utterance : /kultlu ru:ḥ/ may be associated with HL or LL as in examples 41 and 42 respectively.

(41) 

kultlu ru:ḥ

'I asked him to go away,' implying 'before he regrets staying'.

(42) 

kultlu ru:ḥ

'I simply asked him to go away', implying 'misunderstanding finished at that point'.

In example (41) above, the utterance is characterized by the fact that it may be extended by the phrase /kabil ma: tindam/ 'before you regret it'. It is said in a context to reflect the speaker's anger and great excitement, as distinct from which may be extended by the statement /wintahal mawḍu:ʕ/ "and the misunderstanding stopped at that point". It occurs in a context where the speaker appears to be relieved and satisfied with what actually had taken place.

Tonal Features

As far as the tonal features are concerned, HL tones are noticed to commence and end at a point between the third and fourth line, whereas LL tonics are pitched at a level between the first and second lines. Moreoever, the two tone-groups differ in regard to their tonic duration where HL tonic appear to be much longer than those of LL. Finally it is also noticed that while the whole tone-unit in the HL tone appears to be pitched at a high level, both stressed and unstressed syllables that precede the nucleus are pitched at a lower level than the tonic or nuclear syllable. In comparison, the overall pitch configuration of a LL vary from that of HL on the basis that different syllables occurring in the head are normally pitched at a level higher than that of the nucleus, while prehead and unstressed syllables in the head are either pitched at a level similar to that of the nucleus, or at a slightly lower level.

7.11.The Complex Tones

This category includes (i) falling-rising (ii) rising - falling, (iii) falling-rising- falling, (iv) and finally rising - falling - rising.

While identifying the above complex tones, a certain degree of confusion may arise resulting in the similarity between these tones' pitch direction in comparison to their compound counterparts (for a description of compound tones, see p.254). Hence, it becomes necessary to provide a number of criteria in order to make a distinction between two sets of tones.

First of all, from the phonetic point of view, a complex tone usually displays a single peak of prominence in contrast with the double prominence of a compound tone, for views on this, see Crystal (1969, 220). This phonetic criterion, together with the characteristics of compound tones illustrated below (p.254-6) seems to suffice in dealing with straightforward cases. However, in dealing with certain cases, reference should be made to both grammatical and semantic criteria. From a grammatical standpoint, we consider the exponent of a complex tone to be a single word, whereas that of a compound tone is two. Moreover, the exponents of a complex and a compound tone correspond semantically to one and two 'points of information' respectively. A concise description of Ir.S.A. complex tones is presented below.

7.11.1. The Falling-rising Tones

The complex 'falling - rising' tones compose 7.6% of our recorded data. Tone-groups carrying this pattern may be classified into the following tones :

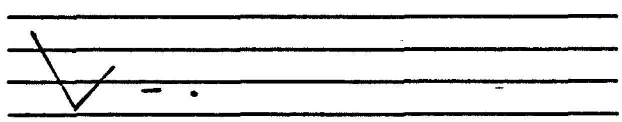
(i) The high falling - rising tones (HFR)
(ii) The mid falling - rising tones (MFR)
(iii) The low falling - rising tones (LFR)

Prior to a description of the main characteristic features of each group, the section below is intended to provide us with a short summary of the general structural characteristics of the FR tone.

The Structure of the falling - rising tone.

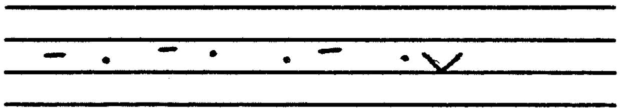
The RF pattern is distinguished by the fact that within its tonic there occurs a fall of pitch followed by a rise. The range of the falling - rising movement of its pitch depends upon the position of its tonic syllable in the tone-group as a whole. Thus, the following two possibilities are found to occur:

(a) The whole tone falls on the tonic if it consists of single syllable, or if it is not followed by any syllables, as in :

(43) 

//ɣla:l kullu // da:jman bandurah//
'Ample crops'.... Always tomatoes'.

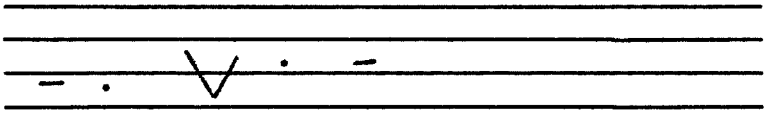
(44)



ʔalla jirḥam- ijja:m zama:n
'Bless the good old days'

(b) In the second case, if the tonic consists of a stressed syllable followed by unstressed ones, then the falling is initiated on the tonic and falls to reverse its direction by rising. The rise continues on the following syllables as in :

(45)



//jiḥrik di:nu- tʃabri:t//lammaj- xuʃ filʕine:n
'Oh dear! when the insecticide is sprayed on the tomato plant, the eyes become inflamed'

However, the occurrance of the second type is noticed to be less frequent in our data.

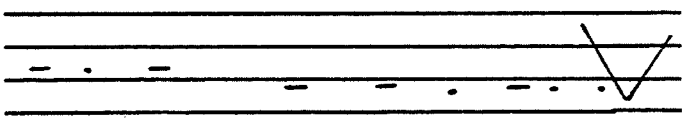
As outlined above, the FR tones may be divided into the following types.

<u>The High Falling - Rising Tone (HFR)</u>

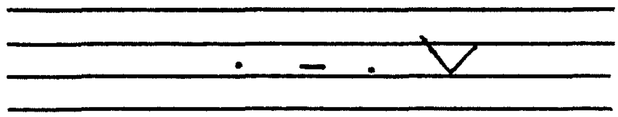
The HFR tone is found to form 33.7% of the FR tones of our recorded data. Tones of this pattern occur in both final and non-final positions. In both cases, the fall is initiated at some point above the third line and in some cases reaches the bottom of the tessitura before it rises to a point lower than that at which it was initiated. The examples below illustrate this :

(a) In final positions :

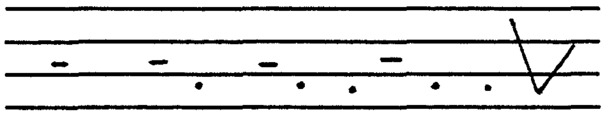
(46)



biddak-ijja:hj- s̲i:r mhandiz willa dakto:r
'Do you want him to become an engineer or a doctor?'

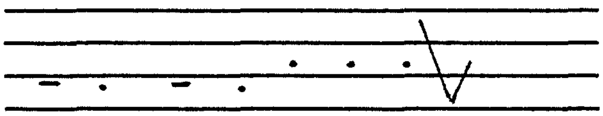
(47) 

// ?ilmiʃmiʃ // ?ibbalʕaw- bas //
'The best apricots are grown in Balʕa'
(emphatic statement).

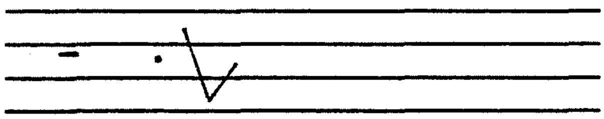
(48) 

wkul sanib- tizraʕu kamih wiʃ-ʕi:r
'And do you plant wheat and barley every year'

(b) In non-final positions, as in :

(49) 

// ha:jiʃ- ʃaɣlib tikdaru:l ha:ʃ // ?ana ..
'I am sure you are now up to this type of work'..

(50) 

min saxla:t ...
'Including goats'.....

From the above examples, it is clear that HFR tones occur in statements to express the speaker's full confidence in his message. This is supported by the fact that TU.s (of this type) may be preceded by the phrase / ?ana mit?atʃid/ 'I am sure'... They may also occur in yes/no and general questions. Yes/no questions are normally used in contexts where the speaker seeks to confirm a statement that a previous speaker has expressed, as in example (48) above. In fact, the speaker's attitude may be summed up in the phrase : /hu: s̲aḥi:ḥ / 'is it true?'. On the other hand, HFR, when used in a general question as in example (46) above, can be taken as a strong hint to the speaker's sheer ignorance of the answer to his question.

Tonal Features

As we mentioned above, the beginning of the fall of this tone, which varies from one example to another, is initiated at a point above the third line. In the majority of our examples, the fall is noticed to reach the bottom line, or a point between line 1 and 2. The rise begins where the fall ends and reaches a point lower than the starting point of the fall, and below the top line. The duration of the tone depends on :

(a) Whether the tonic-syllable is final or not. Our examples above show that final HFR tones are longer in duration than the other type.

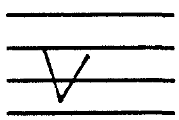
(b) The type of the nuclear-syllable, cv:c for instance, seems to be longer than other types.

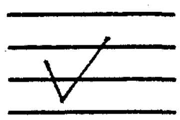
(c) The pitch-level of the rise-termination, i.e. the higher the point, the longer the duration is.

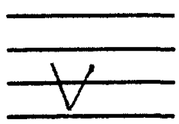
Finally, the pitch-level of the head in all above HFR tones, appears to be lower than the start of the fall.

The Mid Falling - Rising Tones (MFR)

MFR tones comprise 45.9% of recorded texts, which compose 54.9% of our falling - rising tones in our recorded connected texts; they are differentiated from the HFR tones as described above by the fact that, while the falling in the latter commences from a point roughly above line 3 and reaches the first line before rising to a point lower than the starting point, MFR are known to commence their falling somewhere between the second and third lines. In short, their general characteristics can be summed up in the following graphic shapes :

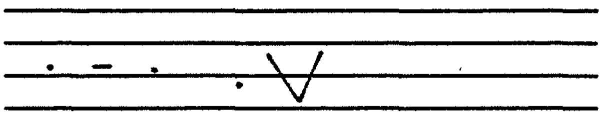
(i) 

(ii) 

(iii) 

The above shapes, based on examples selected from our data, show three different values of the relationship between the starting point of the fall and the final point of the rise. In the first variety, the end-point of the tonic occurs at a lower pitch than the start: whereas in the second, the tonic terminates at a higher level; as different from the third, where both the fall and the rise occur at equal levels. Although the general configuration of the MFR tone is always similar to one of the shapes sketched above, the actual ranges of the tonic, however, vary slightly from one tone-group to another as demonstrated by considering the following examples:

51 (a)

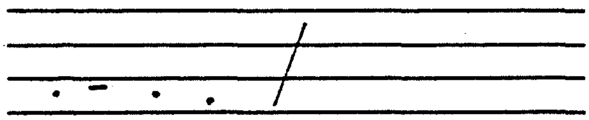


ʔabiʕrif-ʃil ḥal

'He doesn't know the answer [why do you blame him?'].

As different from:

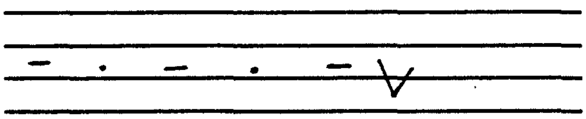
51 (b)



ʔabiʕrif-ʃil ḥal

'He doesn't know the answer! you must be kidding. He is fooling us.'

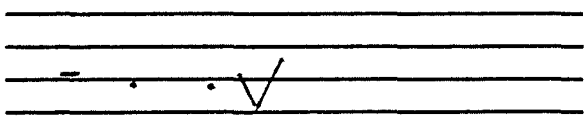
(52)



haða wla:ddil-jo:m ɣe:r

'The present generation is different (Alas!)

(53)



ṯajjib mumta:z

'That is excellent'

With regard to the above examples, the associative contextual features can be explained by comparing example 51(a) with example 51(b)which is accompanied by a high-rising tone. Although both tones occur in a negative structure, example 51(a) is distinguished from example 51(b) and other patterns by the fact that it can be extended by a question thus becoming :

/ʔabiʕrif-ʃil-ḥal le:ʃ bitlu:mu/

'He is hopeless! He doesn't know the answer, why do you blame him?'. Meanwhile, example 51(b) can be extended by an "affirmative" utterance. Hence, the utterance becomes :

/ʔabi rif-ʃil-ḥal ha:ðа biððhatʃ ʕale:na/

'He doesn't know the answer! You must be joking, he certainly does. Furthermore, one may say that the speaker uses the HR in that instance to express an attitude of "objection" to something, accompanied with some sort of aggression, while the MFR tone is used in a context to express regret that is emotionally subdued, which also applies to examples (52) and (53).

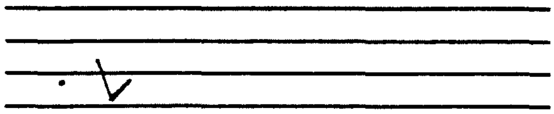
Tonal Features

MFR tones are obviously shorter in duration than the HFR ones. However, as is the case with the latter pattern, the duration of the MFR tones depends mainly upon the level at which the fall starts and the level at which the rise ends, i.e. higher rise would lead to an increase in duration, (see example 51 (b) above. It also depends upon the structure of the tonic syllable. The above examples indicate that the syllabic cvc takes less duration than cv:c. Finally, the whole tone-unit seems to be pitched at a level similar to that of the tonic. In the examples above, all syllables of the 'head' and 'prehead' are pitched only slightly lower than the tonic.

The Low Falling-Rising Tones (LFR)

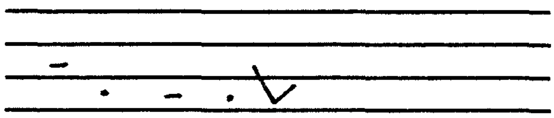
LFR tones compose 20.4% of the FRT in our recorded connected text, which suggests that their occurrence is less frequent than the other two types of falling-rising tones. This pattern occurs in short utterances in connected speech to indicate that the speaker is going to continue. It is also known to occur less in final positions. The following examples will illustrate the main characteristics of the LFR tone.

(54)



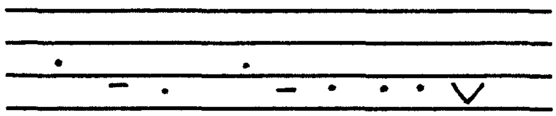
?adʒi:b
'strange'

(55)



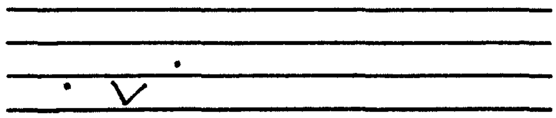
?amma-ana-bakullak
'But I tell you'

(56)



bitfattiḥ ʕine:kis̱-s̱ubḥija:t
'When you open your eyes in the morning ...'

(57)



bintʃabrit
'We spray the plants with'

Examples (54 - 57) above demonstrate that LFR may occur with different grammatical structures including:

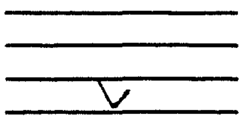
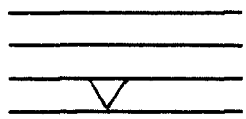
(a) Affirmatives as in (56)
(b) Exclamations as in (54)
(c) Declaratives as in (57)

Although the majority of LFR tones occur non-finally, some do occur in final positions in connected speech. In addition example (56) above, together with many similar LFR tone-units are distinguished by the fact that they may be extended by the question /mɛ:xiə ba:lak ? / are you paying attention? or /samiʕni ? / do you hear me?. In this sort of situation, the speaker tends to use these tones in order to engage the listener by arousing his curiosity. On the other hand, other examples such as (55) above, may be associated with other contextual features when it becomes clear that the speaker is aware of the existence of other views on the topic in addition to his own. The situation can thus be illuminated by pointing out the speaker's intention about his next move in the conversation, which in this case may be interpreted by the possible addition of the sentence "even though you may have different views, mine are ..." with the utterance.

Finally, LFR tones may be used in situations to express the speaker's surprise at what he has just seen or heard.

Tonal Features

The pitch-level of the nucleus as seen in the examples above, show both the fall and rise of the tonic to take place in an area which falls between the first and second lines. The following graphic shapes are presented to sum up the tone's possible occurrences:

(a)  (b) 

These tones are shown to exhibit a fairly long duration comparable to that of LR or LF for instance. In addition, syllables preceding the nucleus are noticed to be low-pitched when compared to the level pitch of the nucleus.

7.11.2 The Rising-Falling Tones

RF tones are distinguished by the fact that within each tonic there occurs a rise of pitch followed by a fall. The distribution of the rise and fall depends basically upon the structure of the tonic, i.e. it takes place on the same syllable when we have a monosyllabic nucleus; otherwise it extends over more than a syllable when the nuclear syllable is followed by what we may call an extension. The appearance of the second type is very rare in our data; the great majority of the RF tonics are monosyllabic.

An examination of the recorded material reveals that 20% of our tone-units occur with an RF tone which suggests that the frequency of occurrence of this pattern is fairly high in comparison to other tone-patterns.

It may be said that the rising-falling tones can be used in most utterances for which the falling tone would be considered fundamentally suitable. It may likewise be added that, in each case, the substitution would add considerably more forcefulness to the utterance. Selected parts of our recorded text where RF occurs are given below in order to illustrate the contextual features of this pattern. In this point, the dialogue takes place between the writer and a cousin, who was born and brought up in the same village, but left with his family in recent years to take up residence in a nearby village. In their conversation, the participants discuss different social matters. The conversation which led them to talk about the family life in late afternoons in the spring goes like this:

> <u>fahna fi harrabi:</u> tilka:na ḥate:na hal?akil bika:ʕ hadda:ru
> balaʃna no:kil ... ha:jjil ?akla:t- ?iʃaʕbijji firrabi:ʕ
> wallah, ma: fi: ?aṯ jab minha willa halbandu:ra ?ilxaḏralim
> ʃahilbi <u>?abaja:x jaxu:j</u> ʕajja:m-il- o:r
>
> '<u>Talking about ourselves in the Spring</u>, you'll find us arranging our dinner in the house-garden - and start eating ... and don't forget the spring local dishes - my God, there is nothing nicer, served with tomatoes at the start of the season /literally, the shiny greenish tomatoes/. Oh! dear friend, cheerful were the good old days of El-ɣo:r" /place name/.

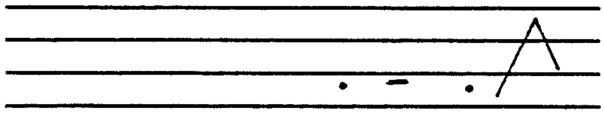
It would be uneconomical to carry on quoting passages from our data in which RF tones occur. Instead, we prefer to start by classifying these tones into their sub-classes and delay the contextual description in order to point it out for each class when the time comes. First, RF tones appear in our recorded data under the following sub-classes:

(a) <u>The High Rising-Falling Tones (HRF)</u>

The HRF tones compose 19.1% of the total number of the RF tones in our data. These tones are characterized by the fact that the rise of the pitch reaches a point between lines 3 and 4 before it falls again to a point slightly lower than that of the starting point.

However, there occur in our data, some very few examples where the final point of the fall takes place at a point slightly higher than the level at which the rise is initiated. Normally, the pitch level at which the rise is initiated occurs, as is the case in the vast majority of the examples, at a point slightly lower than line 2 (i.e. the 150 - 200 Fo region). In the remaining HRF tones the rising is observed to begin at a point slightly above the base line. The following examples are given to illustrate the above descriptions:

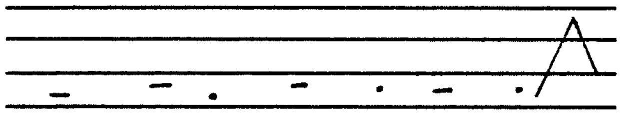
(58)



//?abaja:x jaxu:j//ʕajja:m-ilɣo:r//

Oh! dear friend, cheerful were the good old days of El-ɣo:r [a place name].

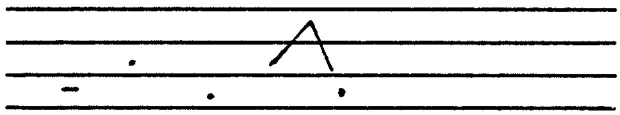
(59)



fi: ?atʃθar min ʕiʃri:n dakto:r

'We have more than 20 doctors'

(60)



ʕmilit baladkum ...

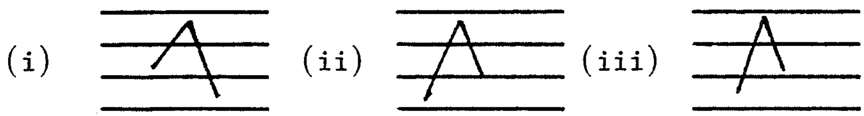
'You are trying to create an image for your village'

Examples (58 - 60) demonstrate the fact that HRF tone can occur in utterances both finally (as in 59) and non-finally as in (60). They also indicate that this pattern is used in statements. We may add that other examples from the data show HRF to occur in almost all types of sentences for which HF or MF would be regarded as suitable. This pattern is also shown to be common in exclamations, interrogatives and commands.

As far as the function of the HRF tone is concerned, it should be pointed out that this tone occurs generally in a context where the speaker intends to convey either a sense of emphasis or contrast or a combination of both. For this reason, examples (58) and (59) above may be extended by a commentary in the form of a command, as in /matðatʃ tʃ irni:ʃ / "do not remind me' or /willa ʃu: ba: lak / 'of course, what do you think? [in the form of a general question] which reflects the strong feelings of the speaker towards his message and the controversary that it may arouse.

Tonal Features

A visual display of the nucleus of this pattern shows it to have one of the following shapes :

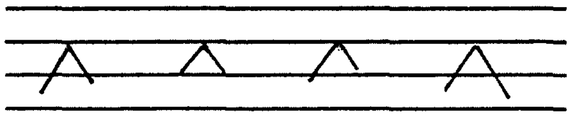


It is noticed that the tonic syllable in non-final tone-units is remarkably shorter in duration than those occurring in final positions. (see example (60) above). It is also noticed that the rise of the tonic tends to take up a greater interval and thus becomes more prominent than the fall.

In our examples that have HRF tones, unstressed syllables preceding the nucleus are pitched low, even in comparison to the pitch level at which the rise in HRF is initiated. On the other hand, the pitch level of the head and the remaining stressed syllables is on a level which is either equal to that of the beginning of the rise or slightly lower.

(b) The Mid Rising-Fall (MRF)

The MRF compose 42.6% of the RF tones in our data. This pattern, which constitutes the bulk of our RF tones, causes a particularly striking difference in the feeling of the utterance on which it is used and thus gives conversation a much more lively and emotional style. The peak of the rise of this tone is generally situated at a level that occurs between the second and third lines (i.e. 200 - 350 Fo region) before it immediately falls again to a point on the first line or just above it. The visual shapes underneath are designed to show the direction and pitch level at which the MRF tone travels:



MRF may occur in a range of varying contexts. Those presented below are chosen for illustration :

1. It may be used in a context to suggest the speaker's confidence in the correctness of the statement he is making, as in example (61) below -

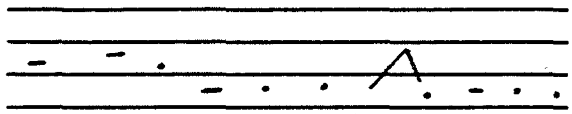
(61)

faḥna fi harrabi:ʕ ...

'It is always the case that in the Spring, we ...'

2. In other cases, it is used in a context where the speaker tries to make fun of his listener, as in example (62)

(62)

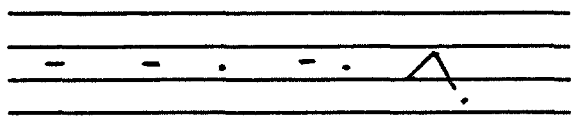


?aj sidki ʕindum-nilbakar ʕaʃara

'Do you mean to say that Sidki (the listener's father) has got ten animals' (where each animal represents a member of the family) .

3. MRF may also be used to convey the speaker's annoyance which could be presented with either funny implications as in example (63) below, or may express an attitude of hopelessness, as in example (64) below :

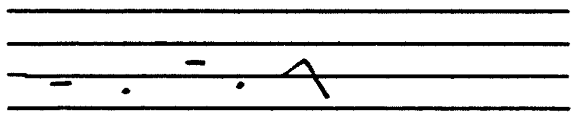
(63)



tʃin markat ?immil-ʕabid ...

'And then - -?im ?ilʕabid - (a singular female) passes by'. (?im ?ilʕabid - a neighbour - times her walk to watch the family gathering for their dinner in the house's front garden).

(64)

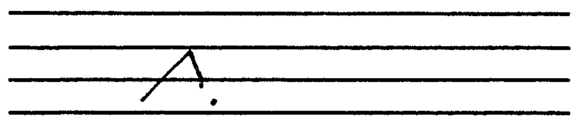


// btilkab-nissa- ʕi:d// fi balad

'You'll find Sa i:d's son abroad', (so what is the point in going home so quickly if your companions are not there?).

4. Finally, MRF tones may occur in statements in which the speaker is responding to a particular piece of information which has been brought to his attention. A typical response to this piece of information is normally marked with a mixture of sarcasm, on the one hand, and a threat or challenge on the other. Unfortunately, examples expressing the above situations do not occur in our recorded text, but as a native speaker of the dialect, one can easily think of numerous utterances used with this tone, such as :

(65)



ra: ḥu

'They are away.'

The speaker's attitude may be interpreted as if he means to say 'because of their behaviour, I know how to deal with them in future.'

Tonal Features

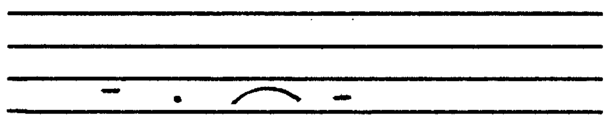
In addition to the tonic features outlined above, we may add that the tonic-duration of MRF is remarkably shorter than that of HRF tones. In examples (61 - 64) above, the average duration of the tonic-syllable of this pattern is 265 milliseconds compared to 333 milliseconds in the case of HRF where the relative duration tends to be unequal, i.e. the rise takes longer duration, the situation is reversed in the case of MRF with the fall taking longer than the rise. However, there are examples in the data where the duration is found to be equally distributed over the various parts of the tone. Finally, in examples where the speaker's attitude reflects sarcasm and challenge, i.e. the context under category (4), the tonic seems to have a distinctive shape in which the pitch level at the end of the rise is flattened before it falls.

In an MRF pattern, the head is normally pitched higher than the nucleus-peak and all the succeeding stressed syllables are pitched a step lower than the head. On the other hand, unstressed syllables preceding the nucleus are generally pitched low although in a few examples, their pitch level is shown to be slightly higher than the pitch level of stressed ones following the head and preceding the nucleus.

(c) The Low Rise-Fall (LRF)

This tone is distinguished by the fact that both its rise-peak and fall-glide are situated between the first and second lines. LRF tones compose 38.3% of the total number of the Rising-Falling tone-units that occur in our data. It can be deduced from examples (66 - 71) below that this tone pattern may fall on utterances that have different grammatical structures including exclamations as in example (66) below, declaratives as in (68), negatives as in (69), interrogatives as in (70) and finally, they occur in association with echoed-statements as in (71) below.

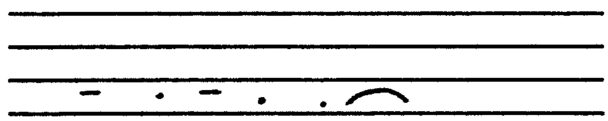
(66)



tʃin- e:ʃ ʕa:d

'Oh! How am I going to put this'

(67)

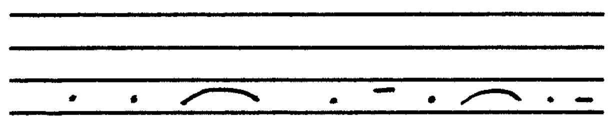


ʕa:d-ibni:dʒi-bille:l ...

'And now we come (to talk about) night-time'

The part in between dashes are not actually mentioned in the utterance.

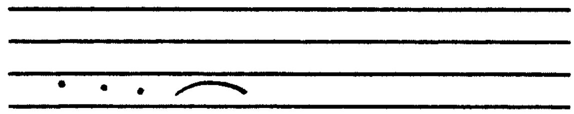
(68)



// whassajjara:t // ʃaɣa:li le:l lin-ha:r //

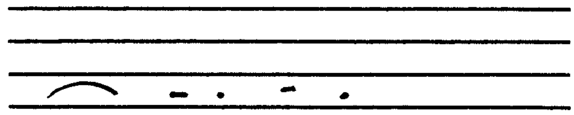
'And the cars" ... are running day and night.'

(69)



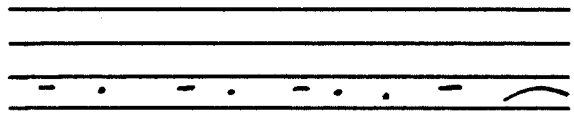
?abindʒaḥu:ʃ...
'They fail to pass' (i.e. they are proved to be failures).

(70)



le:ʃ- intiz- ʕilit
'Why did you become angry?'

(71)



mumtʃin hasa judursuf-bi:r ze:t ...
'It is highly possible that they would be accepted in Beir Ze:t University'

Similar to other patterns, a LRF tone has a range of contextual features with which it is normally accompanied. We believe that a detailed description of these features is not attainable due to the lack of time and space; instead, we will try to reveal as many of these features as possible by referring to their appropriate examples. Generally speaking, one can say that LRF tones in Ir.S.A., may be used in association with one of the following contexts:

1. In examples (66), (67) and (68) above, this tone-pattern is used to mark the speaker's excitement about the subject of the conversation.

2. In contrast, example (69) above, which may be extended by the stretch /makultlitʃ matnakʃi:ʃ / 'I warned you (addressing a female) not to argue' in order to reflect the speaker's determination and insistence regarding a particular view or opinion.

3. In (70) above, a LRF tone is used in a situation where the speaker is puzzled and astonished as a result of a sudden outburst by another speaker, and thus he is inquiring about the reason behind it.

4. Finally, this tone-pattern is used in (71) to indicate a feeling of relief and satisfaction as a result of resolving a problem.

5. LRF patterns are also common in utterances or repeated utterances (the repetition may either be complete or partial) to convey understanding or realization. The contextual features associated with this pattern are marked by the equally possible occurrence of /?a: , ?ajkulli he:tʃ / 'I see! I know now' [literally :'Ah! you tell me']. A typical example is given by speaker 'A' in the second underlined utterance underneath:

Speaker 'A' we:n kaðe:t ?idʒa: ztak ?
'where did you spend your holiday?'
Speaker 'B' fiʃ-ʃa:m 'In Damascus'.
Speaker 'A' fiʃ-ʃa:m 'I see, In Damascus.'
(I understand now).

In the vast majority of the above examples, LRF is used in non-final positions to indicate the speaker's intention to continue or to invite other participants to provide some comments and thus keep the conversation going.

Tonal Features

The tonic syllable(s) of this pattern is/are marked by the absence of a clear cut between the rise-peak and the fall's starting-point. For this reason, LRF are referred to by an arch in their graphic representation. The nuclear syllable(s) is/are fairly long in contrast with the rest of the tone-unit which is markedly short. The duration of the tonic is evenly distributed over the two elements of the tone (i.e. rise and fall) while its general duration depends on whether (a) the tone occurs finally or non-finally, (b) the tonic is marked (marked tonicity), i.e. does not occur at the final lexical item, or neutral.

Accordingly, examples (68 and 70) above demonstrate the fact that non-final and marked tonics are shorter than their counterparts. In monosyllabic tonics, the RF spreads over the tonic, but in polysyllabic ones the rise takes place on the tonic syllable while the fall spreads over the tail. According to our examples, it is noticed that the head and the nucleus of the LRFT have approximately the same pitch level, while both unstressed syllables preceding the nucleus, and stressed and unstressed syllables in the tail are pitched at a lower level.

7.11.3. Falling-Rising-Falling Tones (FRF)

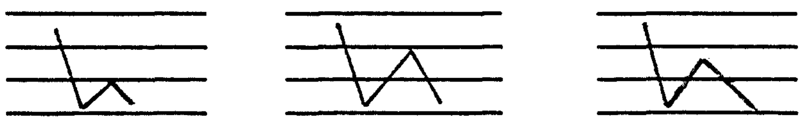
These tones are characterized by the fact that the tone changes its direction twice after its initiation, i.e. it starts falling and then rises and immediately falls again. In comparison with other patterns, it has to be said that the frequency of occurrence of FRF tones in our recorded data is fairly low. This is based on the fact that FRF tones are found to compose 5.4% of the whole data. However, we must not forget that this figure which is based on the present data may be altered as a result of an increase in the body of the data.

Meanwhile, the FRF tones may be classified according to their occurrence into the following sub-classes followed by a description of their main contextual and tonal features:

(i) High Falling-rising-falling tones (HFRF)
(ii) Mid Falling-rising-falling tones (MFRF)
(iii) Low Falling-rising-falling tones (LFRF)

(i) High Falling-rising-falling tones (HFRF)

The tonic of this sub-class commences its fall at a point between the third and fourth line to reach a point above the first before it reverses its direction and rises to a point which varies from one utterance to another. It is noticed that in some examples the rise reaches a point close to line 3; whereas in others, it does not exceed the second line. In all cases, the tonic falls immediately to a point either higher in pitch or lower than the previous rise. The configuration of the tonic of this pattern may be summarised in the following graphs:



(a) (b) (c)

It can be deduced from the above figures that the fall in the three cases is almost vertical, and in spite of the fact that the fall-range is wide, it does not emerge as the dominant element of the tonic. This view is supported by the fact that the duration of the fall occupies a rather short period out of the total duration of the tonic. (see Appendix III).

HFRF tonics which compose 12.5% of the FRF tones are very common in general particle interrogatives occurring in final positions as in example (72) :

(72) 

tʃe:f mustawa likra:jih-na:k
'what about the teaching standard there?'

The above question took place in a quiet conversation which covered university education in regard to Palestinian youth. It then developed into talking about universities in the West Bank. As it happened, the informant to whom the question was put used to be, until a few months ago, a lecturer in a science faculty in one of the universities. After discussing the problems that face the West Bank students in guaranteeing a place in an outside university, it was emphasized that local universities are looked upon as an outlet for the existing problems. Against this background, the question took place in a situation where the speaker expresses a great deal of anxiety to learn from his listener. Accordingly, the above interrogative together with all similar questions may be extended by another question such as /mumtʃin – min faḏlak tiʃrahli / 'Is it possible, if you don't mind, to explain to me?'

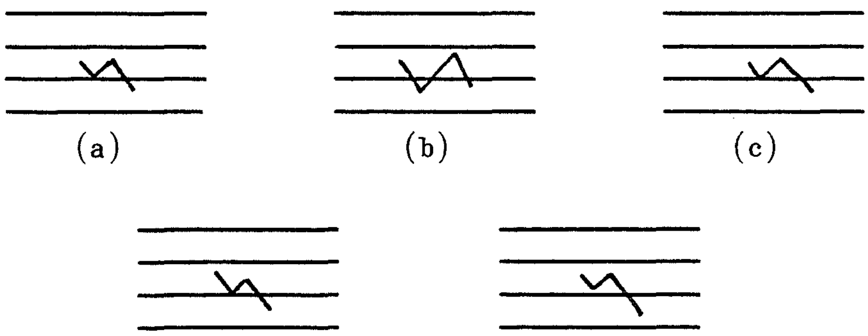
Tonal Features

In comparison to other complex tones such as HF, HFR ... etc., HFRF tones are noticeably shorter in duration. Generally speaking, tones of this type are characterized by the fact that the prominence of the tonic decreases during the initial fall, but begins to increase over the rise which occupies most of the tonic duration, and thus becomes the tonic's most prominent element. Other features extracted from our data show a great number of HFRF tones falling on syllables without tails.

Stressed syllables of the head are marked with a pitch level much lower than the pitch at which the fall is initiated. On the other hand, both stressed and unstressed syllables following the head are pitched at a level higher than that of the head with a gradual increase in height from left to right, (see example 72 above). It is also noticed that stressed syllables which occur immediately before the nucleus are pitched lower than the fall of the nucleus.

(ii)The Mid Falling-Rising-Falling Tones (MFRF)

MFRF tones which constitute 75% of the total number of the FRF tones are characterized by the fact that in each tone the fall is initiated at a point between the second and third lines. According to our examples, the descent of the fall in these tones is observed to reach a point situated either on the second line or slightly below it before it actually commences rising to a level below the third line, after which it immediately starts its second fall. The graphic shapes below are extracted from various examples that occur in the data so as to present the various shapes of the mid falling-rising-falling tones:

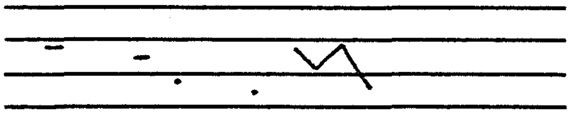


(a) (b) (c) (d) (e)

The average duration of the MFRF tonics of the examples presented below is 310 milliseconds which shows that the tonic of this pattern occupies a short period in relation to the whole tone-group. The rising part of this pattern is similar to the rise in HFRF which is shown to occupy more than 50% of the total duration of the nucleus, thus becoming the most prominent component of the nucleus.

According to examples selected from our data, MFRF is shown to occur in both final and non-final parts of utterances. It is also noted to be associated with declaratives with a varying range of contexts so as to convey the speaker's excitement about something he has said as in example (73) below; or to express his disappointment in relation to a statement which has been delivered to him by another speaker. This tone also appears to be associated with examples where the speaker wishes to register his pessimism about something as in example (77). Furthermore, there are cases where this tone is used in order to express conviction with a touch of surprise as in example (76). The examples below are selected to illustrate the various contexts and attitudes that may be associated with MFRF tones :

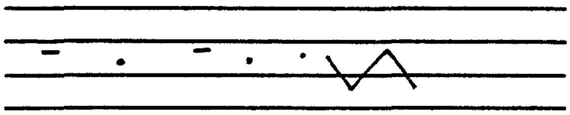
(73)



?aj ḥitta bil?ardun

'Even in Jordan' ...

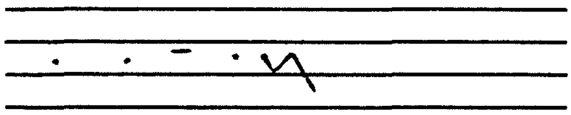
(74)



ʔarbaʕ xamas saʕa:t

'For four or five hours'

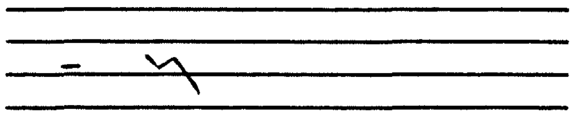
(75)



btiklaʕu: bisse:f

'You'll harvest it in the summer'

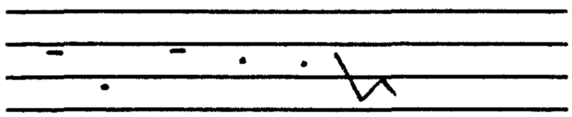
(76)



// ja: si:di //?illibirzikil dʒami:ʕ...

'O.K. sir (literally O.K. my master) God is responsible for us all.'

(77)



ja:xi bassin-ti ha:t

'My friend,(literally brother) you just find them ...'

Tonal Features

In addition to the varying shapes of the nucleus as outlined above, it is noticed that the head is normally pitched at a level lower than that at which the fall is initiated. Its pitch level

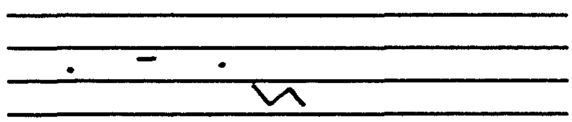
seems to depend upon the existence or absence of stressed or unstressed syllables which compose the body of the tone. The above examples show that the pitch level of this head rises as a result of the existence of a body while it drops down when the number of syllables in the body decreases. It is also noticed that unstressed syllables occurring in the various components of the tone unit, i.e. prehead, body and tail, may be pitched either higher or lower than the head, depending upon the speaker's mood and attitude; i.e. the speaker may exert some sort of emphasis on a particular item in order to single it out from the rest and consequently gives it some prominence , see example (75).
The vast majority of the tonics of this pattern occur without tail, but whenever it occurs, it is normally marked by its low pitch level.

(iii) The Low Falling-Rising-Falling Tone (LFRF)

The occurrence of this pattern in our data is very limited as shown in its frequency of distribution which is 12.5%, i.e. equal to that of the HFRF tones. Its tonic is characterized by the fact that the pitch, whether falling or rising, travels between the first and second line without exceeding the second line at any point. Moreover, the point at which the first fall commences is found to be the highest. Further details are given below:

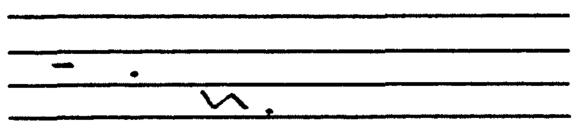
The low falling-rising-falling tones are almost restricted in their occurrence to unfinished declaratives occurring in non-final positions to indicate that the speaker intends to continue, as in :

(78)



?iljo:m bitru:ḥ ...
'Nowadays you go home' ...

(79)



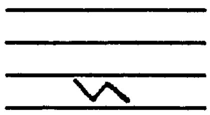
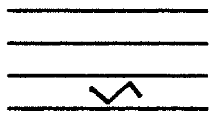
wṣilnal ʕaṣir

'We arrived in the afternoon'

The above tone-units are characterized by the fact that they may be extended by the conditional phrase /bala:t in lil?asaf/ 'but unfortunately'... The context in which this pattern occurs expresses, in the great majority of cases, a feeling of sorrow.

Tonal Features

The pitch features of the nucleus that occur in the recorded data are represented below :

(a)  (b) 

It is obvious that both figures differ from each other in relation to:

(1) The termination point of the second fall.

(2) The maximum pitch level of the rise.

Phonetically speaking, the distinction between both tones is manifested by the fact that tone (a) is normally accompanied by a less degree of intensity where the tone is noticed to end in a whisper.

It is also noticed that tonic syllable(s) which is/are followed by a tail, differ from their counterparts by the fact that they are much shorter in duration. Accordingly, in example (79) above, the duration of the tonic syllable is reduced to almost half of its duration in example (78). Furthermore, stressed and unstressed syllables which occur in the various components that precede the nucleus of this tone pattern, are pitched at a level much higher than that of the nucleus.

7.11.4. The Rising-Falling-Rising Tones (RFR)

The RFR tones which compose 6.1% of our recorded data, are characterized by the fact that the pitch changes its direction twice after its initiation, i.e. it rises at its start and then falls before it immediately reverses its direction to a second rise. In monosyllabic nuclei, the rise-fall-rise spreads over that syllable, as is the case with the majority of our examples. However, there are instances where the tonic syllable is followed by a tail. These examples differ from the rest mainly because the first rise and the fall that follows, spread over the tonic syllable while the second rise is initiated over the tail. This tone-unit may occur in utterances with different grammatical structures as shown below.

According to the pitch-level of the first rise, this tone-unit may be subdivided into a set of tones where each set has its own distinctive grammatical and contextual characteristics. Accordingly, RFR tones are shown to have the following sub classes:

(a) The High Rising-falling-rising tone (HRFR)
(b) The Mid Rising-falling-rising tone (MRFR)
(c) The Low Rising-falling-rising tone (LRFR)

A description of these patterns follows below :

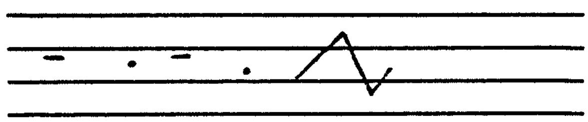
(a) The High Rising-Falling-Rising Tone (HRFR)

HRFR tones which compose 22% of the total number of RFR tones in our recorded data, are characterized by the fact that the rise is initiated at a point between the first and second lines and rises to reach its peak at a point between the third and fourth line; it then falls to reach a point which varies from one utterance to another, at a level above the first line. Finally, the pitch rises for the second time to reach a level which is determined according to the structure of the tone-unit. It is noticed for example, that whenever the tonic is followed by a tail, the pitch level of the second rise is terminated at a point between the second and third lines. It may even exceed the third line in cases where the tail consists of a long syllable or whenever it includes more than a syllable. Alternatively, whenever the tonic ends the tone-unit, the final point of the rise is noticed to occur at a level slightly higher or lower than the second line. For an illustration of these observations, see examples (80 and 81) below.

According to our data, HRFR tones appear to be associated with the following grammatical structures:

(i) In commands which act as a declarative as in example (80) below:

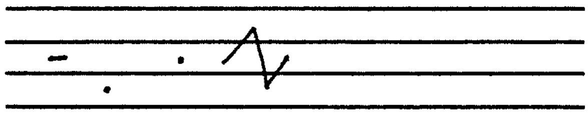
(80)



la:zm-middaʃril-watan
'You have to leave the homeland' ....

These structures are usually marked by an omitted utterance which in this instance may be /?ið̱ru:f bitku:l/ 'circumstances require' literally (circumstances say). The omitted utterance is normally defined according to the context in which the utterance takes place. Thus, the above tone-unit may differ from /la:zm-middaʃril waṯan/ if the second utterance is associated with a low fall and a high head. It is thus treated as a command where the speaker is ordering the listener to do something.

(ii) In declaratives as in example (81):

(81) 

// ri:ḥit hazhu:r // bta:ʕ halbajjara:t

'The smell of the tree blossoms, spreading from the nearby orange orchard'.

The HRFR is restricted in its occurrence to non-final positions in utterances suggesting that the speaker has not completed his message.

From the above examples, it can be said that this tone-pattern is used in contexts where the speaker tries to express his anger and protest not against the listener, but against a third party, as in (80) above. It is also used in other contexts to reflect an excessive excitement and joy about something as in example (81) above.

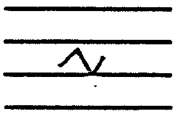
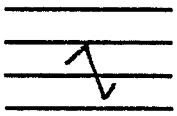
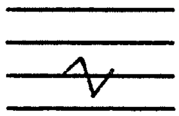
<u>Tonal Features</u>

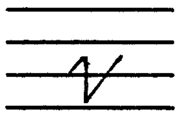
The nucleus of this pattern is mainly distinguished by its rather short duration in comparison to other HF simple tones for instance. It has to be pointed out that in cases where the second rise spreads over an unstressed syllable, the nucleus will be accompanied with a fairly weak intensity which corresponds to its loudness (see mingograph in Appendix III). Furthermore, our examples show that the first rise usually occupies a higher range of pitches than that of the second one.

Generally speaking, both stressed and unstressed syllables succeeding the nucleus are pitched at the same level at which the first rise commences its rising. This in fact may lead us to say that the whole tone-unit seems to have a roughly equal pitch level. Nevertheless, there are instances where unstressed syllables occurring in the body are pitched low in comparison to the surrounding syllables. However, it may be true to suggest that the pitch level of each syllable in this pattern depends to an extent upon the emphasis the speaker wishes to give each item separately.

(b) Mid Rising-Falling-Rising Tones (MRFR)

Mid rising-falling-rising tones are noticed to compose the largest proportion of the total number of RFR tones in general. According to our statistics, they compose 55% of the RFR tones of our recorded data. This pattern is characterized by the fact that its first rise commences at a point slightly above the second line and rises to a point just below the third line; it then falls to a point lower than that at which the rise is initiated. Finally, it immediately starts its second rise to reach a level which tends to be lower than the peak of the first one. However, different utterances will no doubt display slight changes from the above description. The graphic shapes below are designed to represent the various pitch fluctuations of this pattern.

(a)  (b)  (c) 

(d)  (e) 

If the above shapes are transferred into figures, in order to show the Fo range at which rising, falling and rising takes place, table (1) below will then serve to illustrate the above visual shapes:

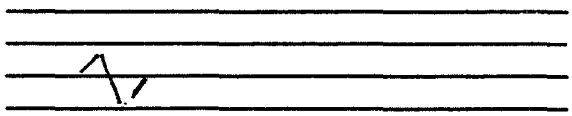
	1st rise initiation	end of 1st rise	end of fall	end of 2nd rise
a	240 Fo	300 Fo	200 Fo	240 Fo
b	250 "	320 "	150 "	175 "
c	200 "	250 "	150 "	200 "
d	250 "	300 "	150 "	170 "
e	250 "	270 "	140 "	250 "

Table (1)

According to our data, MRFR tones are shown to be common in any of the following grammatical structures:

(1) Non-particle interrogatives that occur in final positions in speech as in example (82) below:

(82)



?ajwah

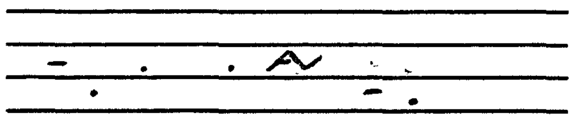
'Oh yes!' (what are you going to tell us?).

The above utterance is characterized by the fact that it may be extended by an imperative such as /matisthi:ʃ tʃamil/ 'carry on! don't be shy'.

(2) MRFR are also shown to occur with greater frequency in grammatical structures which are associated with non-final positions to indicate that the speaker has not completed his message. These grammatical structures include, amongst others:

(i) declaratives, as in example (83) :

(83)



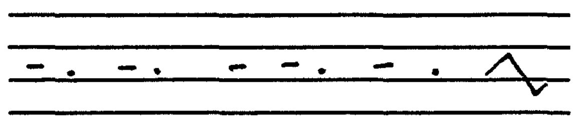
jikbalin ?alfe:n t̲a:lib ...

'They will take two thousand students' (i.e. they will be accepted).

MRFR occurs with the above utterance which is associated with a marked tonicity, but above all, the utterance may be extended by a prepositional phrase such as / wʕal?akal /, 'at least'. This pattern is normally used to express the speaker's appreciation and indicates a sense of relief at overcoming a difficulty.

(ii) MRFR tones are also associated with the first element of a conditional that occurs in a non-final position as in example (84) :

(84)



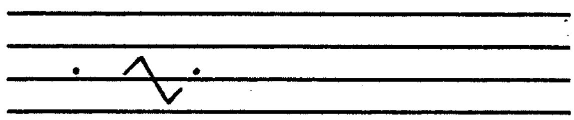
?iða biddu kul ʃahar ha:ð̲a ji:dʒi

'If he decides to come home at the end of every month'...

Example (84) above, may be extended by a sentence, which would function as what is called in Arabic /dʒawa:bul ʃarṯ / i.e. 'the conditional main clause'. Hence, the above example becomes : /?iða biddu kul ʃahar ha:ða ji:dʒi/ ... /?ana bandʒan/ 'If he decides to come home at the end of every month ... I will be extremely angry (literally 'mad'). This pattern is common in contexts where the speaker expresses his objection to a particular matter.

(iii) MRFR may also be associated with utterances which consist of a conditional particle acting as a declarative to express a speaker's warning against something as in example (85) .

(85)

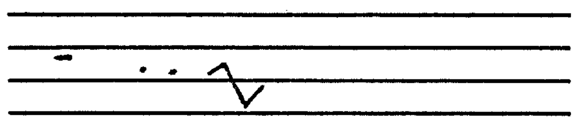


bala:tʃin
'But if'

Example (85) above is normally used to replace an omitted declarative which may be /fi: miθil ha:ðilḥa:la:t/ 'under such circumstances' or 'In these cases' .

(iv) Finally, MRFR tones are shown to be common in utterances which consist of a prepositional phrase structure such as:

(86)



min bakara:t
'including cows' (literally 'from cows').

The above pattern is typically used in contexts where the speaker aims at expressing his gratitude, satisfaction and appreciation for somebody.

Tonal Features

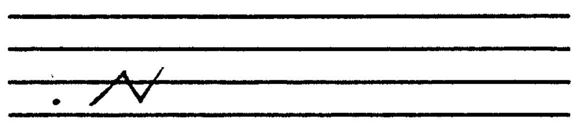
The tonic-syllables of this pattern are the shortest in duration in comparison to other patterns that have occurred so far in our data.

As is the case with HRFR discussed above, MRFR seem to occur in a tone-unit which is wholly pitched at a medium level. However, there are instances where both stressed and unstressed syllables preceding the tonic syllable have a pitch level higher than that at which the tonic is initiated. There is also evidence that the syllable immediately preceding the tonic tends to be pitched at a level similar to that at which the first rise commences. We also noticed that tails occurring in MRF tone-units are normally pitched according to the number of syllables they contain. For example, on average, the first syllable succeeding the tonic would normally continue the rise and thus its pitch level would be similar to that of the rest of the tone-unit. On the other hand, if the tail contains more than a syllable, as in example (83) above, it is noticed that the second rise does not continue over the tail. Instead, it is noticed that the pitch level of that particular tail is comparatively low in comparison with the rest of the tone-unit.

(c) The Low Rising-Falling-Rising Tones (LRFR)

This pattern is of rare occurrence in the data. Hence, it composes about 11% of the RFR tones. It is characterized by the fact that the whole tonic takes place almost between the first and second line. The peak of its first rise may, in a few examples, reach a point slightly over the second line. Its occurrence in the data and in normal speech is almost restricted to short utterances that occur in final positions. LRFR is very common in non-particle interrogatives used in contexts where the speaker expresses his doubts and suspicions. A typical example is presented under (87) below :

(87)



s̲aḥi:ḥ
'Is it true?'(implying that it is hard to believe).

The above example may be characterized by the fact that it can be extended by another non-particle interrogative such as /bitsaddik halhat i / 'Do you believe this nonsense?'. There are numerous examples which may be selected from one's knowledge of the language as a native speaker. In almost all these cases, it remains clear that LRFR tones are characterized by their association with short utterances.

Tonal Features

As a result of the association of this pattern with short utterances, it represents tone-units in their minimum possible occurrence, i.e. as far as tone-unit components are concerned. Consequently, LRFR are normally preceded by either a prehead or nothing, whereas the tonic syllable itself ends the tone-unit.

Prehead components of LRFR are normally pitched at a higher level than the point at which the first rise commences. One may even go further and say that the level-pitch of the prehead is shown to occur in a position similar to that of the pitch of the first rise.

7.12. Compound Tones

In his description of compound tones of English, Crystal (1969, 218-21) maintains that "These tones ... are combinations of two kinetic elements of different major phonetic types acting as a single tonal unit". In order to consider a sequence of kinetic elements as a compound tone, Crystal believes that the following conditions, which include four 'phonetic' and distributional' characteristics must be fulfilled. These are defined in his own terms as follows :

"i. The kinetic tones must display an 'endocentric' relationship, i.e. ∧ , ∧/ , ∨ , etc., but not \\ , //, V/, etc...". Although Crystal does not explain precisely what the term 'endocentric' means, nevertheless, it is assumed that it is employed in order to define the arrangement of the pitch direction of the nuclear syllables included in this type of tone. Accordingly, he believes that the tonic syllables involved must not display similar tones. In other words, in any given compound tone, neither a fall nor a rise is permitted to be repeated before reversing its direction.

"ii. If there is a relationship of this type, there must be no evidence of a tone-unit boundary between the tones. The syllables between the two kinetic elements must display an evenness of pitch pattern, continuing the pitch movement in a 'trough' or sustained arc from one to the other ..."

"iii. One element of the compound tone must be more prominent than the other,... the phonetically dominant element is usually the first...."

"iv. Despite the phonetic prominence associated with the first kinetic element, it is the second which is the major functional element, and the basis on which the tone is classified..." (Crystal 1969 : 218-219).

In order to present a description of the compound tones that operate in the dialect under study, Crystal's criteria, as outlined above, have been adopted with some necessary modifications so as to fit our data. Our modifications are introduced according to the following points :

(1) A compound tone is not necessarily considered to consist of a sequence of kinetic elements. As a result, the criterion of 'endocentric' relationship has not only been extended to account for sequences with a level tone, such as / + = and \ + = ; but at times abandoned, since in our data, we discover compound tones where tonic syllables are shown to be accompanied by a pitch that travels in the same direction, such as \ + \ and / + / .

(2) In his second criterion quoted above, Crystal talks of pitch patterns as acquired by the 'internuclear stretch', i.e. syllables occurring between the two elements of the tone. However, in the case of Ir.S.A., it should be added that, in some instances introduced later in our discussion, the two elements of a compound tone may either follow each other directly without syllables intervening, or alternatively, they may be apart.

(3) In accordance with our view as outlined under point (1) above, the first element of a compound tone, as applied to Ir.S.A., could either be a rise, a fall, a level, a rise-fall or a fall-rise.

Generally speaking, we believe that, the function of a compound tone is to highlight two items in a tone-unit that corresponds to a unit of information. The first of such words is usually the one which the speaker singles out as an important item by making it carry the first element of the compound, e.g. the rise of the rise + fall. The second item, however, may additionally or exclusively be the point of grammatical significance by carrying the last element of the compound tone (i.e. a fall, a rise, or a level). Such an element may then indicate that the speaker is giving information and has completed his message or it may signal that a question is being asked, or the speaker is continuing.

Compound Tones in Ir.S.A.

Compound tone-units constitute slightly less than 17% of our recorded text, which ultimately means that their representation falls short in supplying us with a comprehensive picture in respect of their patterns and their occurrences in the dialect. For this reason, our data has been supplemented by further examples in order to give a full description of their characteristics.

According to the above criteria together with the recommended minor modifications and extensions, compound tones of Ir.S.A. are found to include the following patterns.

1. 'Fall + rise' (F + R)
2. 'Fall + level' (F + L)
3. 'Fall + fall' (F + F)
4. 'Fall + rise - fall' (F + RF)
5. 'Fall + fall - rise' (F + FR)
6. 'Rise + fall' (R + F)
7. 'Rise + rise' (R + R)
8. 'Level + rise' (L + R)
9. 'Level + fall' (L + F)
10. 'Rise - fall + rise' (RF + R)
11. 'Rise - fall + level' (RF + L)

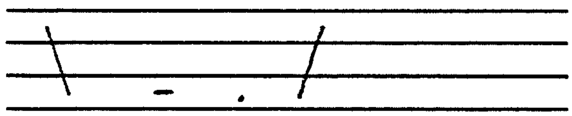
In what follows all the compound tones of Ir.S.A. listed above are divided into their sub-classes, and a brief description is given for each in order to reveal their main grammatical, contextual and tonal description. As mentioned above, the two elements of a compound tone in Ir.S.A., may either be adjacent i.e. in two separate words without internuclear syllables intervening or apart. In examples where an internuclear stretch exists, reference will be made to their pitch pattern, but nevertheless, the 'evenness of pitch pattern' which is a characteristic of compound tones (see criteria No. 2 above) is generally maintained. Experimental evidences of these tones pitch configuration is shown in Appendix (III).

(1) Fall + Rise (F + R)

The compound tones of fall + rise are characterized by having a fall (as defined for simple falling tones above) on their first element, while a simple rise spreads over the second nuclear syllable. This compound tone has a set of tones which differ from each other according to the pitch level of each element. In general, this criterion has been applied in subdividing the above compound tones into their sub-classes. Accordingly, the present fall + rise can be further subdivided in order to show its possible occurrences which are summarized as:

a) High fall + High rise as in example (88)

(88)



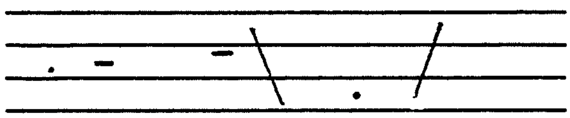
ʃu:f mi:n ʕalba:b

'Find out who is knocking at the door'.

The above utterance is characterized by the fact that it may be extended by the imperative verb /ṭharratʃ /'move'. This indicates that this pattern is common in imperatives. It occurs in contexts where the speaker seems to be agitated while he/she is busy doing something, for example, a knock is heard at the door, then the speaker orders his listener to find out who the caller is. Tonal features will be excluded and discussed later.

High fall + high rise may also occur in utterances where the speaker expresses a protest in a sarcastic manner. This pattern is characterized by the fact that its occurrence is almost restricted to echoed utterances, as in example (89):

(89)



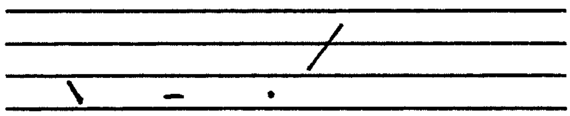
tʃama:n sa:ʕte:n θəla:θ

'In two - three hours time! (you must be joking, this is not enough, I need more time) .

b) Low fall + high rise :

Let us consider the above utterance under example (88) when it is pronounced with a LF + HR, as below :

(90)



ʃu:f mi:n ʕalba:b (as Example 88).

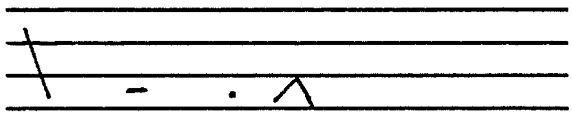
This example differs from the former by the fact that it may be extended by the phrase /jabni/ 'my son'. The speaker's attitude in this case may be described as an appeal mixed with authority, (i.e. a confident appeal). It should be pointed out that, while the second tone-pattern may occur in final positions in connected speech, the former, i.e. example (88) is not permitted finally.

(4) Fall + Rise - Fall Tones (F + RF)

This pattern is characterized by the fact that while its first element is associated with a simple fall, the second acquires a complex one, namely, a rise - fall. This pattern has the following set of sub-classes :

a) High fall + Low rise fall as in example (91) below :

(91)



ʃu:f mi:n ʕalba:b

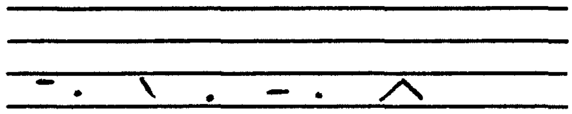
'find out who is knocking at the door?'

This pattern is characterized by the statement /bala:ʃ tð̲ajjiʕ wakti/ 'do not waste my time'. Thus, the whole utterance becomes: 'Go and find out who is knocking at the door instead of wasting my time'. Grammatically speaking, utterances associated with this pattern are interrogatives that occur in final positions and the speaker's attitude is described as 'reproachful'. On the other hand, the first fall is distinguished from the fall in the other examples, as being longer in duration.

b) Low fall + Low rise - Fall

This pattern is common in statements that occur in non-final positions as in :

(92)



?ana xa:jfil-walad rawwaḥ

'I am afraid that the boy will be home by now'

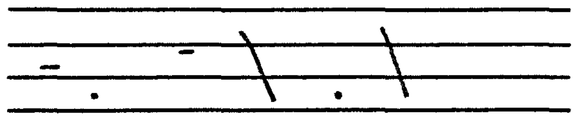
This type of utterance is normally followed by an imperative phrase such as /jalla ku:n/ 'come on, hurry up'. It is used in contexts where the speaker expresses a state of uneasiness or tension caused by apprehension of possible danger. Phonetically speaking, the whole tone-unit is marked by its short duration.

(3) Fall + Fall (F + F)

This pattern is recognized by the occurence of two simple falls on its nuclear syllables. In Ir.S.A., the 'fall + fall' compound tones may be subdivided into :

a) High fall + high fall as in :

(93)



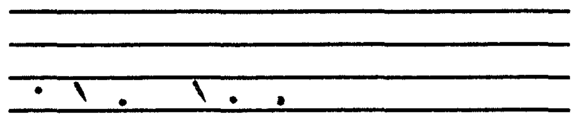
?uxra sa:ʕ ṭe:n θala:θ

'In two or three hours time'

These patterns are common in declaratives that occur in final positions to indicate that the speaker has completed his message. They are common in contexts where the speaker is requiring or appealing in a friendly manner for something.

b) Low fall + low fall as in :

(94)



?issubih maθalan

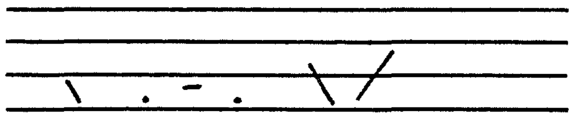
'In the morning,for instance'

As in (a) above, this tone occurs in declaratives in final positions in connected speech. It differs with regard to its context in the situation, where, for instance, in example (94), the speaker is offering a suggestion in a form of advice. It should be noticed that the prehead of this pattern is normally pitched on a level higher than that of the point at which the fall is initiated, whereas the internuclear stretch is pitched at a low level. On the other hand, the nuclear syllables are marked by their short duration in relation to the total length of the tone-unit in general.

(5) Fall + Fall - Rise Tones (F + FR)

The low fall plus a mid fall-rise is a typical example of this tone. This pattern is almost restricted in its distribution to yes/no interrogatives that occur finally in speech, as in :

(95)



hu: halḥatʃi binfaʕ

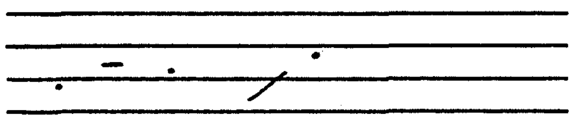
'Do you think that this view would prove to be useful?'

Although it appears that in the great majority of the above examples, the first element of our compound tones is phonetically more prominent than the second, in example (95) above, the situation is reversed where the first fall gradually reaches a point at which the tone is said to become a creak. . In comparison, the second element of the tone, i.e. (FR) is pitched on a higher level, which is probably responsible for the strong prominence of this part of the tone. It is also noticed that this tone is employed in the dialect in contexts where the speaker conveys his doubts about some plans in the form of a yes/no interrogative.

(8) Level + Rise Tones (L + R)

Our investigation reveals that this pattern may occur in the shape of a high level nuclear syllable, followed by a high rise, i.e. the compound tone consists of two nuclear syllables with two simple tones spreading over them. A typical example is the following :

(96)



?ilmaḥal fa:ʒ̱i

'Do you suggest that the store is empty?'
(literally: 'the store empty').

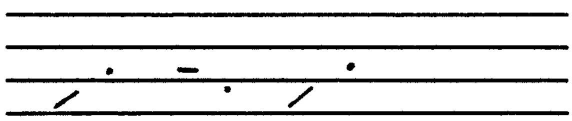
In the above example, the two elements of the compound tone are adjacent, and because the pitch level of its first element varies from that at which the rise is initiated, the whole tone is perceived as if it had a break or a pause in between.

Example (96) is normally associated with yes/no interrogatives, and characterized by the fact it can be extended by another interrogative such as /kas̲dak ?itku:l mafihu:ʃ ?iʃi / 'Do you mean to say that there is nothing in it?'. This compound tone is known to occur in non-final positions in speech to express the speaker's denial of an accusation mixed with a high degree of impatience.

<u>(7) Rise + Rise Tones (R + R)</u>

This pattern is characterized by the occurrence of a simple low rise tone on both elements. Ir.S.A. is shown to have this pattern in the form of a low rise repeated on both nuclear syllables as in:

(97)



lamma tinwi-trawwiḥ

'Whenever you intend to go home ...'

It should be pointed out that the pitch level of the 'internuclear stretch' may, in general, vary from one example to another, depending upon the degree of emphasis the speaker applies to them. In other words, the pitch levels of emphasised items are normally higher than the surrounding ones.

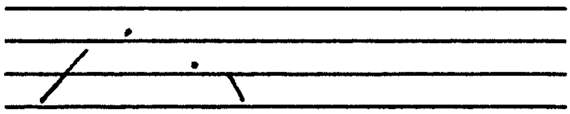
It is also noticed that unstressed syllables of this pattern are pitched at a level higher than that of the nuclear syllables. This, in fact, explains the noticeable high degree of loudness with which the whole tone-unit is associated.

In Ir.S.A., R + R compound tones are associated with the first element of a conditional structure. Thus, example (97) above may be characterized by the fact that it may be extended by giving the second element of the conditional sentence which may be: /kulli min faʕ̲lak/ 'please let me know', which indicates that the speaker is requesting something.

(6) Rise + Fall tones (R + F)

This compound tone is characterized by the fact that the nuclear syllables are dominated by simple tones, i.e. a rise spreads over the first element while a fall spreads over the second. In Ir.S.A., this pattern occurs in two forms :

a) A high rise + a low fall, as in :

(98) 

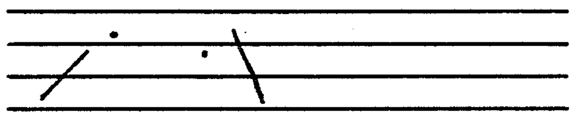
sa:far ?axu:k

'Did your brother leave?'

which is common with interrogatives. It is confined in its occurrence in connected speech to non-final positions. Hence, example (98) above, may be extended by a negative such as /?umakalna: / 'without informing us'. This pattern is normally used in contexts where the speaker conveys his surprise about somebody's behaviour.

Phonetically speaking, the first element of this tone, i.e. the 'rise' is normally heard as being distinctively louder than the rest of the tone. Nevertheless, it is the second element which is responsible for displaying clearly the speaker's attitude.

b) Rise + Fall compound tones may also have the form of a high rise + a high fall as in :

(99) 

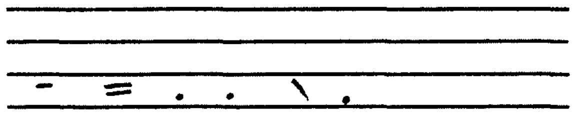
sa:far ?axu:k

'Did your brother leave?'

This pattern differs from the one above in two respects: firstly, the fall in the former is initiated at a point higher than that of the latter. Secondly, the speaker's attitude in the above high rise + high fall, may be described as one of annoyance and disappointment.

(9) Level + Fall tones (L + F)

In Ir.S.A., this pattern may have the form of a low level spreading over the first nuclear syllable followed by a low simple fall spreading over the second nuclear syllable. A typical example which may be associated with this pattern is:

(100) 

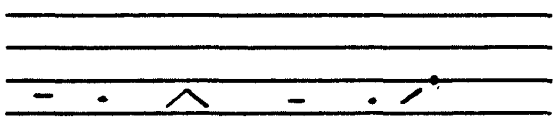
min jo:min-ma ra:hat

'Since she went away'.

Low level + Low fall compound tones are very common in non-final declaratives. In normal speech, this pattern is usually followed directly by another declarative in order to give further information about the first. The present compound tone-unit is normally used in contexts where the speaker expresses sad feelings. For instance, in example (100) above, the speaker is lamenting the departure of his beloved.

(10) Rise - Fall + Rise Tones (RF + R)

This pattern is characterized by the occurrence of a complex tone in association with the first nuclear syllable followed by a simple one, i.e. the rise on the other. This is a departure from the more familiar types where the first nuclear syllable has been associated with a 'simple' tone, as is the case with all above examples. In Ir.S.A., this pattern has normally the form of a low rise - fall followed by a low rise (as these tones defined earlier in this chapter; see simple and complex tones above). A typical example that acquires this pattern is:

(101) 

ʃufna tʃθi:r min haddamʕa

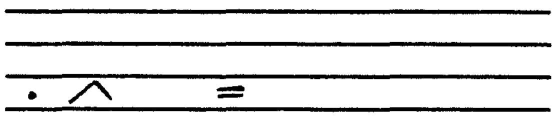
'We have witnessed so many of this type ...'

It is noticed that low RF + low R compound tones are very common in declaratives which are characterized by the fact that they may be followed by a command such as /wala tihtam/ 'don't pay any attention'. As far as the context of the situation is concerned, this pattern is normally used where the speaker makes fun of somebody in his presence.

(11) Rise - Fall + Level Tones (RF + L)

Similar to the previous pattern, this compound tone is initiated by the complex tone rise - fall on its first element followed by a simple level tone on its second nuclear syllable. In the dialect under study, this pattern may have the form : Low rise - fall followed by a low level nuclear tone. As far as the phonetic realization of the compound rise-fall + level is concerned, it should be pointed out that the fall of the first element would normally continue over the syllables immediately following the nuclear, as in examples (102 and 103) below :

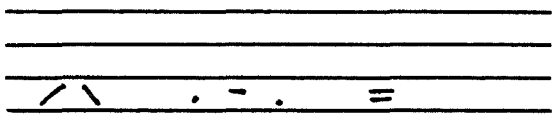
(102)



halḥatʃi s̲a:r

'What has been said actually took place'

(103)



mumtʃin halḥatʃi s̲a:r

'It is possible that what has been said actually took place'.

This pattern is very common in affirmatives which occur finally in connected speech to indicate that the speaker has completed his message. Low rise - fall + Low level compound tones are most familiar in contexts where the speaker expresses a tone of assurance in order to emphasise the correctness of his message.

To sum up the tonal features of the above compound tone-units, it may be said that these are groups where the pitch patterns are most likely to be perceived as being single entities, irrespective of the fact that they contain two nuclear tones. These tones tend to occupy initial and final points in their respective groups. What is also important is the fact that the pitch level of the nuclear syllables tends to be equal. More than 70% of our data shows that both nuclear syllables are either pitched high or low, whereas less than 20% show an obvious contrast of the pitch-level of nuclear syllables; i.e. while the first element is pitched high, the second would receive a low pitch level. The remaining 10% coprise those tonics where the difference in pitch level does not vary a great deal, i.e. high + mid or mid + low. However, in the vast majority of cases, the two nuclear syllables or more (in those cases where one of two receives a complex tone that covers more than a single syllable) tend to be linked by a cluster of low-pitched internuclear syllables in order to achieve what we have called above (following Crystal) the 'evenness' of the pitch in the whole tone-unit. Nevertheless, there are instances where 'internuclear syllables' may be arranged in a slightly rising scale as in examples (96 and 89).

CHAPTER EIGHT

THE FUNCTIONS OF INTONATION IN IRTA:ḤI SPOKEN ARABIC

8.1. Introduction

From what has been published so far with regard to intonational functions, it is difficult to arrive at broad lines of guidance in attempting to discuss the function of intonation in the dialect under study. This is basically due to the varying views that appear in relation to this topic. In short, views on the subject are numerous. "Some researchers, for example", says Lee (1956, 245) "seem to be determined to emphasise the grammatical function of intonation and treat it as the main role (see Armstrong & Ward, Jones). Others, however, believe that the intonation's function is primarily attitudinal". Cruttenden (1970), amongst others, argues against the view which favours a grammatical function for intonation. He disagrees, for instance, with the view that intonation may carry the burden of disambiguating identical grammatical structures such as Halliday's (1967) famous examples:

He washed/ and brushed his hair v.
He washed and brushed his hair

which involves two tone units versus one. He quotes other examples produced by Liberman (1967) and Wode (1966), where varying tonality affects the meaning of the utterances concerned. Cruttenden (1970; 184) argues that "to put forward such cases as evidence for grammatical function of intonation seems to involve making an artificial and unilluminating distiction with regard to the function of intonation boundaries". The basic function of the tone unit in the above examples is, he states, "to stress the internal coherence of the items within it". Departing from this hypothesis, he goes on to conclude that "disambiguation is a derivative effect which this function may have within grammar". As an alternative, Cruttenden (1970; 187) suggests that, in order to investigate the intonational functions, we should assign a definite <u>meaning</u> for each tune class regardless of its grammatical structure. Accordingly, falling tones are then regarded as associated with <u>definiteness</u>, while rising-tunes (i.e. tones, in our terminology) may indicate an element of tentativeness with further subclassifications for these meanings. He concludes his study by suggesting that, if correlations exist between particular tunes and sentence-types, these can be explained in terms of probable harmony between the meaning of a tune and the meaning of a syntactic pattern.

Throughout the literature written on the subject, one comes across studies which regard intonation as having a multiple function. For example, Adams (1969, 116) maintains that in Australian English, "intonation is used :

1. To indicate the boundaries of sentences.
2. To differentiate sentence structures.
3. To signal a question when no linguistic cues are present.
4. To mark word prominence.
5. To connect the parts of a sentence.
6. To add attitudinal meaning to the sentence.

It also appears to be used to express emotional states".

Gimson (1970, 266-67), is another writer who argues that "intonation changes are the most efficient means of rendering prominent for a listener those parts of an utterance on which the speaker wishes to concentrate attention ... In addition, intonation is used as a means for distinguishing different types of sentence e.g. the same sequence of words may, with a fall in intonation, be interpreted as a statement or, with a rise in intonation, as a question. Moreoever, a listener derives from a speaker's intonation information as to the latter's emotional attitude (to the listener or the topic of conversation) or personality..."

This, however, does not mean that all statements in any given language - must have as a rule, a fall in intonation, as opposed to a rise to mark questions. To support this view, we may refer to Fries's (1964) work on this subject; he carried out an experiment to study the correlation between different types of grammatical constructions and specific intonational patterns.

His results show that out of a total of 2561 yes/no questions which occurred during 39 programmes of a particular TV broadcasting games, 1580 are produced with a fall in intonation. These results led Fries (1964, 250) to conclude that "no special intonation pattern constitutes the signal of a distinction between yes/no questions and other types of questions or other types of utterances". He adds, "the intonation patterns of English are a highly complex system, signalling features of a range of structural relationships other than the differentiation of question types or even of utterance kinds, and of a range of attitudes that have not yet been clearly identified". Fries's results agree with the results of some more recent works on the topic, specially those of Kenworthy (1978), who attempts to study the intonation patterns of some particular questions in a Scottish English accent. He argues that the examples used in his study (p. 273), "seem to leave us with no alternative but to say that there are no constraints on the intonation patterns which can be associated with interrogatives - with - inversion questions in Scottish English: we observe rising contours, both high and non-high, and falling contours both low and non-low. The choice of contour is free".

In spite of the common disagreement with the view that grammatical structures of any given language may correspond to a definite set of intonational patterns, we still come across statements, such as that of Mikos (1976), who argues that questions in Polish may be divided into three categories according to their acoustic structure. He argues, for instance, (1976, 252) that "yes/no questions in Polish show a uniformity rising Fo contour characteristic of [+BG] (where +BG refers to a breath-group). According to his views, and in view of the grammatical structure of Polish, the [+BG] pattern plays an important role in these questions, since it is the only cue which distinguishes the interrogative sentences from the declarative ones ..."

The question of correspondence between intonation and grammatical structures, has occasionally attracted some writers' attention. Thus we find Gutknecht (1978, 121-33) who makes his views clear by arguing that "Examples (23, 24) lead to another assumption which has long been considered secure in the literature on intonation, i.e., that for certain structures there is a normal, neutral, direction of nuclear movement". (p. 128). He, for instance, quotes Halliday (1970, 27) who argues that yes/no English questions are marked by having a high rising tonic in their neutral form, whereas, O'Connor and Arnold (1973, 64) claim a low-rise as being "by far the most common way of asking yes/no questions". The existing discrepancy in views within the above approach, will, no doubt, suggest its impracticability.

From the available literature on intonational aspects of some Arabic dialects, it may be interesting to quote some of the views that are relevant to our discussion. Soraya (1966,187), for example, devotes a complete chapter of his thesis to the study of intonational patterns which may occur in association with different sentence types in Egyptian colloquial Arabic. He adopts a view according to which any sentence type may acquire either an unmarked intonation pattern or a marked one, in accordance with their contextual functions. According to his results, declaratives are said to have "falling tones" in their "unmarked" tone patterns (p. 190), and they may require either a "level" or a "rising" tone in their "marked" pattern (p. 191). The validity of such an approach seems to be quite dubious as we are not told on what basis the distinction between marked and unmarked intonation is made. This makes the said distinction ultimately vague and leads to the following question: if both marked and unmarked tones describe declarative constructions, why is it then that unmarked tones, i.e. falling tonics, are regarded as marking declaratives and not the marked, since both of them may be associated with a statement? One may add, however, that if the decision to make the above division is influenced by the high frequency of occurrence of one type of tone rather than the other, it would then be fair to say that Sorraya's conclusions are incomplete,since his results are not based on any comprehensive statistical calculations where a large body of examples is included in the data in order to cover all available instances of statements that may occur in the dialect.

8.2. Aim of Study

In discussing the function of intonation in Ir.S.A., the dichotomous view of intonation as having two major functions, namely, grammatical and attitudinal, with very definite boundaries between them, is substituted by adopting Crystal's views in relation to this topic. In his description of English intonation, Crystal (1969,289-290) argues that the two functions of intonation mentioned earlier "... stand in a relationship of hyponymy to each other : all cases where intonation is primarily of grammatical importance are also of attitudinal relevance, but not all cases of attitudinal function (i.e. all utterances) display a grammatical function ..." Accordingly, instead of assuming a division between the various functions of intonation, we have decided to adopt Crystal's principles by introducing a scale of intonational function that runs between extremes of attitudinal and grammatical functions. In addition, we are aware of the fact that there are areas in the middle of the scale, where the two functions tend to overlap or even coincide. Once such a scale has been set, the intonation of any specific utterance can be viewed as performing a function closer to one or the other end of the scale.

By bearing in mind that our description of tones in Ir.S.A. as presented in Chapter Seven, includes a brief discussion of the grammatical and attitudinal functions of each tone, our main concern in this part of the thesis is to focus attention on cases that clearly support our views about the functions of intonation . For this purpose, the relation between intonation and its function is examined with reference to tonality, tonicity and tone, as described by Halliday (1967).

As a starting point, it is appropriate to begin our discussion by examining the relation to grammar in general, with reference to the structure of the tone-unit in Ir.s.A. An examination of our data reveals that a tone-unit in the dialect under study may coincide at its minimal level with a word and with a sentence at its maximal level. This means that :

(i) No structure less than a word may accommodate a tone-unit;
(ii) A tone-unit may not stretch over a structure longer than a sentence.

Generally speaking, it is noticed that in Ir.S.A. a tone-unit may coincide with any of the following structures :

(1) a word
(2) a phrase
(3) an element of a clause
(4) a clause
(5) a sentence.

The question of which of the above grammatical categories may be said to mark the tone-unit cannot be decided at the moment. However, we have calculated the percentage of the coincidence between each of the above categories with the tone-unit and have found that slightly less than 50% of our tone-units coincide with category under (5) above, while 21% coincide with category number (4). The remaining 29% of our data is noticed to be approximately equally shared by categories under (1), (2) and (3) above.

8.3. Tonality

Halliday (1967) regards intonation as a system which consists of three sets of choices; tonality, tonicity and tone. According to his views, tonality is a system which is responsible for segmenting an utterance into tone-units. The segmentation of an utterance in Ir.S.A. into tone-units may be regarded as a relatively independent selection which reflects the speaker's views on what constitutes an information unit. Our main concern in this section is to search for instances where tonality may be said to be the major factor in defining the grammatical relationship between the various elements within each tone-unit. In other words, there are instances in Ir.S.A. where tonality serves to split lexically identical utterances into various tone-units with different boundaries. What is more, tonality in these instances imposes grammatical relationships among the constituents of each tone-unit on the one hand, and establishes on the other new grammatical relations between the tone-unit and other units that may follow or precede it. Searching for examples to demonstrate our argument is not an easy task. A series of examples is, however, presented below. In each case, tonality is responsible for splitting identical utterances into various tone-units. An illustration of the meaning and grammatical structure of each tone-unit is indicated.

(1) /ʔiḥnal- linfiʕna ʔahlil balad/
'We proved to be of great help to our folk'

(2) /ʔiḥnal- linfiʕna/ ʔahlil balad/
'It is our folk, who proved to be of great help to us'.

Example (1) differs from (2) above with regard to the following points:-

(i) Example (1) consists of a single tone-unit, while our second example consists of two.

(ii) As a result, the grammatical function of the nominal phrase /ʔahlil- balad/ differs in each case. For example, it is used in the first as an object of the sentence while, in the second, it becomes the subject.

(iii) The meaning of the two utterances differ, therefore, in the sense that each meaning is used in a different situation.

(3) /ʔinti we:n ra:jiḥ / ʕar-ta:ḥ /
'Where are you going to? to Irta:h'? (the name of the village to which the writer belongs).

(4) / ʔinti we:n ra:jiḥ ʕarta:ḥ/
'Where exactly in Irta:h are you going to?'

The difference between utterances (3) and (4) above, may be illustrated by referring first to the context of the situation in which each of them may take place. Our analysis show that utterance (3), which consists of two tone-units, may be spoken by someone who is enjoying the company of another friend, when suddenly the friend decides to leave in order to keep up with his daily programme. This decision does not seem to suit the speaker's intention of spending the rest of the day with his friend. So, in order to persuade the friend to change his mind, example (3) takes place where the speaker's attitude may be summarised as if he wants to say : "what an inconvenient decision to take, why do you want to go to Irta:ḥ? what is in Irta:ḥ.... I'd rather have you with me". By contrast, (4) is spoken in a more serious atmosphere. The participants do not seem to know each other well, but due to the fact that the speaker belongs to the place which the addressee intends to visit, he realises that he may be able to offer some help, if he finds out the name of the area his listener intends to visit.

Grammatically speaking, utterance (3) consists of a general question plus a yes/no question, while (4), which consists of a subject + interrogative particle + verb + prepositional phrase, functions as a general question. In spite of the fact that utterance (3) above contains the same grammatical elements as in (4), the difference between the two may be due to the fact that the second tone-unit in (3) may be extended by inserting a subject and a verb such as /ʔana baʕtakid/ 'I guess', in front of the prepositional phrase / ar-ta:h/.

(5) /sali:m miʃ ʃa:ṯir zajja-xu:h /
'Salim is not as good as his brother'.

(6) /sali:m miʃ ʃa:ṯir/ zajja-xu:h /
'Salim is not good at all. He is in no way as good as his brother'.

(7) /sali:m miʃ ʃa:ṯir/ zajja-xu:h/
'Like his brother, Salim is no good'.

Examples (5), (6) and (7) above differ from each other in more than one way. First, the tone-unit under (5) is regarded as a statement, whereas the one under (6) consists of two tone-units in which the initial tone-unit acts as a statement, while it functions in the second as a rhetorical question; one the other hand, utterance (7) consists of two tone-units each of which functions as a statement. Second, in examining the grammatical structure of the above examples, we draw attention to the comparative phrase /zajja-xu:h/. As far as the remaining parts of each individual utterance are concerned, it can be said that they consist of identical grammatical elements, namely, a noun + a negative article + an adjective. As a result of splitting the above utterances into different tone-units, with different boundaries, /zajja-xu:h/ acquires various grammatical tasks. Hence, it functions as an adverbial clause in utterance (5), while in (6) and (7) it functions as a rhetorical question and a statement respectively. Moreover, it is not difficult for a native speaker to realise that there is an omitted part of example (7). Thus the meaning of that utterance may be extended as follows: 'Like his brother, <u>who in my opinion is no good</u>, Salim is no good'. (The extension is underlined).

Third, similar to examples (1), (2), (3) and (4), examples

(5), (6) and (7) above are bound to occur in different contexts of situations; for instance, in (5) above both the speaker and the listener seem to agree about the speaker's judgement in relation to Salim, but in (6), the speaker is not certain about his judement and thus wishes to ascertain the listener's opinion about his judgement and invites some comment. Finally, in (7) the speaker does not hesitate to put forward his own judgement. He does not seem to be interested in hearing the listener's views about the subject.

(8) /waddi:lu mi:t-?idʒne: ?aḥsan/ xamsi:n mabitʃaffi:ʃ/
'It is better to send him a hundred pounds, fifty is not enough'

(9) /waddi:lu mi:t- idʒne:/ ?aḥsan xamsi:n mabitʃaffi:ʃ /
'Send him a hundred pounds, because fifty is not enough'

The difference between utterances (8) and (9) may be summarised as follows :-

(i) /?aḥsan/ in (8) functions as a comparative adjective, while in (9), it merely becomes a conjunction. Furthermore, the second tone-unit in example (9) becomes an adverbial clause of reason, whereas its equivalent in example (8) is employed as a statement.

(ii) There are meaningful contrasts between the two utterances as manifested in the speaker's role. For example, the speaker in example (8) appears to be in a position which allows him to dictate orders according to the type of tone employed; in comparison, our speaker in example (9) acts simply as a passive advisor whose advice may be taken or rejected.

(10) / baʕid ma: banud- da:r /
'After they built the house'...

(11) / baʕid / ma: banud- da:r /
'Still, they didn't build the house'.

Similar to some of the examples above, such as (1) and (3), the opposition between utterances (10) and (11) is occurring between a single tone-unit as in (10), against two tone-units as in (11). In these cases, each tone-unit differs from the rest in regard to its size. For example, the first tone-unit of the utterance (11) is observed to consist of a single word which is an adverb of time; the second tone-unit is a negative grammatical structure consisting of three words. In comparison, example (10) consists of an adverb + a pronoun + a verb + an object in the form of four words. In addition, it is noticed that our tone-unit in example (10) differs from the tone-units in (11) regarding their occurrence in connected speech. Thus, in Ir.S.A., the adverbial clause tone-unit in (10) is shown to occur in non-final positions in connected speech. Whenever it occurs in such positions, it indicates the speaker's intention to continue speaking. In contrast, both tone-units in example (11) have no restrictions as to whether they should occur in any particular position. This, we may add, depends largely upon the type of tone they may be associated with.

(12) / ʃu: / bitku:l ?abu:h wis̱il /

'What ? are you saying that his father has arrived? (I didn't hear you).

(13) / ʃu: bitku:l / ?abu:h wis̱il /

'What are you saying?' (I don't believe it , his father arrived?).

Grammatically speaking, example (12) differs from (13) in that the first consists of two tone-units which respectively function as a general question, and as an echo-question. Example (13) also consists of two tone-units; but in this case, the first tone-unit of (13) represents a general question, while the following tone-unit represents a yes/no one. It is also interesting to notice that while /bitku:l/ 'you are saying' occurs as a subject in example (12), it functions as an object in example (13). Therefore, there are basic differences in meaning between the utterances concerned.

A brief description of a possible context in which the tone-units take place is intended to assist us in pointing out these significant differences. Firstly, tone-units under (12) may be uttered in a situation where the speaker appears not to be a direct participant in a conversation that is taking place among a group of people. His role gradually changes when the conversation touches upon one he knows. Under these circumstances, the speaker interferes in the dialogue to put forward his questions and express his amazement at what he has just heard. By contrast, the speaker in example (13) is one of the two participants discussing day to day matters. At this time, the speaker learns from his companion about the arrival of a friend. It appears that this piece of information comes as a surprise to the speaker who responds by asking a question, in which he reveals some suspicion regarding the accuracy of the latter's statement. Therefore, his question is followed by another, in order to express his disbelief in what he has just heard. The basic difference between the two utterances lies in the fact that in the first instance the speaker intends to confirm that the piece of information received is not false, while the speaker in the second utterance is taken by surprise because he has not expected to hear about the arrival of the person concerned from an outsider. Instead, he was hopeful that his arriving friend will look for him soon after his arrival.

Some sort of similarity exists between the last pair of examples and the following:-

(14) / mafhimtiʃ ʃu: kulit /
'I didn't understand what you said'

(15) / mafhimtiʃ / ʃu: kulit/
'I didn't understand! What did you say?'.

(16) / ?ana baʕrif ?innu dʒa:jil- ?aribʕa/
'I am sure that he is coming on Wednesday'

(17) / ?ana baʕrif / ?innu dʒa:jil- ?aribʕa /
'Do I know? that he is coming on Wednesday?

It is obvious that example (14) consists of a single tone-unit which functions as a statement. This contrasts with (15) which contains two tone-units, the first of which functions as a general question, whereas the second functions as a yes/no question. The present tonality-division of examples (14 and 15) results in an alteration of the grammatical function of the phrase / ʃu: kulit / 'what are you saying?' in such a way that, in example (14), the interrogative particle + verb is regarded as the object of the sentence. In other words, /ʃu:/ in this instance, ceases to function as an interrogative particle; instead it may be replaced by the definite article /?illi/. Thus, the whole utterance becomes

/mafhimtiʃ ?illi kultu / 'I did not understand the bit you said'. In contrast, /ʃu:/ in (15) remains an interrogative particle functioning as a subject in that particular tone-unit.

Once again, examples (14 and 15) are shown to be associated with different contexts, so as to convey different attitudes. Accordingly, the speaker requests in example (14), his listener indirectly to repeat what he previously said, simply because he has not managed to grasp the intended meaning. On the other hand, example (15) may be common in contexts where the speaker appears to be busy either talking or listening to someone else as his addressee is delivering his message. Consequently, the causes for failing to understand the delivered message vary from those explained in relation to utterance (14).

As far as the grammatical function of the tone-units in examples (16) and (17) is concerned, the contrast between the two utterances results from the fact that example (16) consists of a statement similar to that of (14) above, while example (17) contains two tone-units which function as general questions.

(18) / rawwaḥna ʕadda:r mabsuṭi:n /
'We went home happy'

(19) / rawwaḥna ʕadda:r / mabsuṭi:n /
'We are home now, does that make you happy'.

In this case, example (18) consists of a single tone-unit which includes a verb + a prepositional phrase + an adjective. The whole tone-unit functions as a statement which describes the mood of the speaker. The difference between utterances (18)and (19) lies, in that example (19) is split into two tone-units. In addition, the adjective /mabsuṭi:n/, in (19) which occurs in the second tone-unit, assumes the function of a general question preceded by a statement which is confined in its occurrence to non-final positions in connected speech.

So far, it becomes obvious from examples (1 - 19) given above, that the choice of tonality in Ir.S.A. is an effective factor which splits identical utterances into varying numbers of tone-units with distinctive grammatical functions. This in fact supports our earlier expressed views (see p.270) where the function of intonation is shown to extend on a scale running from attitudinal to grammatical. Our examples are selected to demonstrate that there are points on the scale where the two functions coincide. Hence, intonation is believed to be the major aspect that decides the main grammatical and attitudinal characteristics of each of our examples as presented above. Consequently, further changes in the intonation pattern of these examples (such as changing the tone pattern of their nuclei) may lead to parting the two functions further, thus most likely highlighting the attitudinal function. In order to save time and space, the following examples, where tonality still functions in a similar manner, are presented in short notes :

(20) / tʃe:f ʃajiflijja: tḥassan /
'How far do you think he has progressed?'.

The speaker believes that some progress has been achieved. Grammatically, the above tone-unit functions as a general question.

(21) / tʃe:f ʃajiflijja:h / tḥassan /
'How do you see him? do you think that he has achieved any progress?'.

The speaker is in doubt as to whether any progress has been achieved. The tone-units function as a general question and a yes/no question respectively.

(22) / ?intib-tiʕr̂if ?innu ?axaðu ?abulʕabid /
'Do you think that they took Abul Abid (proper noun) away?' (yes/no question).

(23) / ?intib tiʕrif ?innu ?axaðu / ?abul ʕabid /
'Do you know that he took it .. I mean Abul Abid, (yes/no question + a statement).

(24) / kul xami:s / bit̠laʕin biʃimminil- hawa /
'Every Thursday, they (plural feminine) go out to have some fresh air, (two statements).

(25) / kul xami:s bit̠laʕin / biʃimminil hawa /
'Every Thursday they go out, they enjoy themselves, (two statements).

8.4. Tonicity

In discussing the second choice of the intonation system of Ir.S.A., and in accordance with the purpose of this section, which aims at discussing the functions of intonation in the dialect under study, we shall be mainly concerned in discussing examples where tonicity is regarded as :

(i) The essential factor in distinguishing between different shades of meaning, in what appear to be identical utterances. Under such circumstances, the intonation system is said to emphasise the attitudinal side of the scale function.

(ii) Being responsible for creating a situation where certain intonational patterns serve to indicate the emotional attitude of the speaker, in addition to distinguishing between various grammatical structures of identical utterances.

In revealing the shades of meaning mentioned under category (i), a distinction is normally made between neutral tonicity, i.e. the tonic beginning on the final lexical element in a tone-unit (see Halliday 1967, 22-23), and marked tonicity where the tone may fall on any non-final stressed syllable in a tone-unit. The latter is considered as an alternative to which the speaker resorts in order to convey his message. The following examples are presented to illustrate this view :

(1) / sali:m biḥ\ibbiʃ-is- samatʃ /
'Sali:m (masculine singular) does not like fish'
(Otherwise we would have fish for today's meal).

(2) / sal\i:m biḥibbiʃ- is- samatʃ /
'It is Sali:m who doesn't like fish' (otherwise, it will be all right for the rest of us to have fish for today's meal).

(3) / sali:m biḥibbiʃ- is- \samatʃ /
'Sali:m doesn't only dislike fish, he hates it'.
(As a result, we can't possibly think of having fish for today's meal).

In all of the above examples, the general meaning remains precisely the same, the family will not have fish for their main daily meal. Nevertheless, the placement of the tone on different items results in providing us with new information. This would probably give the impression that tonicity, in this dialect, is a free choice. In fact, such judgement would be far from reality. In the remaining part of this section, we shall introduce examples which show that tonacity is restricted to a particular fixed place in the tone-unit because of two main reasons.

Firstly, there is a strong evidence in many examples suggesting that word-order in utterances may strongly influence a decision on the placement of tones. Let us now consider the following examples:-

(4) /daxxalu:l- mustaʃfam- ba:riḥ /
'They admitted him to hospital yesterday'.

(5) / mba:riḥ daxalu:l- mustaʃfa /
'Yesterday, they admitted him to hospital'.

(6) / ḑarab limʕallim ?ilwalad /
'The teacher punished the pupil'.

(7) / limʕallim ḑarab ?ilwalad /
'It was the teacher who punished the pupil'.

Due to the absence of a comprehensive study that deals with word-order in Ir.S.A., which no doubt departs from Classical Arabic in this respect, we have decided to compensate for this handicap by using native speakers of the dialect in order to judge the above examples. For this purpose, five informants were presented with twenty utterances, including the above examples, and were asked to judge them as either being familiar, rare or unacceptable. Furthermore, the informants were also asked to mark the tonic syllable for each tone-unit; and finally, illustrate the difference of meaning between the identical utterances, if they thought that any difference might exist. Our results of the present material show that there was a full agreement amongst our informants in judging the tone-units under (1 - 7) as being familiar. This, in fact, suggests that, subject to contextual and emphatical restraints, any item in examples (1 - 7) may receive the tonic. However, it has to be pointed out that, on the basis of the native speakers' judgements with respect to word-order, examples (5) and (7) above, are found to differ from (4) and (6) in the following ways :

(i) The word-order is different. For example, our results show that Ir.S.A. may be said to construct its statements in the following order :

verb + object + adverbial phrase as in (4)
verb + subject + object as in (6), or
subject + verb + object as in (7).

Accordingly, if an adverbial phrase or an object begins the utterance, then it will not be difficult for a native speaker to realise that the normal word-order has been disturbed.

(ii) It is also noticed that in such instances where a change in word-order takes place, as in example (5) above, a restriction must be imposed regarding the placement of tonicity, thus the tone is permitted to fall only at / ?imba:riḥ /.

Secondly, Tonicity in some Ir.S.A. instances is proved to be restricted in its occurrence to a particular part of the tone-unit, when its function on our scale of contrastivity is primarily grammatical. In all these cases, tonicity in the dialect under study serves to mark and differentiate between certain syntactical structures.

Let us now examine what appears below to be identical pairs of utterances. For the sake of simplicity, all examples are spoken with a falling-tone.

(8) / nakalu sali:m / 'they transferred Sali:m'.
(9) / nakalu sali:m / 'Sali:m moved it'.
(10) / ḍarabu sali:m / 'they punished Sali:m'.
(11) / ḍarabu sali:m / 'Sali:m punished him'.
(12) / ḍarbil ?usta:ð / 'The teacher's punishment' (the punishment is inflicted upon the teacher).
(13) / ḍarbil- ?us-ta:ð / 'the teacher's punishment' (the teacher is the actor).
(14) / su?a:l sali:m / 'Sali:m's question.
(15) / su?a:l sali:m / 'to ask (asking) Sali:m'.

According to examples (8 - 15) above, it has to be said that, structures in Ir.S.A., are distinguished according to their intonational-pattern. Thus, example (8), with the tone falling on its first item, shows a syntactical structure which consists of a verb + a suffix pronoun /u/ + an object. However, when the tone is transferred to its final item, the whole grammatical structure of the utterance changes. In this case, the tone-unit consists of a verb + objective suffix /u/ + a subject. The same thing applies to examples (10) and (11). The equivalent of our utterances under (8 - 12) in Classical Arabic would produce the required meaning without reliance on tonicity. The ambiguity in meaning will be resolved as a result of employing what is known in Classical Arabic as / haraka:tul- ?iʕ-ra:b/ i.e. the vowel-movements at the end of each item. Accordingly, example (8), for instance, becomes /nakalu: sali:m / when the example occurs before a pause. This will be easily distinguished from example (9) which becomes : /nakalahu sali:m /. As a result of dropping the vowel's length in /sali:m/ in example (8), and the dropping of /h/ and /u/ plus the replacement of /a/ with /u/ in /nakalahu/ in example (9), Ir.S.A. must rely on tonicity for resolving the ambiguity. As far as examples (12 - 15) are concerned, the situation differs, since their equivalents in Cl.A are normally distinguished according to their word ordering. Thus, the equivalents of examples (12) and (15) must be initiated by the proposition /?an/ 'to'. In other words, in Cl.A, neither example is allowed to occur as they appear above. On the other hand, Ir.S.A, which allows their occurrence as they stand, relies on the tonicity choice to resolve their ambiguity. Further similar examples may be found as in :

(16) /bis sali:m / 'Sali:m is (as sneaky as) a cat'.
(17) /bis sali:m/ 'Sali:m's cat'.
(18) /ḥma:r sali:m/ 'Sali:m is (as stupid and lazy as) a donkey'.
(19) /ḥma:r sali:m/ 'Sali:m's donkey'.

In the above utterances, each tone-unit consists of two nouns. The only difference between examples (16) and (17); and between (18) and (19) is that in (16) and (18), the first element does not function as a noun, but as an adjective; whereas, in (17) and (19), the first item functions as possessed or what is called muda:f in Classical Arabic. Thus, the above examples in accordance to their tonicity consist of :

(i) adjective + noun (16) and (18)
(ii) possessed followed by possessor in (17) and (19) .

It is important to know that the equivalent examples in Classical Arabic of the above tone-units will have no ambiguity as a result of depending upon the word-order rules. In order to explain the difference between the two varieties, namely, Ir.S.A. and Classical Arabic, the equivalent of examples (16) and (17), as they occur in Cl.A are presented below:

(16) /sali:mun bisun / 'Sali:m is (as sneaky as a cat)'.

versus

(17) /bisu sali:min / 'Sali:m's cat'.

As demonstrated above, the difference between the two types of examples, lies in the word-ordering of each utterance in addition to using the affixes /un/ in (16) and /u/ in (17), in order to mark the grammatical function of each lexical item.

Finally, let us examine the following set of tone-units :

(20) / da:r sali:m / 'Sali:m turned around'
(21) / da:r sali:m / 'Sali:m's house'
(22) / satʃannir- ri:ḥ/ 'the wind calmed down'
(23) / satʃannir- ri:ḥ/ 'the sand of the wind' [carried by the wind].
(24) / ʕammil- ḥub / 'the romance spread around'
(25) / ʕammil ḥub / 'the cousin of someone's sweetheart'.

The tonal pattern associated with examples (20 - 25) above does not only serve to indicate the speaker's attitude towards his message, which is normally illustrated by the type of tone employed, but also decides the grammatical status of some of these tone-units components. Accordingly, in examples (20, 22 and 24), which are shown to have a marked tonicity, the first item in each example functions as a verb. In contrast, in examples (21, 23 and 25) where the tone falls on the final lexical item, the first item in each case is shown to function as a noun. Consequently, in such instances, the attitudinal and grammatical functions of intonation coincides on the scale of the intonational function.

8.5. Tone

As far as this choice is concerned, the tone-system of Ir.S.A. has already been described fully in chapter seven. In particular, we have outlined the functional set of tones that operate in the dialect. In our description (see p. 208- 65) reference has been made to the correlation that exists between each tone and the grammatical structure of the unit in which it occurs. Furthermore, the basic functions of each tone has also been discussed; this included a description of the attitudinal functions associated with each tone; in addition to pointing out that, for instance, tone patterns are found to mark the distinction between final and non-final units in connected speech.

In order to avoid a repetition of what has already been discussed, we would like to outline the major functions of the tone-system in Ir.S.A. by emphasising the following points:

(i) We totally reject an approach which attempts to define the various syntactical structures of the dialect by means of assigning a particular tone for each out of the total set of functional tones that operate in the dialect. On the contrary, our analysis show that in Ir S.A., each grammatical category has a free choice regarding the type and pattern of the tone it may acquire. On this basis, statements, for instance, are found to be associated with one of the following set of tones : fall, rise, rise-fall and fall-rise, depending upon the meaning and the attitude which the speaker may attempt to communicate. This implies that any of the set of tones mentioned here, may be represented by one of its subclassified tones, i.e. a falling tone may occur as either : high, mid or low. The same principle applies to the various grammatical structures of the dialect, as the following examples demonstrate:-

(1) / ?iftaḥil- ba:b /spoken with a low fall, it indicates that the speaker has issued a soft and gentle command, by asking his listener to 'open the door'. Example (1) differs from the following, in which the same utterance is produced with a high-rising tone :

(2) / ?iftaḥil- ba:b / 'Open the door'.
By using such a tone, it becomes obvious that the speaker is extremely

angry, hence, the tone-unit may be said to be common in a situation where the speaker asked someone several times to open the door, without getting a response. The speaker's attitude may be described, or interpreted, as if he wants to say " I am getting fed up, after asking you so many times".

(3) / ?iftahil- ba:b / 'Open the door' : you seem to be unable to understand my message. Example (3) is normally uttered in a context where the speaker doesn't seem to get satisfied by expressing his anger. In such cases, he may make a step further by accusing the listener, i.e. the addressee, of being lazy and irresponsible. In order to express such an attitude, the speaker may employ a mid rising-falling tone as in the present example.

According to examples (1, 2 and 3), one may conclude by saying that, in Ir.S.A., speakers are free to choose any of the above tones, in order to issue commands corresponding to the appropriate situation. In such cases, it may be said that in the above tone-units, the tone-systems of the dialect serve a primarily attitudinal function.

(ii) It may be appropriate to direct our attention to another type of example so as to examine identical utterances, i.e. those that have the same set of lexical items in which the tone-system serves a primarily grammatical function. In these instances, different tones are used to mark different syntactic structures. The following examples are presented to illustrate this suggestion :-

(4) / ?iftaḥ ha:jil- ?awwal / miʃ he:tʃ /
'Open this first, Oh! no, it is not right'.

(5) / ?iftaḥ ha:jil- ?awwal / miʃ he:tʃ /
'Open this first, am I right?' (I suppose I am).

The initial tone-unit in (4) and (5) is deliberately left unmarked since our concern is focused on the final tone-unit, which consists of a negative particle plus an adverb. If the tone-unit /miʃ he:tʃ / is presented to native speakers in its written form, without being intonationally marked, it may be interpreted as a negative phrase. However, in its spoken form, the tone-unit may be associated with different tones. Thus, in (4), a low-rise falls on the nuclear syllable, which results in altering the syntactical character of the tone-unit. Under such circumstances, example (4) functions as a statement, while the negative phrase in (5), functions as a yes/no question, by employing a mid-falling tone. Let us now consider the following example :

(6) / hu:l- li fataḥil- ba:b / 'The one who opens the door...' (mid falling-rise)

(7) / hu:l- li fataḥil- ba:b/ 'It is him who opened the door' (low-fall)

It is obvious that, as a result of employing different tones, the above tone-units differ syntactically where (6) functions as an adverbial clause. According to the Arabic grammar, this adverbial clause functions as a subject for an elleptical object. By contrast, example (7) acts as a statement.

Example (6) differs also from (7) in connection to its occurrence in connected speech, which is restricted in this case to a non-final position. In contrast, (7) is allowed to occur finally in the above utterance.

To conclude this chapter, it has to be said that, in Ir.S.A., tonality, tonicity and tone choices are primarily employed as indicators of meaning and attitude, thus emphasising their outstanding role as bearers of affective indices. Furthermore, there are instances in our data, where in addition to meaning and attitude, the three choices are used by Irta:hi speakers to carry a grammatical function as demonstrated above. However, no denial is made here of other possible functions, which may extend on our contrastive functional scale. In such cases, intonation may, for example, be used to mark what is called word-prominence (see Adams 1969, 116), or to fulfill what Enkvist and Nordström (1978, 63-79) call <u>textual functions.</u> It their textual function, intonational patterns may be said to provide listeners with cues referring to the actual position of any tone-unit within a paragraph for instance. For similar views, see Lehiste (1975, 195-203). Features of this nature are undoubtedly in need of future research.

Conclusions

A major part of the conclusions drawn from the results of this study emphasise the theoretical importance of the time dimension in speech analysis. For example, Ir.S.A. long vowels are shown to be clearly distinguished from their short counterparts in matters of duration. Our description of the dialect's vowel characteristics is also centred on measuring their duration in different positions.

In our description of the stress-patterns in the present dialect, it has been established that stress in the vast majority of cases is predictable according to syllable-patterns of the forms in which it occurs. Nevertheless, there are instances where stress carries a distinctive role by distinguishing between identical pairs of words. In general and according to our investigations about rhythm in speech samples that occur in the dialect, stress has been shown to play an indispensable role in organising the dialect's rhythmical features. This statement is supported by our informants' responses while identifying rhythmical patterns presented to them, as reported in Chapter Six.

As far as Ir.S.A's rhythm is concerned, our measurements suggest that strict physical isochrony between consecutive rhythmic feet in the data examined was not found. Instead, there is a strong tendency to isochrony between consecutive feet as reflected by the low standard deviation of the whole data; and by the fact that a high percentage of our rhythmic feet are shown to have approximately equal duration. Furthermore, our analysis suggests that the tendency towards isochrony is influenced by a number of different factors including:

(i) The phonetic structure of each foot in terms of syllable-structure, number of syllables included and the nature of the segments involved. In general, our measurements show that foot-duration increases linearly with its coplexity; as a result, the reported tendency becomes weaker in circumstances where feet in any data examined vary in terms of the number and type of their syllabic contents.

(ii) The rate of speech delivery. This is based on the fact that, in our study, the tendency to isochrony in speech associated with a normal tempo is stronger when compared to its equivalent in speech accompanied by a fast tempo.

In view of the fact that the major aim of this study is focused on establishing the basic features that characterise rhythm in the dialect concerned, we were unable to deal with all the issues involved. However, we hope that this work will stimulate further research and discussions in the future. In particular, we are hopeful that investigation of this nature would involve a much larger body of data in order to study, for instance, the effect of other dynamic features such as pitch and tempo on the dialect's rhythmic patterns. We also hope that future experiment would examine the relation between a foot's duration in relation to its position in connected speech. In addition, we believe that it is essential to investigate the manner in which native speakers perceive the rhythmic patterns in their language.

Finally, the present study has demonstrated that any utterance in Ir.S.A. must use one tone from a set of tone-patterns that are found to operate in the dialect. For all purposes of practicability, it has been shown that tones in Irta:hi speech consist of three major classes, where each class has been subdivided into its various tones. According to our findings, each tone-pattern is shown to possess its own tonal, grammatical and contextual features. It has also been pointed out that native speakers of this dialect employ definite tonal patterns in order to convey meaning, express attitudes and occasionally to distinguish between grammatical structures.

It is obvious that our present description has been confined to pitch-variations. However, we believe that a fully comprehensive study of such system must account, in addition to pitch-variations, for other dynamic features such as tempo and rhythm, together with other paralinguistic features that occur in the dialect, in order to examine the relevance of these features to the study of intonation.

Appendix I

In this appendix, the actual duration of different short and long vowels occurring in various positions in twelve short utterances as read by six native speakers is presented below. Reference to the various positions of the vowels in our data is made in chapter one, (see p.21). As shown below, the measurement which has been made in milliseconds is indicated underneath each corresponding vowel which, for purposes of pointing it out, is surrounded with brackets. In addition, the mean duration of each vowel, abbreviated as 'M.D', as read by all informants is also given.

Samples of the spectrograms from which the present measurements have been obtained are presented under Appendix (II), where different vowels are shown to occur in short utterances and in a text of connected speech.

Utterance No.1

	sx(u:)l	n(a)tt(a)t	
	175	55	100
	170	75	100
	200	80	150
	215	80	80
	160	60	75
	200	70	100
M.D. in m.sec.	186.6	70	100.8

Utterance No.2

	s(a:)l(i)m		ḥ(a:)s(i)m	
	165	45	125	50
	210	75	175	75
	175	75	175	50
	225	55	175	55
	150	50	150	50
	225	72	160	56
M.D. in m.sec.	175	62	160	56

Utterance No.3

	fh(i)m-	t(i)l-	m(a)ɣz(a)	
	70	40	55	100
	60	70	90	150
	50	50	75	100
	75	50	75	75
	55	50	75	100
	70	40	55	100
M.D. in m.sec.	63.3	50	70.8	104

Utterance No.4

	mn(i)m-	b(a:)rḥ(i)l		ʕ(a)s̱(i)r	
	75	175	50	40	60
	50	125	30	50	50
	40	150	35	50	60
	55	150	25	60	100
	50	175	40	50	75
	50	170	30	55	75
M.D. in m.sec.	54	147.5	35	50.8	70

Utterance No.5

	s(a:)l(i)m		ḥ(a:)tʃ(i)m		ḥ(a:)s(i)m	
	150	40	100	30	110	40
	175	55	130	35	160	40
	150	70	140	50	125	50
	125	30	100	25	100	30
	170	25	125	50	125	75
	175	25	140	25	125	55
M.D. in m.sec.	157.5	40.8	122.5	30.8	124.2	48.3

Utterance No.6

	b(a)rd	m(a:)	f(i:)	za(a)jj(u)	
	70	80	70	50	75
	80	100	100	50	70
	75	100	70	75	50
	100	100	75	75	80
	90	100	80	65	70
	73	90	78	60	68
M.D. in m.sec.	81.3	95	78.8	62.5	68.8

Utterance No.7

	m(a:)l(i)k		m(a)l(i)k		ḥ(a)k(i:)m	
	150	50	50	55	55	100
	100	50	50	50	50	130
	200	50	75	50	60	200
	200	50	50	40	50	150
	150	60	60	60	60	125
	150	60	60	50	50	175
M.D. in m.sec.	158.3	53.3	57.5	50.8	54.2	146.7

Utterance No.8

	z(a)j	m(a)-	r(u)ḥt(i)		dʒ(i:)t(i)	
	75	70	60	55	125	75
	100	80	90	55	105	95
	100	50	70	50	120	80
	95	75	65	50	120	85
	90	65	80	50	110	80
	90	60	75	60	120	88
M.D. in m.sec.	91.6	66.6	73.3	53.3	116.6	83.8

Utterance No.9

	s(a:)l(i)m		s̲(a:)ḥ(i)b		x(e:)r
	150	50	100	50	140
	110	45	100	65	125
	175	55	150	55	150
	140	50	100	50	150
	150	50	110	50	200
	145	50	100	64	153
M.D. in m.sec.	145	50	110	54	153

Utterance No.10

	j(a)ḥm(a)d		ʕ(a)dd(i)l		n(a)fs(a)k	
	50	45	65	50	50	80
	50	60	87	60	85	100
	50	50	75	55	50	75
	60	55	70	50	65	90
	40	50	80	60	55	80
	50	49	73	60	60	85
M.D. in m.sec.	50	51.5	75	56	61	85

Utterance No.11

	s(a)ḥ(a)r		b(i)nt	ḥ(i)lw(i)	
	70	100	100	70	100
	50	75	55	50	70
	80	100	90	55	70
	50	60	75	55	60
	80	100	55	55	70
	75	100	55	50	65
M.D. in m.sec.	67.5	89.2	71.7	55.8	72.5

Utterance No.12

	t(i:)	z(i)n	n(a)	kk(a)	l(a)t	m(a:)	b(a)	kk(a)	l(a)t
	100	50	60	25	75	100	75	50	50
	75	50	50	25	40	75	50	30	50
	100	50	50	50	60	100	70	65	60
	98	50	50	50	30	75	50	50	70
	100	50	55	40	58	90	65	60	60
	90	50	50	35	45	85	58	53	55
M.D. in m.sec.	93.8	50	52.5	37.5	52.3	87.5	61.3	46.3	57.5

In our attempt to provide enough information regarding vowel-duration in Ir.S.A., the above measurements are supplemented by selected samples of spectrograms, where short and long vowels have been recorded and measured while being pronounced in:

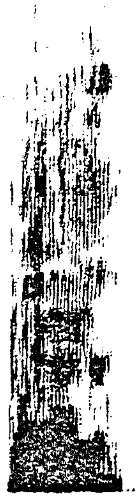
A - Isolated individual syllables

B - Disyllabic nonsense words

C - Isolated words.

Samples of spectrograms which have been employed in our study of the inherent length of Ir.S.A. segments are presented below. It has to be pointed out that these spectrograms are chosen to represent categories A and B above.

A- Isolated individual syllables.

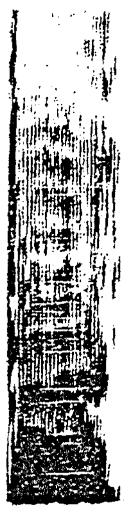


b i

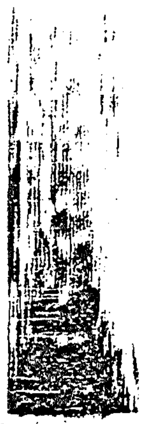
b a:

θ a:

θ u:



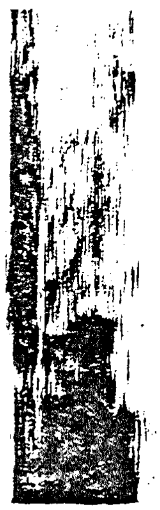
d i



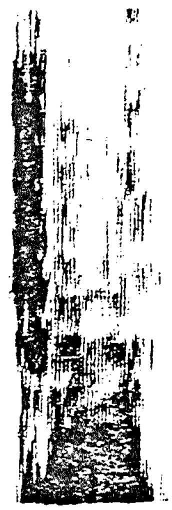
d u

t̲ a

t̲ a:



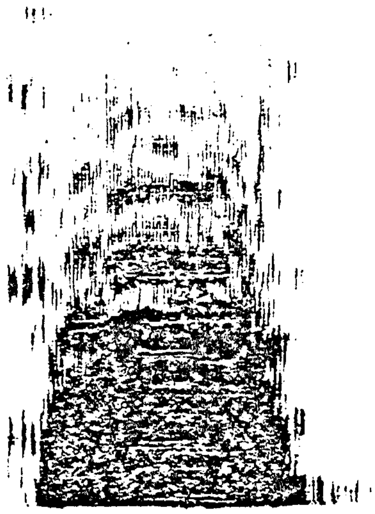
tʃ a



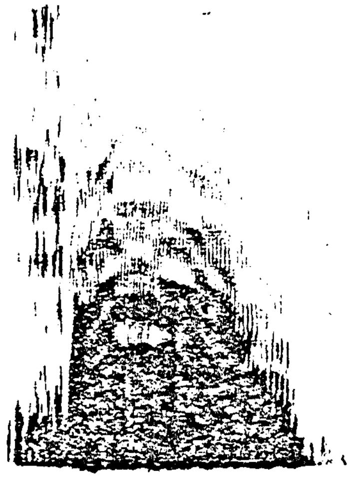
tʃ i

s̲ a

s̲ u



x a:

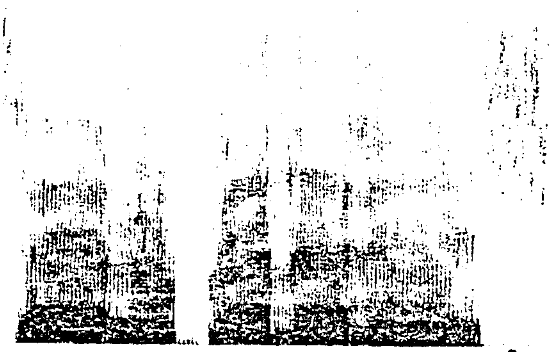


x u:

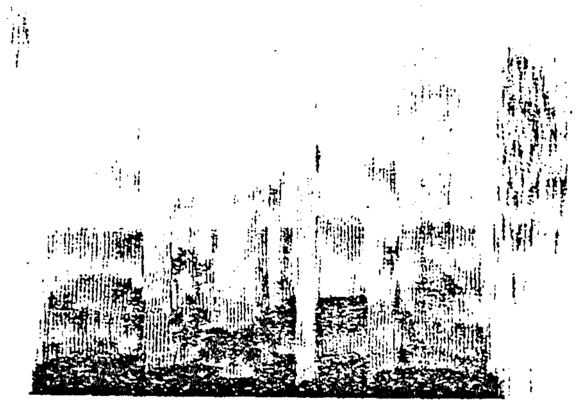
<u>d</u> a

<u>d</u> u

B- <u>Disyllabic nonsense words:</u>

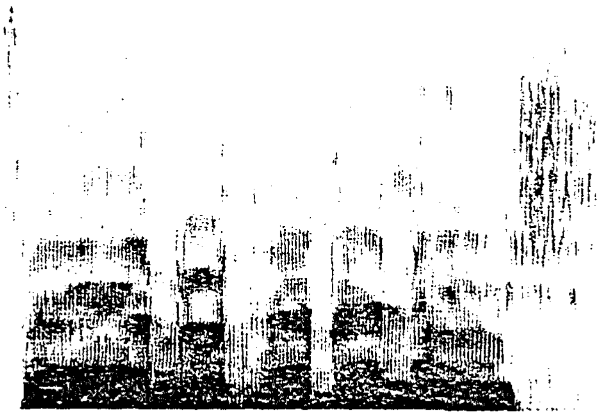


s aʔa l u b a n a l e: ʃ

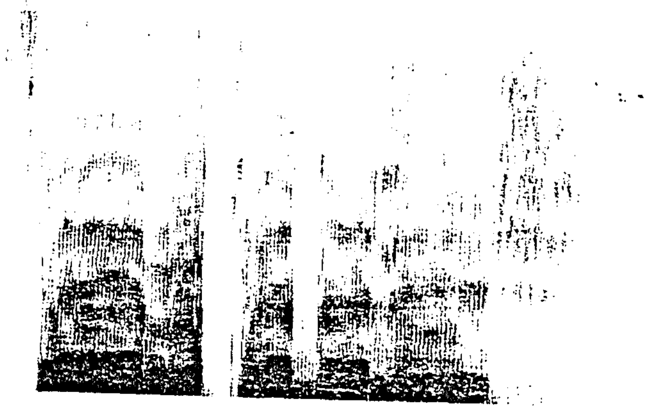


m a n a

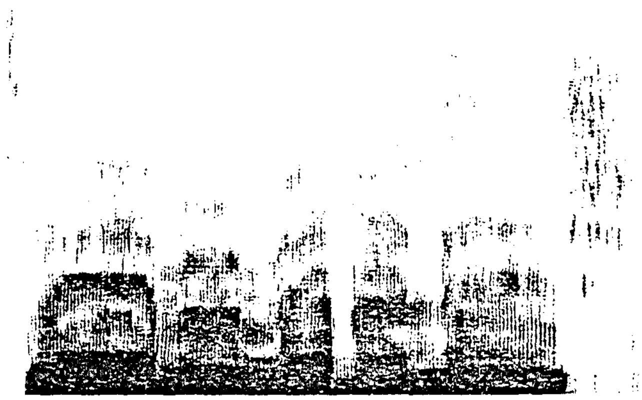
θ a n a



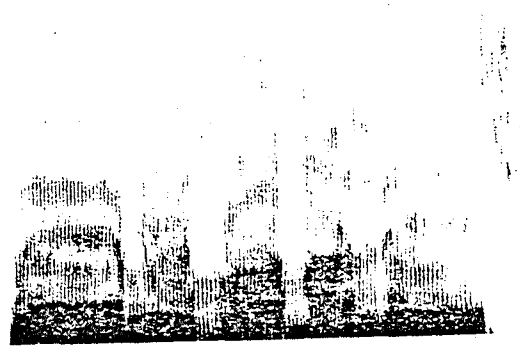
ð a n a



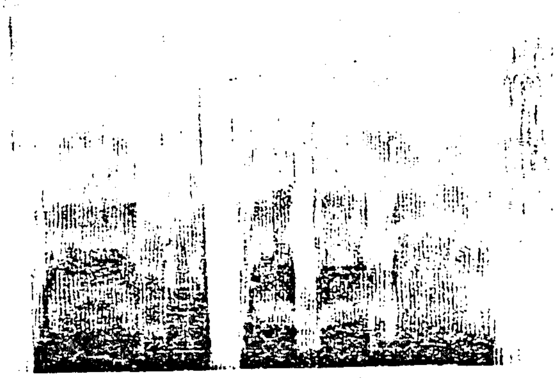
t a n a



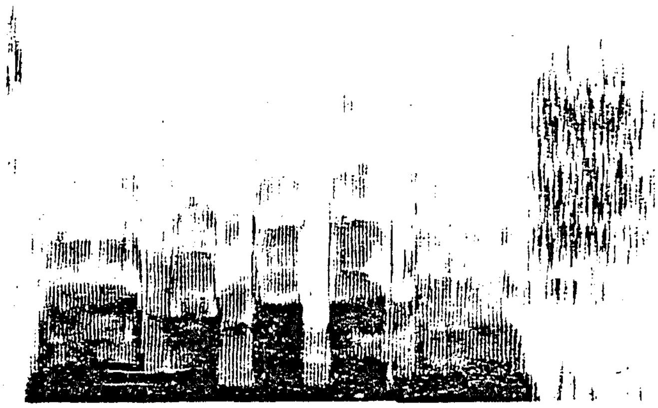
l a n a



∂̲ a n a

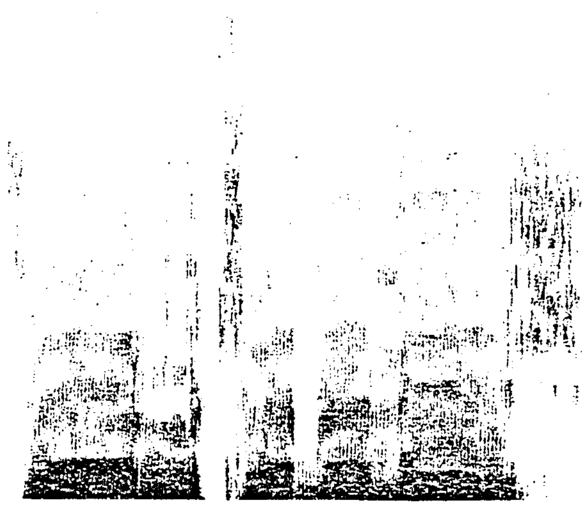


d a n a

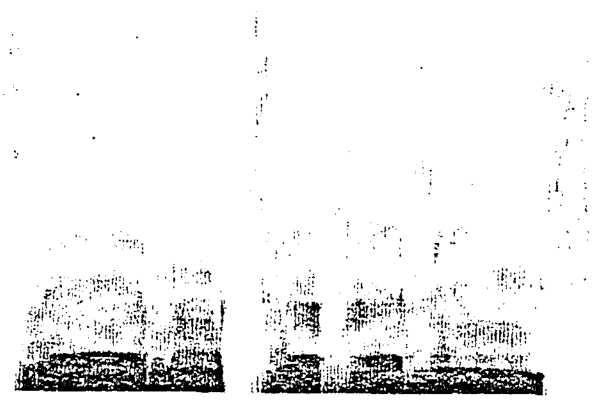


n a n a

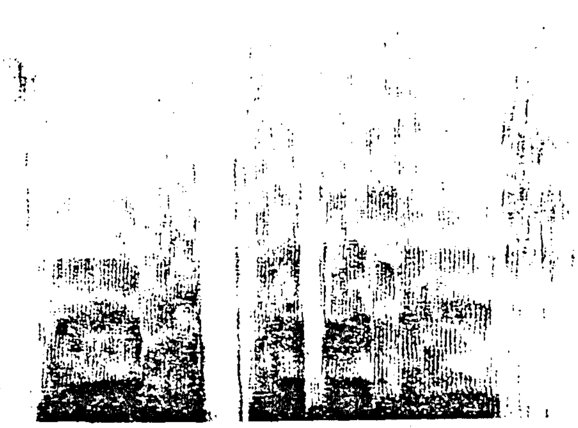
r a n a



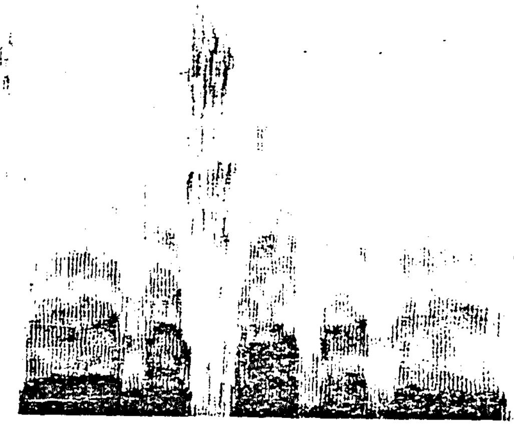
tʃ a n a



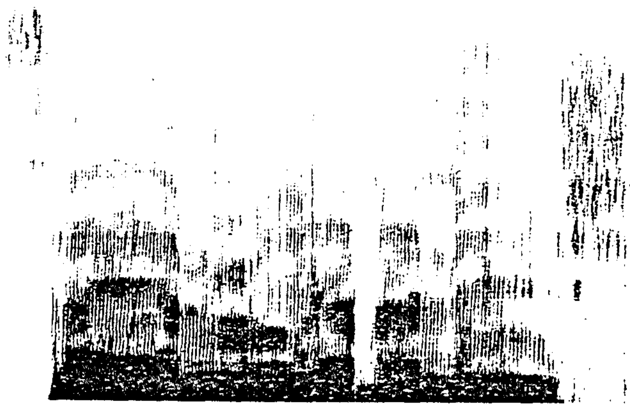
dʒ a n a



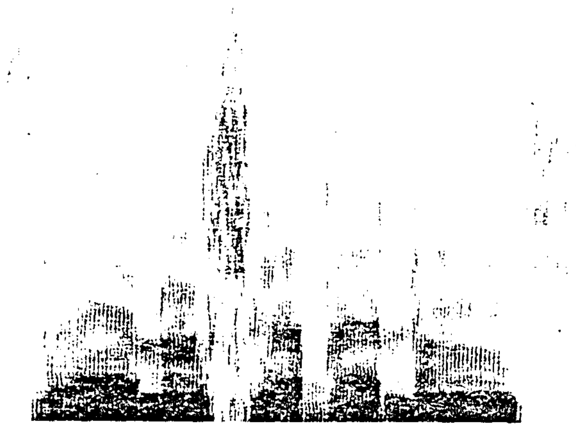
k a n a



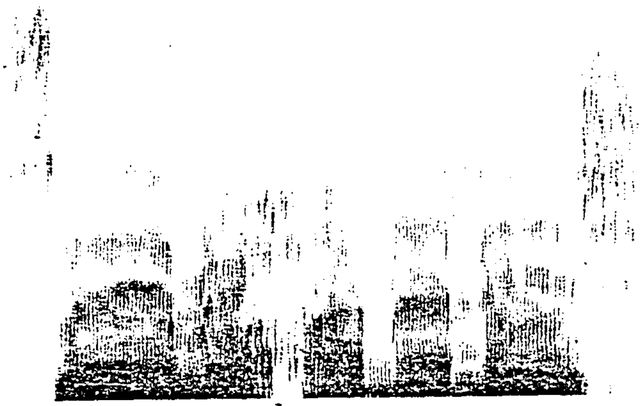
s̲ a n a



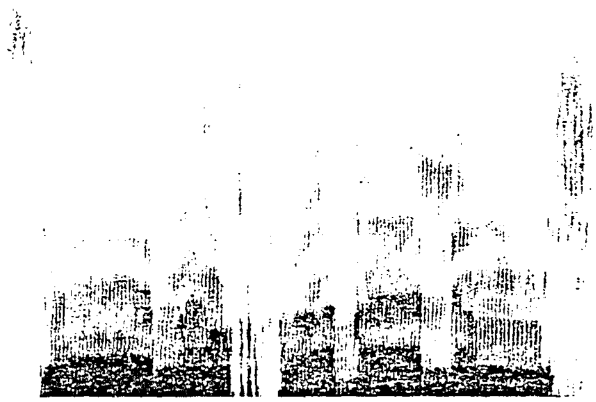
j a n a



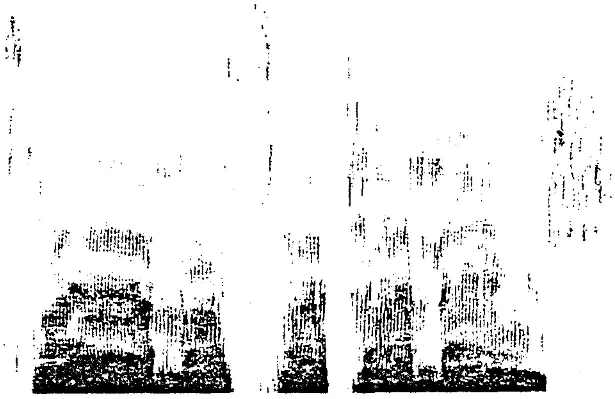
ʃ a n a



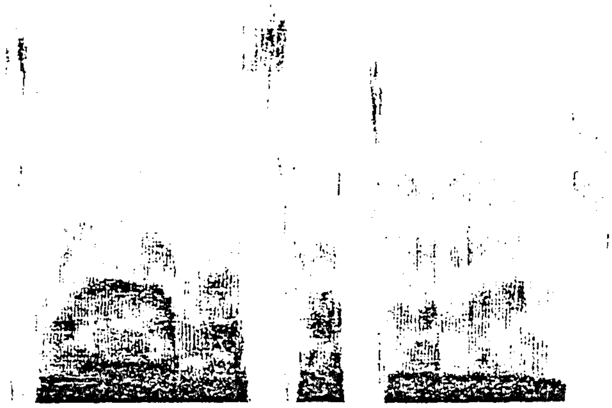
ḥ a n a



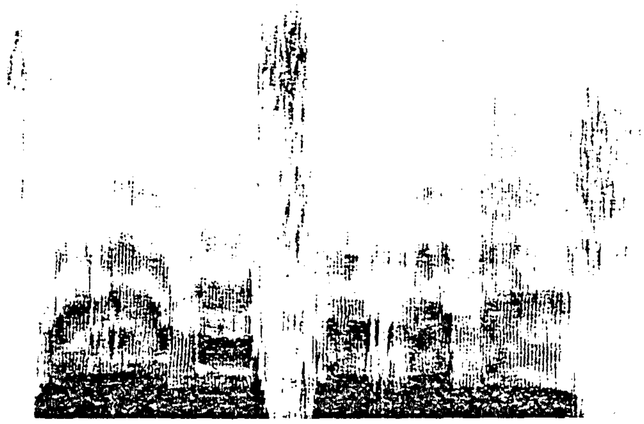
x a n a



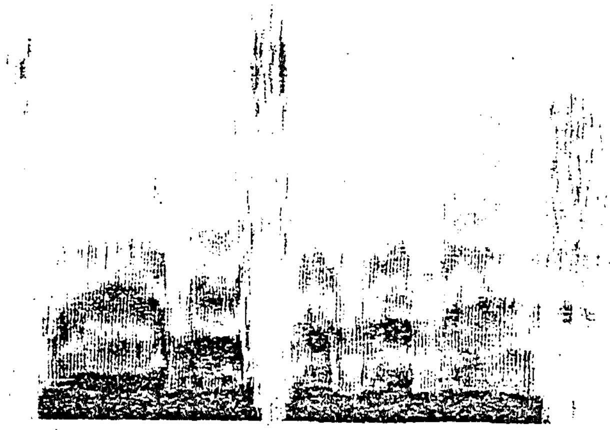
s a dʒ a



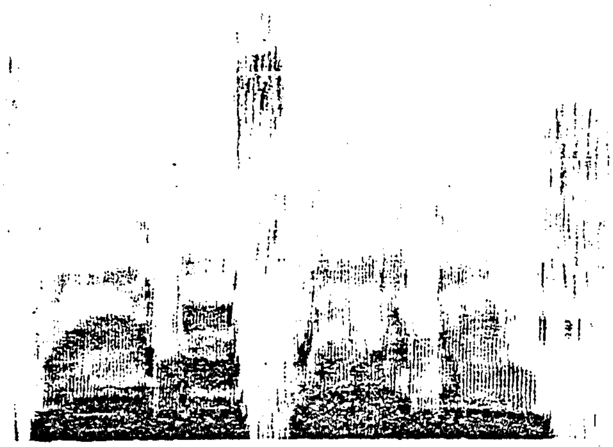
s a tʃ a



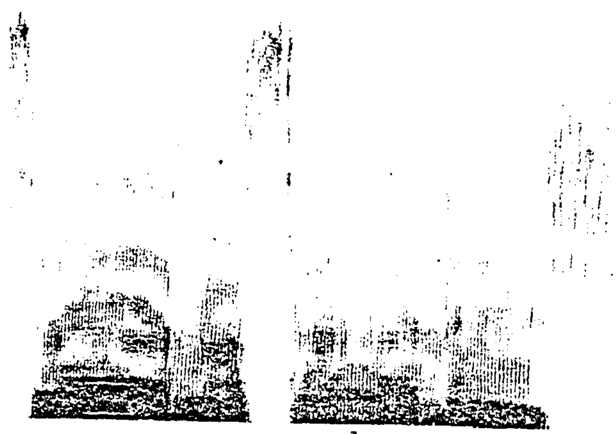
s a ɣ a



s a z a



s a ʕ a

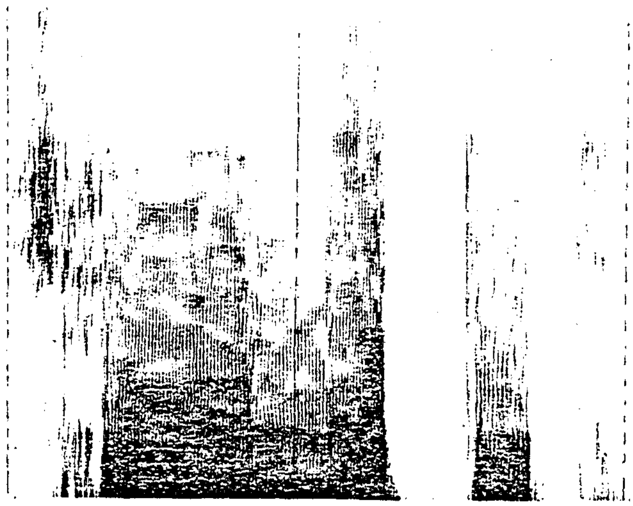


s a h a

Appendix II

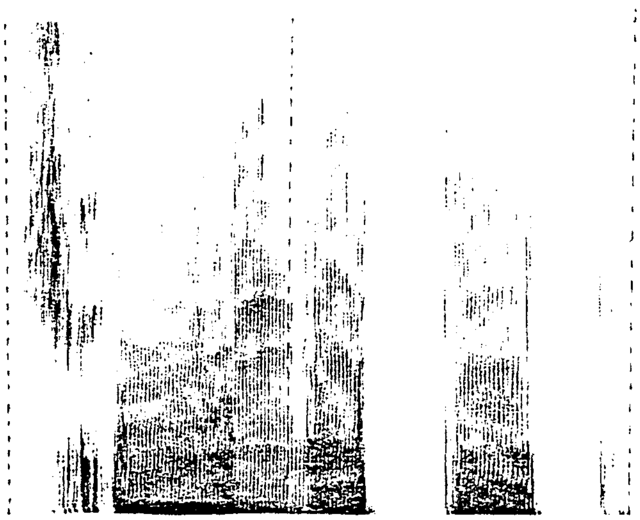
Appendix II is divided into two sections where, in section 'A', selected samples of spectrograms that have been employed in our analysis of rhythm in Ir.S.A. are shown in order to represent the actual duration of their constituent feet in eleven short utterances. The range of samples is deliberately chosen to represent each utterance as read by at least two of our informants. This meant consequently that, samples of spectrograms made by all informants are displayed.

Section A::



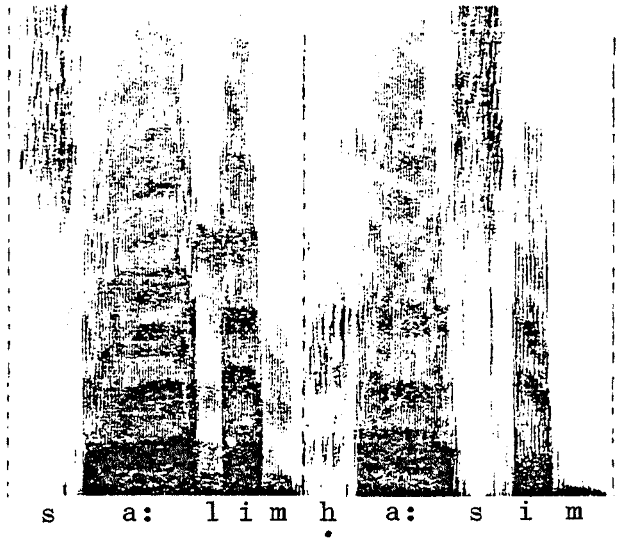
s x u: l n a t t a t

Utterance (1) as spoken by informant (1).

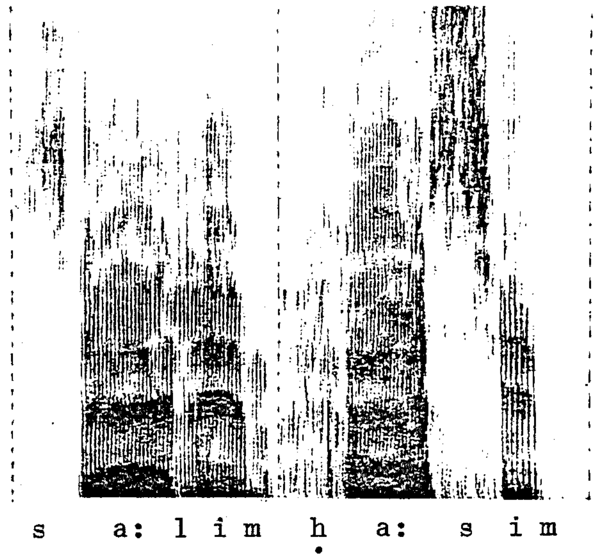


s x u: l n a t t a t

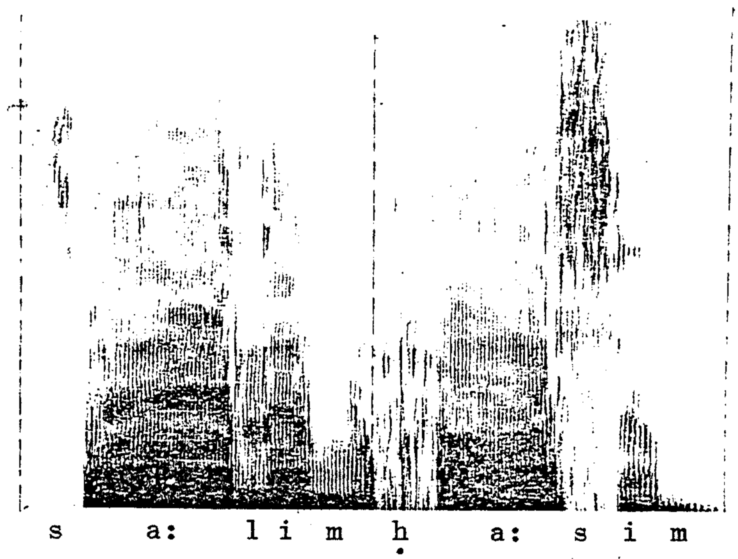
Utterance (1) as spoken by informant (2).



Utterance no.2 as spoken by informant (2).

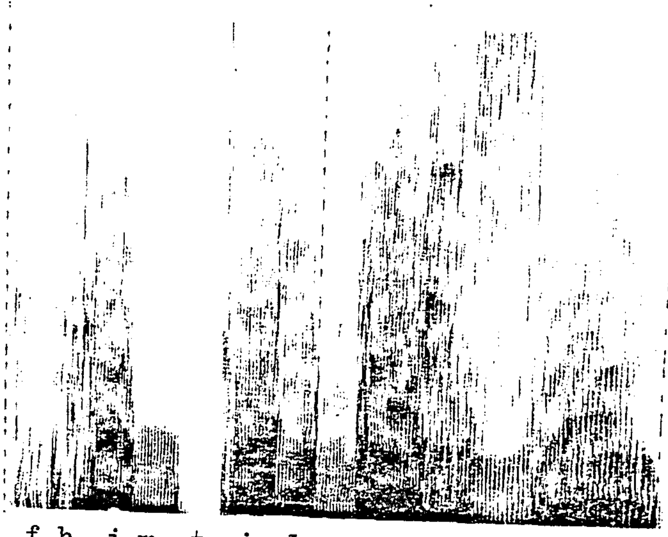


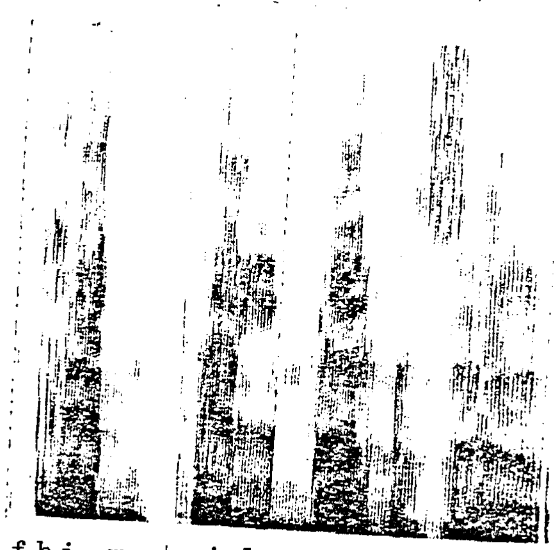
Utterance no.2 as spoken by informant (3).

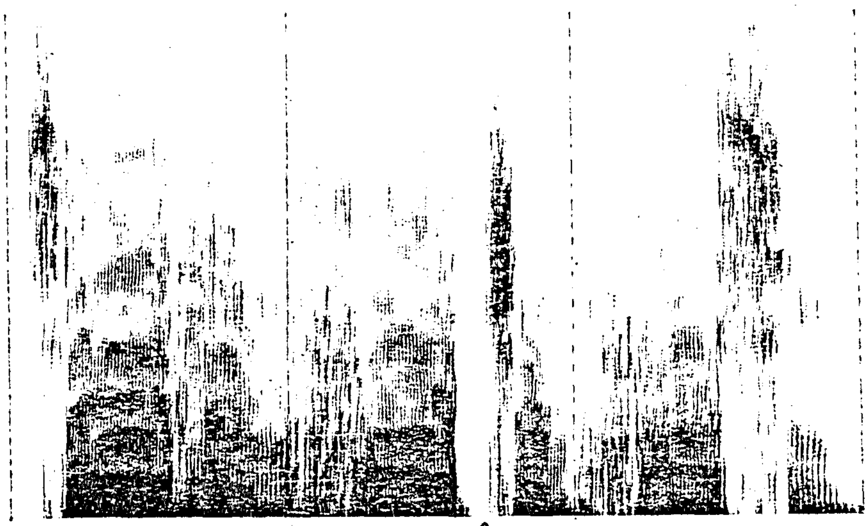


Utterance no. 2 as spoken by informant (4).

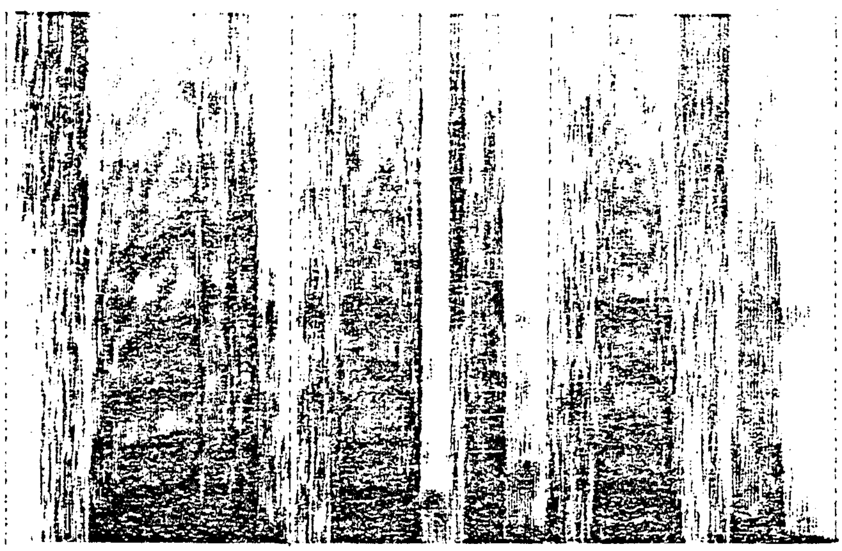
Utterance no.3 as spoken by informant 5&6 respectively :



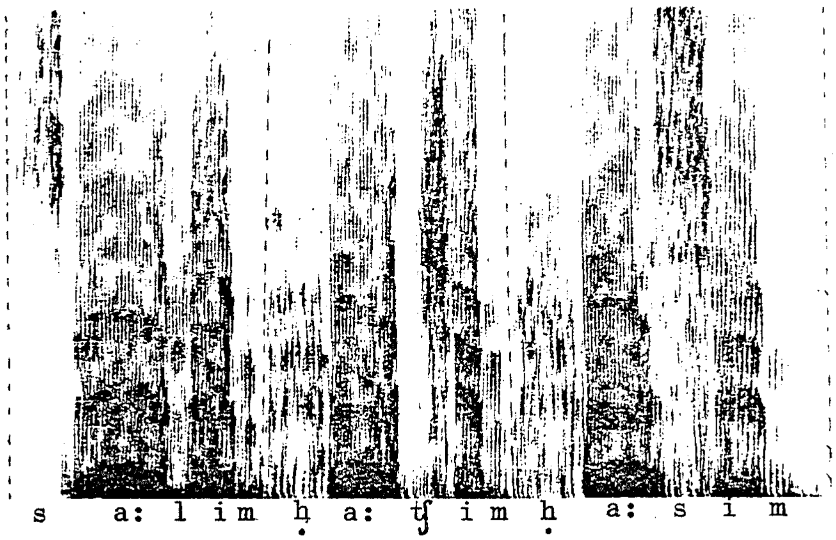




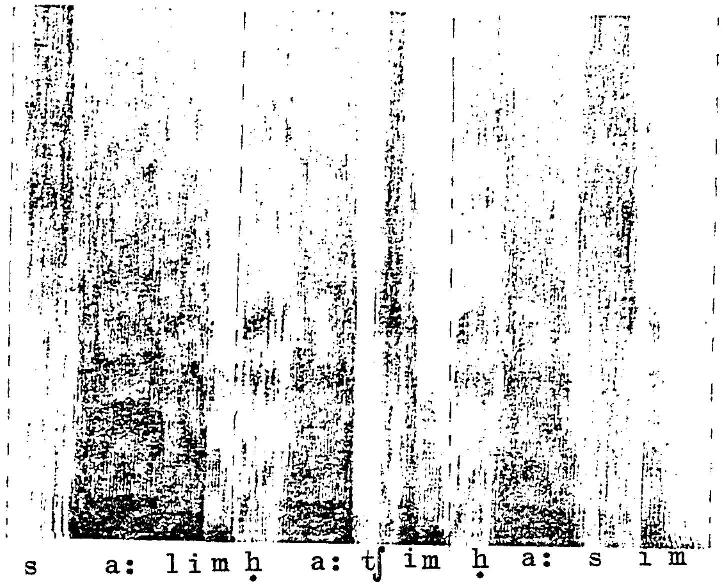
Utterance no.4 as spoken by informant no.5



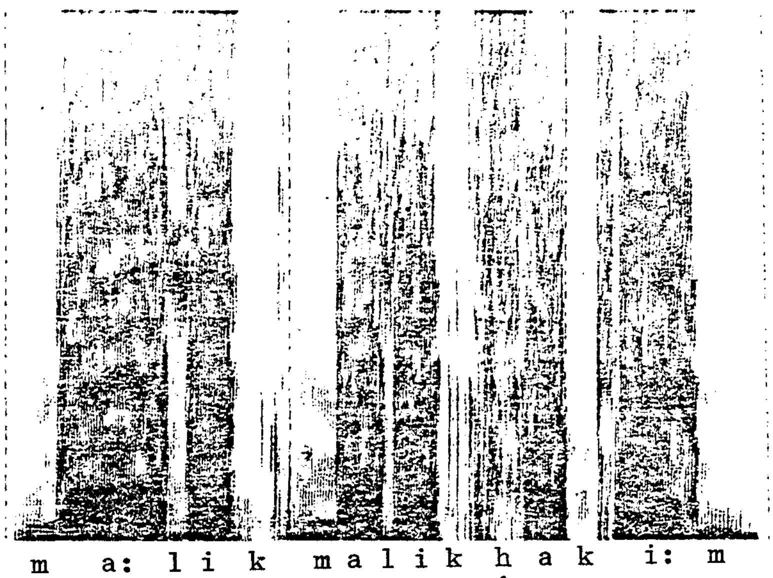
Utterance no.4 as spoken by informant no.3



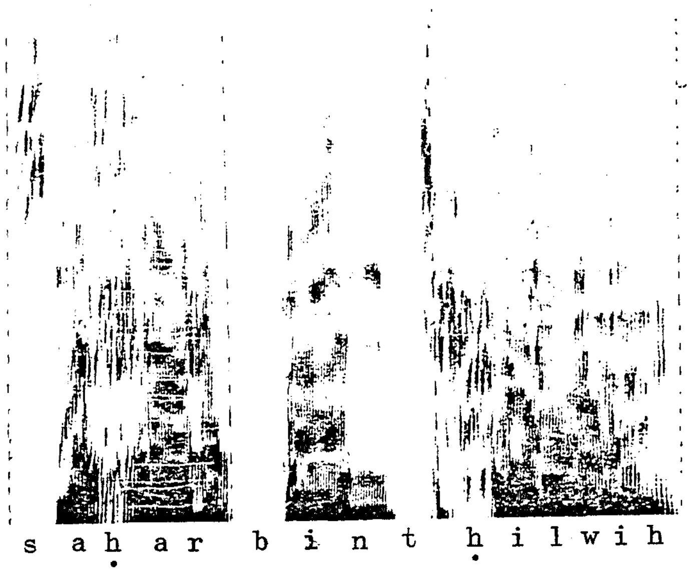
Utterance no.4 as spoken by informant no.4



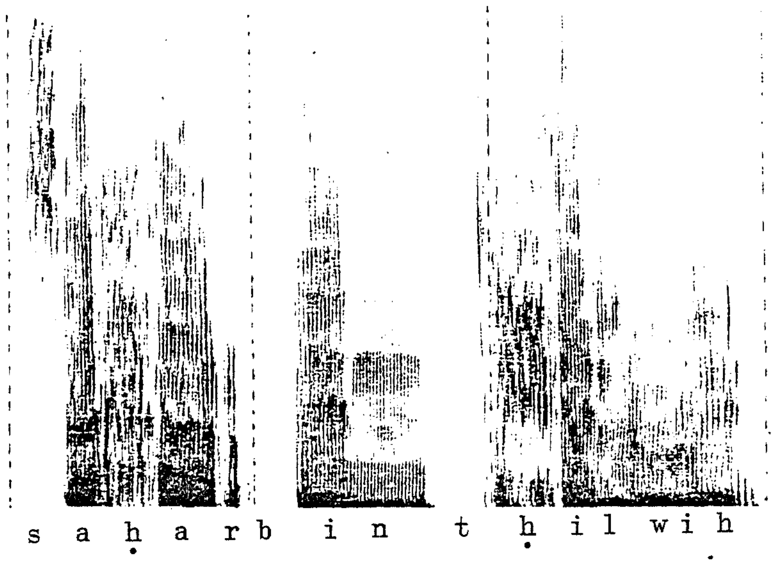
Utterance no.4 as spoken by informant no.6



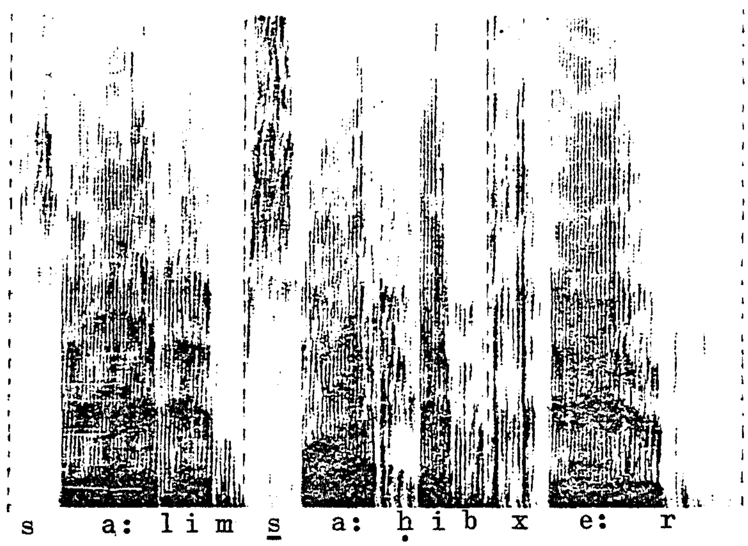
Utterance no.5 as spoken by informant no.2



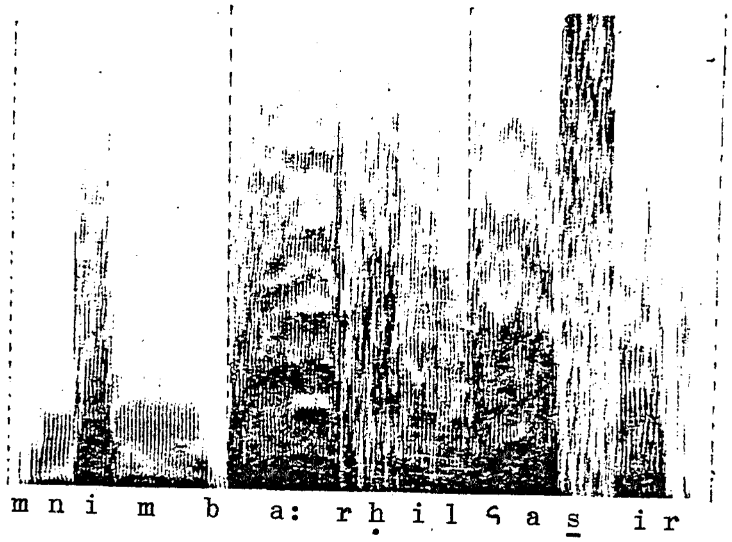
Utterance no.6 as spoken by informant no. 4



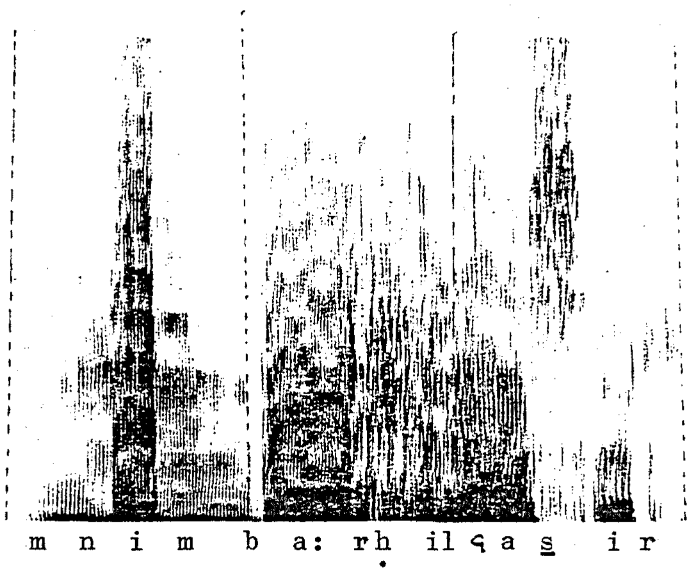
Utterance no.6 as spoken by informant no.1



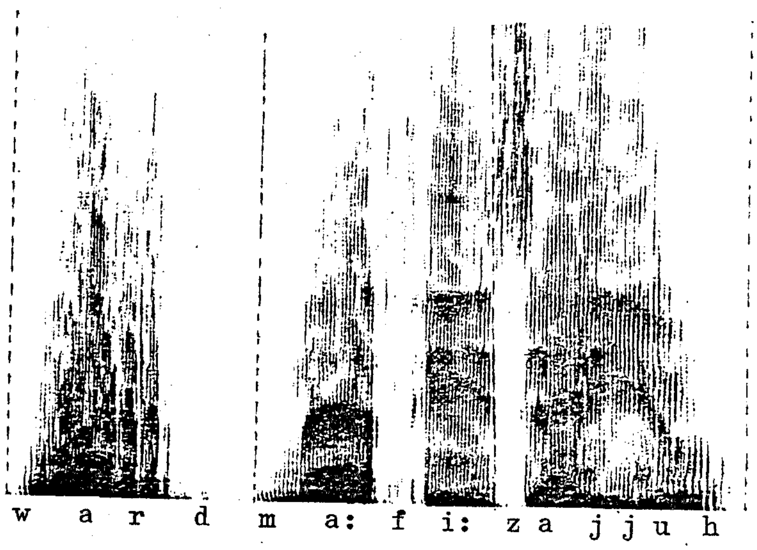
Utterance no.7 as spoken by informant no.5



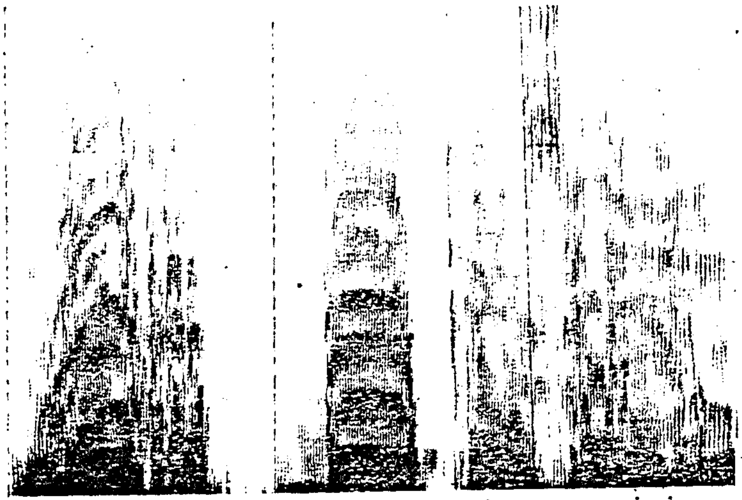
Utterance no.8 as spoken by informant no.5



Utterance no.8 as spoken by informant no.2

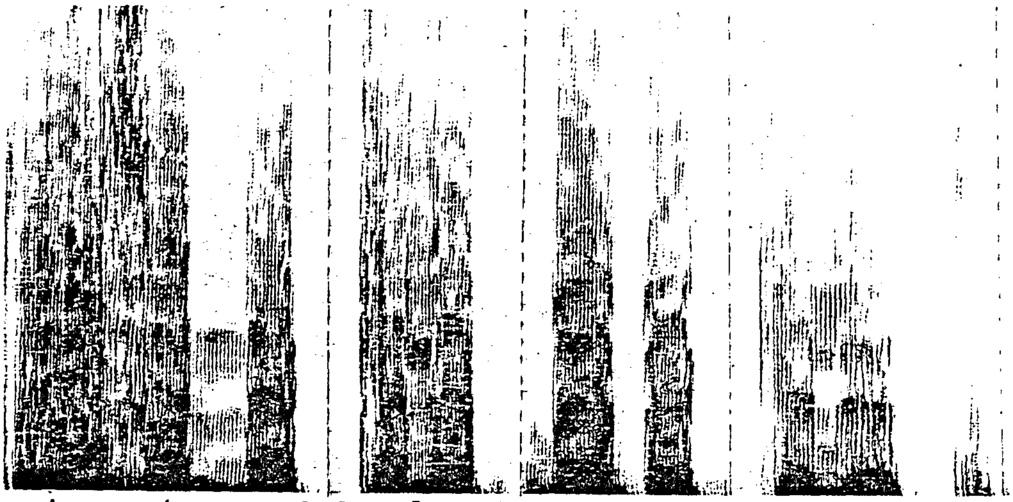


Utterance no.9 as spoken by informant no.1



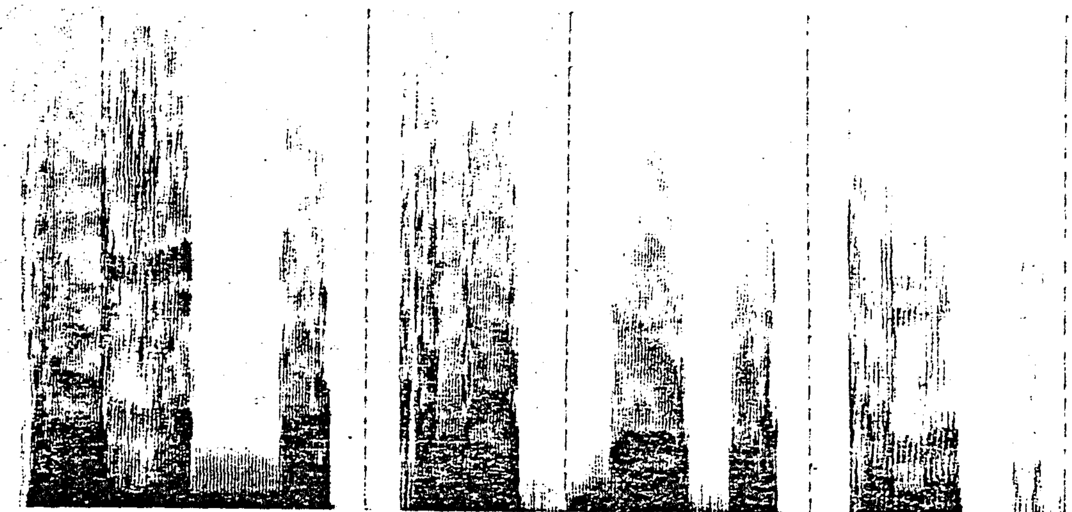
w a r d m a: f i: z a j j u

Utterance no.9 as spoken by informant no.2



t̲ i: z ɨ n n a k k a l a t m a: b a k k a l a t

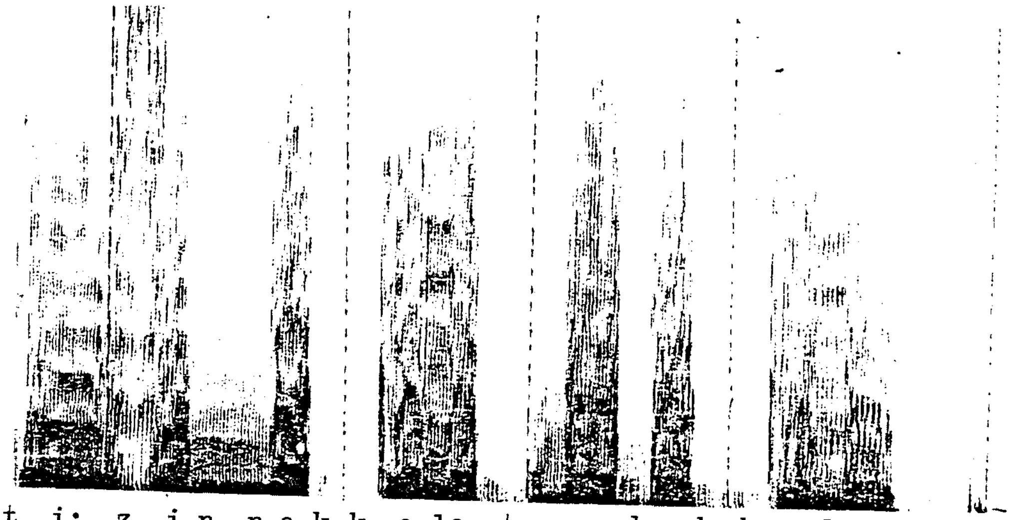
Utterance no.10 as spoken by informant no.3



t̲ i: z i n n a k k a l a t m a: b a k k a l a t

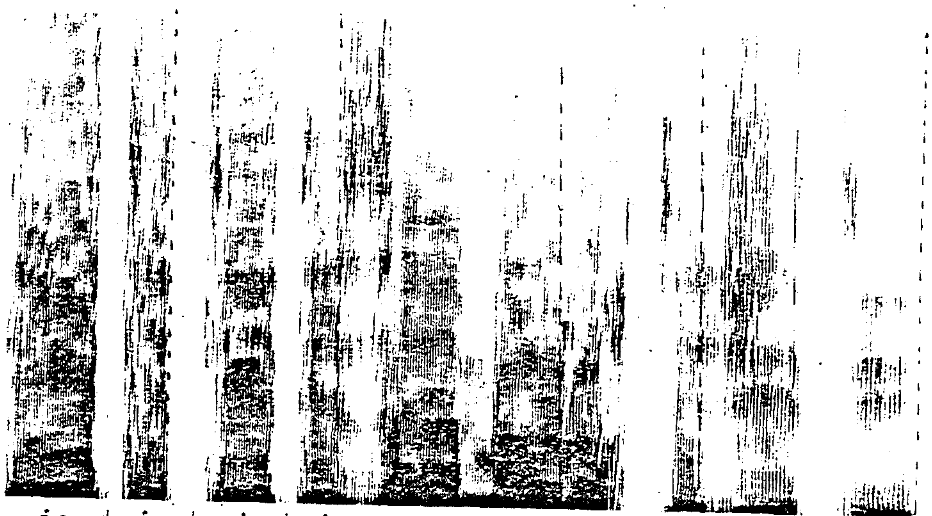
Utterance no. 10 as spoken by informant no.6

Utterance no.10 as spoken by informant no. 1



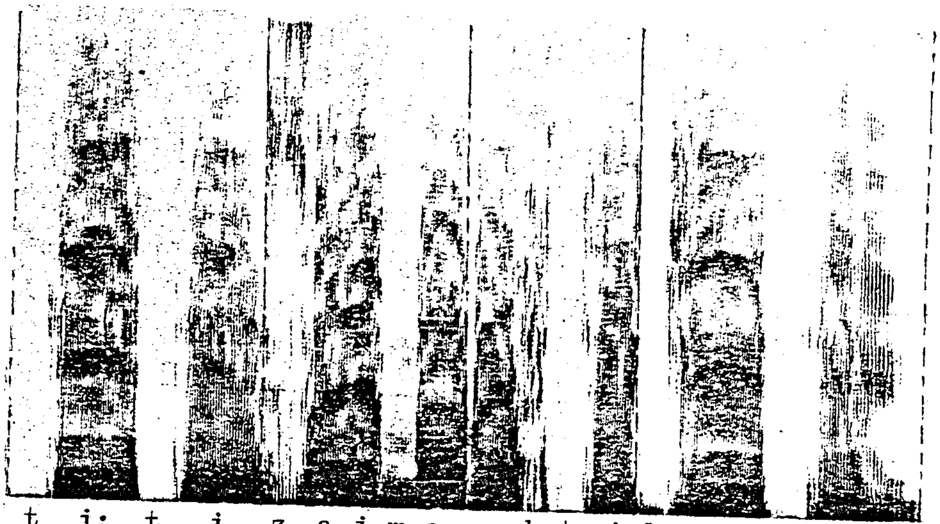
t̠ i: z i n n a k k a la t m a: b a k k a l a t

Utterance no.11 as spoken by informant no.2



t i: t i t i: t i z a j m a: r u ḥ t i dʒ i: t i

Utterance no.11 as spoken by informant no.3

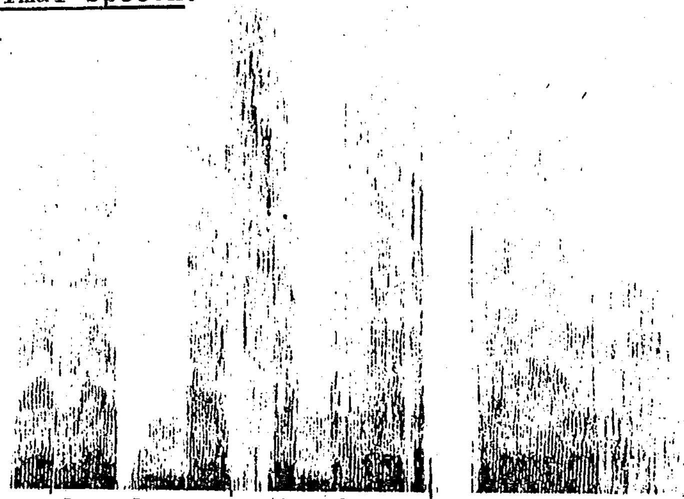


t i: t i z a j m a r u ḥ t i dʒ i: t i h

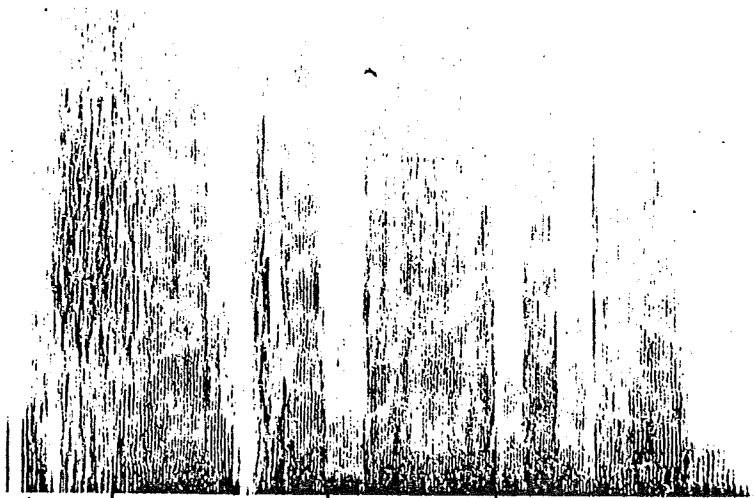
Section (B)

This section is prepared to include samples of spectrograms made in order to measure foot-duration in a text read by the author while employing normal and fast speech tempo. Accordingly, the selected spectrograms appear under two headings namely; normal speech and fast speech.

Normal speech:

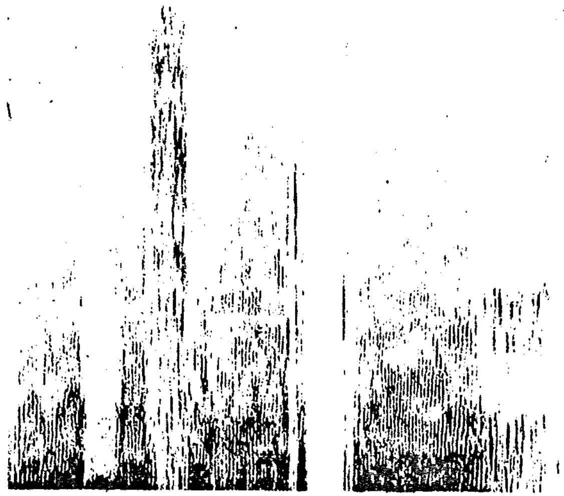


l a d n a s i m h a r t a: ḥ

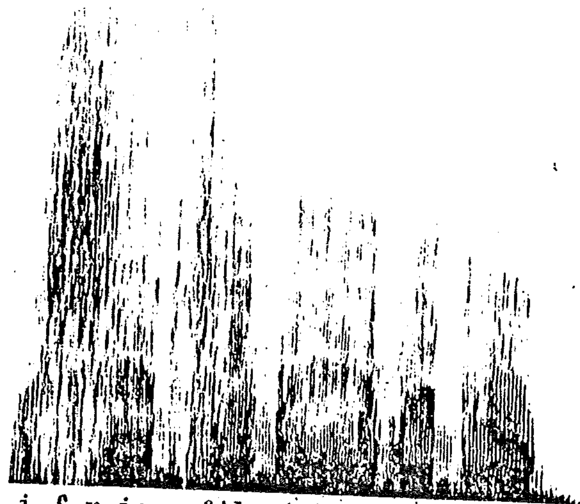


i ʃ r i: n f i l m i j j i m i n h u̥ m

Fast speech:



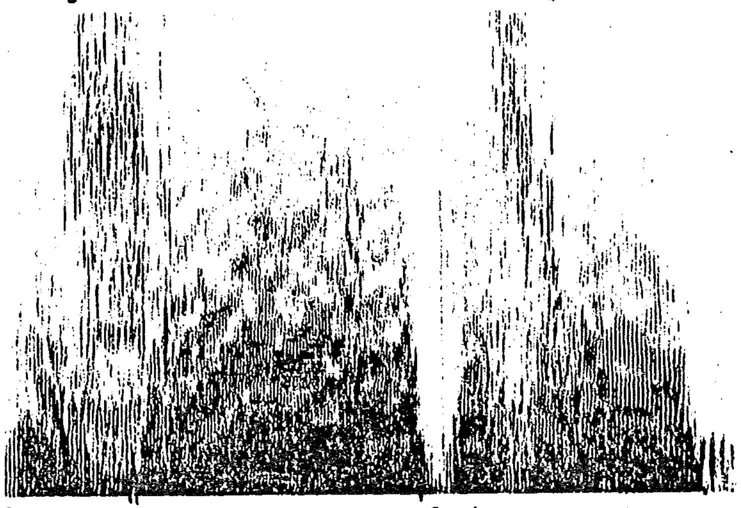
l adn a s imh a r t a: ḥ



i ʃ r i: n fil m i j j i m i n h u m

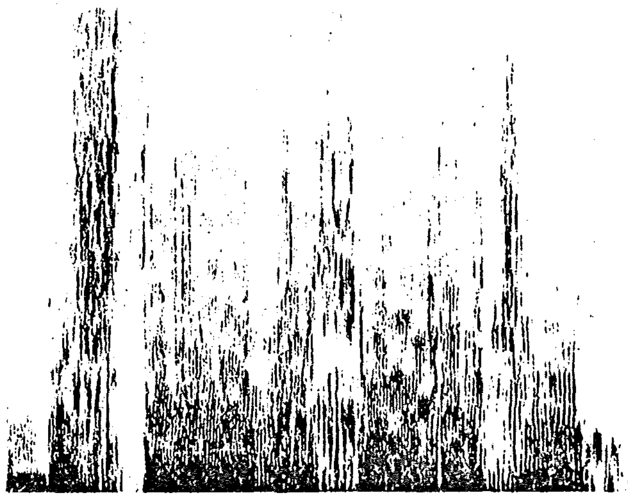
Normal speech:

b i ʃ t i ɣ l u bi l x a: ri dʒ u

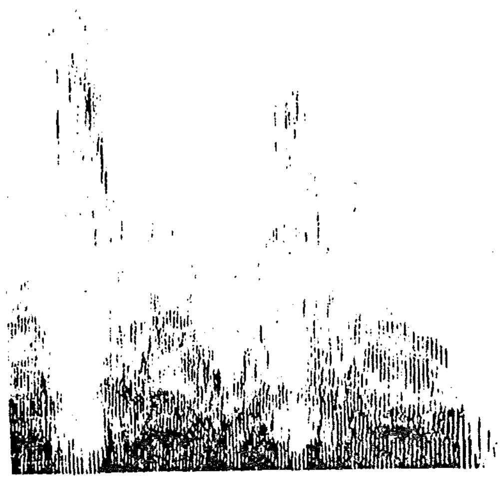


ʕ a z r a: ʕ a w b í z r a ʕ u

Fast speech:

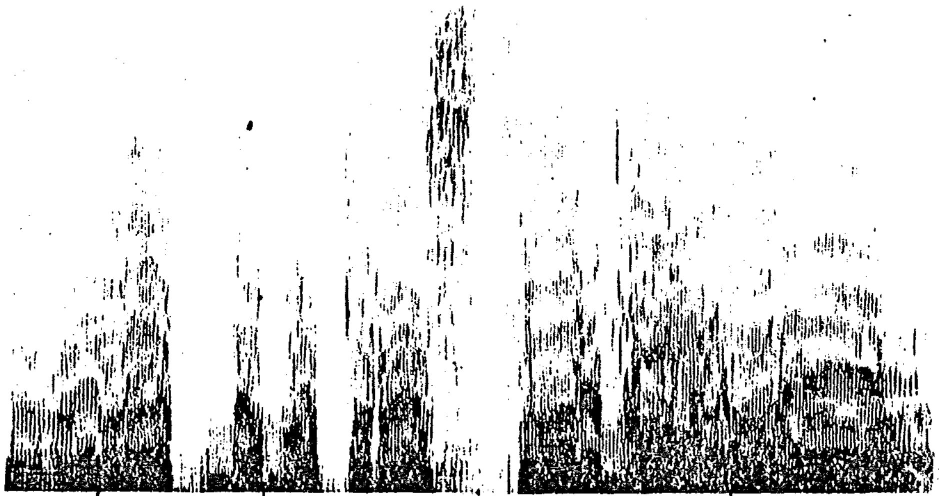


b i ʃ t i ɣ l u bi l x a: ri dʒ u

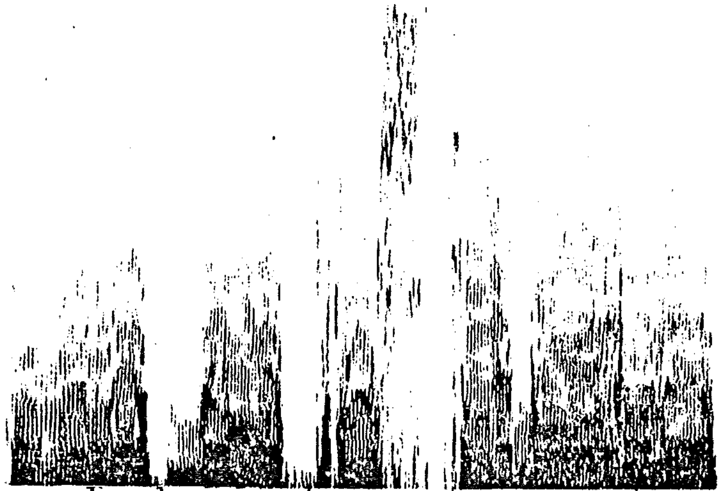


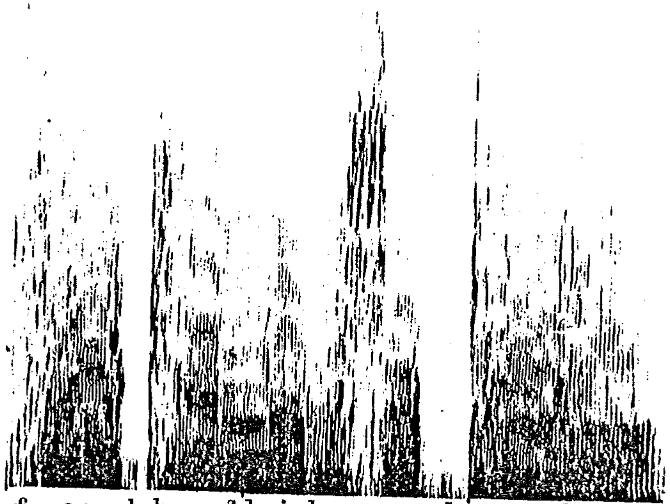
ʕ a z r a:ʕ a w bizra ʕ u

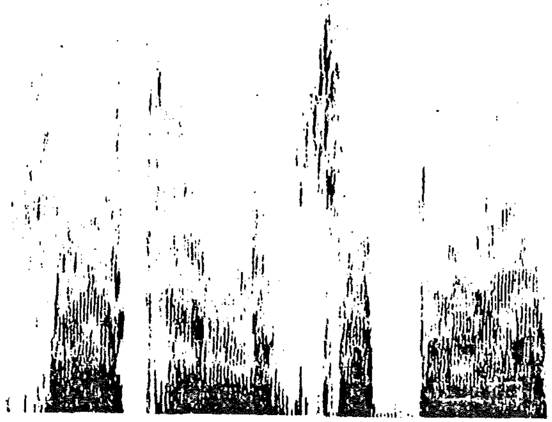
Normal speech:



Fast speech:







Appendix III

This appendix is divided into two sections namely A and B. In A, large parts of three recorded texts employed in our analysis of intonation in Ir.S.A. are presented. In these texts, tone units are numbered consecutively in order to give the meaning of each in the translation that follows, and which is similarly numbered. Each tone unit's boundaries are indicated by using two oblique lines on each side.

Section B is designed to provide some experimental evidences in support of the tones established in Ir.S.A. speech. A total of 36 mingograms are presented;on each one, the pitch level and direction of the nucleus is indicated by two vertical lines. A segmental transcription of the all tones shown is also given.

Section A: text no.1

Speaker A: // hu: ba:ki mniz - [1] la:mi-limli:ḥa // [2] tku:l //
// [3] mahu: biswa:ʃ bas̠ali // [4] jalla ma:jtʃu:n // [5] bitmu:n ja:bu - fatḥi // ...
// [6] btuətʃur biilbla:d ja:bu fatḥi // [7] fiʃʃah- riθθ-a:liθ //
// [8] lammal-dʒaw jitḥassan // [9] la: ʕa:d fi: mat̠ar // [10] wala fi:
widja:nit- dʒur // [11] whanna:s baʕid haððuh-rija:t // [12] tits̠affat̠lak
ba:b haddu:r // [13] ʔilhadʒ ḥasan // [14] baka jirdʒa mnil-madrasi // [15] jkullak //
// [16] ha:tu jawla:d tanitɣadda ba:b hadda:r // [17] tibkad- dinjaθala:θ //
// [18] θala:θiw nus̠ ha // [19] ʔilʕas̠rijja:t // [20] nḥut̠ hat̠t̠abixa:t //
// [21] whazla:m tibda tu:kil // [22] tʃin markat // mart ʕamak [23] ʔabul-ʕabid //
// [24] massi:hum bilxe:r // [25] ʔahlan // [26] wasahlan bilḥadʒdʒi // [27] tfaððali ja:
hadʒdʒi // [28] walla // [29] ma: bakdar // [30] ʔaj za:wdi // [31] ja: hadʒdʒi //
// [32] wallah // [33] hassa me:kli //

Speaker B: // [34] walla ja:bub- rahi:m // [35] ha:j ʕa:da:t-ibla:dna //
// [36] falkul // [37] biʕmal nafsil ʕammalijji // [38] faḥna fi harrabi:ʕ //
// [39] tilka:na // [40] hat̠t̠e:na hal ʔakil bika:ʕ hadda:r // [41] wballaʃna no:kil //
wmatinsa:ʃ jaxu:jil [42] bas̠al lixðar // [43] wirruz bilʕadas // [44] ha:j //
// [45] ʔilakla:t- iʃʃaʕbijji fir-rabi:ʕ // [46] wallah // [47] ma:fi: ʔat̠jab minha //

48 49 50
// wila hal-bandu:ra // ʔilxað̲ra limʃahilbi // ʔabaja:x
51
jaxu:j ʕajja:mil-ɣo:r // bake:na baʕid ma:n xallis̲ //
52 53 54
// jitmat̲t̲at̲il- wa:ḥad // fika:ʕ hadda:r // ʕala hadʒdʒanbijji //
55 56
// wijru:ḥ sa:ḥibha no:mi //ʔarbaʕ xamis saʕa:t //

57 58
Speaker A: // la:tʃin // ʔilfarik be:naw-be:nkum //
59 60 61
// ja:bu fathi // ʔinuḥ-na firrabi:ʕ // ri:ḥit hazhu:r //
62 63 64
// bta:ʕil- bajjara:t // btibkam-ʕabjil-dʒaw // bitfatiḥ ʕine:kis̲-
65 66
s̲ubḥijja:t // ʔawwal ʔiʃi bitʃimmu // ri:ḥit halwarid //
67 68 69 70
// bassintu ʕa:d // maʕind-kummiʃ // ʃadʒar mizhir // zaj he:tʃ //

71 72
Speaker B: // ʃu: bitku:l // walla ja:-bubrahi:m //
73 74 75
// ha:ðal- ḥatʃi s̲aḥi:ḥ // ʕindkum halbajjara:t // wallamu:n //
76 77 78
// whalburtka:n // rawa:jiḥ min xe:r ʔalla // mima: habba wadab //
79 80 81
// ʔamma-kullak ʕinna // baʕið̲ hanna:s // za:rʕin ʃwajjit ʃadʒar lo:z //
82
// wiʃwajjit burtkana:t //

83 84 85
Speaker A: // bassil-lo:z // malu:ʃ ri:ḥa // ja:bu fatḥi //

86 87
Speaker B: // walla ja:bub-rahi:m // lamma jibka mizh ir //
88 89
// miʃ bat̲t̲a:l // baʕdak bitʃimlak-ʔiʃw ajji //

90 91
Speaker A: // ʕindkum miʃmiʃ // ʔintub-tizraʕu //

92 93
Speaker B: // walla jaxu:j miθil ma: hatʃe:tlak // baʕið̲ hanna:s //
94 95 96 97
// bizraʕu // ʃadʒara ʃadʒrate:n // bika:ʕ hadda:r // ha:ð̲a kul ma:
ʕinna //

98 99
Speaker A: // ʔilmiʃmiʃ ib-balʕaw-bas // ... //ʕa:dib-ni:dʒi
100 101 102
bille:l // ja: si:di // hanna:s // bt̲it̲laʕ tishar ʕind baʕað̲ha //
103 104 105 106
// tʃin ra:ḥil-hadʒ // wilhadʒdʒi // ʕada:r xa:lti // bassil-hadʒdʒi
107 108
matiʕrifiʃ tukʕud // ku:m ja hadʒ // hassa liwla:d na:mu //
109 110 111 112
// ʔabinamu:ʃ // wa:ʕje:n s̲a:ru // la:tʃin-ʔe:ʃ ʕa:d // we:n- niḥnan-
113 114 115
na:m // ʔilkaʕdi ʕað̲ahir hadda:r // ja:bu fatḥi //btiswam-wa:lid-dinja //

116 117
// xalli:naw-s̲iflak ʕa:dil-waðiʕ // btit̲t̲allaʕ ʕalɣarib //
118 119
// bitʃu:f halxat̲ // ?illi burbut̲ ma: be:n kalki:ljiw-t̲u:ltʃarim //
120 121 122
// whassajjara:t // ʃaɣa:li le:lin-ha:r // ts̲awwar ʕa:d //
123 124
// ?ilbahar miʃib-ʕi:d ʕannak ?atʃθar min sabʕa ki:lu // la:tʃinib-
125 126 127 128
tit̲t̲alaʕ lalkibil // bitʃu:f farʕu:n // wʃu:fi // wtʃafa // wna:be:n
129 130
fatraw-fatra // bibka fi: ʕindhum ʕurus // whalɣana:ni ka:jmi //
131 132 133 134
// t̲u:llil-le:l // btisma ʕa:d // kulʃi bis̲e:r // wlaʃʃama:l minnak //
135 136 137 138
// t̲u:ltʃarim // barð̲u // manð̲ar miʃ ʕa:t̲il // ḥiliw //

139 140 141
Speaker B: // walla-ḥna ja:bub-rahi:m // fille:l // ?ilha:lib-
142 143
tixtlif ʕinna // halixtja:rijji // bitdʒammaʕu maʕ baʕað̲ //
144 145 146 147
// fi haddawawi:n // ?ubi-kuʕduj-xarfu // ʕaniʃ-ta // wʕanir-rabi:ʕ //
148 149 150
// ʕanil-ʕiʃib // ha:ðal-hatʃi miθil ma:b-tiʕrif // biwaffi:ʃ maʕiʃ-
151 152
ʃaba:b // fabtilka haʃʃaba:b s̲a:ʕat // ?illi tiliʕ ʕana:blis //
153 154 155
// willi ra:ḥʕa- ra:malla // we:n fi: filmim-li:ḥ // we:n fi: hafli //
156
// bitlaki:hum dabbu wara:ha //...

157 158 159
Speaker A: // ha: ja:bu fatḥi // ʃu: barna:-mdʒak // na:wit-

rawwiḥ ʕas̲s̲e:f //

160 161
Speaker B: // ?a:n-ʃa:lla ja:bub-rahi:m //bas wallal-wa:ḥad //
162 163 164 165
// ma: hu: ʕa:rif // birawwih // binimkit // la:bila:ki ḥad jukʕud
166 167 168
maʕa:h // wala biʕrif // we:n // bidduj-ru:ḥ //.

169
Speaker A: // ja: ʕammil-wa:ḥad bila:ki ʕanna nafsil-muʃkili //
170 171 172 173
// halbalad fa:ð̲ji // ma: fi: // ɣe:r halixtja:riji // whalfallaḥi:n //
174 175 176
// wmiθil manti ʕa:rif // muʕð̲am haʃʃaba:b // ?iɫi ra:ḥ ʕasʕudijji //
177 178 179
// wiɫi ra:ḥ ʕalikwe:t // wiɫi fil-?immara:t // kul wa:ḥad bidaw- wir

riziktu //

180 181
Speaker B: // ?amma walla // miθil ma: bidi ?akullak //
182 183 184
// bake:na fi hadda:r // hawa:laj ʕiʃri:n θalaθi:n wa:ḥad // ?iljo:m //

// 185 bitrawwiḥ // 186 btilkab-nissaʕi:d ɟbalad // 187 ?ibnil- ʕabid //
// 188 fịbalad // 189 wallah // 190 ma:b- tilka mi:n tukʕud maʕa: //

Speaker A: // 191 bas ʕalʕumu:m // 192 ?ilawð̱a:ʕbtitḥassan //
// 193 ?indak hasa bid̲d̲affi fi: dʒa:miʕte:n // 194 wintib-tiʃtɣil fiwaḥdi minhum // 195 faxaffat maʃa:kil haʃʃaba:b // 196 badal ma: jitlaʕu barra //
// 197 wilwa:ḥad jitɣallab // 198 jdawwirlu ʕamaḥal fidʒa:mʕa // 199 mumtʃin hassa judrus fibi:r ze:t // 200 willa finnadʒa:ḥ // 201 s̱aḥi:ḥ // 202 willa tʃe:f ra:jak //

Speaker B: // 203 wallal- ?awð̱a:ʕ ja:bub-rahi:m // 204 miθil ma:ṯ fað̱alit // 205 ?afð̱al bitʃθi:r // 206 fas̱a:r ʕinna haldʒamiʕte:n // 207 ?aw haθθala:θi // 208 jikbalin ?alfi:n ṯa:lib fissani // 209 ?illi baki:t tru:ḥ ʕakullid-duwalil-ʕarabijji // 210 matikbaliʃ minna // 211 mite:n wa:ḥad //
// 212 wba:ki haʃʃaba:b t̲s̲i:ʕ // 213 tru:ḥ tiʃtɣil bʃaɣla:t // 214 ?alla ?aʕlam tʃe:fi- ʕi:ʃu //

Speaker A: // 215 ?illi biddi ?as?alak // 216 tʃam ṯa:lib ʕandkum filkismilli-biddaris fi:h //

Speaker B: // 217 walla ʕinna ?arbʕi:n ṯa:lib //

Speaker A: // 218 kulhum mnid̲-d̲afi //

Speaker B: // 219 ṯabʕan kulhum mnid̲d̲affi // 220 fi: ḥad ji:dʒim-nibla:d θa:nji //

Speaker A: // 221 tʃam walad be:nhum // 222 wtʃam binit takullak //

Speaker B: // 223 wallal bana:t // 224 bisa:we:niʃ- ʃaba:b takri:ban //
// 225 nisbit xamsi:n filmijj // 226 fi kullil dʒa:mʕa //

Speaker A: // 227 walla ha:j nisbi la: ba:s fi:ha //

Speaker B: // 228 mahu:nti ?aʕraf ja:bub-rahi:m // 229 ?ilbana:t s̱iʕbin-ɣarribhin // 230 fahassa s̱a:rat ?ildʒa:mʕa ʕindhum kari:bi //
// 231 fakul wa:ḥad // 232 s̱a:r bidduj-waddi bintu //

Speaker A: // [233] bassilli bidi ?as?alak-ija: // [234] t e:f mustawa likra:ji-hna:k //

Speaker B: // [235] mli:ḥ // [236] walla ja:bub-rahi:m // [237] ʕaḥasab ma: kare:na-ḥna // [238] ʃa:jiflak ?ijja:h ?innu // [239] ?ilwað̱iʕ bitḥassan // // [240] wafð̱al min zama:n bitʃθi:r //

Speaker A: // [241] bas ʕa:d // [242] zaj ma: biku:llil-maθal // //[243] ?ilɣale:ð̱ lawara // [244] ?inna:s-illi bidha titxarradʒ // [245] ko:ltin ?ajnaʕam // [246] we:n bidhatru:ḥ // [247] we:n bidha tiʃtɣil //

Speaker B: // [248] ja:xinti bas ha:t // [249] xarridʒmin haʃʃaba:b //

Speaker A: // [250] walla ja: ʕammi ṣaḥi:ḥ // [251] zaj ma:t- fað̱alit // // [252] diwalil- xali:dʒ bidha ja: ʕammi // [253] ?int a:n biddak u ul bis u:dijji // // [254] mitwaffir // [255] ?intʃa:n biddak bilikwe:t // [256] bitla:ki // [257] ?aj ḥita bil?ardun // [258] ?iʃʃuɣul mitwaffir // [259] ko:ltin ?aj naʕam // [260] bala:tʃin // // [261] biḥalḥa:li ha:ði // [262] bnirdʒaʕ // [263] lalmuʃkilil-li hatʃe:na ʕale:ha // // [264] kul-liʃʃaba:b // [265] la:zmid-daʃr - ilwaṯan // [266] wṯiṯlaʕ barra tithadʒdʒar // // [267] ?iddawwir ʕalukmit ʕe:ʃha //

Speaker B: // [268] walla ja: ʕammi ʕaʃa:n he:tʃ //. //[269] haʃʃaba:b birfaʕur-ra:s // [270] we:n ma:t-ru:ḥ // [271] bitla:ki nisbithum ʕa:lji //

Speaker A: // [272] bas hu:nti mistakill-ittað̱hija:t // [273] ?illi ʕimlu:ha ?abwitna // [274] ?ajil wa:ḥad // [275] bakaj- bi:ʕ // [276] kul ma:ʕindu // // [277] min saxla:t // [278] min bakra:t // [279] juḥruθ le:l- inha:r // [280] ta:jdabbirlu kirʃe:n // [281] ta:jwaddi:hin lalwalad // [282] bassilli bitʃi:dak // [283] ?innul-balad btifraḥiʃ fi:hum // [284] ?aj min baladna // [285] fi: ?atʃθar min ʕiʃri:n dakto:r // [286] kulhum miʃ mawdʒudi:n fi:ha // [287] kulhum barra //

Speaker B: // [288] wala:w // [289] ja:bub-rahi:m // [290] ʕmilit baladkum // // [291] kulha bitʕiddilha:ʃ xamismi:t nasami // [292] fi:ha ʕiʃri:n dakto:r //

Speaker A: // [293] ?ajinti na:jim ja:bu fatḥi // [294] walak baladna fi:ha

?atʃθar min ?alif // [295] wʕalal-?akal // [296] wʕalal-?akal // [297] min limhandisi:n // // [298] bitlaki:lak xamsi:n // [299] mnid- daktra ʕiʃri:n // [300] min limkarji:n // // [301] fo:kil-mite:n //

Speaker B: // [302] ?aj ʃu: bitkulli // [303] ja:bub-rahi:m // [304] kullili ʕadde:thum // [305] bidʒu:ʃ ʕabaʕaðhum // [306] mi:t wa:ḥad // [307] ?ilʕa:m-ilma:ðbas // // [308] fi ṯuba:s laḥa:lha // [309] baka ḥawa:laj // [310] θalaθmijji-wxamsi:n wa:ḥad // // [311] fil-dʒa:mʕa:t //

Speaker A: // [312] whu: ja:bu jaʕni ja:bu fatḥi // [313] ?ihna bidna nitka:tal // [314] makul haʃʃaba:b lalwaṯan //.

Text no.2

Speaker A: //[315] ʕala kullil-ḥala:t // [316] massil-ḥa:ðri:n bilxe:r //

Speaker B: // [317] ʃu: ha:j // [318] mukaddimi ja:bub-rahi:m //

Speaker A: // [319] la: // [320] bidnan-ʃu:f sadʒdʒal // [321] willa la? //

// [322] ?ihtʃi ?ihtʃi // [323] ja: xu:j jabu fatḥi //

Speaker B: // [324] hatʃe:t //

Speaker A: // [325] ha:t // [326] xarifna // [327] ʕan- e:ʃ biddak-itxarifna //

Speaker B: // [328] ʃu: biddi ?axarfak // [329] bidna ?axarfak ʕan ha:ð̠a // // [330] ?ilkukte:l // [331] ?illi bikulu:lu //

Speaker A: // [332] ʃu: haṯṯe:t fi:n-ti //

Speaker B: // [333] haṯṯe:na fi: be:ðte:n // [334] kaṯṯaʕna hattuffaḥa:t // //[335] ʃukaf ʃukaf // [336] θalθar-baʕ tuffaḥa:t // [337] wḥaṯina:lna // [338] nus̠ ki:lu ḥali:b //

Speaker A: // [339] ?ilwa:ḥad biku:l nus ki:lu // [340] nus-iwki-jjit ḥali:b // [341] nus ki:lu // ... // [342] ʃu:b-tizraʕu jaxu:j fiṯu-ba:s̠in-tu takullak //

Speaker B: // wallal-balad 343 maʃhu:rabiz-ra:ʕtil-bas̱al //

Speaker A: // 344 laʔ laʔ // 345 ʔilʔawwal // 346 bis̱s̱e:f // 347 ʃu:b-tizraʕu //

Speaker B: // 348 ʃu: // 349 bake:na nizraʕ baṯṯi:x // 350 ʔuʃimma:m //
// 351 wku:sa //

Speaker A: // 352 ʔa:h // 353 mahu:n-tu maʕind-kummiʃ majji //

Speaker B: // 354 fiʃ ʕinna majji // 355 mḥana baʕil // 356 kulha //
// 357 ʔa:h // 358 bassil-ʔarað̱il li // 359 ʔilmarwijji // 360 bake:na nizraʕ //
// 361 bnizraʕ kulʃi // 362 ʔillibiddak- ijja:h // 363 bnizraʕ bandu:ra //
// 364 bnizraʕ baṯa:ṯa // 365 wimluxxijji //

Speaker A: // 366 ṯajjib wilbaṯṯi:x // 367 binfaʕ jaxu:j //
// 368 ʕamajtil-baʕil //

Speaker B: // 369 bilbaʕil-uf // 370 wala fi: ʔaṯjab minu filbaʕil //

Speaker A: // 371 wibtizraʕu bandu:ra takullak //

Speaker B: // 372 walla ja:bub-rahi:m // 373 ʔilbandu:ra // 374 bins̱aḏḏir
bandu:ra // 375 bake:nan-s̱aḏir lalikwe:t // 376 wlaliʕra:k // 377 wlasʕuddijji // ...
// 378 ʔilɣo:r ʔilɣo:r // 379 ʔiɣla:l kullu // 380 da:jman bandu:ra //

Speaker A: // 381 wbittʃabirtu jaxu:jil bandu:ra //

Speaker B: // 382 bintʃabrit //

Speaker A: // 383 jiḥrik di:nu-tʃtʃabri:t // 384 s̱a:ḥi lammaj-xuʃ bilʕine:n //

Speaker B: // 385 ho: ho: lamma biddak-itʃtʃabrit //

Speaker A: // 386 ṯajjib ja si:di // 387 wbitkabrul-bandu:ra lamma
tizraʕu:ha // 388 biʕid ma: ṯiṯlaʕ //

Speaker B: // 389 willa // 390 biddak-itkabri-ʃʃatli // 391 bidu:n tikbi:r //
// 392 tʃi:f bidhat̮-t̮s̮i:r //

Speaker A: // 393 jaʕni nafs- iṯṯurk- ittakli:dijji //

Speaker B: // [394] nafsilli-btiʕmalu: bniʕmalu //

Speaker A: // [395] ?iḥna bidʒu:z- izra:ʕa ha:j // [396] mitkadmi:n ?atʃθar min ʕindkum //

Speaker B: // [397] hihe: // [398] we:n ruḥit-inti // [399] ?intu ʕindkum bajjara:t // [400] butrka:n // [401] wma: ?dra:k // [402] wle:mu:n //

Speaker A: // [403] la: jaxu:j // [404] ?ilbandu:ra- ljo:m // [405] kulha btinizri ʕaslu:tʃ //

Speaker B: // [406] ʃu:- slu:tʃ //

Speaker A: // [407] ?abtiʕrifiʃ fi:ha //

Speaker B: // [408] la? // [409] walla ʕinna baʕidhum bikabru //

Speaker A: // [410] mantu mit?axri:n // [411] kulna:lak mit?ax-ri:n // // [412] masaddaktiʃ //

Speaker B: // [413] ?intu ?akullak // [414] miʃ ʃa:ṯri:n ɣe:r fiha-burtkana:t // [415] whal-lamuna:t // [416] ɣe:r he:tʃ hatʃi matiḥtʃili:ʃ //

Speaker A: // [417] ?aj kabil ma:tizraʕu- ntul- baṯi:x // // [418] ?iḥna bake:na nizraʕu //

Speaker B: // [419] walla bake:na ja: bub-rahi:m // [420] ?ajja:mi-lbaṯṯi:x // [421] bake:na nizraʕilna θalaθi:n ?arbʕi:n dunum // [422] baki:na nuktuf halbaṯṯixa:t // [423] ntʃawimhin // [424] winḥammil sit sabiʕ sajjara:t // // [425] wʕala ʕamma:n // [426] dʒini:ni ja: baṯṯi:x // [427] ?utibka-mwalʕa //

Speaker A: // [428] walla ja: ʕammi // [429] baṯṯi:x dʒini:n maʃhu:r fiddinja kulha // [430] la:tʃin muʃtʃiltil-bati:x ?inna // [431] bakat-il // // [432] ?ilwa:wijja:t // [433] la:tʃin bake:na nunṣubilhin fxa:x // [434] hah kul fax // // [435] ʕalfa:ɣi // [436] ʕumurna ma:ṣidna wa:wi // [437] ḥiərijja:t bakin // // [438] hiərijja:t // ...

Speaker A: // [439] mi:n bizraʕ ʔarð̲kum takullak //

Speaker B: // [440] fi: ʕinna ʔarið̲ ʔaʕt̲ina:ha ʕalkisim //

// [441] bnu:xið ʕiʃri:n filmijji mnir-ribiḥ //

Speaker A: // [442] t̲ajjib mumta:z // ...

Speaker A: // [443] wibtizraʕu barsi:m biʃʃatawijji //

Speaker B: // [444] wallal- barsi:m ma:ḥad biʕirfu ʕinna //

// [445] halbakara:t birʕe:n // [446] wmaḥaddiʃ bizraʕu //

Speaker A: // [447] ʔa:h // [448] ʔintu maʕindkummiʃ bakar //

Speaker B: // [449] walla bakar ma: ʕinna-ḥna // [450] ʕinna bakar //

// [451] bas muʃitʃθi:r //

Speaker A: // [452] wbiʃta ʃu:b-tizraʕu //

Speaker B: // [453] ʔatʃθar- iʃi fu:lu- bas̲al // [454] filɣo:r ha:ð̲a //

// [455] laʔinnul- ʔarið̲ da:fji //

Speaker A: // [456] wkul sanib- tizraʕu kamiḥ wiʃʕi:r //

Speaker B: // [457] kul sani // [458] kamiḥ wiʃʕi:r // [459] wʕadas // [460] wḥummus̲ //

// [461] ha:ði ʃaɣli ð̲aru:rijji dʒiddan //.

Text no.3

The text presented here by speakers 'A' and 'B', is regarded as a typical example of a conversation that may take place between two market traders in fruit and vegetables.

Speaker A: // [462] ʔiʃtara ʔabufatḥi //

Speaker B: // [463] ʔakullak ja: ʔaxi // [464] ʕifna min haʃʃaɣli //

// [465] la:bidnan- bi:ʕ // [466] wala bidna niʃtri // [467] jilʕan ʔabul-jo:m //

// [468] ʔilli kalaʕna fi:l- bas̲al //

Speaker A: // ʃwaji -ʃwaji [469] ja: zalami // [470] matitnarfaziʃ //
// [471] le:ʃin- tizʕilit //

Speaker B: // ja: zalami hu: [472] siʕirr- ilinti ʕat̲e:na-jja:
ha:ða //

Speaker A: // [473] tajjib // [474] ʔinna:s bittafa:hum // [475] billati: hija
ʔaḥsan bitfa:hamu //

Speaker B: // walla ja:bub-[476]rahi:m kulna:lak // [477] dafaʕ fi:hin
ʔabum-ḥimad // sabʕaw- [478] θala:θi:n le:ra filki:lu //

Speaker A: // ʔadʒaj- kulli [479] ʔabum-ḥimad //

Speaker B: // ʔinti [480] ʕa:d he:ʃ ba:li // [481] ru:ḥ dawwir //
// ru:ḥ [482] dawwirlak ʕala bas̲ala:t θanja:t //

Speaker A: // ja: [483] si:di // ʔilli [484] birzikil- dʒami:ʕ huwal-la:h //

Speaker B: // [485] ha:ðas̲- s̲aḥi:ḥ // [486] ʔallaj- jassir ʔamrak //.

TRANSLATION

Text no.1

Speaker A: // would he be considered [1] a gentleman // I [2] ask //
// I suppose [3] he is not worth an onion // never [4] mind // no doubt [5] you
have your own influence // ... // do you [6] remember, back home Abu-Fathi
(nickname) // in [7] March // when [8] the weather improves // there would [9] be
no rain // nor [10] overflowing rivers // in the [11] afternoon, when people //
// sit in [12] their front gardens // at such [13] time my father // used [14] to
come back from work // he would [15] then say // boys, [16] let us have dinner
in front of the house // [17] normally, the time would be three o'clock //
// or nearly [18] half-past three // [19] generally, it would be in the afternoons //
// the food [20] would then be brought out // and we [21] would start our meal //

// 22 moments later // 23 our neighbour (an old lady) would pass by //
// 24 I wish you a happy afternoon (she says) // 25 welcome (we answer) //
// 26 feel at home hadʒdʒi (vocative) // 27 please join us //
// 28 I swear by God // 29 I cannot // 30 please try to have some of our food //
// 32 I swear by God (she replies) // 33 I've just finished my dinner //

Speaker B: // 34 by God, I swear Abub-rahi:m (nickname) //
// 35 these are common habits // 36 everybody // 37 does the same // 38 we in April // 39 you'll find us // 40 serving the food in the yard in front of the house // 41 and start eating // 42 do not forget the spring onions //
// 43 wilimdzaddara (a local dish) or the rice with lentils //
// 44 these are // 45 these are the Springtime popular meals // 46 I swear by God // 47 nothing tastes nicer than that // 48 we also used to have tomatoes // 49 normally green and shiny // 50 cheerful were the days of El-ɣo:r (a name of a place) // 51 after finishing work // 52 each one of us used to lie down // 53 in the yard in front of the house // 54 on mattresses // 55 and have a long sleep // 56 for four to five hours //

Speaker A: // 57 but // 58 the difference between us and you //
// 59 Abu Fathi // 60 - 63 is that the smell of the blossoming trees in the orchards, spreads all over the place // 64 when you open your eyes in the morning // 65 the first thing you would smell // 66 is the smell of the blossoming trees // 67 but you, in comparison // 68 you have no //
// 69 blossoming trees // 70 as such //.

Speaker B: // 71 everything you said // 72 I swear by God, Abubrahi:m (nickname) // 73 is true // 74 you have these fruit orchards // 75 including lemon trees // 76 orange trees // 77 all have a fantastic smell //
// 78 unidentified but pleasant smells // 79 but I am telling you, we have //
// 80 some people // 81 who plant some almond trees // 82 and a limited number of orange trees //.

Speaker A: // [83] but almond trees // [84] have no smell // [85] Mr. Abu-Fathi //

Speaker B: // [86] believe me Abub-rahi:m // [87] while they are blossoming // [88] it is not bad // [89] you still get a pleasant smell //.

Speaker A: // [90] do you have apricot trees // [91] do you plant this kind //

Speaker B: // [92] Brother, believe me, as I mentioned earlier // // [93] some people // [94] plant // [95] a tree or two // [96] in the yards in front of their houses // [97] that is all we have //.

Speaker A: // [98] take my word, balʕa (a small nearby town) is the most famous place for apricots // ... // [99] let us now talk about life at night // [100] my friend [literally my master] // [101] people normally // [102] go out visiting each other // [103] usually, the father (nick named hadʒ) // [104] and the mother (hadʒi) // [105] go out visiting my aunt // // [106] but the mother cannot stay for long // [107] get up hadz // [108] the children would probably be asleep by now // [109] they will not fall asleep (he replies) // [110] they are old enough to be responsible // [111] but in reality // // [112] we could not fall asleep // [113] as spending sometime of the night on the house-roof // [114] Abu-Fathi // [115] is worth a lot // [116] let me describe the situation for you // [117] if you look towards the west (from your place on the roof) // [118] you see the road // [119] which stretches between /kilki:lji/ and /tu:lkarm/ [two nearby towns] // [120] with cars on it // [121] passing almost all day and night // [122] imagine also // [123] that the sea is not more than seven Km. from us // [124] but if you look to the south // [125] you would see /farr o:n/ (name of a village) // [126] and / u:fi / (another village) // [127] and /tʃafa/ (name of a village) // [128] and from time to time // they have a wedding party // [129] and the loud singing // [130] all night // [131] you will be able to hear // [132] everything that happens // [133] meanwhile, [134] to

135 136 137
the north // there is tu:lt arim // also // the view is not bad //
138
// it is beautiful //

139 140 141
Speaker B: // by God, Abub-rahi:m// at night // things in
142 143 144
our case are different // the old men // gather // in the special
145 146
family guest room // and they start telling stories // about winter //
147 148 149
// and about spring-time // about plants // and as you know this
150
sort of conversation // does not appeal to young people //
151 152
// consequently the young people wonder about // some go to Nablus //
153 154
// others travel to ra:malla // wherever there is a decent film //
155 156
// or a good party // they quickly get attracted //...

157 158
Speaker A: // tell me Abu-Fathi // what is your programme for the
159
summer // do you intend to travel home //

160 161
Speaker B: // if God wishes me to, Abub-rahi:m // but I often
162 163
say to myself // I wonder why each one of us // should bother about
164 165
going home // since we only get upset // you would not find suitable
166 167 168
companions // nor would you know // where // you wish to go //

169
Speaker A: // I must admit that we face the same problem //
170 171 172
// the village is almost empty // apart from // old people // and
173 174 175
peasants // and as you may know // the majority of younger people //
176 177
// are working abroad some in Saudia Arabia // some in Kuwait //
178 179
// and some in the United Arab Emirates // everyone is concerned
about his welfare //

180 181 182
Speaker B: // by God // I am telling you // there were in our house //
183 184 185
// about twenty to thirty people // nowadays // whenever you go home //
186
// you discover that Saᶜi:d's son is living in a different country //
187 188 189 190
// while ?il abid's son is in another // by God // you would not
find anybody to sit with //

Speaker A: // but in [191] general // the [192] situation is improving // // at present we have [193] two universities in the West Bank // and you work in [194] one of them // this in fact [195] eased the young people's problems // instead of [196] travelling abroad // and [197] facing many problems // // such as finding a [198] place in a university // they can [199] now join bi:r Ze:t (a university in the West Bank // or [200] ?annadza:h (another university // if I [201] am right // what do you [202] say to this ? //

Speaker B: // I swear [203] Abub-rahi:m, that circumstances // as you [204] explained them // are [205] much better // and [206] now we have two universities // or [207] three // capable of [208] accepting two thousand students a year // where [209] formerly all Arab universities // [210] would not accept from us // more than [211] two hundreds // while [212] the remainder of our school-graduates would be left without hope // as a [213] result they had to take jobs // God knows how [214] they managed to survive // ...

Speaker A: // I want to [215] ask you // how many [216] students do you have in your department //

Speaker B: // I believe [217] we have forty students //

Speaker A: // do all of [218] them come from the West Bank? //

Speaker B: // of course [219] they all come from the West Bank // // no one from outside [220] can join the university //

Speaker A: // how [221] many of them are boys?// and [222] how many are girls? //

Speaker B: // I believe [223] that the girls // are [224] approximately equal to the boys in number // almost [225] fifty per cent // [226] in the whole university //

Speaker A: // this is [227] indeed a high percentage //

Speaker B: // 228 as you may know Abub-rahi:m // 229 it is difficult to send girls abroad // 230 and now they have a university nearby // // 231 so every one // 232 is encouraged to send his daughter //

Speaker A: // 233 what I would like to ask you is // 234 what about the standard of education there? //

Speaker B: // 235 it is good // 236 indeed Abub-rahi:m // 237 it is better than at our time // 238 and I would even say // 239 that things are improving // 240 it is much better than before //

Speaker A: // 241 but the important thing is // 242 as the proverb says // 243 things become thicker all the way // 244 people who intend to graduate // 245 I would ask // 246 where can they go?// 247 where can they find a job? //

Speaker B: // 248 you just make them available,brother // 249 produce young graduates //

Speaker A: // 250 I believe you are right // 251 as you mentioned earlier // 252 the Gulf States are still in need of graduates // // 253 if you are looking for a job in Saudia Arabia // 254 it is available // // 255 if you want a job in Kuwait // 256 you will get one // 257 even in Jordan // // 258 jobs are available // 259 I would say // 260 but // 261 in this case // 262 we get back // 263 to the problem we have discussed earlier // 264 all young people // 265 have to leave their homeland // 266 to become strangers elsewhere // 267 searching for means of survival //

Speaker B: // 268 and in fact because of this // 269 we are proud // // 270 wherever you go // 271 you find them in great numbers //

Speaker A: // 272 but do not underestimate // 273 our parent's contributions // 274 many of them // 275 used to sacrifice // 276 whatever they had // // 277 including goats // 278 and cattle // 279 working day and night // 280 in order to make enough money // 281 to send to his children // 282 but what annoys you // 283 is that the country is not benefiting // 284 in our village, for instance // 285 there are more than twenty doctors // 286 none of whom lives there // 287 all are abroad //.

Speaker B: // 288 My God // 289 Abub-rahi:m // 290 you actually tell us that your village // 291 which does not have more than 500 citizens // // 292 has twenty doctors? //

Speaker A: // 293 you are asleep ?abu-fathi // 294 there are a few thousand living in our village // 295 and at least // 296 counting engineers // 297 there are fifty // 298 counting doctors // 299 twenty // 300 counting teachers // 301 there are over two hundreds //

Speaker B: // 302 you are talking nonsense // 303 Abub-rahi:m // // 304 all those you mentioned // 305 do not add up // 306 to more than a hundred // 307 while only last year // 308 in tuba:s alone // 309 there were nearly // 310 three hundred and fifty students // 311 studying abroad //

Speaker A: // 312 Oh! Abu Fathi // 313 what are we arguing for? // // 314 all young people are servants for our country //.

Text no.2

Speaker A: // 315 In any case // 316 I wish all present a good evening //

Speaker B: // 317 what is this? // 318 an introduction Abubrahi:m //

Speaker A: // 319 no // 320 we want to find out whether it is recorded // // 321 or not? // 322 speak AbuFathi // 323 brother Abu Fathi //

Speaker B: // 324 I spoke //

Speaker A: // 325 come on // 326 tell us // 327 what do you intend to tell us?//

Speaker B: // [328] what do you want me to tell you? // [329] I would like to describe to you //[330] the cocktail// [331] what is called cocktail//

Speaker A: // [332] what did you put in it? //

Speaker B: // [333] I put two eggs // [334] cut a few apples into pieces // // [335] thin pieces // [336] three to four apples // [337] and I added // [338] half a kilo of milk //

Speaker A: // [339] you are not supposed to say half a kilo // // [340] but half a pound // [341] it is wrong to say half a kilo // ... // [342] what kind of plants do you grow in tuba:s, I meant to ask //

Speaker B: // [343] in fact, our village is famous for growing onions //

Speaker A: // [344] no, no // [345] firstly// [346] in the summer // [347] what do you grow? //

Speaker B: // [348] what shall I say? // [349] we normally grow watermelons // // [350] and yellow melons // [351] and odʒe:ts //

Speaker A: // [352] Oh! yes // [353] you have no irrigation water //

Speaker B: // [354] we have no water // [355] we do not rely on irrigation water // [356 - 7] most of our agricultural land // [358] but in the other type of land // [359] where irrigation water is used // [360] we normally grow // we grow almost [361] everything // [362] whatever you want // [363] we grow tomatoes // // [364] we grow potatoes // [365] and other kinds //

Speaker A: // [366] but do watermelons // [367] grow brother // [368] without irrigation water //

Speaker B: // [369] Oh! without irrigation water // [370] there can be nothing nicer than that //

Speaker A: // [371] you also mentioned that you grow tomatoes //

Speaker B: // [372] I swear by God Abub-rahi:m // [373] the tomatoes //

// we export [374] tomatoes // we normally [375] export it to Kuwait // and to [376] Iraq // to [377] Saudia Arabia // ... // the [378] ɣo:r [a name of a place], the ɣo:r // it is [379] very fertile // [380] ample crops //

Speaker A: // do you [381] also spray the tomato plants with insecticide? //

Speaker B: // yes [382] we spray it //

Speaker A: // damn [383] the insecticide // do [384] you remember when it penetrates the eyes? //

Speaker B: // Oh! ah! [385] when you apply the insecticide //

Speaker A: // well, [386] friend (literally master) // and [387 - 8] do you bury the stalk after planting the tomato plant? //

Speaker B: // of [389] course // you [390] have to bury it // [391] without burying // [392] how could it grow? //

Speaker A: // you mean you [393] apply the same traditional techniques //

Speaker B: // [394] whatever you do, we do //

Speaker A: // we are [395] probably, regarding agriculture // [396] more progressed than you //

Speaker B/ // listen [397] to that // what are [398] you talking about? // // you have fruit [399] orchards // [400] oranges // and [401] other types // [402] lemons //

Speaker A: // no [403] brother // nowadays, [404] tomatoes // [405] are planted to grow on wires //

Speaker B: // [406] what wires //

Speaker A: // don't [407] you know about it? //

Speaker B: // [408] no // to be honest [409] we still employ the traditional ways //

Speaker A: // [410] you are backward // [411] I told you are are backward // [412] // but you disbelieved me //

Speaker B: // [413] you are, I would say // [414] are best qualified for planting orange trees // [415] and lemon trees // [416] otherwise, the matter is different //

Speaker A: // [417] you do not seem to realise that before you began to grow watermelons // [418] we used to do it //

Speaker B: // [419] However, Abubra-hi:m, we used // [420] when the watermelon's season is due // [421] we used to plant about thirty to forty donums [a donum equal 1000m^2.] // [422] and we used to collect the watermelons // [423] arrange them in heaps // [424] and load about six to seven lorries // [425] and send them for sale in Amman // [426] watermelons from dʒini:n (name of a place) // [427] the market would be at its best //

Speaker A: // [428] to be honest my frind [literally, uncle] // // [429] watermelons from dʒini:n are famous throughout the world // but [430] the problem we normally faced when growing watermelons // [431] used to be // // [432] foxes // [433] we did set traps for them // [434] big traps // [435] without success // // [436] we never caught any // [437] they were conscious of them // [438] they were conscious // ...

Speaker A: // [439] who farms your land, may I ask? //

Speaker B: // [440] we had a piece of land we leased out in return for a share of the profit // [441] our share would normally be 20% of the profit //

Speaker A: // [442] that is excellent // ...

Speaker A: // [443] do you grow clover in winter? //

Speaker B: // [444] I swear by God, clover is not known in our area //

// cows are left [445] to graze // and [446] nobody grows clover //

Speaker A: // [447] Ah! // you do [448] not have many cows //

Speaker B: // in [449] fact, I would not say that we have many cows //
// we [450] have a few // but [451] not many //

Speaker A: // and what [452] do you grow in winter? //

Speaker B: // [453] mostly, broad beans and onions // in [454] the ɣo:r area // because the [455] weather is not cold //.

Speaker A: // and [456] do you grow wheat and barley every year? //

Speaker B: // yes, [457] every year // wheat [458] and barley // and [459] lentils //
// and [460] chick peas // this is [461] an important matter for us //.

Text no.3

The text presented below which took place between speakers A and B can be regarded as a typical example of a conversation that may take place between two market traders in fruit and vegetables:

Speaker A: // did Abu-[462] Fathi decide to buy? //

Speaker B: // I am telling [463] you brother // I am [464] getting fed up //
// I do not [465] wish to sell // neither [466] to buy // I curse [467] the day // in [468] which we harvested the onions //

Speaker A: // take it [469] easy man // do not [470] get nervious // why [471] are you getting upset? //

Speaker B: // man, do [472] you consider the price which you offered to be fair? //

Speaker A: // [473] fine // people, [474] by understanding // and [475] good intentions will reach an agreement //

Speaker B: // by God, Abubra-hi:m, [476] as I mentioned // [477] // Abum-himmad offered // [478] thirty seven lira for each kilo //

Speaker A: // [479] now, he is mentioning Abum-himad (implying that this is inventing an unreal story) //

Speaker B: // [480] If you believe so // [481] go and look // [482] go and look for another type of onion //

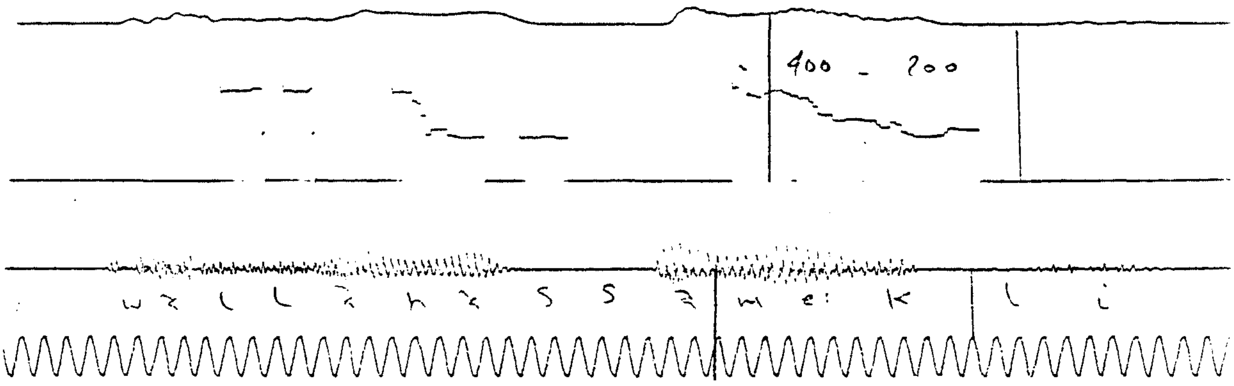
Speaker A: // [483] O.K., boss [literally master] // [484] God is responsible for all of us //.

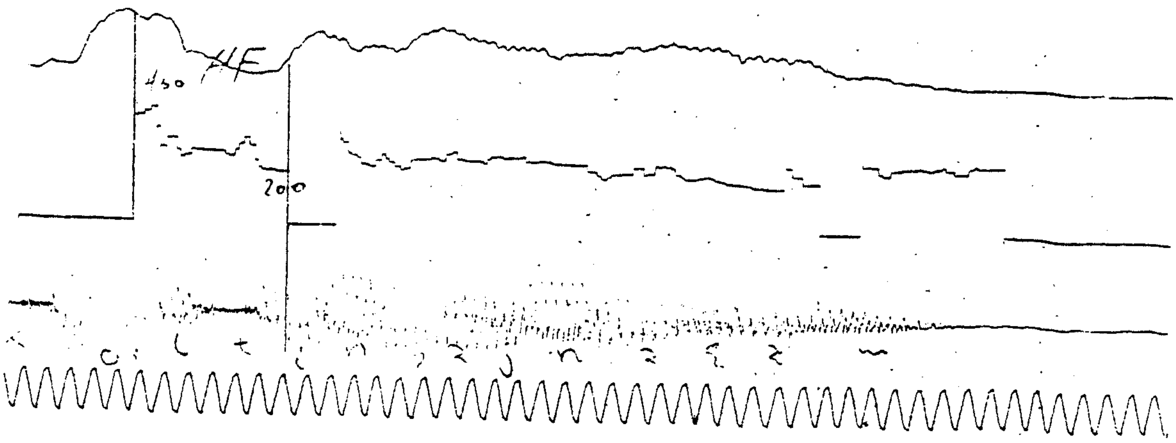
Speaker B: // [485] that is true // [486] may God make things easier for you //.

Section B: the simple tones.

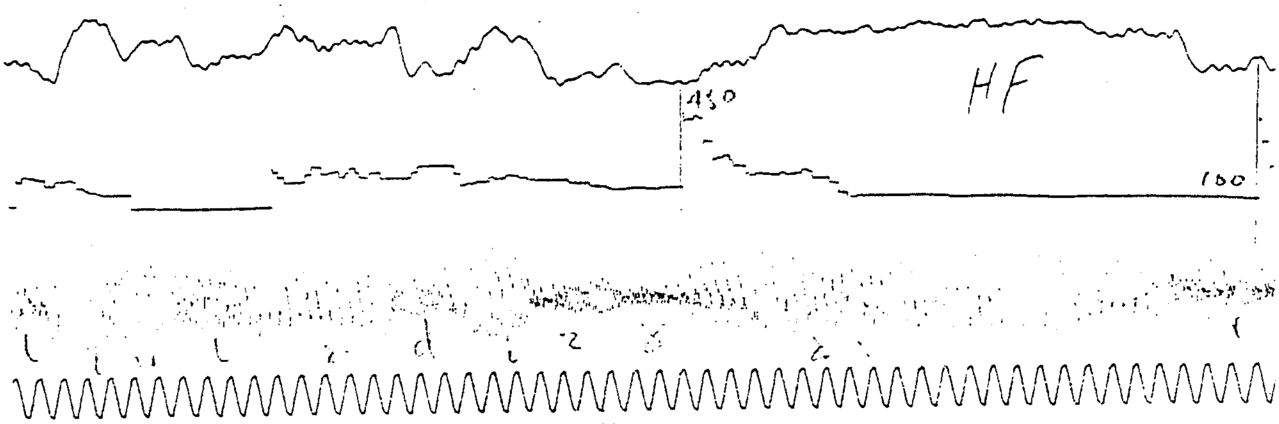
1. The falling tones.

a. The high suspended falling tone.

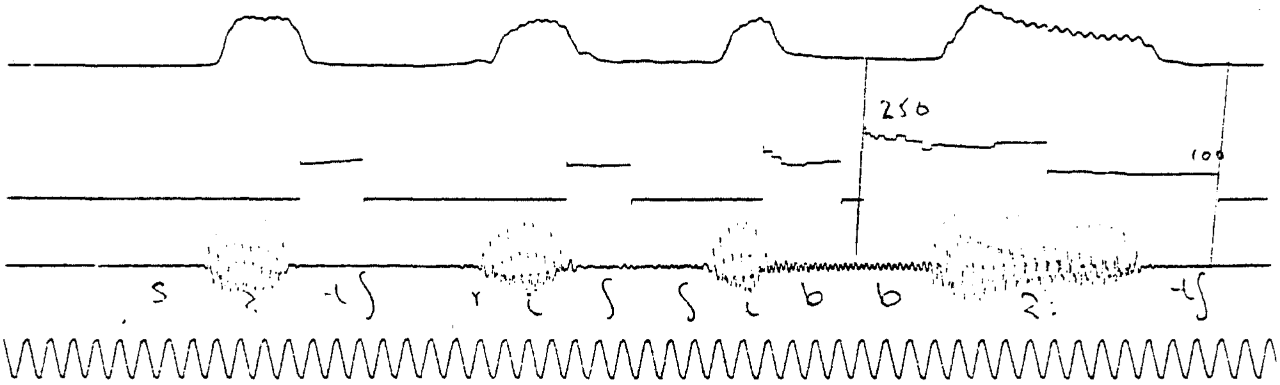


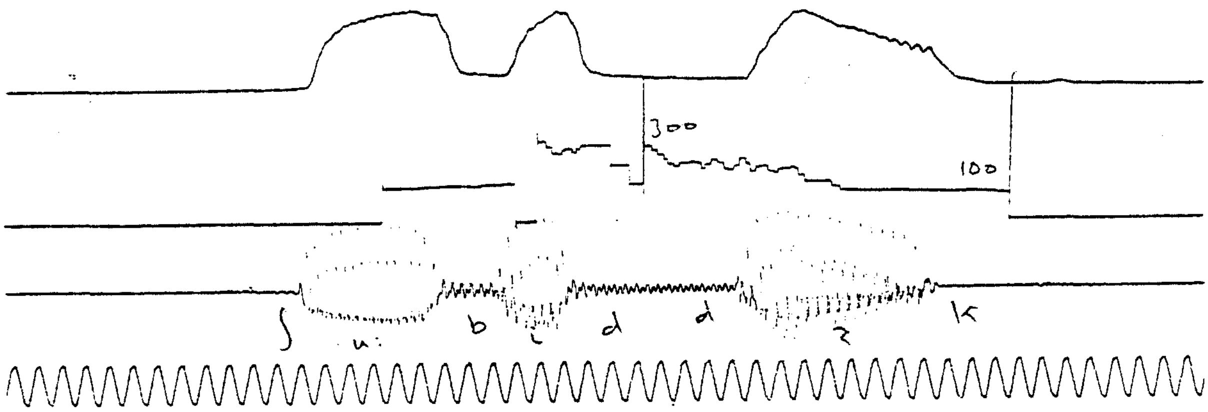


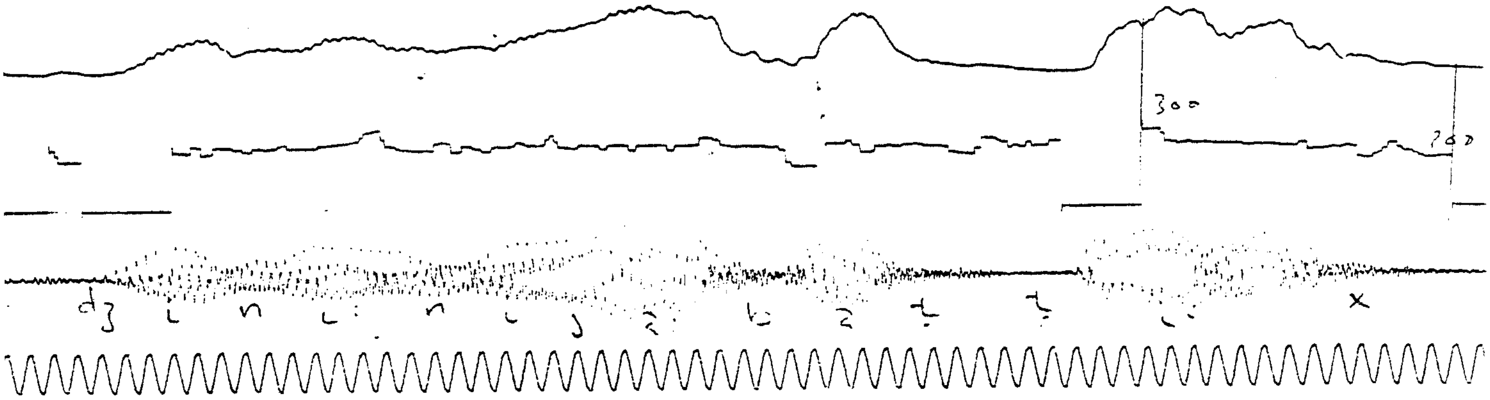
b. The high low falling tone.



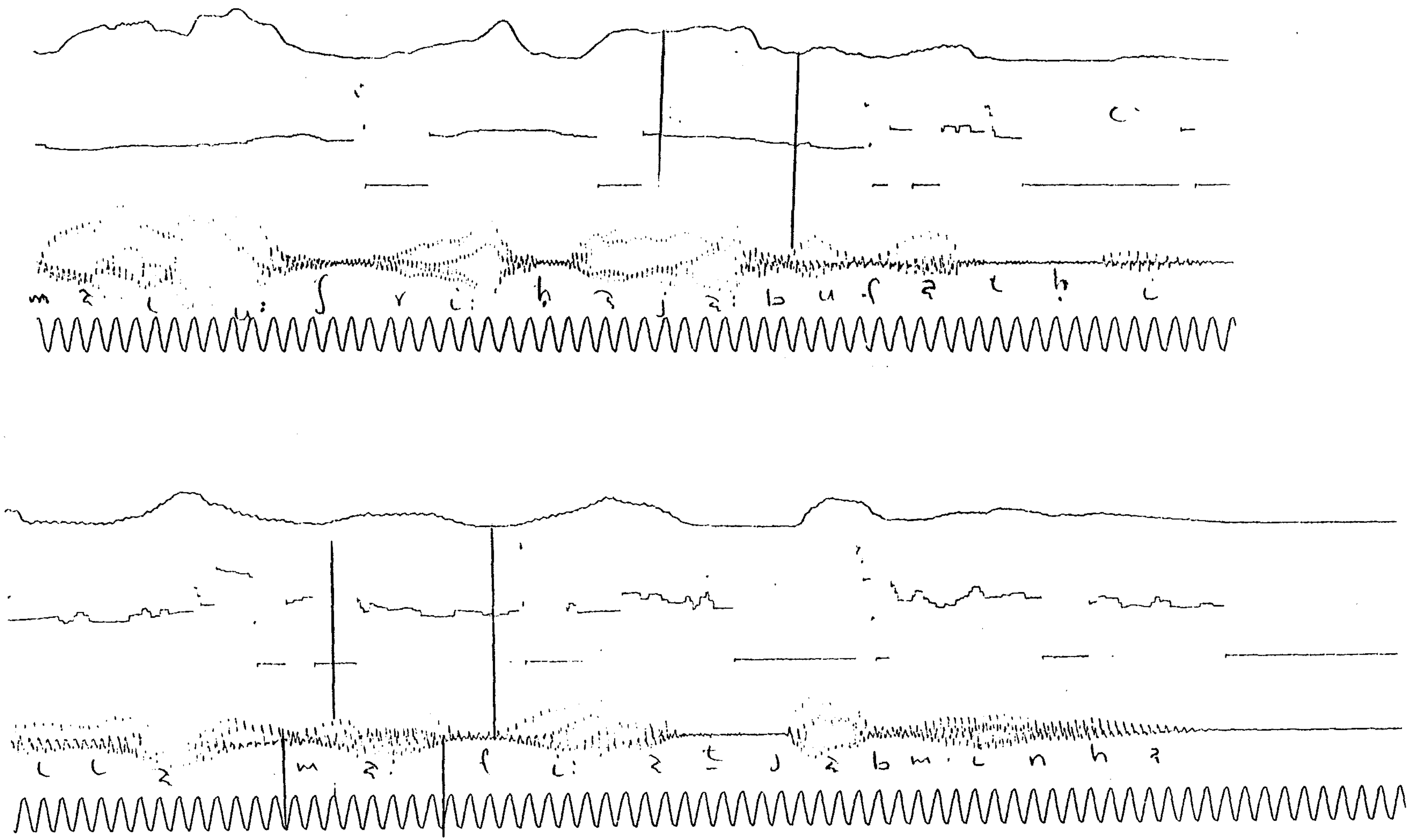
c. Mid falling tones.





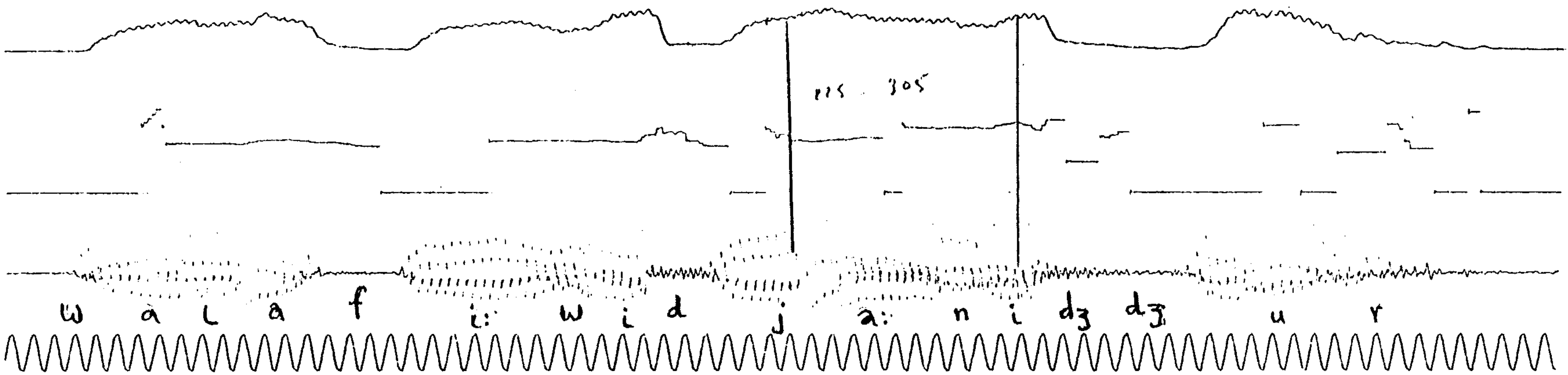


d. Low falling tones

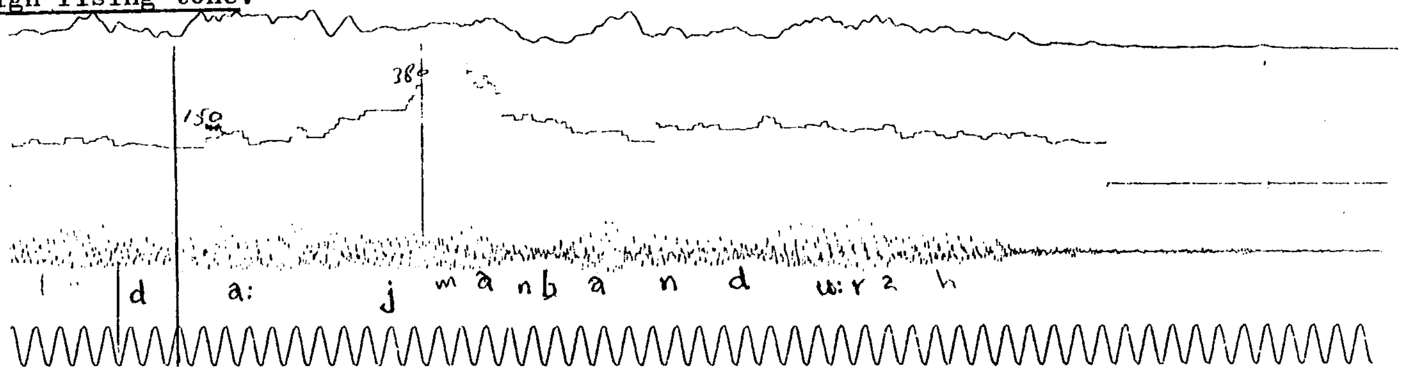


2. The rising tones.

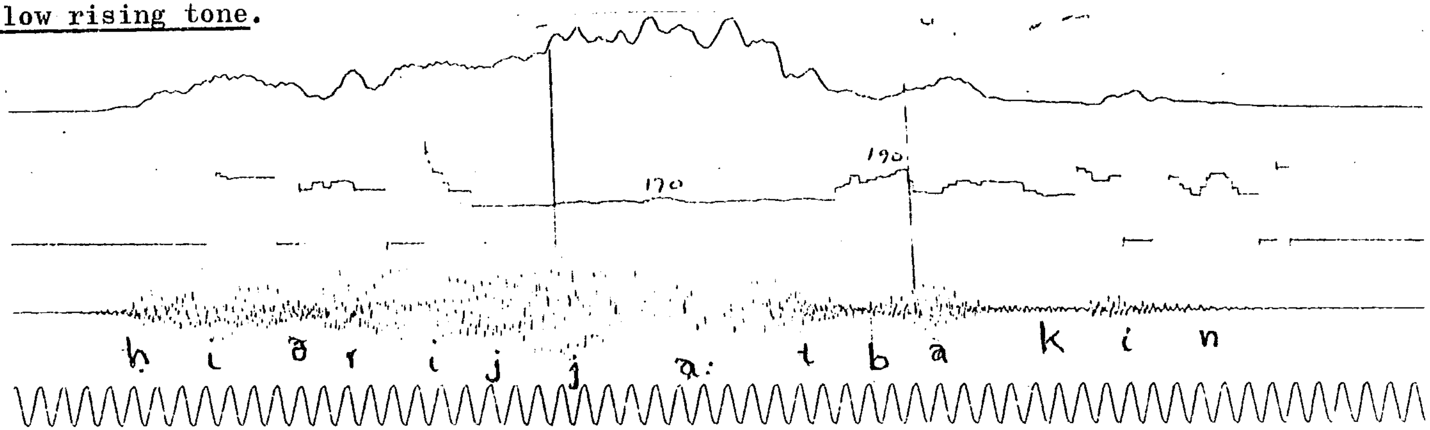
a. The mid rising tone.



b. The high rising tone.

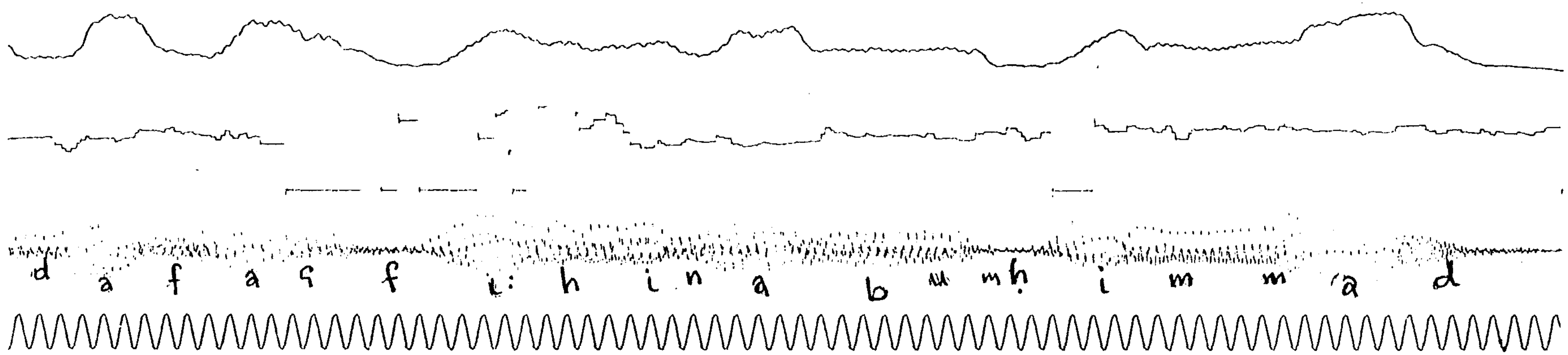


c. The low rising tone.

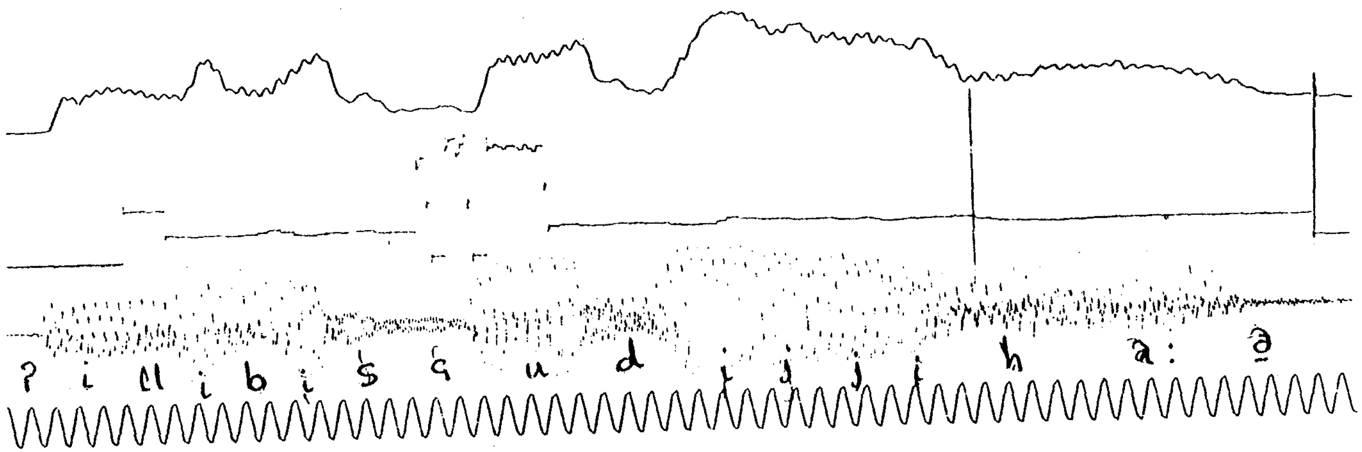


3. The level tones.

a. The high level tone.



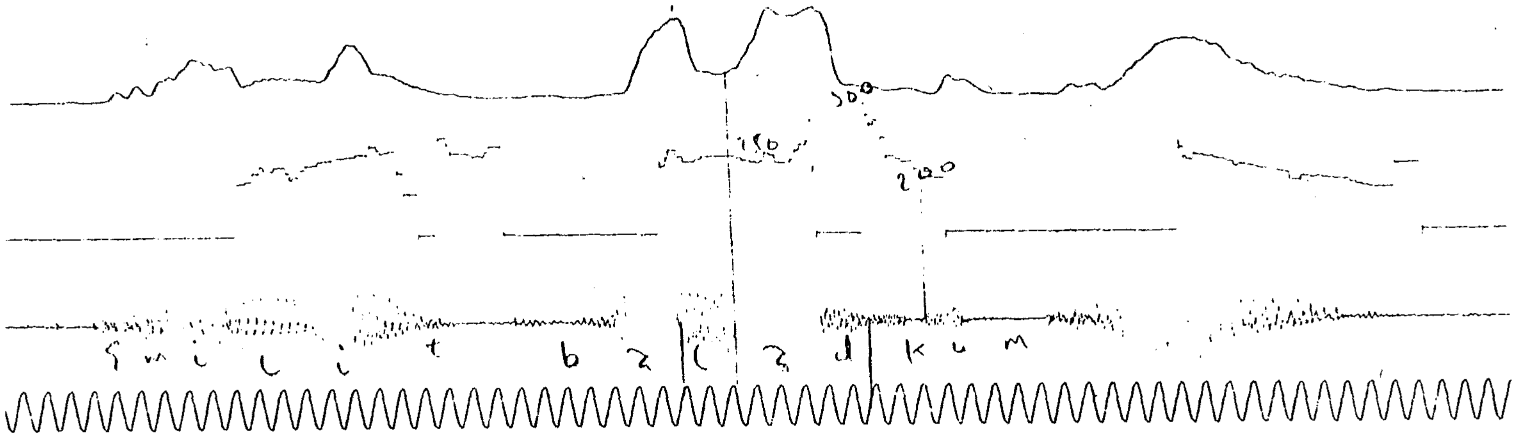
b. The low level tone.



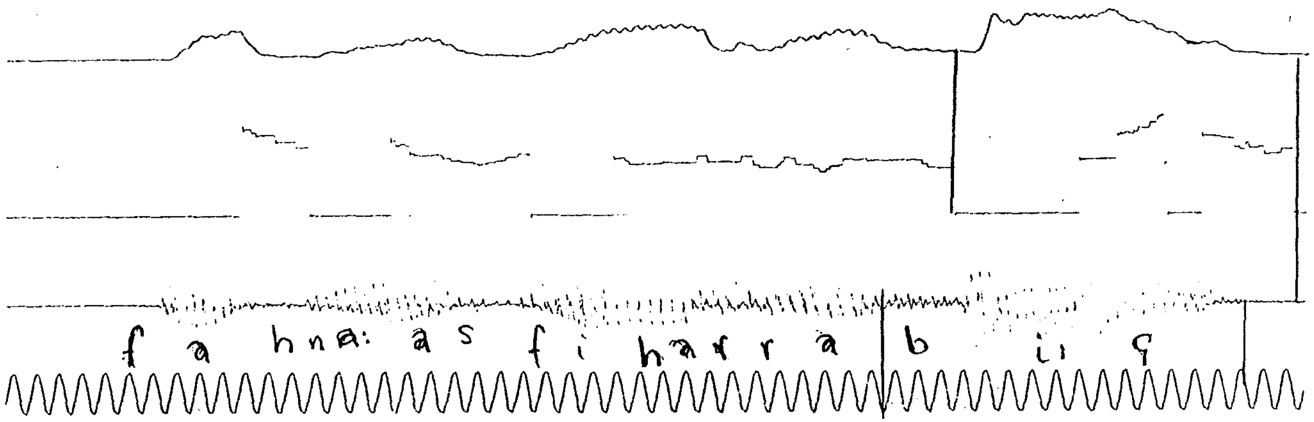
Section B: the complex tones.

4. The rising-falling tones.

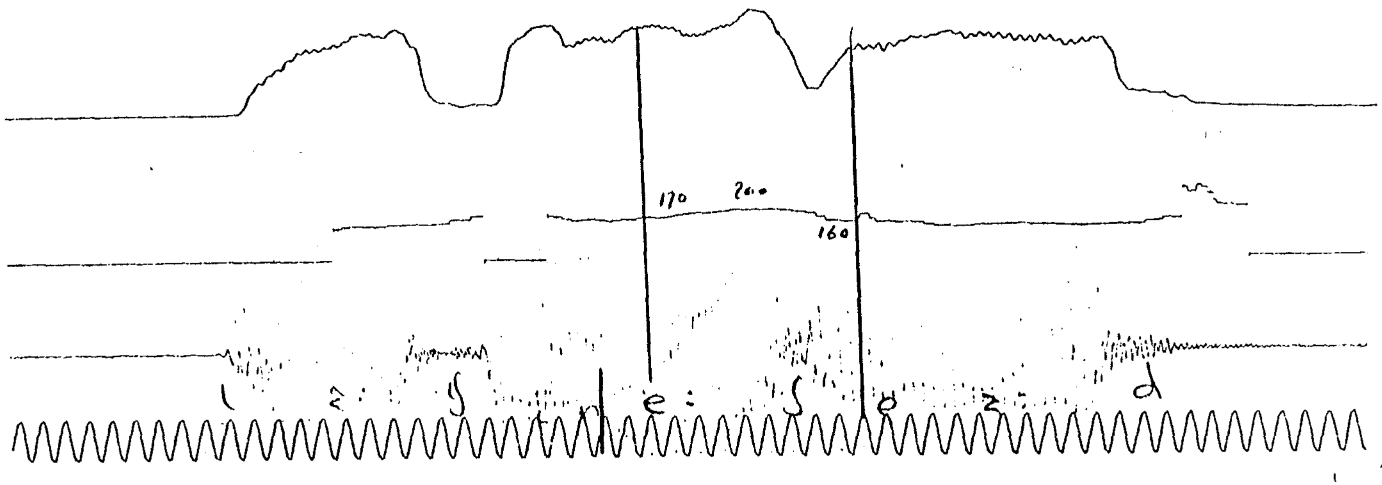
a. The high rising-falling tone.



b. The mid rising-falling tone.

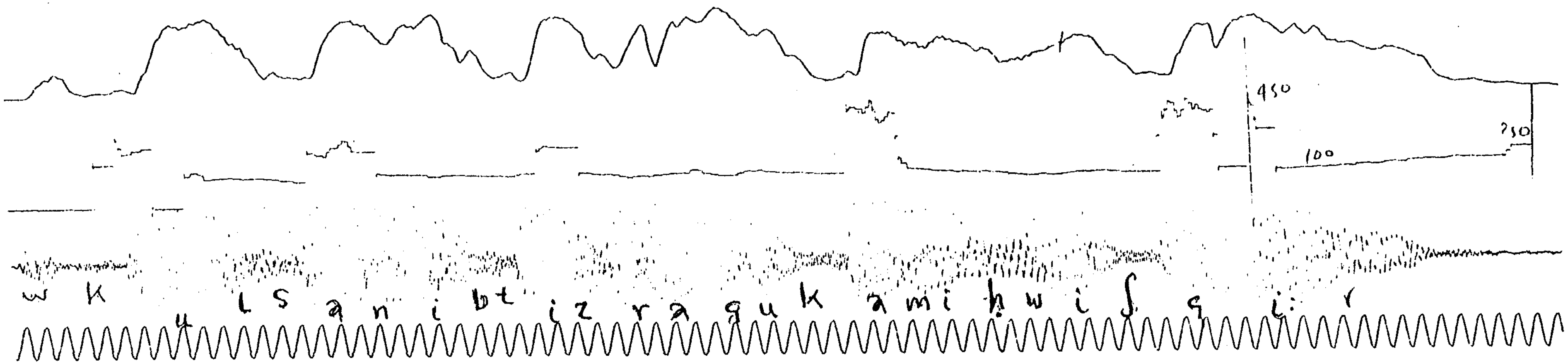


c. The low rising-falling tone.

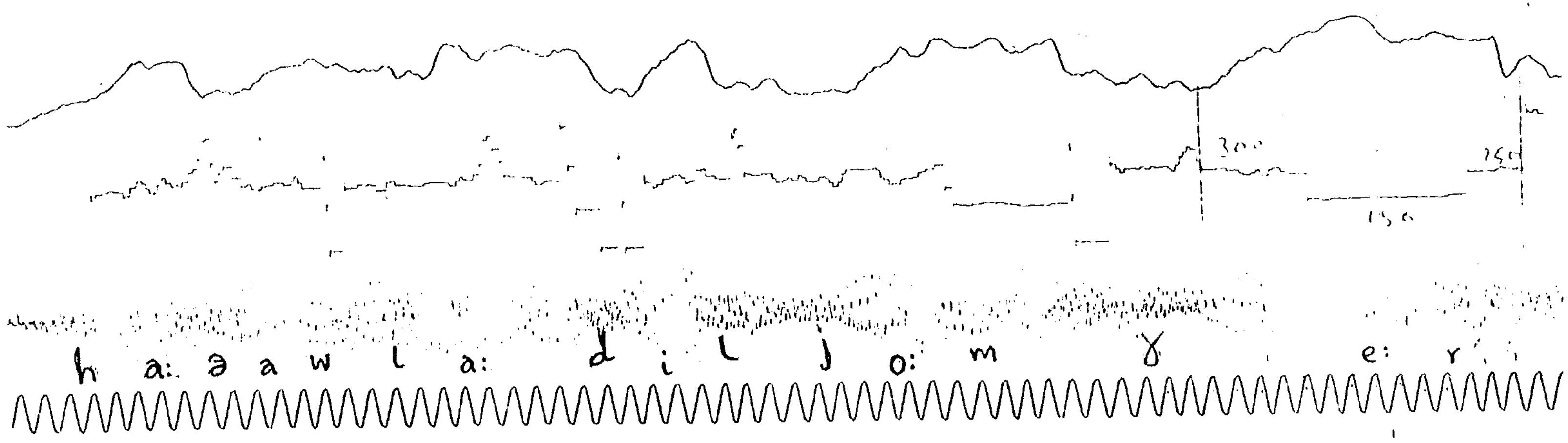


5. The falling-rising tones.

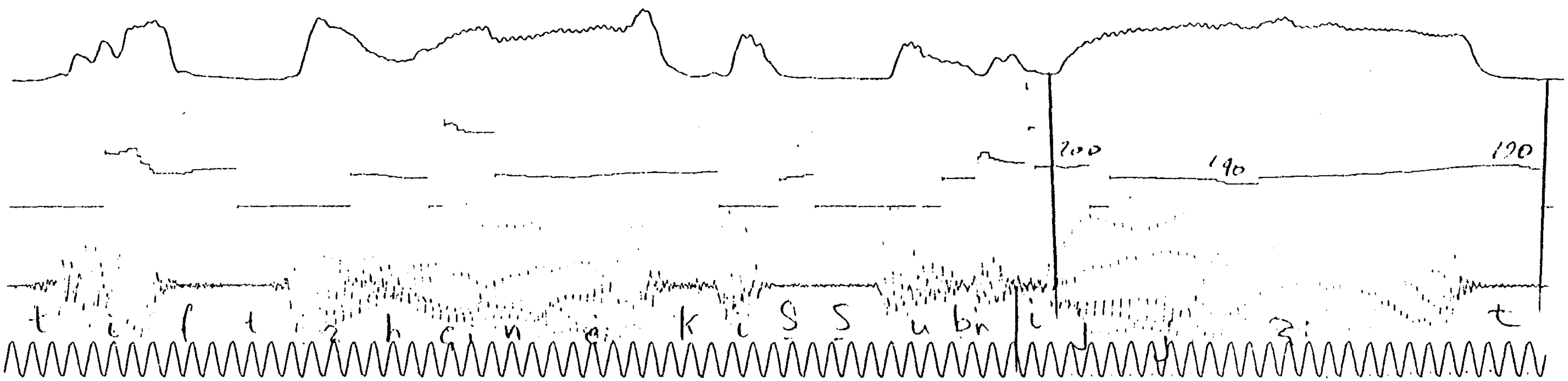
a. The high falling-rising tone.



b. The mid falling-rising tone.

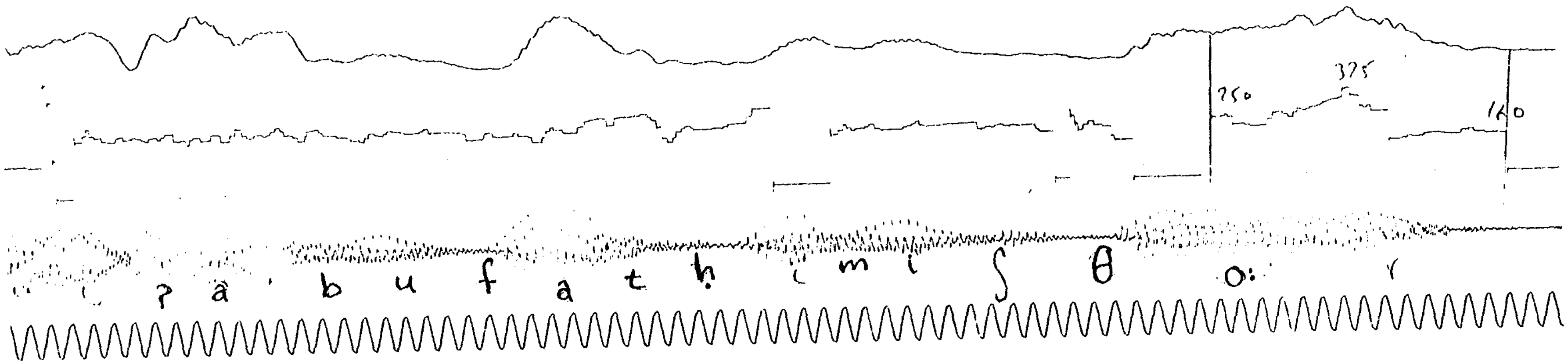


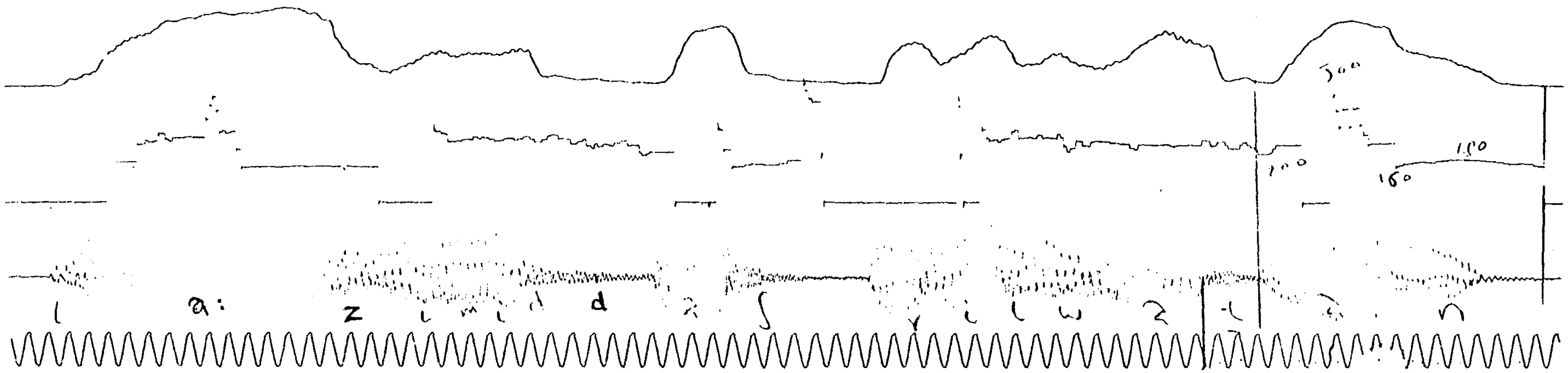
c. The low falling-rising tone.



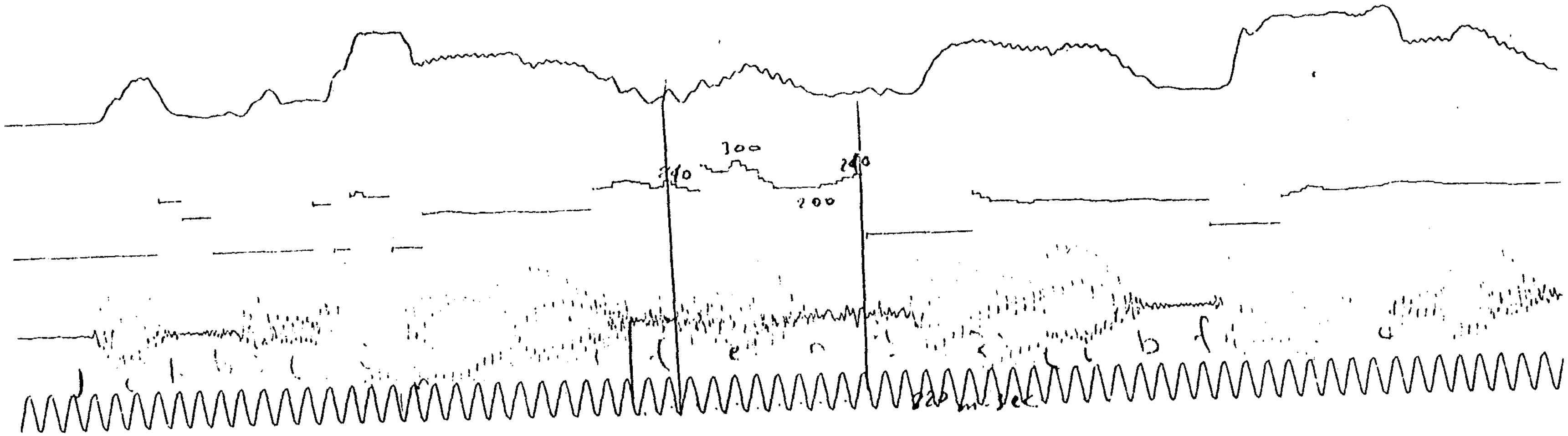
6. The rising-falling-rising tones.

a. The high rising-falling-rising tone.

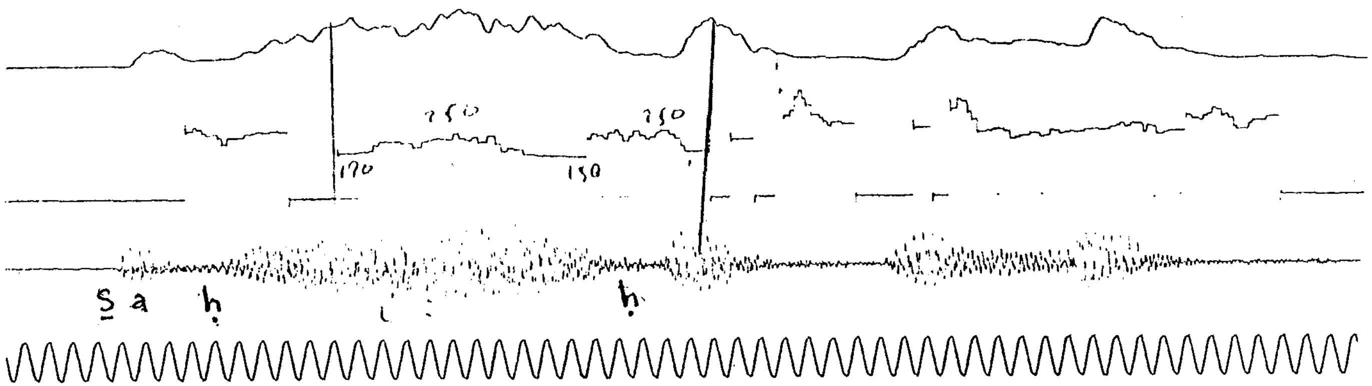




b. The mid rising-falling-rising tone.

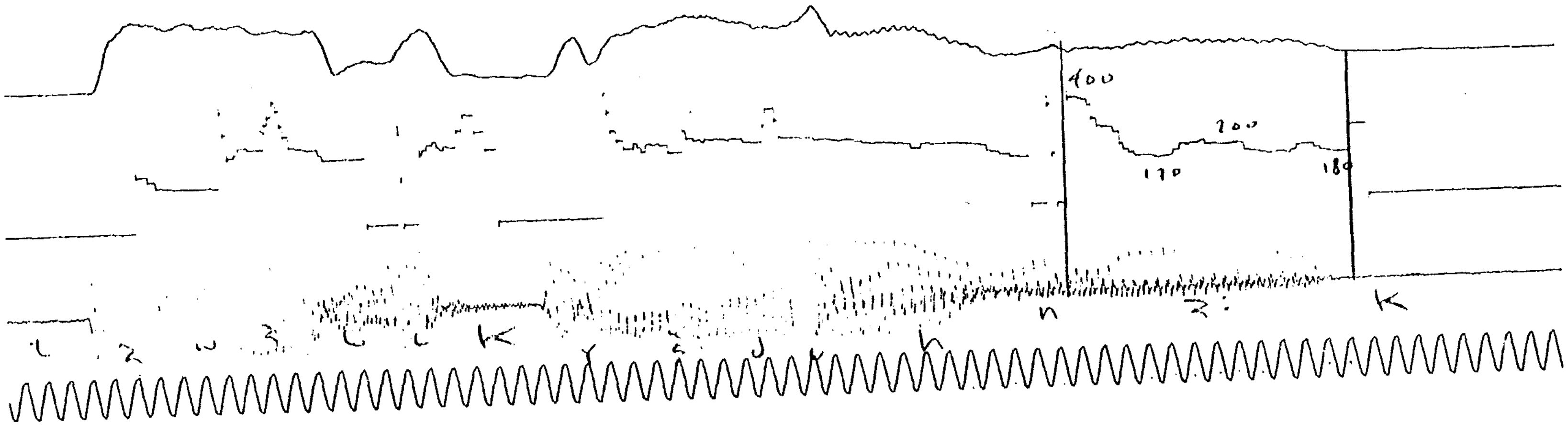


c. The low rising-falling-rising tone.

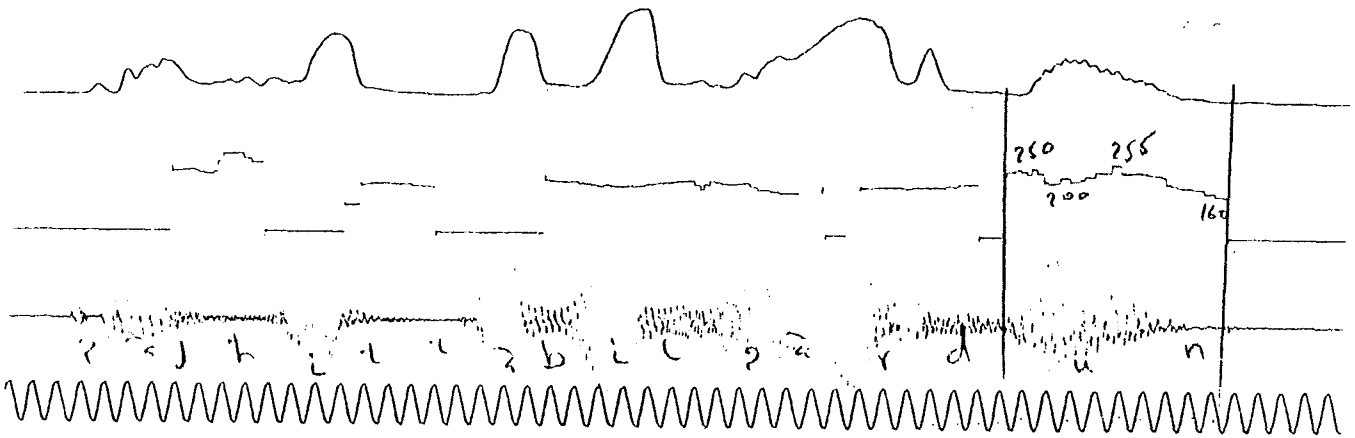


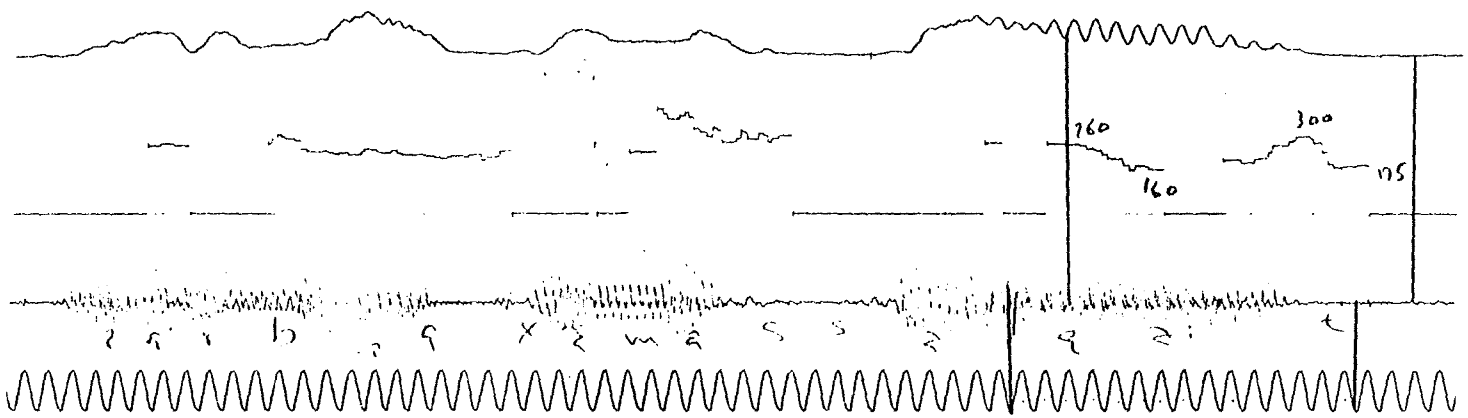
7. The falling-rising-falling tones.

a. The high falling-rising-falling tone.

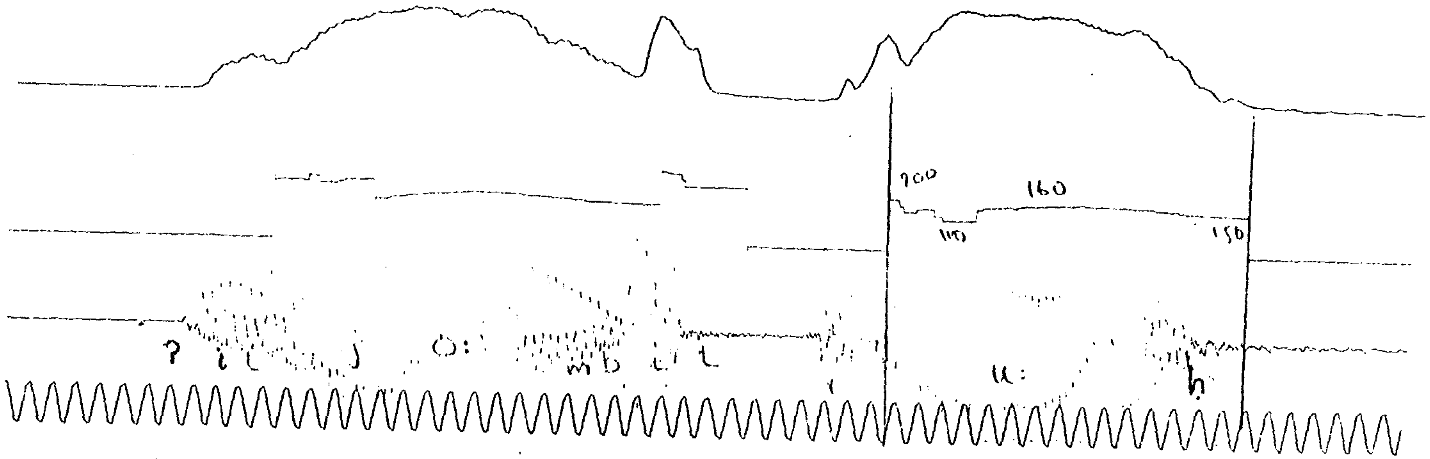


b. The mid falling-rising-falling tone.



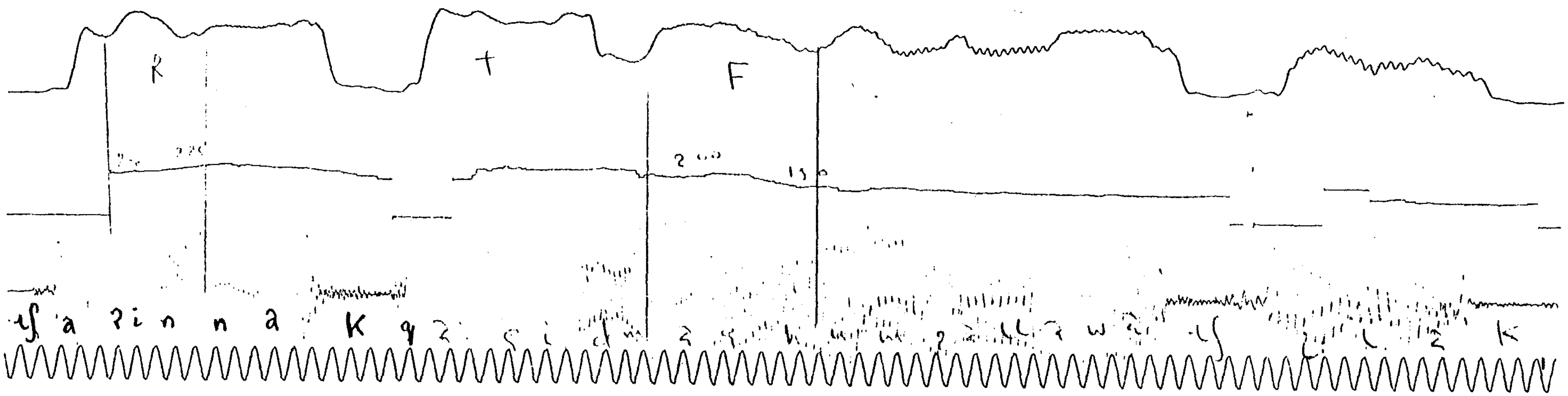


c. The low falling-rising-falling tone.

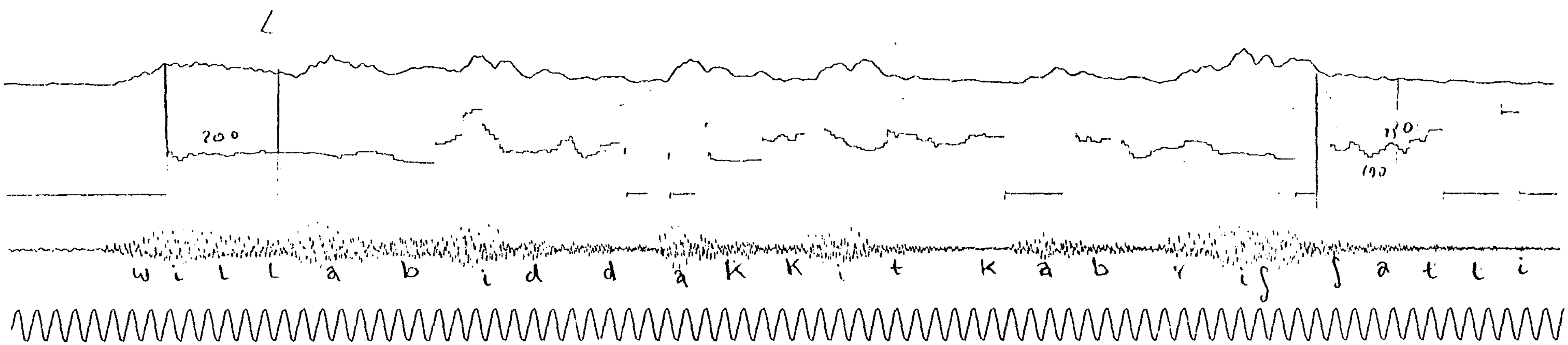


Section B: The compound tones.

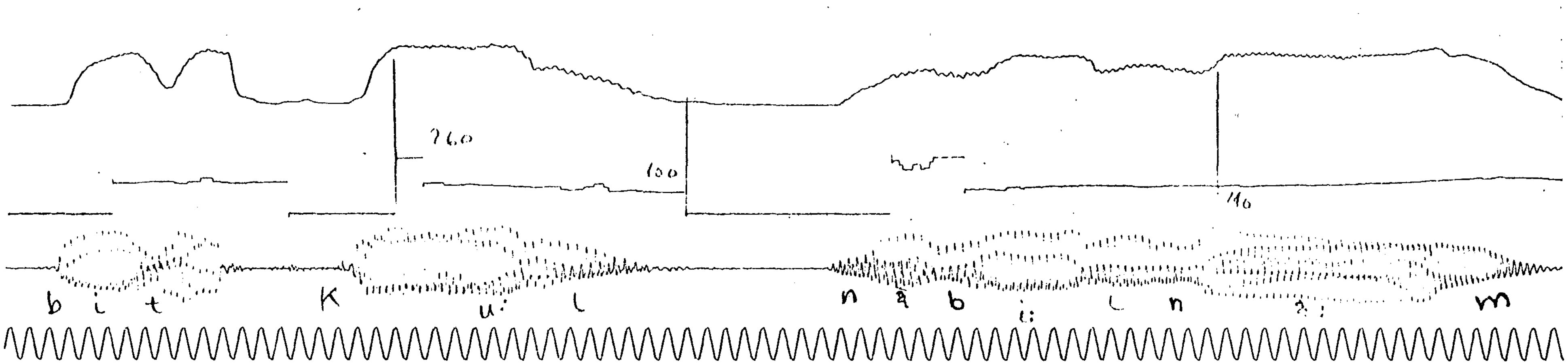
8. The rise and fall compound tone.



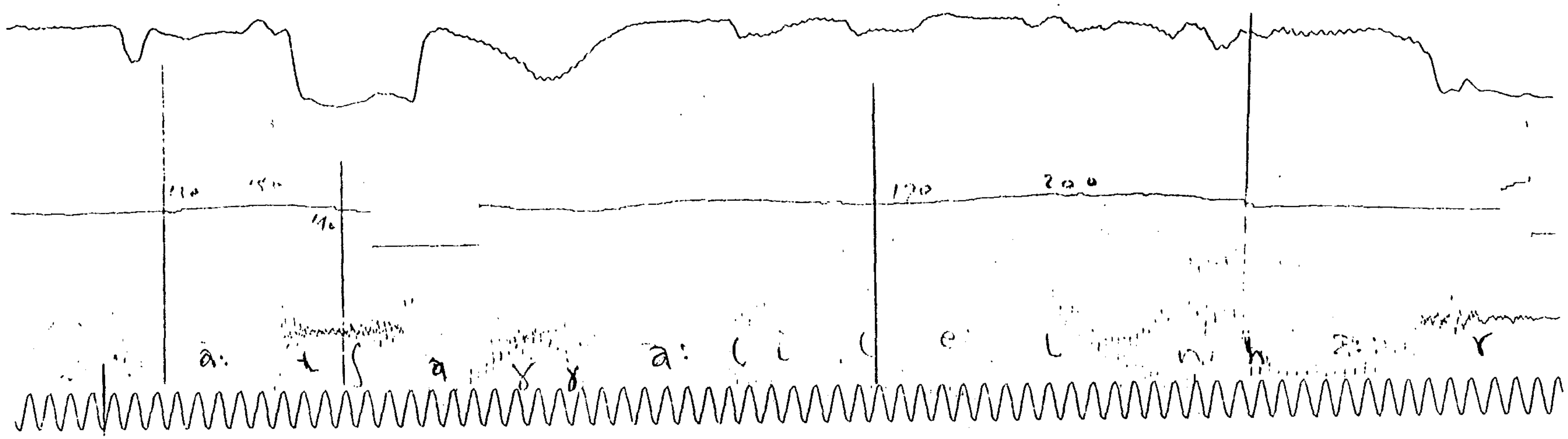
9. The level and rise compound tone.



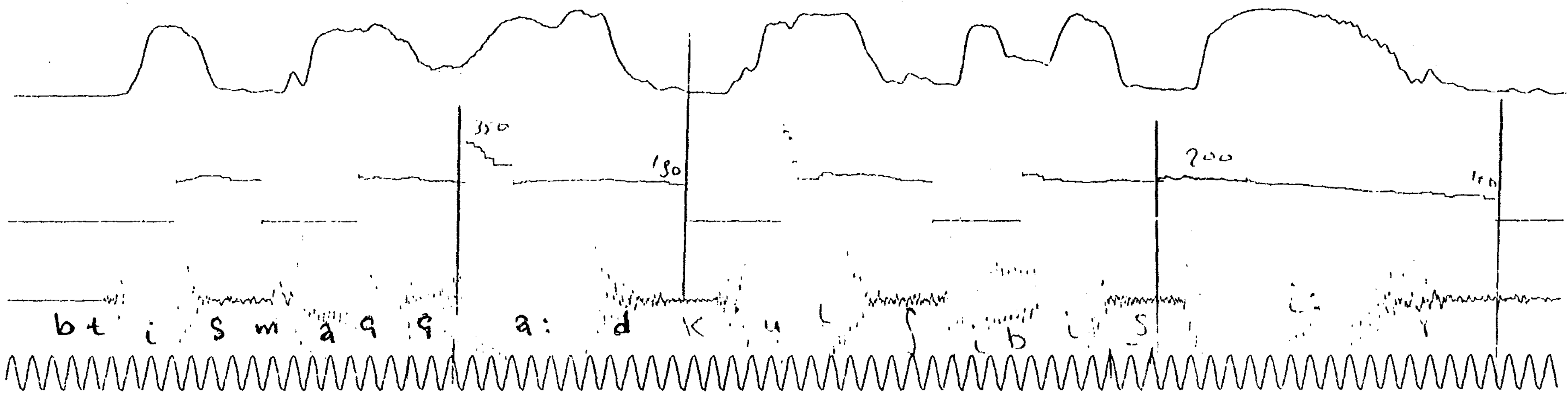
10. The fall and rise compound tone.



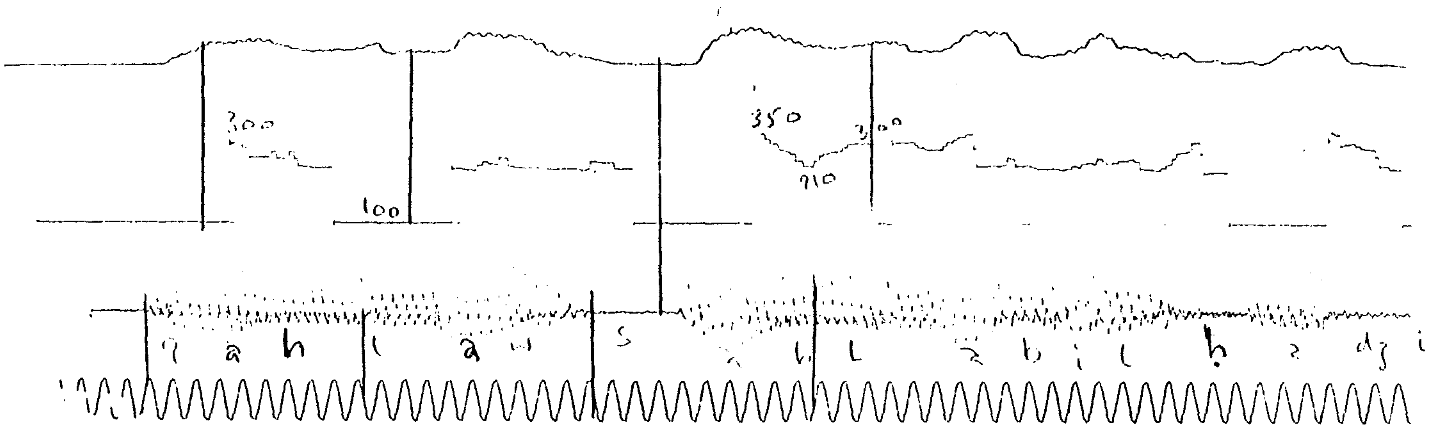
11. The rise and rise compound tone.



12. The fall and fall compound tone.



13. The fall and fall-rise tone.



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