TONES IN PANJABI : A STUDY IN THE FRAME WORK OF SANSKRIT PITCH LEVELS

Dissertation submitted to the Jawaharlal Nehru University in partial fulfilment of the requirement for the award of the degree of

MASTER OF PHILOSOPHY

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CERTIFICATE

This dissertation entitled TONES IN PANJABI : A STUDY IN THE FRAMEWORK OF SANSKRIT PITCH LEVELS submitted by Harpal Singh , Centre of Linguistics & English , School of Language , Literature & Culture Studies ,Jawaharlal Nehru University , New Delhi , for the award of the degree of MASTER OF PHILOSOPHY is an original work and has not been submitted so far in part or in full for any other degree or diploma of this or any other university.

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To vibration of vocal chord

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ABBREVIATIONS USED

NIA	New Indo Aryan
VS	Vedic Sanskrit
Vaj.	Vajasyeni
Prati.	Pratisakya
/´/	High Tone
unmarked	Mid Tone
/`/	Low Tone

LIST OF MAPS, TABLES AND CHARTS

CHAPTER 1

INTRODUCTION

We wish to begin with a mention of two interesting facts we came across while going through available literature on tones in Panjabi and pitch levels in Vedic Sanskrit.

The first fact is that a scholar believes that there are four tonemes in Panjabi in opposition to the popular belief that Panjabi has just three distinctive tonemes [1].

The second fact which would be of much interest to Sanskrit scholars is that there is a scholar who maintains that Vedic Sanskrit has four pitch accents and not just three as it is generally regarded[2].

Such types of diverse but firm opinions provoke one's sense of righteousness,which then perpetually compels one to know more and more about the differences so that one finds himself very close to the reality at least, if not truth one day. This study in a way is an attempt to integrate such diverse views.

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1. Malik, A. N., 1995 - Phonology and Morphology of Punjabi, MRML,India

2.See on the subject of Vedic accentuation, Prof. Roth's preface to the Nirukta : two treatises byWhitney in the journal of the American Oriental Society, Vol. IV p. 195 etc. V. p. 381 etc.

Historically, Panjab used to be called Aryavartta -Abode of the Arya. Incidentally, Aryavartta was the land where early Vedic literature (*Ṛigveda*) was composed (Cardona 1984).

In Ṛigvedic texts we find pitch levels marked which are three in number. These accents have been translated as acute, grave and circumflex. On the other hand Panjabi language is regarded as the only Modern Indo Aryan language having tones. A lot of controversial views regarding the origin of tones in Panjabi language are there. Till now it is a mystery how come Panjabi is the only language among MIA languages having this feature. A lot of scholars maintain that tones in Panjabi are nothing but the pitch levels of Vedic Sanskrit -a language Panjabi is said to be present day form of. Such facts paved way for a study which attempted to see a correlation between the pitch levels of Vedic Sanskrit and tones in Panjabi.

As an attempt to solve this mystery this study has basically come out to be a comparison of the original Vedic Sanskrit text with the text of Panjabi to see whether a correlation exists between

the places of occurence of Panjabi tones and Vedic pitch levels or not. From the findings of this, generalisations that could have been possible have been made. Chapter 5 of this dissertation has been fully devoted to this task. In this chapter no attempt has been made to explain presence or absence of correspondences.

But as we stated in the beginning of this chapter that there are diverse views regarding the number of pitch levels in Vedic Sanskrit as well as tones in Panjabi even among the scholars who belong to the same region as far as Panjabi is concerned. So it becomes necessary to justify why do some of the scholars maintain that there are three pitch levels in Vedic Sanskrit whereas others do not. The same goes for Panjabi also. Why do most of the scholars maintain that there are three tones in Panjabi. Moreover the definitions of pitch levels in Vedic Sanskrit as well as tones in Panjabi also differ from person to person. Nevertheless, most of these opinions appear to be intuitive only if not largely matters of perceptual difference. All this makes it necessary to ponder over what all can be called pitch levels in Vedic Sanskrit and how we

can define tones in Panjabi. Chapter 3 not only explains in detail what are the tones in Punjabi but also justifies why do the scholars assume them to be three in number as high, mid and low or otherwise. On the same line Chapter 4 explains the pitch levels in Vedic Sanskrit, the marking system as given in Vedic texts and the reasons why do scholars regard them as three in number.

As far as motivation to pursue this study is concerned I think intellectual curiosity stands out as the Central. But, nonetheless, apart from this it has significant relevance in a number of areas which we will mention in the following lines. An integration of diverse views about tones in Panjabi will necessarily help one to have a close picture of available literature on tones in Panjabi. Descriptive study of tones in Passnjabi finds application in a no. of areas including

a.) **Demographic studies :-** This study will be of much help to demographers as now in preference to articulatory basis, peculiarities based on voice and suprasegmental features are more important.

b.) Speech Pathology :- This study will help practitioners and speech therapists account for following conditions commonly reported in patients suffering from paralysis of vocal chords, laryngectomization, epilepsy, stuttering, migraine, pseudo / progressive bulbar paralysis and parkinsonism etc. (Malmberg, 1968).

i.) Loss of ability to hold a tone

ii.) The tone of the voice is wrong.

iii.) Patients complain of thickening of voice.

iv.) Monotonous speech.

v.) Poor singing voices

c.) Speech Training :- Specialists who hold special training sessions to enable normal speakers gain better control over pitch variation and voice modulation can benefit from the study. Cine-Artists, news-readers, comperes, theatre personalities and all other who work in the areas related to speech and electronic media can gain from the study.

Moreover studies related to vowels of languages exploiting tonal phenomenon can also refer to this study as it is generally regarded that a study of vowels without any reference to their tonal / pitch variations accompanying them will be quite meaningless because tonal contours ultimately contribute towards characteristic sentence melody and the rhythm of the language (Narang 1989).

Phonology they say is a semantically conditioned science. Nevertheless phonemes exhibit no dual structure, meaning enters discourse at a higher level than sound and phonology is therefore a homogeneous science. The same has been assumed to hold good for this study. And the fact that prominence can be given to a syllable by pronouncing it louder, with greater accuracy, with a higher pitch or by giving it longer duration is the underlying belief which will form the starting point.

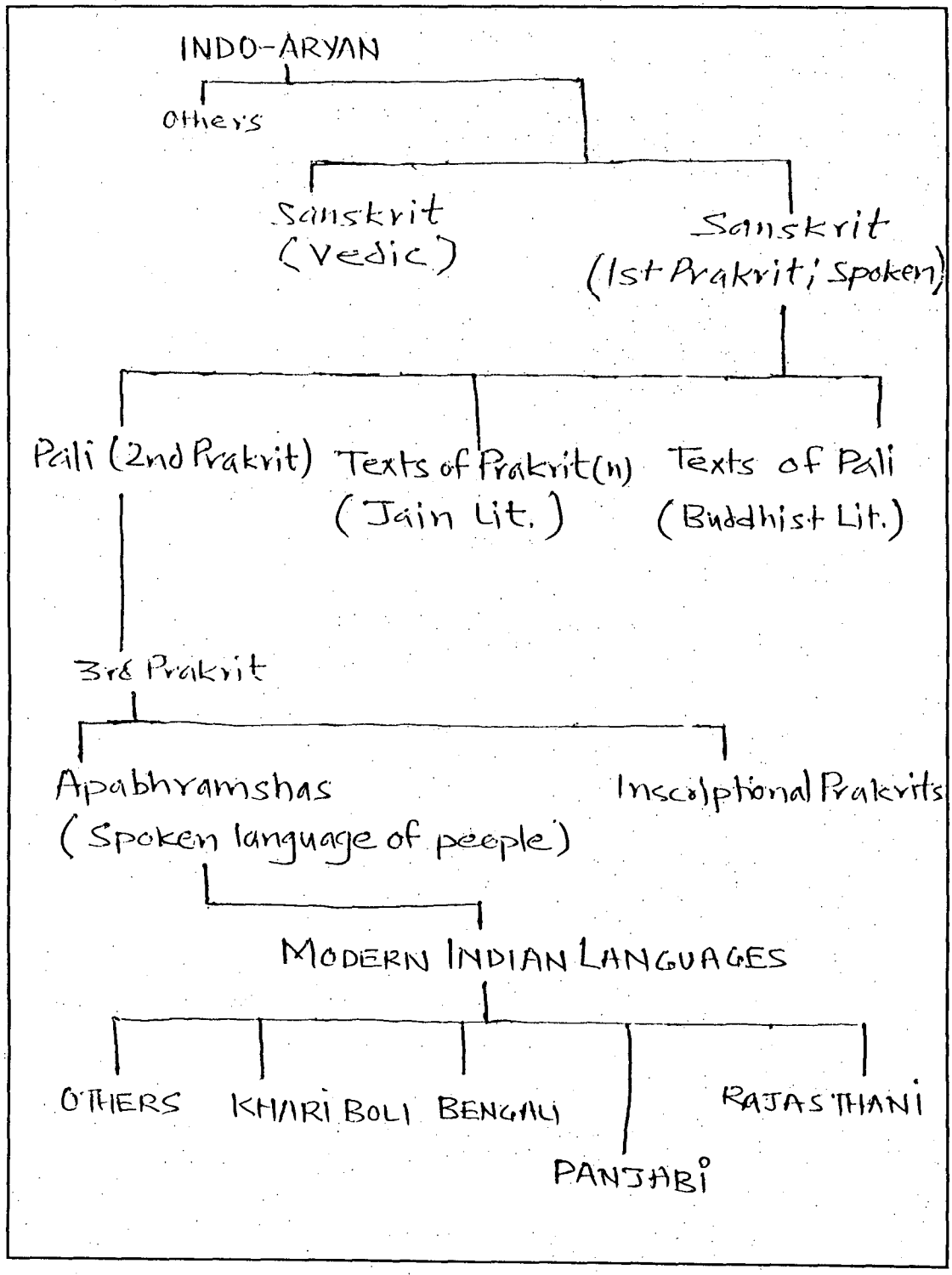


Table 1 - PANJABI : AN OVERVIEW OF DEVELOPMENT

Chapter - 2

THE PROSODIC ORGANIZATION[1]

2.1 PITCH AND LOUDNESS

Syllables vary in their perceptual prominence. The patterns of varying syllabic prominence that result from the interactions of the four elements - pitch, loudness, duration and articulatory quality - give each language a characterstic texture, over and above the segmental detail of the language. This texture is made up of the interweaving of three main patterns of supra-segmental organization. These three patterns are those of the prosodic, metrical and temporal organization of the speech material. The function of the present chapter is to consider the contribution to the suprasegmental texture of speech of the pattern of prosodic organization of pitch in the variation of melody in individual utterances.

The melody of an utterance is communicated chiefly by movements in time of the pitch of the voice. Pitch as such is a

1. Adapted from Laver, John(1994).

perceptual concept. It is phonetic correlate of the vocal folds during the voicing of segments. Its acoustic correlate is fundamental frequency, measured in cycles per second, for which the modern notation is Hz (Hertz).

The perception of fundamental frequency differences by the human auditory system is remarkably accurate when listening to stimuli in ideal conditions. The just noticeable difference (the psychological threshold or limen) in pitch discrimination between two notes, in the span of fundamental frequencies from 80 to 160 Hz is of the order of ± 1 Hz. Differences of less than about 1 Hz are impreceptible, or subliminal. Above these frequencies the limen becomes progressively greater. It is conventional to describe the pitch of voicing as 'higher' when the frequency of vibration of the vocal folds increases and 'lower' when the frequency decreases.

The full discussion of prosodic phenomenon needs to be prefaced by saying that there is a difference in kind between segmental features as such and supra segmental features of prosodic organization. A segment is defined by the mutual co-

presence of particular features which can be regarded as 'inherent' to the identification of the segment concerned. Suprasegmental prosodic features are 'overlaid' on segments and are not inherent to the definition of segments.

Another prefacing comment that needs to be made is that although the analysis is mostly concerned with properties of syllables and larger units, there remain of course lower level interactions between segments and suprasegmental features. The effects mostly concern features by the muscular and aerodynamic requirements of momentary segments. Reversing the image of the segment as a carrier for suprasegmntal features, one could think of these segmental perturbations as being momentaily superimposed on the general trend line of the pitch or loudness movements characterising the uttarance. To take a prosodic viewpoint both the micoperturbations and microprosodic distortions are to be discounted.

2.2 THE PROSODIC ANALYSIS OF PITCH

An initial distinction can be drawn between the range within

which pitch movements take place versus the shape, height and the direction of these movements.

2.21 PITCH RANGE AND PITCH SPAN

The melody of the speaker's voice on any given occassion is not a matter of the asbsolute value of the pitch displayed by the voice from syllable to syllable. Pitch is related in two senses . Fistly, the estimation of the pitch value of a single syllable as high, low or mid etc.. is a relative perceptual judgement made by the listner in terms of the hypothesized placement within the general range of pitch over which the speaker's voice is believed to move. Secondly, the pitch value of the given syllable in a train of syllables in connected speech is judged relative to the pitch values of its immediate neighbours, as being the same, higher or lower.The melody of the speaker's voice on any given occassion is thus a matter of the train of relative pitch values that the listner perceives in the succession of syllables that make up the utterance, within the frame work of the speaker's assumed pitch range.

The definition of melody leaves matters of rythms largly out of account which form part of metrical analysis. It also emphasises the fact that the listner brings a number of assumptions to the assessement of the speaker's range of pitch. These assumptions bear an issue to do with different kinds of pitch range typified by the particular speaker's voice. One is the organic range of the speaker's pitch which is the maximum range of pitch of which the speaker's voice is physically capable, given the biologically determined factors of his or her laryngeal anatomy and physiology. The second kind of pitch range is speaker's current paralinguistic range, which is the adjustment within the organic range of the range of pitch that is exploited for momentary paralinguistic purposes of signalling particular attitudinal information. Cultures vary in the way that the utilised pitch setting as part of paralinguistic communication.The question 'Which pitch phenomena count as linguistically significant' can not be dissociated from the complimentary question of which pitch phenomena count as para-linguistically communicated. The third type is the linguistic range, which is the range within which the phonologically relevant pitch of

the speaker's voice habitually varies in paralinguistically unmarked, attitudinally neutral conversation.

The fourth type of pitch range to be distinguished is the phonological pitch-span, which is the local range within which the speaker organises relative values of pitch for prosodic purposes within the whole or part of a particular utterance. Within the notion of the pitch-span, one can isolate two framing components. The first is the component contributed by the choice of the base-line which is the series of pitch values that is perceived as forming the floor of the current pitch-span. The second is the component contributed by the choice of plateau or top-line which is the series of pitch value that is perceived as forming the ceiling of the current pitch-span. The interval between the base-line and the top-line define the width of the pitch-span. An essential ingredient of the concepts of pitch-span, base-line and top-line is that they are defined as trends over several syllables. One of the characteristics of pitch phenomenon in many languages is the downward slope of both the base-line and the top-line with the progressive narrowing of the pitch-span within the linguistic range. This effect is usually

called Declination.

2.22 PITCH HEIGHT AND PITCH CONTOUR

Within the constraints of the pitch span and any declination a distinction can be drawn between the relative heigtht of the pitch of an individual syllable and the contour of any dynamic pitch movement involved. Pitch-height refers to the relative placement of the syllable within the values of the pitch-span. Different levels can be categorised as high, mid, low, mid-high, mid-low etc. as appropriate. The concept of pitch-contour refers to the shape and direction of the trajectory shown by any perceptible change in pitch value through the duration of the syllable. Different contours can be refered to as level, rise, fall, rise-fall, fall-rise, rise-fall-rise etc. as required. The position of the placement of the pitch values within the pitch-span is then a matter of combining relevant levels from the choices of pitch-height and ptich-contour to give composite levels such as high, level, high to low-fall, low to high-rise, low to mid-rise and so forth. Another relevant characteristic of pitch-contours is their alignment with respect to the segmental strand of

speech production. For a given pitch movement may begin its salient movement in early, middle or late part of the syllable concerned.

2.3 THE ANALYSIS OF MELODY

One can think of two different phonological uses of pitch, on the basis of the linguistic domain over which pitch pattern can be held to be serving contrast of functions. The first category is the use of pitch in tone systems, where it serves to differentiate units at the level of individual word and individual syllable. The second is the use of pitch in intonation systems, where it serves to identify linguistic identities at levels higher than the word, at the phrase and sentence levels.

2.31 THE ANALYSIS OF PITCH PATTERNS IN TONE SYSTEMS

A distinction can be drawn between uses of lexical tone in two main types of tone systems-those where the domain of linguistically significant pitch behaviour is the whole word versus those where the significant domain is the syllable.

2.311 WORD BASED TONE SYSTEM

In this type of tone system,. a contour type pattern of pitch is associated with the entire word, over a variable number of syllable. This can be referred to as a word based use of lexical tone. As sub-variety of the use of word tone for lexical identification can be found in partial tone languages which have significant pitch on some syllables only.

2.312 SYLLABLE BASED TONE SYSTEM

In the second major type of tone system, every syllable is associated with the characteristic relative pitch-value. Pike (1948) in his work on languages exploiting tone systems, defines these as having lexically significant, contrastive but relative pitch on each syllable. It is the pattern made up by the series of such tones on the syllables of the word that serves to identify the word. Therefore it is referred to as syllable based use of lexical tone. Pike (1948) suggested typological division of languages using syllable based tone systems into two categories, depending on what feature of the pitch behaviour was significant. These can be referred to as

languages using registered tone systems and languages using contour tone systems to fecilitate the analysis of other facets of pitch use. In both types of languages as exhibiting an intonational function. The phrase registered tone system can be taken to be as a system where the relevant feature of word identifying pitch behaviour is the relative high of the syllable pitch is concerned within the speaker's pitch-span. In such registered tone systems, syllable may show only level pitches, only changing pitches (Rises and falls), or a mixture of both level and changing pitches. In the case of changing pitches, each of the end points of the falls and rises are identified with one of the level pitches. The phrase contour tone systems applies to the system of tones of a language where the relavent feature of the word identifying pitch behaviour is less the relative height of the syllabic pitch concerned, but more its shape as the trajectory, together with its general placements in the speaker's pitch-span. One also finds mixed regisrter/contour tone systems. Acoustic analysis reveals that in real speech the pitches of the so-called level tones are seldom strictly level. Acoustic analysis of the fundamental frequency actually used confirms once

again that the level tone displays a certain amount of movement, those substantially less than the rises and falls.

2.313 DISCRETE LEVEL TONE SYSTEMS

Welmers(1959) describes discrete level tone system as one where the pitch value of the different tones are maintained in approximately as standard relationships to each other. Connell and Ladd(1990:3-4) characterised discrete level tone systems as once in which the realisation of the tone phonemes are not supposed to trespass on each other's phonetic space but are realised in descrete frequency bands that remain more or less fixed throughout the utterance. Welmers (1959) also introduced the notion of downstep, which is the lowering process in tonal phonology which can be applied to the second of that two high tone syllables. This means that the choice of tone after low tone syllable is different from the choice after a high tone syllable. After low tone, the tone of the next syllable can only be low or high. After high tone, however, the next tone can be low, the high or downstepped high (that is a pitch slightly lower than the preceeding high but not so low as it would

need to be counted as a low tone). A high tone after downstepped high is on the same level as that downstepped high. A phonological feature called upstepped has also been discovered. (Schun 1978) Downstep as a phonological feature is to be distinguished from a feature of many tone languages called downdrift. This is the process which results in high tones after low tones being phonetically less high than any preceeding high tone in the utterance, which can be regarded as a type of tonal assimilation with the low tone influencing the height of the succeeding high tone (Hyman 1973:154). To the extent that downdrift is the characteristic of potentially a whole utterance, it can be regarded as an intonational use of pitch. Downdrift and downstep give a language of the tone system terraced level effect (Welmers 1973). The repeated application of upstepped adjustments similarly results in a terraced level effect (Connell and Ladd 1990:4).

2.4 TONAL SANDHI

The patterns of tone in isolated forms of word often differ from their manifestation in different contractual positions in connected speech, under the influence of adjacent tones and other

factors. There are closer parallels between the analysis of the phonetic variant of tones due to contextual influences of other tones, of intonation, and of structural position, and analysis of the allophones of segmental phonetics. Indeed the closeness of the analogy between these is reflected in the invention of the parallel terminology; phoneme and toneme, phonemic and tonemic, allophone and allotone, phonetic and tonetic, phonology and tonology. Allotonic variation in the phonetic realisation of the toneme in a language due to contextual effects exercised by neighbouring toneme in the stream of speech are called Tonal Sandhi after the term used by Sanskrit grammarians.

2.5 TONOGENESIS

Since the form of any given language evolves with time from languages which were once atonal can develop tonal systems in a process called Tonogenesis. Languages may also lose the use of tonal distinctions and become atonal. One of the ways that tonal system may arise springs from micro-prosodic influences on perception. There is a good evidence that, in the historical evolution

of language, the perception of distortions of this contextual sort can give rise to the development of tonal differentiations of words and other grammatical units. Hombert gives a helpful summary of this area.

'The historical development of tones -- can result from the re-interpretation by listener of a previously intrinsic cue after the recession and this appearance of the main cue ... The development of contractual tones on vowels due to the loss of a voicing distinction on obstruents in pre-vocalic position is probably the most well documented type of tonogenesis. When such a development occurs, a relatively lower pitch register develops on vowels following the previously voiced series, and a relatively higher pitch is found after the previously voiceless aspirated series. The process can lead to a multiplication by two of the number of tones. If the languages are tonal, it will have two tones after the developments; an already existing two tone system can be transformed into a four tone system, and so on' (Hombert 1978:78).

2.6 TONE FROM A FUNCTIONAL POINT OF VIEW

Andre Martinet notes that students of language normally tempt to base their analyses and classifications on the physical nature of what is recorded, such a procedure according to him is not only misleading in

far less complex domain of phonematics but it is also throughly confusing when, as in the case in prosody,. the same physical reality, language melody, is in some languages atleast, put to three different uses. As he says that the functional approach offers the only valid method for the understanding of prosodical matters, their scientific treatment and presentation. We are trying to summarise his views on functional segmentation in prosody and what should be called tone in a language . According to him in a functional approach to phonology, the physical nature of the items involved is not decisive. But as one cannot disregard segmentation he allows one to retain it as the criterion for distintguishing between phonematics and prosody and for attributing a given feature to one or the other chapter of the phonological description . But if one wants to distinguish between different types of prosodic elements or features one has been asked to revert to function as a lodestar. He also calls to replace terms like pitch and melodic height. From a functional standpoint in prosody a distinction can be made between tone, accent and intonation. The three types are thus ordered, linguistically, from central to marginal, tone being decisive for establishing the identity of significant unit and highly characteristic of specific languages, while intonation at

best gives suggestions as which is to how the speaker feels about what he is communicating in a manner basically the same for the all language communities. The three types are thus ordered according to the dimensions of the frame in which each of them operates, the segments characterised by tones being as a rule smallest and those where intonation functions largest.

2.61 TONE

The normal physical nature of tone is melodic. A tone is, as a rule, as certain feature of the melodic curve that necessarily results from the vibration of the glottis. The segment characterised by a tone may be smaller than the phoneme and is then called a mora. The function of tone is distinctive just like that of phoneme or of distinctive phonematic features. In other words a tonal difference suffices to identify the moneme or a larger significant unit in contra distinction to all the other units of the same class.

2.62 ACCENT

Accent is not meant to be distinctive. Its fundamental and permanent role is syntagmatic.

CHAPTER-III

TONES IN PANJABI

3.1 LAND AND PEOPLE

Panjabi speaker is there almost in every place in this world. United Nation estimated Panjabi to occupy 12th place among the languages with maximum number of speakers on the globe. Mainly, it is spoken in the Panjab, the Western part of which is Pakistani territory, while the Eastern part forms the Indian state of Panjab. The total number of Panjabi speakers in both these areas is more than 30 million. Speakers of Western and Eastern dialects alike use the same literary language and many Panjabi scholars are inclined to regard the Eastern and Western dialects as forms of one single Panjabi language (Tolstaya 1981). The birth of the Republic of India in 1950 gave a new impetus to the development of Panjabi, as it is Indian Government policy to encourage the growth of local languages. Panjabi is now recognised as the official language of education, both for primary education in schools and for higher eduction in universities, and many newspapers and

periodicals are published in it in the Panjab and other states. People from Delhi, the state adjoining Panjab in India, which is also the second state after Panjab having maximum number of Panjabi speakers, are raising voices for Panjabi to be made the second language of the state. Himachal Pradesh, Jammu and Kashmir, Haryana, Uttar Pradesh and Rajasthan are among other states where even if people don't speak Panjabi they understand it very well. The reason for which goes much beyond the story of common lexicon as it appeared to us. We are also of the view that if researched properely, this area of research can yield many new reasons for such an affinity. Panjabi pop songs have proved out to be heart-throb of every young and old during the last decade all over the world. Hardly is there any movie in Hindi (national language of India) nowadays which does not include a song or few words of Panjabi. Not only we have a lot many Panjabi movies and serials coming up on small-screen in India at present but there also exists a separate satellite cable T.V. channel entirely devoted to programmes in Panjabi.

3.2 DEVELOPMENT

Panjabi, the form as we know of today, took this shape probably much before Guru Nanak Dev used this language to compose verses. According to some scholars Panjabi development can be dated back to 10th century but nobody has been able to fix any exact date. Certain lexical forms in modern Panjabi usage can be traced back to Vedic times. It developed alongwith other new Indo-Aryan languages. It has served as lingua franca for the discourses of wandering Yogis. One cannot say with surety whether it developed from Kaikayi or Śaurseni Apabhraṃsha but Prakrit and Apabhramsha no doubt have been the main contributors. In the past there has been a long debate whether Panjabi is an Aryan language or not. But the issue seems to have settled for once and all with most of the views falling in support of Panjabi being an Indo-Aryan language.

3.3 GROUPING AND CLASSIFICATION

When it comes to classification and grouping of Panjabi with other NIA languages a lot many differences are there the way

various scholars view. Hornle (1886) classified it as Western dialect of the North-western group alongwith Sindhi, Gujarati and Western Hindi. Sir George A. Grierson (1916) put Panjabi in the inner sub-branch of the Central group alongwith Rajasthani, Gujarati and Western Hindi. The other sub branch called outer sub-branch contained Lahnda and Sindhi. Chatterjee (1926) put Lahnda, Sindhi and Panjabi in one group whereas Rajasthani and Gujarati form another group. In 1931 Grierson held that Panjabi is the language of the midland group of languages whereas Lahnda and Sindhi form the North-western group. Turner (1975) felt that North-western group contains Lahnda and Sindhi only and Panjabi belongs to the Central group. Cardona (1974) found Kashmiri, Western pahari, Central pahari, Nepali, Lahnda, Panjabi and Sindhi in the group called North-western. Nigham (1972) sub-classifies Sindhi, Panjabi and Lahnda in one group. Haudricourt (1970-p.6) says that Panjabi is in unique position as it geographically links the Aryan languages of India to all the Indo-European languages.

Massica (1991,p.118) notes that "Contrasted tone is reported

from several NIA languages and dialects but undoubtedly the classic case of tone in NIA is Panjabi". It can be said that Panjabi is the only Modern Indo-aryan language having fully developed tone system.

3.4 WRITING SYSTEM

The Gurumukhi script is syllabic. The Gurumukhi alphabet consists of 35 letters and for this reason also known as Peinti ( ). The word Gurumukhi means proceeding from the mouth of the Guru. At the time of Nanak, the first Guru of the Sikh community (1469 - 1538), three alphabets were in use in the Panjab. One of these Bhatakshari was used by Nanak for his religious work, and it was on the basis of this alphabet, as ammended and extended by the Guru Angad(1538-1552), that Gurumukhi developed. (Tolstoya 1981).

3.5 MARKING FOR TONE

The Gurumukhi writing system does help in predicting tonal placement but not completely. The presence of symbols for voiced aspirates and ਹ in the script, in most of the cases is indicative of

tone but there many other places where such an indication is not available.

3.6 DIALECTS

If one goes by the information contained in the 'Linguistic Atlas of the Punjab', a monumental work undertaken by the team headed by Harjeet Singh Gill in 1972 there existed atleast 25 different varieties of the Panjabi language in early 70s. These are spread over places as far apart as Rothak in Haryana and Kulu in Himachal.

3.7 LINGUISTIC STUDIES ON TONAL PHENOMENA

Tonal phenomena in Panjabi has always been an area of interest to both native as well as non native scholars. As a result of the firrst serious attempt by T.Grahame Bailey we have 1913 publication entitled 'Panjabi Phonetic Reader'. Mohan Singh Diwana (Punjabi language and Prosody, Lahore 1933) and Benarasi Dass Jain (Phonology of Punjabi and a Ludhiani Phonetic Reader, Lahore,1934) followed him. The new techniques,developed in Europe, USA and UK in particular, influenced linguistic studies on

Panjabi in mid 50s. In 1957 Kalicharan Behl published an article in Indian Linguistics on tones in Panjabi. The paper focussed its attention on the Maghi dialect spoken in Amritsar. He followed the approach propounded by K.L. Pike in his treatise 'Tonemics'. Carrying on with the same dialect H.S. Gill presented two research papers before the Linguistic Society of India on Word Tones in Panjabi in 1959. Then in 1960, he published his paper entitled 'Panjabi Tonemics' in the Journal of Anthoropological Linguistics. Ved Kumari Ghai published an article about Dogri tones in 1968. In 1969 for the first time comprehensive information about Puadhi dialect of Panjabi was provided by B.S, Sandhu. In 1974 in a special issue of Parakh (a research bulletin of Panjab University) a study entitled 'The Articulatory and Acoustic Structure of Punjabi Vowels' was published. Thus study done by B.S. Sandhu was taken by some scholars as not only the first scientificd study of the phonetics of Panjabi language but also the first systematic study of its kind in the Northern-Indo-Aryan languages. In between he also published a research study called 'The Tonal System of Punjabi' in Parakh issue second of 1968. In 1972, S.S. Joshi got his M.Phil.

dissertation entitled 'Pitch and related phenomena in Punjabi'in Pakha Sanjam (a journal of Panjabi University, Patiala. The same issue of Pakha Sanjam also included a research article on tones in Panjabi by A.G. Haudricourt. In 1975-76 British phonetician R.K. Sprigg published his paper 'Tonal units and Tonal classification; Panjabi, Tibetan and Burmease' in Pakha Sanjam. In the study of E.B.A. Awan done in London in 1974 the phonology of the verbal phrase in Hindko. He maintained in that study that this particular dialect of Panjabi has two tonal systems as opposed to three term tonal system. And these are realised not over a word as unit but over a phrase. A study of tones of highly scientific nature ' The Phisiology of Tone' by John Ohala published in Pakha Sanjam in 1974. In 1978 following poly-systemic approach S.S. Joshi submitted his doctoral dissertation on the verbal phrase in Panjabi. It was later modified and appeared in book form in 1989. It was titled 'Phonology of the Panjabi Verb.' In 1975 Mukhtiar Singh Gill worked on the Phonological Patterns of Panjabi spoken in Barnala Tehsil. Manjit Singh Dhutti worked on Bawri dialect in 1975. It is said that it shares a tonal system of Panjabi. Baldevraj Gupta in

1975 presented a comparative study of Panjabi and Tamil Phonology. N.R.L.C. of CIIL in 1980 published Punjabi Phonetic Reader. It is very useful book for teaching Panjabi sound system. In 1982 Ashok k. kalra in 'Some Aspects of Panjabi Language' questioned the findings of earlier scholars regarding the nature of tones. According to him, tonal phenomena in Panjabi is predictable and can be taken care of by the means of some rules. In 1985, Tej K.Bhatia tried to explain the development of tonal system of Panjabi in his work 'The Evolution of Tones in Panjabi'. In 1989 Vaishna Narang brought out spectrographic analysis of vowel system of Panjabi. She did her study at a laboratory in California. In 1991 Collin P. Massica brought out a book entitled 'THe Indo Aryan Languages'. Amarnath Malik who has done his studies in America has come out with the detailed study of Panjabi phonology in 1995. A lot of young scholars from Panjab, Delhi and C.I.E.F.L. Hyderabad have been revisiting the issue of tone itime and again for past few years. Most of these studies are in unpublished form.

3.8 NAMES AND NUMBER OF TONES

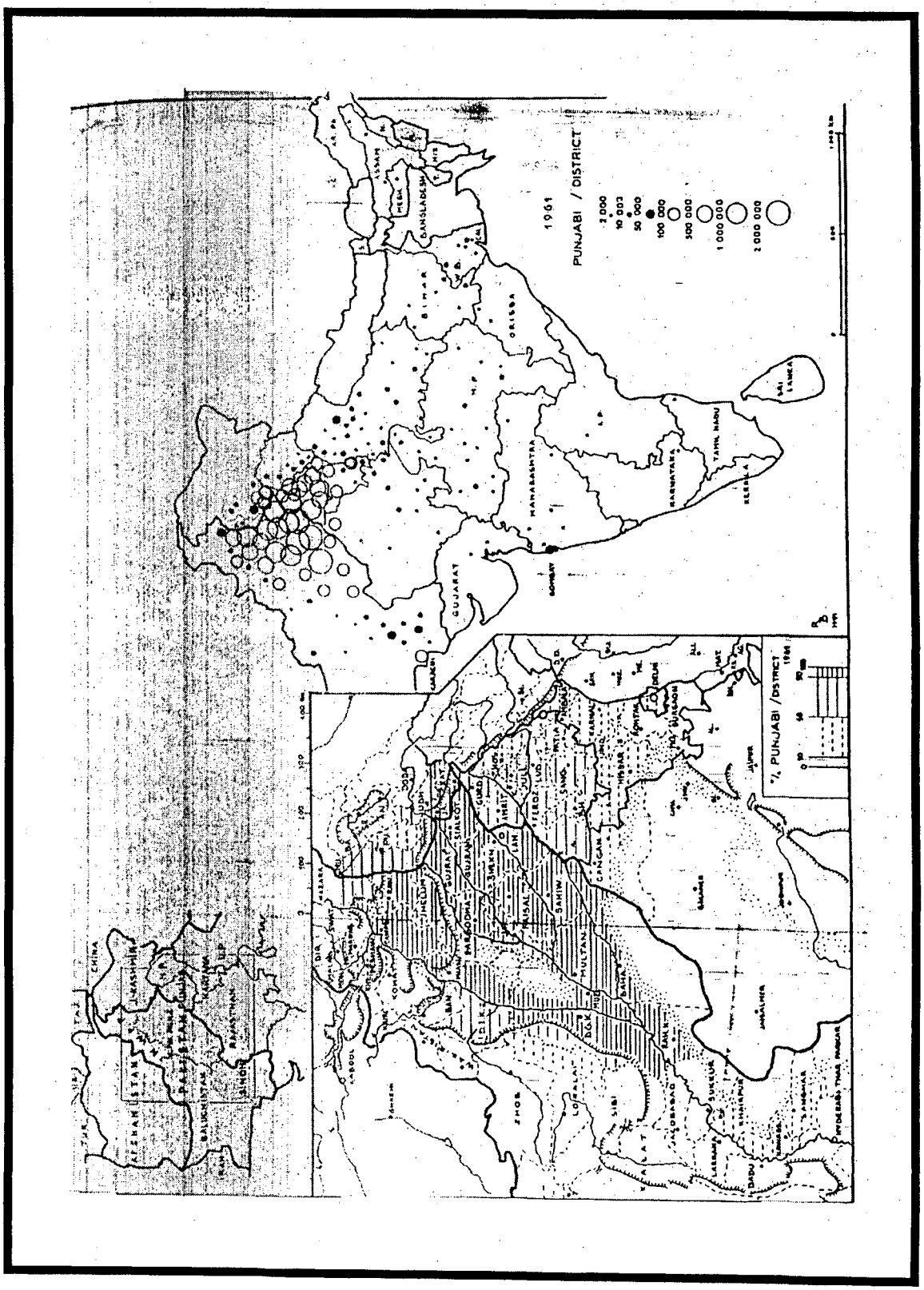
Although different descriptive labels have been assigned to tones by different linguists but there is a broad agreement among scholars that there are three distinctive tones in Panjabi. But, almost everybody differs in his views when it comes to defining the nature of tones in Panjabi. The table given on the following page will make picture more clear. It is followed by a detailed discussion on nature of tones in Panjabi as stated by various scholars from time to time.

As the chart suggests most of the scholars refer to three different entities when they refer to tones in Panjabi except Amarnath Malik who maintains that there exists a fourth toneme namely rising - falling but in the beginning of his book, in the phoneme chart he also metioned that there are three tones in Panjabi (Malik 1994). According to T. Grahame Bailey (1913, P.XV) these can be termed 'low rising (or 'low rising-falling')' 'high falling' and 'ordinary tone of speaking'. Kalicharan Bahl (1957, p. 140) names the 'tones in Panjabi' as 'falling tone', 'rising tone' & 'even tone' respectively. Gill and Gleason (1963, p.44) call them 'low tone',

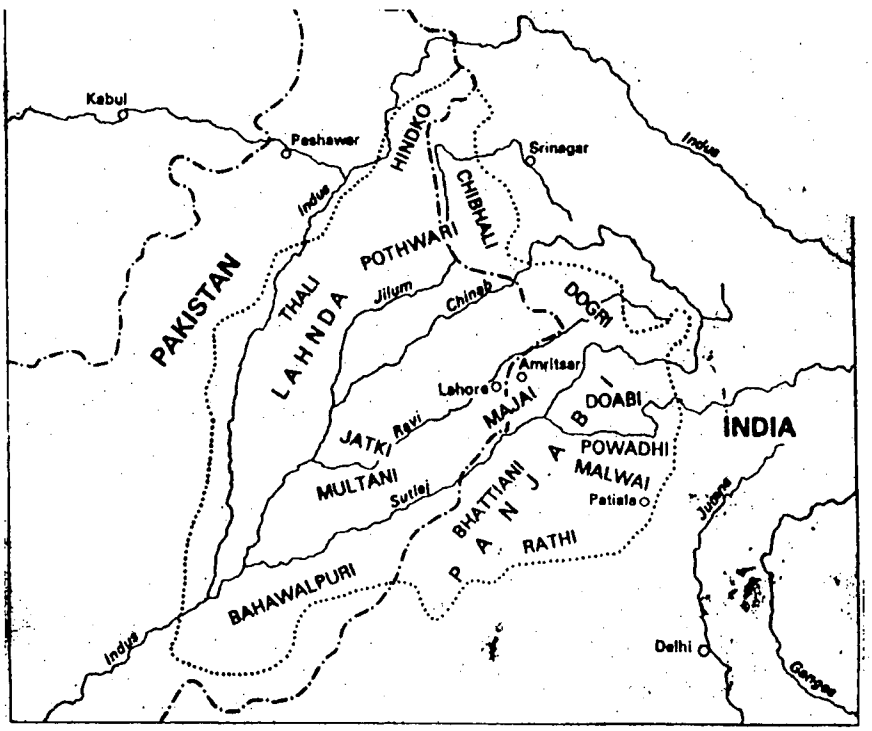
Linguist	A	B	C	D
Bahl, K. C.	Falling	Even	Rising	
Bailey, T.G.	Low rising	Ordin-ary	High falling	
Gill, H. S. & Gleason, H. A.	Low	Mid	High	
Joshi, S. S.	Tone1	Tone2	Tone3	
Malik, A.N.	High-falling	Level	Low-rising	Rising-falling
Sampat, K. S.	Falling	Level	Ring	
Sandhu, B. S.	High	Level	Low	

Table 2 - Number and Names of Tones in Panjabi.

'high tone' & 'mid tone'. K. S. Sampat (1964 p.108) has described these tones as falling, rising and level respectively. S.S. Joshi (1973 p.10) preferred not to give any descriptive label to the tones of Panjabi as he thinks that all the three tones have different pitch feature exponents in different contexts and are influenced by the environments in which they occur. He does not see any point in having a descriptive label if it does not in fact describe. Therefore he termed them as Tone 1, Tone 2, Tone 3. Dr. B. S. Sandhu (1974 p.51) maintained that there are three tones in Panjabi namely 'level', 'low', and 'high'. He has also studied influence of tones on the duration of Panjabi vowel.He observed, unlike Russian and English, Panjabi does not have stress system to decide durational features of vowels in a word. Although he made a general statement that low tonal vowels are slightly longer than the level and high tonal but he is also of the view that nothing concrete can be said as in some of the cases he did not find any differece in duration between vowels with level and high tones.



Map 1 : Number of Panjabi Speakers in India based on 1961 Census.



Map 2 : Different dialects of Panjabi.

3.9 NATURE OF TONES IN PANJABI

Though a lot many scholars have written a lot about tones but in this chapter on nature of tones in Panjabi. We would like to take up the views extended by Dr. H.S. Gill, Dr.S.S. Joshi and Amarnath Mallik. Dr. H.S. Gill , no doubt , has been among the natives who pioneered the research in this area and there is hardly any linguist who has dealt with tones and has not recognised the excellence of his study. Dr.S.S. Joshi who although has had close association with Dr.Gill when they were colleagues at Panjabi University, Patiala does not agree with Dr. Gill on some aspects as far as nature of tones is concerned. Nevertheless, both of them worked on different dialects. Amarnath Mallik who has worked on the same dialect as Dr. Gill worked on and published his research almost 35 years after Dr.Gill's first paper on the nature of tones in Panjabi says that H.S.Gill and H.A.Gleason's recent work on Panjabi is not a 'technical structural sketch', but purports to be a reference grammar based on the works of earlier writters.

He also adds that the specimen cited in the reference grammar

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1. Dr.Gill worked on majhi and Dr.Joshi on doabi.

2. Dr.Amarnath Malik worked on Majhi dialect

3. See introduction to Phonology and Morphology of Panjabi

are mainly from literature and discription pertains more aptly to the literary and not the spoken variety of the language. Other works that exist, which have also been rendered traditional and practical by him, according to him by no means present synchronic-descriptive analysis of the language. For Gill and Gleason nature of the tone is not dependent on the phonological structure of the word. It is ,therefore, properly marked and any one of three tonal contours may begin from the first or the second syllable. But this freedom to have the onset of the tonal contour on first or the second syllable is only partial. He also emphasises that in a language with contrastive tonal contour or accent onset of the pitch which make the syllable more prominent than the others is phonologically far more significant than the exact phonetic nature of the vowels or the consonant. Phonetics of the tones as summerised by Gill and Gleason under the heading Tone Domains, Tone Onset and Tone Tails follows as under.

TONE DOMAIN

1. There are 3 significant tonal contours in Panjabi

2. Panjabi tone is normally realised over two syllables its domain.

Of these the most important is the first, or onset syllable and it is on this syllable that the tone is written in transcription.

3. The onset of the tone can be on either the first or the second syllable of the word in that case of second syllable there is a pre-tonal neutral syllable, one which is outside the domain of the tone.

4. The second part of the tone, the tail, is on a syllable following that having onset. There are four important possibilities. a) The word may contain a syllable following that with the tone onset. In this case, the tail will be realised on the syllable. b). The onset bearing syllable may be final, so that there is no syllable within the word on which a tail can be realised. But the following word has the pre-tonal neutral syllable the tone tail is then realised on the initial syllable of the following word. c) The onset bearing syllable is final in the word and the word final in an utterance with an intonational span. In this case there is a non-phonemic prolongation of the word to allow for the realisation of the tail. This is vocalic release after consonant or lengthening of final vowel. It is the

phonetic syllable, but as it is wholly predictable, it is not to be considered phonemically as the syllable. d) The onset bearing final syllable is followed by a word with an initial onset beaing syllable.

TONE ONSETS

The three tones oppose each other on onset syllables in atleast three ways; pitch level, pitch contour and duration. Of these, pitch level often the most conspicuous, but is also most affected by intonational span. The other two features are therefore, a considerable importance in distinguishing tones. High tone is higher than the other two. There is a marked up glide. The syllable is shorter than the other two. Mid-tone is intermediate in pitch between the other two. There is a slight up glide. The syllable is of intermediate length. Low-tone is the lowest tone. The pitch tends to fall slightly, never to rise. The syllable is appreciably prolonged by comparison with other two.

TONE TAILS

The syllable immediately after a tone onset bears the tone tail. It's pitch is predictable from the tone and serves in a secondary

way as a cue for recognition of the tone. It may be affected by the following tone, but this affect is relatively minor. The tail of a high tone tends to remain level if the next tone bearing syllable is relatively higher. Otherwise it may fall very slightly. The tail of the mid tone generally rises appreciably, though this rise is reduced if the next tone bearing syllable is relatively low. The tail of a low tone rises even more than that of the mid tone. If however, a juncture /+/ intervenes between onset and tail, the pitch contour of the whole tone is generally broken somewhat. In a high pitch, the tail tends to be level, but at a lower level than the end of the onset. The mid tone tail generally rises, but may start, lower level than the end of the onset, particularly to the next tone is relatively low. The tail of the low tone may be level or even slightly falling and often starts, higher level than the tone at the end of the onset syllable. Tones of any other syllable have little if any function in signalling tones in the neighbourhood.

Dr. Joshi maintains that all the dialects of Panjabi are not equally tonal In those which are, tone is a word prosody. It is not

the property of certain syllable only, but applies to the whole word as a unit. Thus the tonal contour is spread over the entire word. Pitch features are one of the most important phonetic exponents that help to keep the different terms of the system distinct from one another. Each of the term of the three term tone system has a number of pitch feature exponents. Certain variations in the pitch levels that have been noted may be because of environment, emphasis, voice register, or of a combination of two or more of these. The three terms of the systems Dr. Joshi has chosen are Tone 1, Tone 2, Tone 3. The pitch feature exponents of the each terms are as follows.

TONE 1

A fall in pitch followed by a rise is the most characteristic feature of this tone. The fall in pitch starts from a little above the mid level, falls to low where it may remain level for some time and then rises to about mid level again. The rise in all cases does not necessarily reach the same level as that of the beginning point.

TONE 2

Of mid level pitch which may rise a little towards the end of the word is the most common pitch exponent of this tone. The tonal contour starts at about mid level, slightly lower than the beginning point of tone 1, remains level and ends higher than the end point of tone 1. An initial fall in pitch followed by a rise in most of the cases, is an exponent of tone 1. But there is no initial fall in pitch in tone 2 words. This serves as an important cue to keep two tones distinguished from each other.

TONE 3.

Rise in pitch followed by a slight fall in some cases, is the most common pitch exponent of tone 3. The fall however, does not necessarily reach the same level as that of the beginning point of the rise. The contour of this tone is different from that of tone 2 in that there is an initial rise in pitch in tone 3 words but not in tone 2 words.

Dr. Joshi's treatment is different from that of Gill and Gleason in that the concept of tone shift and tone change are not used in

his study. Tone is the prosody stated for the whole word as the unit. It is stressed, not tone that shifts from one place to another within the word.

Tone 1 the exponents are

1. Voicelessness + Non-aspiration (+Plosion/Affrication)p/t/ṭ/k/c
2. Nasality m/n

Tone 2 the exponents are

1. Vocalic articulation ɪ/i/ɛ/ə/a/ɔ/o/ʊ/u
2. Voicelessness + non-articulation (+plosion/affrication)p/t/ṭ/k/c
3. Voicelessness + aspiration (+plosion/affircation) ph/th/ṭh/kh/ch
4. Voicelessness (+ friction) s/š
5. Voice (+ lateral occlusion) l
6. Nasality m/n
7. Voice (+ plosion/affrication)b/d/ḍ/g/j

8. Voice + flap + alveolarity r

9. Glottality (+ friction) h

Tone 3 the exponents are

1. Voicelessness + non-aspiration(+plosion/affrication)p/t/ṭ/k/c
2. Voicelessness+aspiration (+ plosion/affrication) ph/th/ṭh/kh/ch
3. Voicelessness (+ friction) s/š
4. Voice (+ plosion/affrication) b/d/ḍ/g/j
5. Voice (+ lateral occlusion) l
6. Vocalic articulation I/e/ɛ/ə/a/ɔ/o/U
7. Nasality m/n
8. Voice + flap + alveolarity r
9. Glottality (+ friction) h

According to Amarnath Malik Panjabi has a simple gliding pitch contour system of four tones with direction as the differential

characteristic of the glides. It has a rising glide, a falling glide, a rising-falling glide and a single level tone of zero glide as the fourth type of contour*. The four contrastive tones are as follows

a.) Level tone : It is the average middle pitch of the speaker which remains level throughout except for a sight rise towards the end of the syllable. The level tone occurs in all kinds of morphs, monosyllabic, disyllabic or trisyllabic. It may occur on any or all syllables of a morph irrespective of whether the syllable is stressed or untressed.

b.) High-falling tone : Starting well above the average middle pitch of the speaker, the pitch in this tone falls abruptly half way to the middle pitch. This tone is a concomitant of aspiration and occurs in aspirated vowels or vowels followed by voiced aspirates.

The high-falling tone occurs in all kinds of morphs and the syllable bearing this tone is always stressed. This tone corresponds phonetically to the fourth tone of the peking dialect of the Chinese language.

A vowel bearing the high falling tone tends to be appreciably shorter than an identical vowel in a similar but toneless environment.

Low-rising tone :- Starting from a pitch slightly above the lowest that the speaker can command, the pitch in his tone rises to a level well below his average middle pitch and then, sometimes, falls halff way towards the starting pitch. The tone is accompanied by a considerable fealing of constraint in the larynx which impacts to the syllable bearing it the effect of a creaky voice.

The tone corresponds in its accoustic effects to the third tone of the peking dialect.

In the case of disyllabic and trisyllabic morphs which have tone on the first or secong syllable but stress on a subsequent syllbale, a part of the tone generally goes on the stressed syllable, so that in such cases the tone is spread over two syllables. It is called extension of tone.

Rising-Falling Tone

This is a combination of the low rising and high falling tones. The double tone occurs only in the first syllable of morphs. The

tonic vowel is either aspirated or preceds a voiced aspirate and is preceded by un-aspirated voiceless plosives and affricates. The number of words with the double tone is not very large.

The morpho-phonemic phenomenon is observed when causatives are formed from verbs which bear high falling tones, the shifting of the stress, to the subsequent syllable is accompanied by a change of tone from high-falling to low-rising.

Chapter 4

PITCH LEVELS IN VEDIC SANSKRIT

4.1 PITCH ACCENTUATION

Among the pitch using languages of the Indo-European family, Vedic is the oldest and it preserved on the whole the primitive Indo-European system of pitch accentuation[1]. Accentuation in Sanskrit is only marked in the Vedas. Generally, for these varying pitch levels three names are recognised by scholars :

1. 'udātta',"raised" i.e. the elevated or high tone

2. 'anudātta', "not raised" i.e. the low or grave tone.

3. 'svarita', "sounded" i.e. the sustained tone.

'Svarita' is said to be neither high nor low but a mixture of the two. Although there are only three recognised names of the accents some scholars believe that when viewed computationally to adjust the exact relationship between the sounds of three accents by arranging them in regular musical series or progression, one link will be found missing. According to them the 'udatta' and

1. Maxmueller

'svarita' are names for positive sounds and the 'anudatta' for negative, but the neutral, general, accentless sound, which may be compared to a flat horizontal line, and lies as it were between the positive and negative, remains undesignated.

They are also of the view that grammarians, such as Pāṇini, who recognised only three names for pitch accents apply the name 'anudatta' to this neutral accentless sound also. They view it as something not right as the name becomes unsuited to the low tone properly so called i.e. the tone immediately preceding the high is lower than the flat horizontal line taken to represent the general accentless sound. They also give an explanation for it. According to them the fact is that the exertion required to produce the high tone ('udāṭta') is so great that in order to obtain the proper pitch the voice is obliged to lower the tone of the preceding syllable as much below this flat line as much the syllable that bears the 'udatta' is raised above it. They support their assertion by resorting to the fact that Pāṇini himself explained this lower tone by the term 'sannatara' and the commentrators have substituted the expression

'anudattatara' for this. For the neutral accentless tone Pānini used a term called 'ekaśhruti' i.e. the one monotonous sound in which the ear can perceive no variation.

This group of scholars maintains that there are four tones in Vedic Sanskrit and for that they use four different expressions. The neutral, indifferent, accentless or monotonous tone represented by horizontal line. The expression 'anudāttatara' has been adopted to designate the lowest sound of all or that immediately preceding the 'udatta' while the 'svarita' denotes the mixed sustained sound which follows the 'udatta'.

According to *Mahabhāṣhya*, there are some other accents formed of the sub-divisions of these three accents. Accents then become 'udātta', 'udāttatara', 'anudātta', 'anudāttatara', 'svarita', 'svaritodātta' and 'ekaśhruti'[1]. The '*Shuklayajurvediya Prātiśākhya*' of Kātayāyna[2] mentions the sub-divisions differently. It holds that 'udatta' and 'anudatta' each is of one kind; and the third accent the 'svarita' alone has eight varieties namely (1) 'Jatya' (2.) 'Abhinihataa' (3.) 'Kṣaipra' (4.) 'Praślisṭa' (5.) 'Tairovyañjana' (6.)

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1. Mahabhāṣya 1.2.33.

2. Kātyāyana's Prati. 1.111.

'Tairovirama' (7.) 'Padavṛtta' and (8.) 'Tathābhavya'[1]. In the text these three varieties have not only been defined but illustrated also. Kāṇva on the *Vaj Prats*[2] names one accent more, that is 'udattamaya'.In *Samhitapatha* one can find all these variations.

According to *Aṣhṭādhyāyī*, generally, the word has one 'udatta 'or one 'svarita', the other accents are 'anudātta'[3]. So in disyllabic words there are many ''anudattas' followed by 'udatta' or 'svarita'. As the former is inevitably influenced by the succeeding 'udatta'. The last of the 'anudattas' cannot be pronounced like the preceding 'anudattas'. So in comparison to the ordinary case it is uttered in a lower tone. Such an 'anudàtta' is called 'sannatara'[4], a term used by Pāṇini[5] and Patañjali[6]. Similarly arises the term 'udāttatara'[7].

The 'svarita' is classified phonologically into two, namely independent and dependent. The 'independent-svarita' arises when an 'udātta' vowel is joined with an 'anudātta' vowel in the same syllable because of sandhi. For example in 'diviva', the 'i' is a 'svarita' because it is formed by sandhi of 'udàtta' 'i' of 'divi' with the following 'anudàtta' 'i' of 'iva'. A 'dependent-svarita' arises when the 'udātta' is followed by two or more 'anudātta' syllables, as Pāṇini prescribes a 'svarita' is substituted for 'anudātta' after 'anudātta' (8.4.66).

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1. Śukla Yajurvediyā Prati. 1.111-1.120.
2. Kāṇva's commentary on the Vaj. Prati. - 1.150.
3. Some commentrators call it 'anudāttatara' also.
4. Maxmueller.
5. Aṣṭadhyāyī - 1.2.40.
6. Mahabhāṣya on 1.2.33.
7. Aṣṭadhyāyī 1.2.35, Ṛgveda Prati. 3.2.

On the basis of the discussion held so far we can say that mainly there are three pitch levels or accents in VS, the acute (or ' udàtta'), the circumflex ('svarita') and the grave ('anudàtta') as revisited from time to time by various scholars.

4.2 ACCENT MARKING

The marking of accents is not a part of the alphabet. To mark the accentuations there is a different code and special symbols are used to mark the accentuation. The accentuation is marked in some manuscripts of the old literature, namely in the primary Vedic texts or *Samhitās*, in two of the *Brāhmaṇās*, *Taittirīya* and *Satapatha*, in the *Taittirīya Araṇyakā*, in certain passages of the *Aitareya Āraṇyakā* and in *Suparnādhyāya*. We come across a number of methods of marking the accents, more or less different from one another in different texts. Please refer to the table given on the next page, the three main accents are thus marked in the *Sāmaveda* and the *Ṛigveda* respectively.

		Samaveda	Rgveda
udatta	high tone	1	unmarked
svarita	circumflex	2	| above the syllable
anudatta	grave	3	— below the syllable

Samaveda 1·1·1·2·1	नमस्ते अग्न ओजसे गृणन्ति देव कृष्टयः अमैरमित्रं मर्दय ।
Rgveda 8·75·25	नमस्ते अग्न ओजसे गृणन्ति देव कृष्टयः अमैरमित्रं मर्दय ।
Samaveda 1·1·1·2·4	दोषावस्तर्धियावयम् ।
Rgveda 1·1·7	दोषावस्तर्धिया वयम् ।

Table 3 : Accent marking in Vedic Texts

4.3 DECODING ACCENT MARKING IN DIFFERENT TEXTS

It is not just that the said tone exists on a particularly marked place and it does not exist where it has not been marked. The accent in vedic texts is not predictable by mere taking marks into account. The positions of the syllables and the contexts syllables are situated in also matter a lot. To predict effictively one has to take following rules into account before one predicts.

The acute ('udàtta') syllable is left unmarked, the circumflex ('svarita') has a short perpendicular stroke above, and the grave ('anudàtta'') preceding an aucte ('udàtta') or independent circumflex has a short horizontal stroke below[1]. For example :

अग्निम अग्निम जुहोति; तन्वा क्व

But the introductory grave stroke below cannot be given if an acute ('udàtta') syllable is initial. Hence an unmarked syllable at the beginning of a word is to be understood as acute, and hence also, if several syllables precede an acute the beginning of a sentence in *Samhità-pàtha* or 'pada' in *Padapàtha* they must all alike have the grave sign[2]. For instance

इन्द्र। ते। करिष्यसि। तुविजात। ('pada-pāṭha')

1. Mishra (1972)
2. Mishra (1972)

All the grave syllables, however, which follow a marked circumflex are left unmarked, until the occurence of another accented syllable causes the one which precedes it to take the preparatory stroke[1]. For example

सुदर्शीकसन्द्रुक but सुदर्शीकसन्द्रुग्गवाम्।

If an independent circumflex be followed by an acute or by another independent circumflex, a figure 1 is set after the former vowel if it be short; or a figure 3 if it be long, and the signs of accent are applied as in the following examples[2] :-

अप्स्व 1 न्तः (form अप्सु अन्तः)

रायो 3 वनिः (form रायों अवनिः)

The rationale of this mode of designation is not well understood, as the *Prātiśākhyas* give no account of it. In the scholastic utterance of the syllable so designated is made a peculiar quaver or roulade of the voice, called 'kampa' or 'vikampa'[3].

Nearly accordant with this *Ṛgveda* method of designating accent are the methods employed in the manuscripts of the *Atharva veda*, of the *Vājasaneyi Samhitā* and of the *Taittirīya Samhitā*,

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1. Mishra (1972).
2. Mishra (1972).
3. Maxmueller.

Brāhmaṇa and *Āraṇyaka*. Their differences from it are of trifling importance, consisting mainly of peculiar ways of marking the circumflex that precedes an acute[1]. In some manuscripts of the *Atharvaveda*, the accent marks are dots instead of strokes, and that for the circumflex is made within the syllable instead of above it.

In most manuscripts of the *Maitrāyaṇī Saṃhitā*, the acute syllable itself, besides its surroundings, is marked, namely, by a perpendicular stroke above the syllable (like that of the ordinary circumflex in the *Ṛgveda* method). The independent circumflex has a hood beneath the syllable, and the circumflex before an acute is denoted simply by a figure 3, standing before instead of after the circumflexed syllable[2].

The *Śatapatha Brāhmaṇa* uses only a single accent sign, the horizontal stroke beneath the syllable, like the mark for grave ('anudàtta') in the *Ṛgveda*. This is put under an acute, only under the preceding syllable. The method is an imperfect one, allowing many ambiguities.

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1. Maxmueller
2. Whitney

A lot many scholars find the *Samaveda* method of accent-marking the most intricate of all. It has a number of different signs, consisting of figures only or of figures and letters combined, all placed above the syllables, and varying according to both the accentual character of the syllable and its surroundings. This method of accent marking is complicated and it requires a close investigation.

Chapter - 5

CONCLUSIONS

Pitch accent in Vedic Sanskrit and tone in Panjabi bear some effect on meaning of the utterance. As we shall see in the following examples[1], in Vedic Sanskrit the pitch accent modifies meaning.

'indraśatrù' means slayer of Indra (*Ṣaṣṭhi-tatpurusa*)

'indraśatru' means whose slayer is Indra (*Bahuvṝhi*)

In the examples given above the acute pitch accent plays an important role in determining the meaning of word and compound.

In Panjabi also speaking the same thing with a different tone results in a change of meaning[2]. For example

kóra	High	'leper'
kòra	low	'horse'

---

1. Murti (1984).
2. Gill & Gleason (1964).

Let us now take the following rules as suggested by Gill and Gleason into account and compare the text of *Rgveda* with the text of *Ādam-khor* (written in Panjabi by Nanak Singh, Amritsar, 1953) given on the next pages.

Rule I - In initial position in the word, the voiced aspirates indicate low tone on the first syllable e.g.

kòra   ਘੋੜਾ

càru   ਝਾੜੂ

Rule II - In final position voiced aspirates indicate high tone e.g.

mɔ́g   ਮਾਂਘ

mɔ́j   ਮਾਂਝ

Rule III - In medial position after a peripheral vowel and with only a single vowel following, voiced aspirates indicate high tone on the preceding vowel (the penultimate and usually the first syllable) e.g.

mági   ਮਾਘੀ

máji   ਮਾਝੀ

enemies, as the Sun the earth, as thunderbolts the clouds: she, being praised, knows all these our (exploits): may NIRRITI depart far off.

मो षु णः सोम मृत्यवे परा दाः पश्येम नु सूर्यमुच्चरन्तम् ।
द्युभिर्हितो जरिमा सू नो अस्तु परातरं सु निर्ऋतिर्जिहीताम् ४

4. Give us not up, SOMA, to death: may we (long) behold the rising sun: may our old age brought on by (passing) days be happy: may NIRRITI depart far off.

असुनीते मनो अस्मासु धारय जीवातवे सु प्र तिरा न आयुः ।
रारन्धि नः सूर्यस्य संदृशि घृतेन त्वं तन्वं वर्धयस्व ५

5. ASUNITI, give us back the (departed) spirit: extend our life that we may live (long): establish us that we may (long) behold the sun: do thou cherish the body with the *ghi* (that we have offered).

ASUNITI.—A goddess: literally, "conductress of breath or souls," *i.e.*, who prolongs life.

असुनीते पुनरस्मासु चक्षुः पुनः प्राणमिह नो धेहि भोगम् ।
ज्योक् पश्येम सूर्यमुच्चरन्त मनुमते मृळया नः स्वस्ति ६

6. Restore to us, ASUNITI, sight and breath, and enjoyment in this world: long may we behold the rising sun; make us happy, gracious (goddess), with prosperity.

पुनर्नो असुं पृथिवी ददातु पुनर्द्यौर्देवी पुनरन्तरिक्षम् ।
पुनर्नः सोमस्तन्वं ददातु पुनः पूषा पथ्यां या स्वस्तिः ७

7. May earth restore the (departed) soul to us: may the divine heaven, may the firmament (restore it): may *Soma* restore the body to us: may PUSHAN restore to us speech, which is prosperity.

THE FIRMAMENT.—[*Sayana* takes *pathyam* as that

which is in the firmament, *i.e.*, speech, which is derived from ether (*akasha*).

SPEECH.—*Swasti* may be a synonym of *vach*, "speech": "May she give us articulation" (*pathyam vacham*, 'good speech').

शं रोदसी सुबन्धवे यह्वी ऋतस्य मातरा ।
भरतामप यद्रपो द्यौः पृथिवि क्षमा रपो मो षु ते किं चनामसत् ८

8. May the great heaven and earth, the parents of sacrifice, (grant) happiness to SUBANDHU: heaven and earth, remove all iniquity; let heaven (take away) iniquity: may no ill ever approach thee.

अव द्वके अव त्रिका दिवश्चरन्ति भेषजा ।
क्षमा चरिष्ण्वेककं भरतामप यद्रपो द्यौः पृथिवि क्षमा रपो मो षु ते किं चनामसत्

9. Remedies come down from heaven by twos and by threes: one wanders singly in heaven; heaven and earth remove all iniquity: let heaven (take away) iniquity: may no ill ever approach thee.

BY TWOS AND BY THREES.—By Twos=the two *Ashwins*, or by threes=the three goddesses *Ila*, *Sarasvati* and *Bharati*.

समिन्द्रेरय गामनड्वाहं य आवहदुशीनराण्या अनः ।
भरतामप यद्रपो द्यौः पृथिवि क्षमा रपो मो षु ते किं चनामसत् १०

10. Send, INDRA, the active ox, who may bring the cart (laden with) the *ushinarani* grass: heaven and earth, remove all iniquity; let heaven (take away) iniquity; may no ill ever approach thee.

Chart 1 : Specimen Vedic Text

ਆਪਣੇ ਸੀਵਨ-ਸਾਥੀ ਨੂੰ ਘਰ ਵੜਦਿਆਂ ਹੀ ਵੇਖ ਕੇ ਸੁਲੋਚਨਾ ਨੇ ਫਟਕਾਰ ਪਾਈ। ਪਰ ਸ਼ਾਇਦ ਇੰਨੇ ਨਾਲ ਹੀ ਉਸ ਦਾ ਮਨ ਨਹੀਂ ਸੀ ਭਰਿਆ, ਉਹ ਅਜੇ ਹੋਰ ਵੀ ਬੜਾ ਕੁਝ ਕਹਿਣਵਾਲੀ ਸੀ, ਸਦ ਕਿ ਪਤੀ ਨੂੰ ਉਸ ਨੇ ਸਵੇਰੇ, ਘਰੋਂ ਨਿਕਲਣ ਤੋਂ ਪਹਿਲਾਂ ਦੁਹਰਾ ਤਿਹਰਾ ਕੇ ਇਕ ਲੰਮੀ ਲਿਸਟ ਗਿਣਾਈ ਸੀ ਚੀਜ਼ਾਂ ਲਿਆਉਣ ਲਈ। ਉਹ ਅਜ ਸਾਰੀ ਦਿਹਾੜੀ ਮੁੜ ਮੁੜ ਕੇ ਉਹਨਾਂ ਚੀਜ਼ਾਂ ਦੀ ਗਿਣਤੀ ਗਿਣਦੀ ਰਹੀ ਸੀ ਸੇਹੜੀਆਂ ਕਈਆਂ ਦਿਨਾਂ ਤੋਂ ਘਰ ਵਿਚ ਮੁੱਕੀਆਂ ਹੋਈਆਂ ਸਨ, ਤੇ ਨਾਲੋ ਨਾਲ ਪਤੀ ਉਤੇ ਕਚੀਚੀਆਂ ਵੱਟਦੀ ਰਹੀ ਸੀ। ਉਸ ਦੇ ਖ਼ਿਆਲ ਵਿਚ ਮਰਦ ਦਾ ਸਨਾਨੀ ਉਤੇ ਸਭ ਤੋਂ ਭਾਰੀ ਅਨਿਆਉਂ ਹੈ ਕਿ ਉਹ ਸਨਾਨੀ ਨੂੰ ਤਾਂ ਹਰ ਵੇਲੇ ਉਸ ਦੀਆਂ ਜ਼ਿੰਮੇਵਾਰੀਆਂ ਚਿੱਤਾ ਚਿੱਤਾ ਕੇ ਕੋਸਦਾ ਰਹਿੰਦਾ ਹੈ ਪਰ ਆਪਣੀਆਂ ਜ਼ਿੰਮੇਵਾਰੀਆਂ ਤੋਂ ਹਮੇਸ਼ਾਂ ਅੱਖਾਂ ਮੀਟੀ ਰਖਦਾ ਹੈ।

TRANSLATION

At the sight of her life-companion entering the house, Sulochana felt shocked. Evidently, even this (his return) did not bring satisfaction to her mind; now she meant to say far more to her husband than she had in the morning, when, before he left the house, she had given him a long list of all the things that had to be bought. Today, she had spent the whole day reckoning up, over and over again, all the things that had been lacking for some time now in the house, and at the same time getting angrier with her husband. It was her opinion that (as she saw it) the chief injustice in the relationship between man and woman lay in the fact that the man is continually abusing the woman, reminding her of her obligations while shutting his eyes to his own obligations.

Chart 3 : Specimen text of Panjabi as given in Tolstaya (1981)

On having examined the texts closely we are of the view that at the level of organization and pattern tones in Panjabi are different from pitch levels of Vedic Sanskrit. But on the basis of the details, we have gone through in chapters 2, 3 and 4 about tone and pitch in a language, tones in Panjabi and pitch levels in Vedic Sanskrit, we can say that at the level of accoustic phonetics, i.e. seeing purely the physical sides of the phenomema concerned, tones in Panjabi and pitch levels in Vedic Sanskrit are exploiting the same physical phenomenon. But to say anything about the extent or degree of exploitation, and variations there of one really needs a study of different order as this study of ours had a rather narrow scope because of lack of laboratory experimentation. In the absence of technological aids we had to rely on what our ears perceived in an uncontrolled environment.

On the basis of what we heard, we would like to point out that, as most of the scholars do treat, Vedic Sanskrit should not be treated as a fixed language because it is not a fixed language. We feel that if taken supra-segmental variations into account

no language which is still being spoken whether used in religious ceremonies or in public, by naitve scholars or by professionals can save itself from undergoing a change. And it is a fact that Vedic Sanskrit is being spoken by people even now, though the number of people may be small and they may not be using it to communicate with others. Recently we happened to visit 'Vishwa Veda Sammelan' which was held in New Delhi. There, we were exposed to the chanting of verses given in *Ṛgveda* by Vedic scholars from South as well as North of India. Although Vedic Scholars learnt it from their seniors as a part of transfer of tradition but this transfer of language was not absolute as it appeared to us. Some kind of change was there at least at the level of supra-segmentals.

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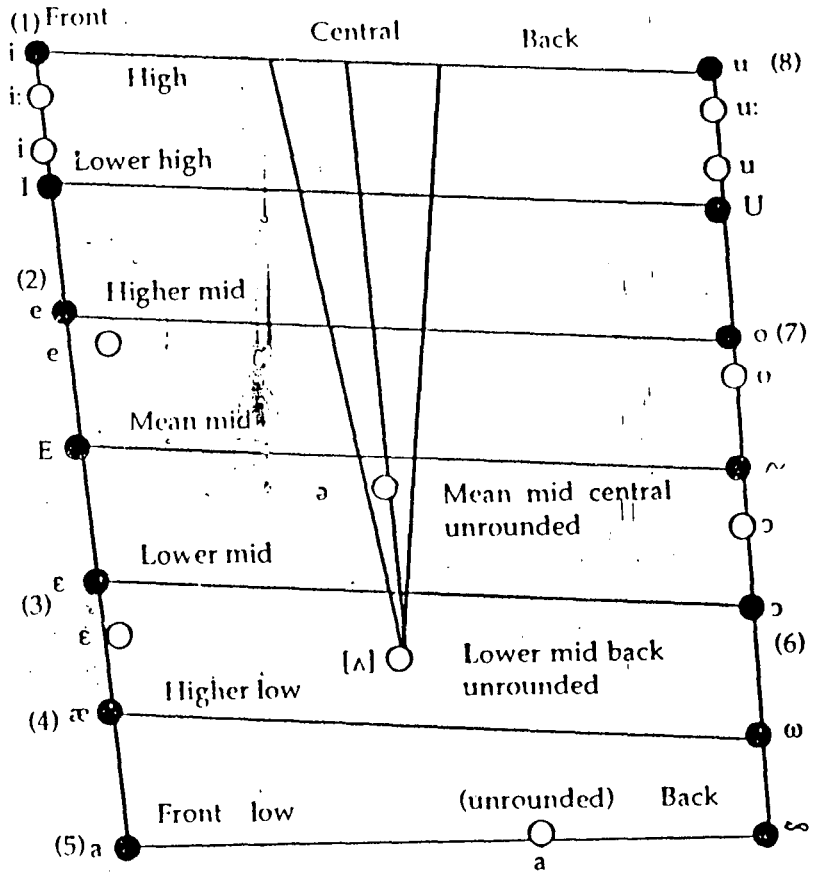


Appendix 1 : Vowels of Panjabi as given by Amarnath Malik

	Bi-labial	*Labio-dental*	*Dental*	*Alveo-lar*	*Palatal*	*Cacu-minal or Retro-flex*	*Velar*	*Glot-tal*
Stops								
vls unasp	p		t			ʈ	k	
vls asp	ph		th			ʈh	kh	
vd unasp	b		d			ɖ	g	
*tonal asp	bh		dh			ɖh	gh	
Affricates								
vls unasp					c			
vls asp					ch			
vd unasp					j			
tonal asp					jh			
Fricatives								
vls		*[f]		s	ʃ		*[x]	h
vd		v		*[z]			*[ɣ]	
Nasals	m			n		ɳ		
Laterals				l				
Trill				r				
Flap						ɽ		
Semi-vowels	*[w]				y			

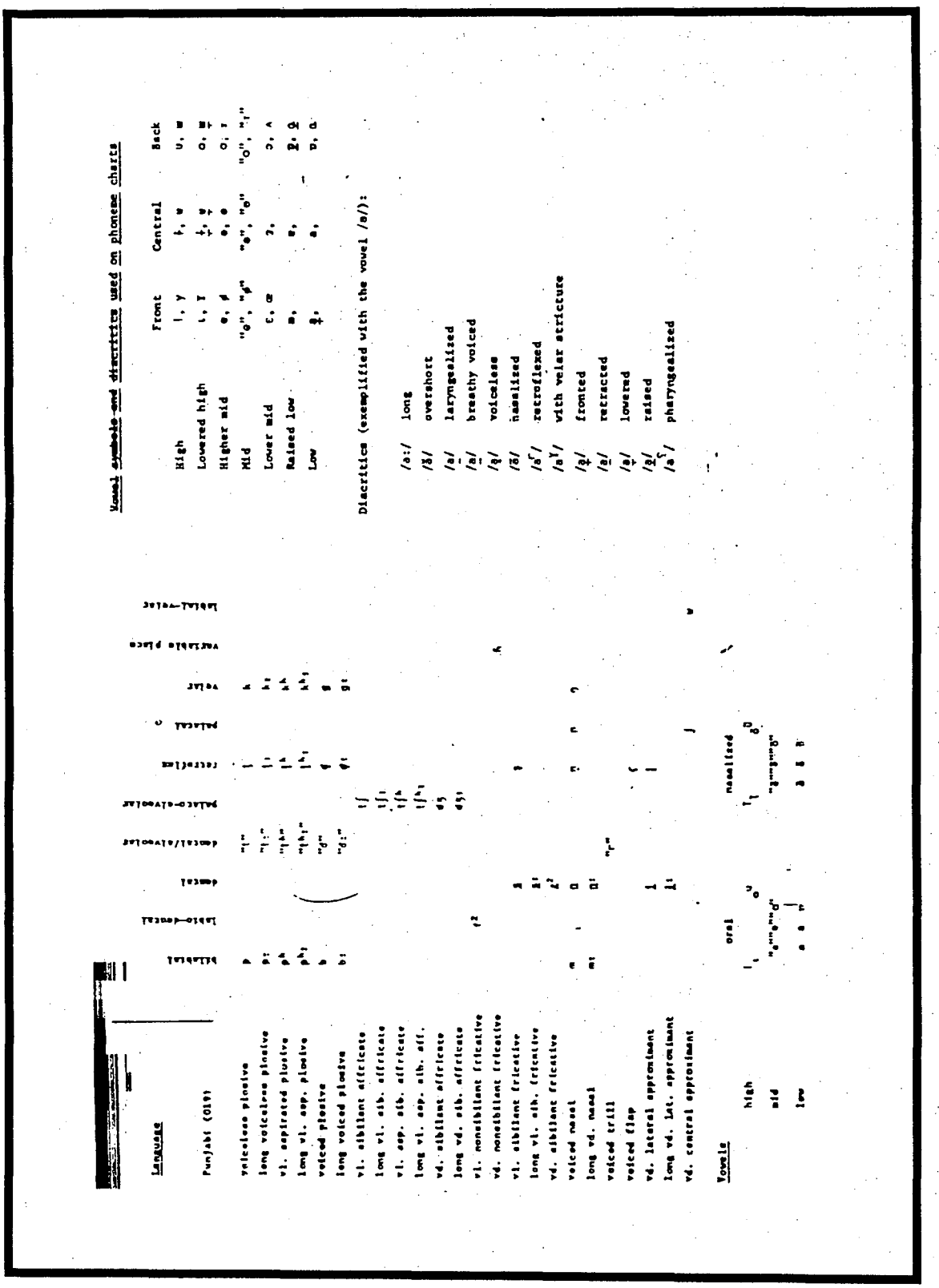
Fig. 2. Table of Majhi consonants.

*The symbols within brackets represent allophones or subsidiary members of the phonemes.[1]

*The tonal aspirates /bh, dh, ḍh, gh/ and the tonal affricate/jh/ are not simple phonemes, but are compound phonemes comprised of plosives or affricate, accompanied by tones. (Vide Chapter 4, Arts. 19-24 and 30.)

[1]The most frequent sound is called its *principal member* or *norm*. It is usually the sound which would be given if a person with unstudied pronunciation were asked 'to say the sound by itself'. The other sounds belonging to the phoneme are called *subsidiary members*. The term *allophone* is used to denote a particular member, principal or subsidiary, of a phoneme. (Vide D. Jones, *An Outline of English Phonetics*, Art. 197).

Appendix 2 : Consonants of Panjabi as given by Amarnath Malik.



Appendix 3 : Sound pattern of Panjabi as given in Madieson (1984) based on Gill & Gleason.

Appendix 4 : Pronunciation-key of Panjabi as given in Punjabi-English Dictionary by S.S. Joshi and others published by Punjabi University.

PRONUNCIATION KEY

IPA symbol *Vowels*	*Gurmukhi symbol (s)*		*as used in*	*Gurmukhi transcription*
iː	ਈ	ੀ	*eat, see*	/ਈਟ, ਸੀ/
ɪ	ਇ	ਿ	*it, sit*	/ਇਟ, ਸਿਟ/
e	ਅੇ	ੇ	*egg, bed*	/ਅੇਗ, ਬੈਡ/
æ	ਐ	ੈ	*add, hat*	/ਐਡ, ਹੈਟ/
aː	ਆ	ਾ	*arm, bath*	/ਆਮ, ਬਾਥ/
ɒ	ਅੋ	ੋ	*odd, hot*	/ਅੋਡ, ਹੋਟ/
ɔː	ਓ	ੋ	*all, court*	/ਓਲ, ਕੋਟ/
ʊ	-	ੁ	*_, put*	/_, ਪੁਟ/
uː	ਊ	ੂ	*ooze, boot*	/ਊਜ, ਬੂਟ/
		ਅੱ	*up, bun*	/ਅੱਪ, ਬਅੱਨ/
ɜː		ਅ:	*earn, hurt,*	/ਅ:ਨ, ਹਅ:ਟ/
ə		ਅ	*a'bove, 'dancer*	(ਅ'ਬਅੱਵ, 'ਡਾਨਸਅ*)
Diphthongs				
eɪ	ਏਇ,	ੇਇ	*aid, bale*	/ਏਇਡ, ਬੇਇਲ/
aɪ	ਆਇ,	ਾਇ	*ice, nine*	/ਆਇਸ, ਨਾਇਨ/
ɔɪ	ਅੋਇ,	ੋਇ	*oil, boy*	/ਅੋਇਲ, ਬੋਇ/
əʊ		ਅਉ	*ode, go*	/ਅਉਡ, ਗਅਉ/
aʊ	ਆਉ	ਾਉ	*out, tout*	/ਆਉਟ, ਟਾਉਟ/
ɪə	ਇਅ	ਿਅ	*ear, fear*	/ਇਅ*, ਫ਼ਿਅ*/
eə	ਏਅ	ੇਅ	*air, fare*	/ਏਅ*, ਫ਼ੇਅ*/
ʊə	ਉਅ	ੁਅ	*-, poor*	/-, ਪੁਅ*/

*indicates a ਰ-link before a following vowel.

stress accent

/ˈ/ indicates primary stress on the following syllable : re'member /ਰਿˈਮੈਮਬਅ*/

/ˌ/ indicates secondary stress on the following syllable : aca'demic /ਅੇਕਅˈਡੈਮਿਕ/

A symbol within round brackets ( ) indicates that the sound is often omitted.

Consonants			
p	ਪ	*pad*	/ਪੈਡ/
b	ਬ	*bad*	/ਬੈਡ/
t	ਟ	*tab*	/ਟੈਬ/
d	ਡ	*day*	/ਡੇ/
k	ਕ	*kite*	/ਕਾਇਟ/
g	ਗ	*gun*	/ਗਅੱਨ/
f	ਫ਼	*fun*	/ਫ਼ਅੱਨ/
v	ਵ	*very*	/ਵੈਰਿ/
s	ਸ	*seat*	/ਸੀਟ/
z	ਜ਼	*zip*	/ਜ਼ਿਪ/
θ	ਥ	*three*	/ਥਰੀ/
ð	ਦ	*that*	/ਦੈਟ/
ʃ	ਸ਼	*ship*	/ਸ਼ਿਪ/
ʒ	ਯ਼	measure	/ਮੈੱਯ਼ਅ*/
h	ਹ	*heart*	/ਹਾਟ/
ʧ	ਚ	*chip*	/ਚਿਪ/
dʒ	ਜ	*jeep*	/ਜੀਪ/
m	ਮ	*man*	/ਮੈਨ/
n	ਨ	*nap*	/ਨੈਪ/
ŋ	ਙ	*sing*	/ਸਿਙ/
l	ਲ	*lap*	/ਲੈਪ/
r	ਰ	*rot*	/ਰੋਟ/
j	ਯ	*yet*	/ਯੈੱਟ/
w	ਵ	*weep*	/ਵੀਪ/
x	ਖ਼	*loch*	/ਲੋਖ਼/

THE DEVANÂGARÎ LETTERS.

Vowels.					Consonants.					
Initial.	Medial.	Initial.	Medial.	Equivalent.						
अ	–	ब	–	a	क	क	k	प	प	p
आ	ा	बा	ा	â	ख	ख	kh	फ	फ	ph
इ	ि	इ	ि	i	ग	ग	g	ब	ब	b
ई	ी	ई	ी	î	घ	घ	gh	भ	भ	bh
उ	ु	उ	ु	u	ङ	ङ	ṅ	म	म	m
ऊ	ू	ऊ	ू	û	च	च	ch (or *k*)	य	य	y
ऋ	ृ	ऋ	ृ	ṛi (or *ri*)	छ	छ	chh (or *kh*)	र	र	r
ॠ	ॄ	ॠ	ॄ	ṛî (or *rî*)	ज	ज	j (or *g*)	ल	ल	l
ऌ	ॢ	ऌ	ॢ	ḷi (or *li*)	झ	झ	jh (or *gh*)	व	व	v
ॡ	ॣ	ॡ	ॣ	ḷî (or *lî*)	ञ	ञ	ñ	श	श	ś (or *s*)
ए	े	ए	े	e	ट	ट	ṭ (or *t*)	ष	ष	sh
ऐ	ै	ऐ	ै	ai	ठ	ठ	ṭh (or *th*)	स	स	s
ओ	ो	ओ	ो	o	ड[1]	ड[1]	ḍ (or *d*)	ह	ह	h
औ	ौ	औ	ौ	au	ढ[2]	ढ[2]	ḍh (or *dh*)			
					ण	ण	ṇ (or *n*)			
					त	त	t	ं	ं	ṁ (or *m*)
					थ	थ	th	ँ	ँ	m̃ (or m̃)
					द	द	d	ः	ः	ḥ (or *h*)
					ध	ध	dh	ᳵ	ᳵ	(Jihvâmûlîya), χ
					न	न	n	ᳶ	ᳶ	(Upadhmânîya), φ

[1] Sometimes represented in the Veda by ळ, ळ॒ ḷ (or *l*).

[2] Sometimes represented in the Veda by ळ्ह, ळ्ह॒ ḷh (or *lh*).

Appendix 5 : Devanagari Alphabet as given by Maxmueller.