INTRODUCTION

In the present thesis, we make an attempt to present an explanatory phonology of Delhi Urdu (also called KarKhandari Urdu) as spoken by artisans, traders, craftsman and labourers of old Delhi living in the vicinity of Jama Masjid. The analysis is carried out in the theoretical frame-work of form-content linguistics, also known as columbia school of linguistics.

With a view to provide proper perspective for the present work on Delhi Urdu phonology, we deal with the historical setting of Delhi Urdu in section A. In section B, we take-up field procedures utilized in the collection and analysis of the data. In section C, we present a brief account of the theoretical framework that determines the phonological analysis presented here. The scope of the study is taken-up in section D.
Section A. Historical Setting of Delhi Urdu.

Delhi Urdu is commonly known as karkhandari Urdu. The term "karkhandari (adj.) is based on the noun karkhandar 'workshop worker', which in turn is derived from the persian word karkhana 'workshop'. The name karkhandari is therefore quite appropriate for the Delhi dialect of Urdu, for it is spoken by the workshop workers' the artisans and craftsmen of old Delhi.

The karkhandari speakers are chiefly concentrated in the south-west of Jama Masjid and Lalkuan Bazar, and are geographically bounded by Chandni Chowk Bazar on the north, Faiz Bazar on the east, Asaf Ali Road on the south, and Lahori Gate on the west. The speakers of karkhandari Urdu are mainly located in the areas of Chitli Qabar Kucha Chilan, Kala Mahal, Tokriwalan, Soiwalan, Phatak Teliyan, Bulbule Khana, 'Kucha Pandit, Mohalla Rod Gazan, Farrash Khana and Gali Batashan. On the north-eastern side of Lal Kuan are Situated Gali Qasim Jan, Bazar Balli Maran, Haweli Hisamuddin Haider, Bara Duari, Sher Afghan Khan and Ahata Kale Sahib, and Phatak Habash Khan beyond Khari Boail. These area come within the precincts of the four walls. Beyond the walls of the old city, karkhandari areas also include Mohalla Kishan Ganj, Shish Mahal, Qassab Pura, Beri-Wala Bagh and a few lanes in Bara Hindu Rao.

Inasmuch as the recorded material on karkhandari Urdu is only recent, the origin of the name karkhandari remains untraceable in old records. Although there exists some commonality in the features of both old Urdu and karkhandari Urdu, nothing definite can be said
about the age of karkhandari. The specimens of Delhi Urdu presented by Insha Allah Khan in his Darya-i-Latafat (written in 1807) do not shed sufficient light on the phonological make-up or the grammatical structure of this dialect of Delhi. However, on the basis of inferences drawn from the preserved material, we can safely assume that the development of karkhandari Urdu has been going on since long, with its origin rooted far back in time with the history of the Urdu language.

The following works comprise the recorded materials on karkhandari Urdu.

1. SHAHID-i-RANA by Mohd. Sarfaraz Husain, Delhi, 1932 (Dialogue between two Karkhandars and Nanhijan, pp.78-80).
2. NIRALI URUD by M.A. Mughni, Delhi, pp.128.
3. YE DILLI HAI by Syed Yusuf Bukhari, Delhi, 1944 ('Dilli Ke karkhandar', pp.77-79).
Section B. Field Procedures.

No research is possible without data. Data collection is a very important aspect. It is also the primary step of any kind of research. The data for the present study has been collected through fieldwork, which is also known as field linguistics (samarin; 1967:1). Field linguistics is a very broad term and does not only concern with the collection of the data. It also deals with analytical procedures. These two main tasks, with particular reference to the present study, are outlined below.

Section B. Collection of the Data

The entire process involved in the collection of data for the phonological study undertaken here, can further be divided into two parts, namely, selection of the informants and actual procedure of data collection.

Section B. (a) Selection of the Informants

For the collection of data, the first task was the selection of the appropriate informants. The informants are the native speakers of a language, either as repetition of what has already been said or as creations of what somebody might say (samarin; 1967:20). Informants also explain how the utterances were used or what they meant.

The informants selected for the present data on Delhi Urdu, were mainly women workers (artisans or skilled labourers) belonging to the lower strata of Urdu speaking community. They were five in number having different kinds of skills. With their different crafts and special
skills, they provided us with a wealth of information that helped us collect a large number of words, some of which are extinct in modern Standard-Urdu. The names of the informants with their respective ages are given below:

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kallo Begum</td>
<td>48 years</td>
</tr>
<tr>
<td>Safura Khatoon</td>
<td>40 years</td>
</tr>
<tr>
<td>Anwari Begum</td>
<td>36 years</td>
</tr>
<tr>
<td>Zarina Khatoon</td>
<td>32 years</td>
</tr>
<tr>
<td>Zakiya Khatoon</td>
<td>30 years</td>
</tr>
</tbody>
</table>

For the present study only illiterate persons were selected as informants. None of them was formally educated. To be sure, a couple of them had some informal education, they knew the Urdu alphabets and had learned to read the holy Quran. They all were the representative of the lower social class in terms of income, occupation, cultural possession and intellectual stimulation. All the informants belonged to the different Urdu-speaking Muslim Mohallas of Delhi. All of them were born in Delhi.

All five of the informants possessed clear and audible voices and clear pronunciation as well. They all were linguistically unsophisticated.
Section B_1 (b) : Data Collection

The data of Delhi Urdu presented in this thesis has been obtained through the informants selected for this purpose only and not by anybody else or from anywhere else. Further, the data collection was based on face-to-face interviews with informants for hours, and it was tape-recorded.

The data collected can be divided into two parts: non-selective and selective.

(i) Non-Selective Collection of Data

In the beginning all kinds of words, phrases and sentences were collected without any preparation of word list etc.) by observing speech anonymously.

(ii) Selective Collection of Data

Selective collection was made of monosyllabic words only. This was accomplished in two ways. Firstly, by using monosyllabic entries as in J.T. platts Dictionary as a guide to possible words in Delhi Urdu. Secondly, by keeping in view the potential slopes in the graph based on combinations of all the phonological units, plotted both vertically and horizontally, for actual realizations of the word. Care was thus taken to ensure an exhaustive list of monosyllabic combinations of the phonological units.

During elicitation of the data every phonetic detail of the sounds of Delhi Urdu was taken into account. Data was recorded in phonetic transcription.
Section B2: Procedures for the Analysis of the Data

Analytical procedures used for setting up phonological units in the present study, were almost the same that are utilized in the discovery procedure for the inventory of phonemes by the phonemicists of American Structuralist School.

However, for the kind of phonological analysis undertaken here, it was also necessary to use procedures that would help in collecting and analyzing the data on some kind of exhaustive basis. As mentioned above, all monosyllabic words were exhaustively collected during the fieldwork in Delhi. The CVC monosyllabic words were plotted on the graph sheets, each of which contained all the words realized with one initial consonants followed by all the vowels horizontally, and with all the final consonants vertically. Additional graphic devices were used to get the figures for the $C_1 C_2$ consonant clusters in both the initial and final positions of the monosyllabic words. The departures from random arrangement of phonological units were then tabulated for use in quantitative validation of the phonological analysis of Delhi Urdu presented in this thesis.
Section C: Theoretical Background *

The phonological analysis of Delhi Urdu presented in the thesis is based on the phonological principles of form-content linguistic. Although the seed of this linguistic theory can be seen in the work of Ferdinand de Saussure, it has been developed by professor William Diver and his students at Columbia University. In his phonological tenets, professor Andre Martinet. But the phonological theory in its present form, is fully developed at Columbia University. A brief account of this phonological theory is given in four sections below. Section $C_1$ presents the orienting principles for the phonological analysis. Section $C_2$ is comprised of the phonological and grammatical linguistic units. Section $C_3$ deals with the concept of double articulation of language as a parameter for distinguishing phonology from grammar. Section $C_4$ deals with substance and value in linguistic analysis, while section $C_5$ deals with the syntagmatic and paradigmatic aspects.

* For a theoretical discussion here and else where in the thesis, liberty has been taken to incorporate ideas from both the published and unpublished works of professor William Diver. But in view of extensive incorporation of his ideas in pieces, often it has not been possible to give proper references. I am indebted to him for using his concepts throughout the thesis. But by no means does it imply that professor Diver is responsible for any misrepresentation of his ideas in the present work.
Form-content linguistics regards the discipline of linguistics as a tripartite organization. The three entities involved in the linguistic analysis of a language are orientation, theory and phenomena. Orientations have been explained in the section C₂. And we know that orientations are the common facts about the character of language which serve as external control on hypothesizing whereas theory deals with the explanation of the non-random characteristics of phenomena by postulating hypothesis. The theory provides with the explanatory link between the orientations and phenomena.

Phenomena are the observable facts of language. The phenomena of the discipline of linguistic are speech sounds. The structure and functioning of the phenomena is not random, they fallow set patterns. It is theory which explains non-random characteristics of phenomena, and the theory in turn be justified by orientations. The theory is to be justified by the various orientations, we can not hypothesize any thing at odds.
Section C₂ : Orienting Principles

Orientations are the common facts about the character of language, which serve as external constraints or control over hypothesizing.

There are five orienting principles for phonological analysis, namely, physiological mechanism (physiology of the vocal tract), human behavior (psychology), communicative intent (communication), vision and acoustics medium.

The phonological analysis of a language (or dialect) must be motivated by all the five principles. These five orienting principles are as follows:

Section C₂ (a) : Physiological Mechanism

Signals of language are produced by a particular mechanism, the vocal tract. Therefore, the characteristics of vocal tract and the dynamics of sound production make a tremendous effect on its phonology. The various facets of sound production (physiology of vocal tract and mechanism of sound production), serve therefore, as a base for the phonology of language.

Professor Diver has given a deep thought to this physiological mechanism and rightly put forward the importance of human physiology in the study of speech sounds. The first principle of form-content linguistics developed by professor Diver explores the characteristics and limitations of the human vocal aperture. It is a physiological apparatus, that applies in speech to substitute all those sounds and sound sequences which have a common difficulty to the speech capacity of the speech community.
Thus these sounds or sound sequences are replaced by an alternative class of sound and sound sequences identical to the changed sound or sound sequences but lacking the difficult properties. The purpose of such changes and substitutions are thus to maximise the perceptual characteristics of speech and to minimise its articulatory difficulties.

Sounds or phonological units are produced by the different degrees of configuration of the vocal tract. The individual units are classified on the basis of their respective articulators and their different degrees of apertures. In section C\textsubscript{2} (ai) and C\textsubscript{2} (aii), we discuss the articulators and the degrees of apertures respectively. In section C\textsubscript{2} (aiii), we present the hierarchy of adroitness of lingual articulators, with de fact placement of labium on that hierarchy.

Section C\textsubscript{2} (ai) : Articulators

In this section, we will be discussing the physiological characteristics of the articulators with a view to determine their role in the production of speech sounds.

In traditional American phonemics, the consonants are classified or rather named depending upon their points of articulation. In a phonological grid however, the consonants and vowels are classified on the basis of the articulators. The articulators are the adroit members of the vocal tract and hence can be manipulated to affect the production of speech sounds. These adroit articulators shape and excite the cavity resulting in the production of speech sounds. In contradistinction to the articulators, the points of articulation play only a passive role,
in that they may be touched, or an approximation may be made towards them, by the approaching articulator.

The adroit members of the vocal tract are the lips, the tongue (apex, medium, front-dorsum, mid-dorsum, post-dorsum (root)), the velum and the larynx which we will be taking up one by one in the following headings.

For convenience of reference, the four articulators that shape and excite the vocal cavity in speech production in association with the various point of articulation are shown in Diagram 0-1.

**The Lower Lip**

The lower lip articulates against the upper lip and the edges of the upper teeth. The lower lip may form a complete closure of the oral passage by being pressed firmly or loosely against the upper lip. The lower lip also articulates against the edges of the upper teeth, resulting in partial closure, the surface of which is perforated.

The lower lip comes in contact with the upper lip to form a complete closure which is ideally suited for the production of stops and the lower lip articulates the edges of the upper teeth to form a partial closure, an ideal situation for the traditional 'fricatives'.

The upper lip acts as an articulator for labial stops and labial fricatives. In the production of the labio-dorsal semi vowel (w) and the labio dorsal vowels (u:, o: etc), both the upper lip and lower lip are rounded and protruded in the shaping of the oral cavity. Thus, for these sounds of openings, the upper lip acts as an articulator.
The Tongue

The tongue, when at rest, occupies the floor of the mouth. It is the premier articulation in the production of speech sounds, due to its physiology, adroitness etc. The complex muscular structure of the tongue can be divided into five parts, namely, the apex, the front dorsum, the mid-dorsum, the back-dorsum and the post-dorsum (root) of the tongue.

(i) Apex: The extremity of the tongue is called the apex and is very flexible. It moves freely and can be made to assume a variety of positions.

(ii) Medium: The parts of the tongue, which normally lies opposite the palate (hard palate), is traditionally called "front" or medium.

(iii) Front-Dorsum: The part of the tongue which lies behind the medium and falls under upper part of the velum is here called dorsum.

(iv) Back-Dorsum: The part of the tongue which falls between the root of the tongue and the front dorsum (traditional velar stop) and which lies opposite the post-velum, (lower part of velum) is known as back-dorsum.

(v) Post-Dorsum or the Root of the Tongue: The base of the tongue from which the tongue starts is known as post dorsum.

The ancient Indian phoneticians had a tripartite division of the tongue parts. The three areas are: The Jihvamula 'root of the tongue', the Jihva-madhva 'mid of the tongue' and the Jihvagra 'tip of the tongue' (Allen; 1965:18).
The VeJum

Continous with the hard palate and behind it is the soft palate or velum. This is movable fold hung from the back edges of the palate and terminating in the posterior pillars of the fauces or the pharyngopalative arch. The velum is essentially an incomplete septum between the mouth and the oral pharynx (Heffner; 1950:37). The velum is boneless muscular arch capable of independent movement up and down. (Bloch Band Trager G.L; 1942 : 15).

The velum acts both as an articulator and a point of articulation. As an articulator, the velum produces nasal consonants and nasalized vowels. As a place of articulation velum is utilized in the production of front dorsal consonants, k.g. etc. traditionally known as velar consonants, as well as front dorsal and central (traditional unrounded) vowels, such as θ and a.

Velum can be divided into two parts, namely : (1) pre-velum : It lies just after the palate and opposite front-dorsum of the tongue (2) Post velum : It lies between the pre-velum and the Uvula, right above the back dorsum of the tongue. (Bronahan and Malmberg; 1976:39).

The Larynx

The diameter of trachea is from 2 to 2.5cm and its length is about 11 cm. The uppermost ring of the trachea differs from the other rings, in that it is a complete ring. However, while lower rim of this ring is approximately circular, its upper rim is distinctly oval, with the long
axis front to back. This ring or cricoid cartilage is the foundation of the structures which as a functional group, are called the larynx (Heffner; 1950:15).

The larynx comprised of three main parts, namely, the thyroid cartilage, the arytenoid cartilage and the vocal cords or vocal folds.

(i) Thyroid cartilage is the most important of the cartilage in the larynx, which forms a shield like structure (the Adam's apple) on the front side of the larynx. It is open on the dorsal side. (Brosnahan and Malmberg; 1970:31).

(ii) The Artenoid cartilage. The artenoid cartilages, are two pyramid-shaped cartilages fastened to the upper surface of the back part of the cricoid cartilage by means of joints which permit them to move laterally on it. (Brosnahan, L.F. and Malmberg M; 1950 : 15-31).

(iii) (Vocal cords) Glottal Articulator or Vocal folds:

The vocal folds originate at the anterior arms of the arytenoids (vocal processes) and undergo certain physiological mechanism which are mentioned below:

(a) When the two vocal folds comes in close contact, they make a temporary closure at the glottis, giving rise to the speech sound, known as "glottal stop".

(b) When the vocal cords are at rest they are drawn apart. In this the glottis is open. This is the ideal position of breathing and all the voiceless sounds are produced (pt, c.k. etc.) in this position.
When the vocal cords are drawn closely together and made to vibrate they produce voiced sounds, b, d, j, g etc.

(c) The extreme sensitive and flexibility, of the vocal cords can produce various degrees of musical notes, called "tones" as is apparent in Tone languages.

(d) The narrowing of the vocal cords with or without voicing, produces aspirated sounds, ph, bh, kh, gh, etc.
Section C_2 (a ii) : Degrees of Aperture

The degrees of aperture are reference points for the vertical closings and openings of the vocal tract (and of the glottis), resultants of the upward and downward movements of the lower jaw, we have divided this section into further sub-sections for case of reference.

Degrees of Aperture combined with Articulators.

In this section we describe the degrees of aperture, from total closure, to maximum opening. Furthermore, we present the combination of individual apertures with the various articulators that produce the variety of speech sounds, beginning with the stop consonants through the most open vowels.

Aperture 0 : With the total closure, there is complete stoppage of airstream somewhere in the vocal tract.

The 0 - aperture combines with the various articulators to produce speech sounds, traditionally known as "stops" or 'plosive'.

The combination of 0 - aperture with various articulators in the production of stops is illustrated as fallows:

<table>
<thead>
<tr>
<th>Articulator</th>
<th>Sounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labium</td>
<td>p b etc.</td>
</tr>
<tr>
<td>Apex</td>
<td>t d etc., ŋ ŋ etc.</td>
</tr>
<tr>
<td>Palatal</td>
<td>c j etc.</td>
</tr>
<tr>
<td>Dorsum</td>
<td>k g etc.</td>
</tr>
</tbody>
</table>
Aperture 1: This aperture involves partial stoppage of airstream in which there is contact between articulators and points of articulation. At this aperture, turbulence is produced by forcing the air through the contact.

Aperture-1 combines with the various articulators to produce speech sounds, traditionally known as fricatives. It is to be noted that voicing is also produced at the glottis by the contact of vocal cords at this aperture.

The production of fricatives and of voice, by the combination of the 1-aperture with various articulators is illustrated as follows:

- Labium: $f, v$
- Apex: $\emptyset$
- Glottis: $V$ (voice)

Aperture $1_{1/2}$: An unusual feature of Urdu is the use of an intermediate aperture at the glottis between apertures 1 and 2. As already seen, the glottis is used at aperture 1 in the production of what is usually called "voice" and at aperture 2 in the voiceless aspirates. The intermediate aperture, here called $1_{1/2}$, is a configurative of the vocal folds that is more open than that seen in voicing but less open than that seen in the voiceless aspirates. The folds are in vibration just as they are with aperture 1, but the posterior section of the folds is continuously more open than in the case of plain voicing.
Aperture 2: There is no stoppage of air passage at this aperture; but the articulator forms a sufficiently narrow constriction. So that it can control the stream of air coming from the lungs (noise is produced by turbulence as the airstream comes in contact with some target).

The 2-aperture combines with the various articulators to produce speech sounds which are also traditionally known as "fricatives" and which include the traditional 'sibilants'. Furthermore, it may be noted here that aspiration is produced at this aperture through a triangular configuration of the glottis.

The production of fricatives and of aspiration brought about by the combination of 2-aperture with various articulators, is exemplified below:

- Apex: $s \, z$
- Medium: $v \, w$
- Front-Dorsum: $x \, g$
- Glottis: $A$ (aspiration)

Aperture 3, 4, 5, etc.: The articulators are used to produce resonant cavities with these successively larger degrees of aperture. At these apertures, the opening is so large that there is no longer even channel turbulence; therefore at these apertures, the articulators only shape the cavity and excitation comes from the voicing at the glottis.

These larger aperture combine with various articulators to produce speech sounds, traditionally known as 'liquids,' 'nasal' and vowels.
In terms of the degrees of openings, aperture-3 can be placed between the small aperture (0 through 2) and larger apertures (4 through the maximum opening). The narrow aperture-3 is ideally suited for 'liquids' and 'nasals'. It is however, unsuited for the production of vowels, which required a smooth, unobstructed flow of airstream.

The aperture combines with the various articulators to produce the 'liquids' and 'nasality' as illustrated below:

'Liquids'

Labium + Back-Dorsum : w
Apex : l r etc.
Medium : \, / etc.

'Nasality'

Velum (at Aperture-3) : N (nasality)
Velum (Aperture-3 + Aperture 0) : Nasal Consonants
                                                      m n etc.
Velum (Aperture-3 + large : Nasalized vowels
Aperture) : ŋ ñ ñ etc.

Aperture-4 Through the most open aperture : These apertures are large enough to allow free air flow through the vocal cavity to produce 'vowels'.
Aperture-4 combines with appropriate articulators (medium and back dorsum), to produce 'close vowels', such as i and u. The quality of vowels becomes more open, as we move to larger, more open apertures (Example: e:, o:, a:, etc.) The most open vowels such as a: are produced at the largest, most open aperture.
Traditional Equivalent of Aperture:

We draw a borderline between apertures 3 and 4. Thus, aperture 0 through 3, associated with the production of consonants, be opposed to the larger apertures from 4 to the most open, used for the production of vowels. This two-way division of apertures will correspond to the traditional division of consonants and vowels. Traditionally, consonants are classified in terms of manner of articulation, such as 'stops', 'fricatives', 'liquids' etc. In contrast, the vowels are classified in terms of the height of the tongue raised, such as 'high vowels', 'mid vowels', 'low vowels' etc.

The advantage of our approach in classifying the speech sounds in terms of degrees of aperture is that we apply the same, uniform yardstick in the classification of both consonants and vowels.
Section C.2 (aiii) : Hierarchy of Adroitness for Parts of the Tongue.

The body of the tongue is a complex structure, with muscles (Heffner; 1950:33). The tongue is extremely mobile, especially the apex of the tongue. Apex is not only the most mobile portion of the tongue, but it is also the most mobile articulator among the supraglottal organs. The musculature of the medium is more closely associated with that of both apex and the front-back dorsum than are the musculatures of those two with each other. As a consequence, the apex and the front-back dorsum are more free to move than is the medium. Moreover, the apex is at the free end; hence it is free to move in almost every direction of the oral cavity, whereas the rest of the tongue, particularly the medium is not so free. Due to this, the apex stands at the top on the scale of adroitness. Then come the front-back dorsum, the medium and the post-dorsum (root), in the decreasing order of mobility. The relatively higher or lower mobility of the various parts of tongue is shown in Diagram 0 - 1.
Diagram 0 - 1: Scale of adroitness for the Tongue Parts.
De-Facto Placement of Labium on the Scale of Adroitness for the Tongue.

As shown in the preceding section, the hierarchy of adroitness is limited to tongue parts; the other supraglottal articulators (labium and velum) are not compared with the tongue parts in terms of adroitness. As the lower lip plays an important role in the production of speech sound and is quite mobile, it may be of some worth to attempt a de-facto placement of labium on the scale of adroitness for the tongue. Given the musculature of the lower lip and mobility of the lower jaw, we can safely say that the labium would identically be placed below the apex and above the medium. Furthermore, in all likehood the labium would occupy a place somewhere around front-back dorsum of the tongue in terms of hierarchy of adroitness.

Section C^2 (aiv) : Size, Shape, and Mass of the Lingual Articulators

The size, shape and mass of the various parts of the tongue play a significant role in the shaping and often in the excitation of the vocal cavity.

The apex of the tongue is thin (with less mass), narrow in size, and triangular in shape. As a result, the apex has very little weight. These physiological characteristics make the apex most adroit of all the tongue-parts.
However, although the apex plays an active role in the production of consonants, its physiological make-up has repercussion on the production of certain sounds like vowels where it has no role to play at all. Its there, tapering structure fails to mould a proper resonating chamber which is essential feature for the production of vowels. We may point out at this juncture, that the massy three-part dorsum is ideally suited for the production of certain consonants also.
Section C (av) : Role of the Larynx in the Production of Voicing and Aspiration

An unusual feature of Urdu is the use of an intermediate aperture at the glottis between apertures 1 & 2. As already seen, the glottis is used at aperture 1 in the production of what is usually called "voice", and at aperture 2 in the voiceless aspirates. The intermediate aperture, here called 1 1/2, is a configuration of the vocal folds that is more open than that seen in voicing but less open than that seen in the voiceless aspirates. The folds are in vibration just as they are with aperture 1, but the posterior section of the folds is continuously more open than in the case of plain voicing.
Section C.2(b) Human Behavior

Language is a particular instance of human behavior as such it is greatly influenced by the underlying characteristics of human behavior: language is structured and manipulated is greatly determined by the well defined characteristics of human behavior, such as intelligence and inertia. As a repercussion of intelligence and inertia, human seek a minimax solution between accomplishment and effort.

Language is generally defined as a system of arbitrary vocal symbols, used for communication by human beings. Human beings, being what they are, behave in a specific way in all situations which makes all human endeavors different from the performance of non-humans (animals, machines), language being no exception. Human being are a complex of many physical and mental abilities and traits, which affect their behavior in all situations. They are gifted with intelligence, memory, reasoning, thinking, imagining etc. Apart from the above mentioned abilities, there are certain weaknesses too in human behavior. One of the weaknesses, characterizing human behavior, in his persistent desire to be inert, be lazy and do nothing. In other words, laziness is also an integral part of human behavior. The various traits mentioned above interact as well as contradict in different situations. Nevertheless, they are a determining factor in the structure and functioning of language.

The concept of linking phonological analysis to human behavior characteristics may seem strange to the traditional phonemicist, but to us it is an important orienting principle. It is Professor William Diver, who through his writings has highlighted the significance of human behavior
in phonological analysis. In his paper, entitled 'Phonology as Human Behavior' he has explained many skewings in the distribution of phonological units of English in terms of human behavior as an orienting principle for phonology.

As shown by Diver and some other Scholars of Columbia School of Linguistics, we may explain through human behavior the phonological skewings such as the following that are encountered in many languages:

1. Preference of voiceless and unaspirated consonants over their voiced and aspirated counterparts. A manifestation of this skewing can also be seen in the concept of 'neutralization'. (Trubetzkoy: 19 ? ?.) In the present work, this type of skewing is explained in terms of the human trait of favoring speech sounds produced by fewer articulators over the sounds produced by more articulators.

2. Sounds produced by an articulator at the nearest point of articulation are preferred to sounds produced by the same articulator at some more remote point of articulation. For it is easier for an articulator to approach the nearest point of articulation, whereas that articulator has to twist and turn or to advance farther to approach a distant point of articulation.

3. The characteristics of neighboring segments tend not to be precisely differentiated. The assimilative trait can be seen in the combination of phonological units. The precise coordination is also avoidance by making certain phonological changes and making neighboring segments similar.
4. In successive segments, large changes of aperture are preferred to small changes of apertures. In this type of change is explained in terms of the human trait of aperture change and combination of phonological units.
Section C\textsubscript{2} (C) : Communicative Intent (Communication)

Language is a particular instance of a system of communication, and like other systems of communication, it indicates meanings by means of signals. It is through communication, that we discover distinction in signal and meaning therefore, communication as a base, is indistensible for the phonological analysis of a language furthermore, the varying needs of communication, immensly influence the distribution of phonological units an both the systagmatic and the paradigmatic aspects.

It has been agreed beyond doubt the communication is a basic factor in the structure of a language as for as grammar is concerned. The traditional phonemicists have argned for a long time whether communi­cation has its domain in the phonology of a language or not. Andre Martinet's was the first to introduce the role of meaning in phonology through his concepts of "functional load and functional yield". For us, however, communication plays an important role in the phonological analysis of language.

Communication as an orienting principle is of prime importance for us in that it plays a major role in the establishment of the phonological units in the phonological grid. The traditional American phonemicists believed in the substitutional-distributional criteria, but resorted to meaning distinctions as a short-cut method. For us, we need not apologize for resoring to meaning for th establishment of the phonological unit or traditional "phonemes", for communication is an orienting principle for for the phonological analysis of any language. Thus, the phonological
units of a language are established communicatively on the basis of distinctiveness in meaning.

Besides the make-up of phonological units, communication is also instrumental in the syntagmatic distribution of the phonological units. That is, the communicative load of various phonological units are not the same. Communicatively the initial position of the word is more important than the final position of the word. The communicative load is thus higher in the word initial position then in word final position. Phonological units with low communicative load are either wiped out or merge with other units which have higher communicative load. Trubetzkoy's concept of "neutralization" is one of the manifestations of communicative load in a language.

Communication is thus at the epicenter of human language.

Section C_2 (d) : Acoustic Medium

Language signals are transmitted through a particular medium, the acoustic. It is to be pointed out here that our comments of acoustic medium are based on received knowledge.

Acoustic medium as an orienting principle, is basically important in the study of vowels, where we deal with physiologico-acoustic features.

The human physiology dictates that the vocal tract is arranged symmetrically along one dimension. There is more space in the front than at the back within the vocal cavity. In the case of vowels, where
the relative height (rise and fall of the tongue) is taken into account, the size of the resonance chamber matters a great deal. Bigger the chamber, more the sounds will be amplified.

Acoustically, it is easier to distinguish front vowels than the back vowels. The oral chamber for the front vowels extends from the medium to the larynx, as a result of which the sounds are greatly amplified.

However, for the back vowels, the resonance chamber extends from the dorsum to the larynx. Because of a comparatively small chamber, the vowels cannot be distinguished easily. An additional chamber is formed through tip rounding which amplifies the sound and hence makes them easily distinguishable.

This need for tip-rounding is clearly explainable through formants which are recorded by the sound spectrogram as a result of which we are able to distinguish the front vowels from the back vowels.

Section C₂ (e) : Vision

Language is a particular instance of vision, that is, of the articulation of those organs that are visually observable.

Vision as an orienting principle has no role to play in the establishment of the phonological grid. The phonological grid of a language is governed by the other four orienting principles, namely, physiological mechanism, communication, human behavior, and acoustic medium.

In the phonological analysis of language, we may encounter skewings
where the use of the labial phonological units suddenly rise unexpectedly, such skewings can be explained through vision, which is one of our orienting principles. To sum up $C_2$ (orienting principles as a whole)

Of the orienting principles, presented above for the phonology of a language, only two orienting principles are required for the grammatical analysis (Communication and Human Behavior).

From the viewpoint of form-content linguistics, we can say that.

(i) Phonology is a particular instance of the utilization (as a sound-producing mechanism) of the physiological characteristics.

(ii) Phonology is to be regarded as a particular instance of vehicle of communication.

(iii) Phonology is to be regarded as a particular instance of learning capacity of humans.

(iv) Phonology is to be regarded as a particular instance of acoustics.

(v) Phonology is a particular instance of vision.
Section C3: Linguistic Units.

After introducing the orientations or orienting-principles for the phonological and grammatical analysis of a language in the previous section, here two types of units are taken up which are found in a language, namely, phonological units and signal-meaning units (or signes).

Phonological units are basic units of phonology. signes are the basic units of grammar. The phonological theory deals with the postulation and the explanation of the phonological units or the articulatory gestures. The grammatical theory on the other hand, deals with the postulation and explanation of signal-meaning units (signes).

While all the five orientations, discussed in section C1 play a role in the makeup and non-random distribution of phonological units, only two are utilized by the signes in their establishment and non-random distributions. That is, all the articulatory characteristics of the phonological units and their distribution within the word are motivated by all five orientations. The motivation for constructing signes as the basic unit of grammar comes from only Communication and Human Behaviour.

Section C4: Double Articulation of Language.

The articulation of language is manifested in two different planes. Each of the signal-meaning units which emerges, from a first 'articulation' is articulated in its turn into phonological units.
The obvious advantage of double articulation is economy. The first articulation is economical in the sense that with a few thousand of fairly unspecific signes, it is possible to shape an infinity of different communications. In the same way, the second articulation is economical since only a few dozen phonological units combine and keep distinct all the signes we need.

Thus, first articulation is related with grammar whereas second articulation will come under phonology.

Andre Martinet full developed the concept of 'double articulation'.

In consequence of the double articulation the general theory is divided into two : phonology and grammar. The phonology explains the non-random distribution of articulatory gestures in the formation of morphological signals. The grammar explains the non-random distribution of morphological signals with reference to their meanings.

Section C5 : Substance and Value in Linguistic Analysis.

Both substance and value are important in linguistic analysis. In the establishment of two types of linguistic units of language, namely, phonological units and signes, discussed in section both substance and value are taken into consideration.

The phonological units are classified on the basis of articulator and apertures in terms of physiological mechanism. That is, the classification of the units in the phonological grid takes into account their phonetic substance. Apart from this, the phonological units in the grid are also
characterized by value, that is, their interrelationships within the phonological paradigm.

Similarly, it is both the distinctiveness of meanings for the signes, of their number and of their interrelationships, as well as the substantive differences for the signes that count in establishing various grammatical systems for a language.

Thus, equal weightage is given to substance and value in linguistic analysis. Andre Martinet was the first scholar to weigh substance and value on equal scales in phonological analysis. In the nineteenth century, the Indo-Europeanists based all their research on substance alone. As a reaction to this, Ferdinand de Saussure introduced the concept of 'value' in grammatical analysis. But he highlighted the importance of value at the expense of substance.

It must be noted here that the value relationship introduced in grammatical analysis by Saussure, was incorporated in the phonological works of the prague school. In fact, the paradigmatic axis of the prague school phonology is based on Saussure's associative relationship.
Section C6 : Syntagmatic versus Paradigmatic Relations

The concept of syntagmatic versus paradigmatic relations was developed by Trubetzkoym of the Prague School of Linguistics, particularly for phonological analysis. But the dichotomy, under the terms "syntagmatic" versus "associative" relations was actually introduced with particular reference to grammar and lexicon by Ferdinand de Saussure, the Father of Modern Linguistics (Saussure: 1964:122).

According to Ferdinand de Saussure, in a language state (synchrony) everything is based on relations. In discourse, on the one hand, words acquire relations based on the linear nature of language because they are chained together. This rules out the possibility of pronouncing two elements simultaneously. The elements are arranged in sequence on the chain of speaking. Combinations supported by linearity are syntagms. The syntagm is always composed of two or more consecutive units. In the syntagm, a term acquires its value only because it stands in opposition to everything that precedes it or follows it, or to both (Saussure; 1964:123).

Outside discourse, on the other hand, words acquire relations of a different kind. Those that have something in common are associated in the memory, resulting in groups marked by diverse relations. The coordination formed outside discourse are not supported by linearity. Their seat is in the brain; they are a part of the inner storehouse that makes-up the language of each speaker. They are associative relations (Saussure; 1964:123).
Saussure's concept of "associative relation" was derived from his concept of "value". It may however be noted that his dichotomy of syntagmatic and associative relations was limited to only the level of grammar and lexicon.

After Saussure, Trubetzkoy took up this concept and developed it further. It was he who extended the application of Saussure's dichotomy to the level of phonology. And it was he who used the term "paradigmatic" for Saussure's "associative relation". According to Trubetzkoy, the syntagmatic relationship of the units (grammatical and phonological) represents the interrelationship of the units in the speech chain or in the syntagm, whereas the paradigmatic relationship to the interrelationship of the units in a paradigm. In the case of phonological units, the paradigm is the inventory or the repertory of phonological units in a language.

Andre Martinet, who follows Trubetzkoy, also holds the same view with regard to the syntagmatic versus paradigmatic relations in phonology. Moreover, he introduced a third relation, namely, "functional relation" for phonological analysis. He was the first scholar to recognize that "function", i.e., communication plays a role in phonology. Thus, we see that as far as the concepts of syntagmatic, paradigmatic and functional relations are concerned, there is a direct line of scholarly descent from Saussure to Prague School, and from there to Columbia School through Andre Martinet.
Section C7: Validation of the Analysis

The comparison of the data collected with the phonological principles of the theory is referred to as the validation of the theory. In general, the theory provides for a statement of the methods of sound production in terms of a phonological grid and principles that restrict or encourage the potential utilization of the members of the grid in the formation of the morphemes. In the comments on the grid and on the frequency counts, detailed comparisons will thus be made at every point between the data and the principles. This will be done primarily by reference to the skewed characteristics readily observable in the data, since the point of the validation is a demonstration that the skewings are produced by the phonological principles themselves.
Section D: Scope of the study

The present phonological analysis of Delhi's karkhandari Urdu is limited in scope both in the utilization of data in the application of orienting principles for phonology. The data utilized in the frequency counts in limited to only monosyllabic words in Delhi Urdu only occasionally some polysyllabic words collected randomly during the field-work have been included in our illustrations.

In making the phonological analysis of Delhi Urdu, we have limited ourselves to only four orienting principles, namely the physiological mechanism, human behavior, communication and vision, the fifth orienting principles is beyond the scope of the present study. However, on the basis of received knowledge on acoustics, we have made some observations in terms of acoustic medium, that tend to reinforce our phonological analysis arrived at through physiological mechanism.