CHAPTER VI
INTERACTION OF THE ORIENTING PRINCIPLES IN THE PHONOLOGY OF DECCANI URDU: SUMMARY AND CONCLUSIONS
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The phonological analysis of Hyderabad dialect of Deccani Urdu has been carried out in this thesis with a view to showing the role of quintuple orientations—physiological mechanism, human behavior, communication, vision, and acoustic medium—as the motivating principles for departures from random arrangement of phonological units in both their paradigmatic make-up and syntagmatic distribution. In this chapter, we present the result of our analysis in three sections. In section A, we deal with select phonological skewings that are brought forth by the interaction of two or more orientations. Section B contains a brief chapterwise summary of the phonological analysis. In section C, we present conclusions with a comment on the worth of our analysis.

Section A: The Interaction of the Orientations

As discussed earlier, orienting principles themselves provide a motivated rationale for the skewings encountered in the paradigmatic make-up and syntagmatic distribution of the phonological units. These skewings have been dealt with in separate chapters, each devoted to one of the quintuple
orientations. Further, we have also examined in these chapters that how a particular skewing, which is explained in terms of one orienting principle, is often favored or disfavored by other orientating principles. In this section, we make an attempt to highlight that how the interaction of different orientations produces phonological skewings in Deccani Urdu.

It is noteworthy that although there are quite a few phonological skewings which are favored and disfavored in terms of more than one orientations, we discuss only some select phonological skewings here with the help of Table VI-1.
### Table VI-1: Interaction of Orientations in the Distribution of Stops in the Monosyllabic Words

#### Comments on Table VI-1


As seen in the last column for the monosyllabic words in the table above, of the 1850 occurrences of the four stop...
types combined, the simplest, voiceless unaspirated stops have 859 occurrences, followed by the least complex, voiced unaspirated stops 631 occurrences, the more complex, voiceless aspirated stops 208 occurrences, and the most complex, voiced aspirated stops 145 occurrences. That is, in order of increasing complexity, the actual occurrences of the four stop types, show a downward trend. This selective asymmetrical utilization of the four stop types in the formation of the syllables and words in Deccani Urdu is clearly motivated by the interaction of physiology, acoustics, and human behavior. For, it is through the acoustical study that we are able to gauge the physiological complexity of the four stop types. Further, on the basis of their graded physiologico-acoustic complexity, a hierarchy among the four stop types is established. (Cf. Chapter V, section D.) And as we have discussed earlier in our chapter on human behavior that the simpler, less complex phonological units are preferred over more complex units in a language.

Comment 2: Interaction of the Orientations:

Communication and Human Behavior

As seen in the last column for the monosyllabic words in the table above, of the 1066 initial occurrences, the simplest voiceless unaspirated stops have 385 occurrences, followed by the voiced unaspirated stops 369 occurrences, the voiceless aspirated stops 167 occurrences, and the most
complex, voiced aspirated stops 145 occurrences. As these figures indicate, the scale of preference for the four stop types is maintained throughout. Further, these stops are more or less competitively utilized in this communicatively important word initial position due to the powerful impact of communication.

On the other hand, of the 784 final occurrences of the stops in the monosyllabic words, the voiceless unaspirated stops have 474 occurrences, followed by the voiced unaspirated stops 262 occurrences, the voiceless aspirated stops 41 occurrences, and the voiced aspirated stops 7 occurrences. That is, the simplest, voiceless unaspirated stops are additionally favored and the most complex, voiced aspirated stops are additionally disfavored in this communicatively least important word final position. This sharp skewing in favor of the favored voiceless unaspirated stops and against the disfavored voiced aspirated stops in this position is brought forth by the interaction of human preference for simpler phonological units, and lesser communicative impact at the end of the word.

Comment 3: Interaction of the Orientations:

Vision and Communication

As seen in the column for labial stops in the table above, of the 445 labial occurrences in the monosyllabic words, 331 stops appear in communicatively important initial
position of the word, whereas only 114 stops appear in communicatively least important final position of the word. That is, the initial labial stops appear in a ratio of almost 3 to 1 the final labial stops. This extraordinary skewing in favor of the word initial labials is brought about jointly by the visibility factor of the labial articular and greater communicative load. However, the extraordinary disfavoring for the labial stops in the word final position is attributed to the joint interaction of the minimum communicative load the the inverse impact of the visibility of the labial articulator.

Section B: Summary

In the Introduction, we have dealt with the historical setting of Hyderabad Urdu, the field procedures utilized in the collection and analysis of the data, the theoretical principles that motivate the phonological analysis, and the scope of the study in section A, B, C and D, respectively.

In Chapter I, we have made an effort to briefly present the physiological base of Deccani Urdu phonology in terms of the orienting principle of physiological mechanism of Columbia school of linguistics. Here an attempt has been made to provide justification for the phonological skewings that are encountered in the paradigmatic make-up and the syntagmatic distribution of the word in Deccani Urdu, in terms of the physiological parameters of articulators and apertures.
In section A, we have presented the phonological grid of Deccani Urdu (Diagram 1-1), followed by explanatory comments dealing with the different aspects of the grid. Although the phonological units in the grid have primarily established by contrast through minimal and subminimal pairs in terms of the orienting principle of communication, these phonological units have been appropriately placed on the intersections of the relevant axes of articulators and apertures on the basis of their substantive characteristics in terms of the physiology of the vocal tract.

We have established 9 degrees of aperture, and 8 articulators for the placement of phonological units in the grid of Deccani Urdu. The degrees of aperture are subjected to two broad divisions, namely, the constriction versus opening, and the clearly audible versus less clearly audible. The former is primarily based on physiological mechanism whereas the latter division is mainly based on acoustic medium.

The articulators that are particularly relevant to the production of phonological units in Deccani Urdu, are the labia, the apex, the medium, the front dorsum, the back dorsum, the velum, and the glottis.

On the intersections of relevant articulators and apertures, we have established 60 phonological units. Of these 60 phonological units, 56 are fullfledged “phonemes”. The other 4 units are non-distinctive positional variants that
appropriately fill some empty intersections on the phonological grid, and have therefore been raised to the status of phonological units. Further, three highly abstract units of V(oicing), A(spiration), and N(asality) have also been placed on the phonological grid. For these three units are superimposed on other, simpler phonological units to produce more complex units, such as, voiced stops, voiceless aspirated stops, nasal vowel etc., in Deccani Urdu.

In section B, we have evaluated the impact of the hierarchy of adroitness of articulators on the paradigmatic make-up of the consonantal units and their frequency of occurrence in the monosyllabic words in Deccani Urdu. We have set up a scale of adroitness for the articulators, with the apex as the most adroit, the dorsum (and the labium) as more adroit, the medium as less adroit, and the post dorsum as the least adroit. In accordance with this scale relationship, we predicted that the apical consonants should be most favored both in the number of units and in their frequency of usage in the word, followed by the dorsal or labial consonants, the medial consonants, and the post dorsal consonants in that order. And it has been amply demonstrated through the actual frequency counts that the paradigmatic and the syntagmatic distribution of phonological units of Deccani Urdu fully conforms to our expectations.
In section C, we have dealt with the medium-dorsum mass as the articulator for vowels. It has been argued that the structure and the shape of the medium-dorsum mass is ideally suited for the formation of the resonant cavities, a necessary requirement for the production of vocalic units of speech in a language. It has been shown through a diagram, that the three articulators, namely, the medium the front dorsum, and the back dorsum, in association with the clearly audible apertures 4 through 9, produce 20 vocalic units in Deccani Urdu.

Of the 20 vocalic units in Deccani Urdu, 8 are produced by medium, 8 by back dorsum, and 4 by front dorsum. It has been noted that notwithstanding the asymmetry of the vocal tract, we encounter a parity in the number of units for the back dorsal vowels vis-a-vis the medial vowels. In defense of this parity, it has been argued that as all the back dorsal vowels are labio-dorsal ("back rounded"), the impact of the angle of the jaw with its vertex at the back, is more than compensated by utilizing the labia as an additional articulator in the production of these vowels in Deccani Urdu.

Further, it has been noted that there is only a two-way horizontal opposition between the medial and the back dorsal vowels in Deccani Urdu. For, as the opposing medial and back dorsal vowels are formed at the fringes of the horizontal axes, there is maximum horizontal space available to the opposing units due to the absence of front dorsal vowels in between
them on their own apertures, which facilitates a relatively easy production and clear perception of these vowels. It is argued that this factor also contributes to the parity of the two types of vowels in Deccani Urdu.

However, it has also been noted that the four-way opposition at the medial and back dorsal axes does create vertical crowding of the vocalic units, and it requires precision of control on the part of the speaker to maintain the acoustic distinction between the opposing units. In conformity with the human trait to disfavor relatively more complex phonological units, it has been established through frequency counts that in comparison with the front dorsal vowels, the medial and the back dorsal vowels are less frequently utilized in the organization of the word in Deccani Urdu.

Finally it has been noted that there is an asymmetry in the number of units for the long (14) in comparison with the short vowels (6) in the vocalic paradigm of Deccani Urdu. It has been argued that this discrepancy in the number of vocalic units is brought forth by the quantitative distinction of the duration itself. The greater duration of the long vowels greatly facilitates their proper production and clear perception by the native speakers. On the contrary, the momentary phase of the short vowels becomes a hindrance in the exact articulation and clear perception of these vowels. In consequence, Deccani Urdu has a rich, 7-vowel system for the
long vowels, for both the oral vowels and the nasal vowels. At the same time, the problems of articulation and perception associated with the short vowels, are satisfactorily resolved in Deccani Urdu by forming a 3-vowel system.

In Chapter II, an attempt has been made to examine the paradigmatic make-up and syntagmatic distribution of the phonological units in terms of human behavior orientation.

In section a, we have dealt with three main dichotomies among the phonological units of Deccani Urdu that are motivated by the human trait of preferring fewer articulators over more articulators. The dichotomies, voiced versus voiceless consonants, aspirated versus unaspirated among the voiceless stops, and nasal versus oral vowels, are characterized by the use of an extra articulator. In view of the preference for fewer articulator, we predicted that the voiceless consonants should be preferred over the voiced consonants, the unaspirated over the aspirated among the voiceless stops, and the oral vowels over nasal vowels in Deccani Urdu. It has been successfully demonstrated through the actual frequency counts that the phonological skewings, as observed in Deccani Urdu, are clearly in conformity with our expectations in terms of fewer versus more articulators.

In section B, we have examined the relation between the apcio-dental ("dental") consonants and the apico-palatal ("retroflex") consonants in terms of the human trait of proximte
versus remote place of articulation. Here we predicated that the apico-dental consonants, produced with proximate place of articulation should be preferred over apico-palatal consonants, produced with remote place of articulation. For it is easier for the apex as an articulator to come in contact with the adjacent place of articulation (the teeth), vis-a-vis the remote place of articulation (the palate). It has been successfully demonstrated through the actual counts that the apico-dental consonants have a preference over apico-palatal consonants, both in the number of units in the paradigm as well as in the frequency of usage in the word in Deccani Urdu.

In section C, we have studied the combinatory aspect of Deccani Urdu phonology through the assimilative trait of neighboring phonological units. In view of the general avoidance of fine, precisely coordinated movement of articulator, we predicted that there should be a favoring for the combination of phonological units that become similar due to the impact of assimilation. The skewed occurrences in favor of the favored and against the disfavored combinations, fully conforms to our expectations in terms of the assimilative trait of neighboring phonological units.

In section D, we have evaluated the impact of degree of aperture change on the combinatory pattern of Deccani Urdu. It has been argued that large changes of aperture which require less precision of control are preferred over small
changes of aperture which require greater precision of control. It is therefore demonstrated through the potential and the actual occurrences of the three types of monosyllabic (CVC, CVCC, CCVC) words of Deccani Urdu that the CVC type which involve larger changes of aperture are drastically favored.

In section E, we have examined how human behavior orientation provides reinforcement to the validity of the phonological units in the grid. The phonological skewings in the grid have been explained in view of the human preference for the phydiologico-acoustically simpler, less complex phonological units.

In chapter III, we have dealt with the orienting principle of communication to provide justification for the paradigmatic and syntagmatic skewings observed in the phonology of Deccani Urdu.

In section A, we have provided communicative justification for 56 of the 60 phonological units, as presented in the phonological grid of Deccani Urdu. These 56 elemental units of communication ("phonemes") are established by way of contrast through minimal and subminimal pairs.

In section B, we have examined the combinatory pattern of the phonological units with a view to highlighting the role of communication in Deccani Urdu phonology. Here it is discussed that the consonantal interchange in the initial and final positions in the CVC type of monosyllabic words brings
about a change in meaning in Deccani Urdu. And it is through the change in the combinatory pattern of the some phonological units that a different word is created in this dialect.

It has been argued that the beginning of the word carries greater communicative load than the end of the word. Thus, in view of the differing communicative load associated with the initial and final positions of the word, we encounter a skewing in the distribution of phonological units in the two positions. It has been shown through the frequency counts that all the four types of consonants (apical, dorsal, labial, and medial) compete well in the communicatively important word initial position. However, the apical consonants, produced by the most adroit apex, are drastically favored vis-a-vis the non-apical consonants in the communicatively less important word final position. This discrepancy in the usage of consonants in the initial and final positions is brought about by the communicative factor.

In section C, we have taken up the phonological merger of consonantal units of Deccani Urdu. It is argued that the phonological units that are characterized with a low communicative load, are merged with the neighboring phonological units.

In section D, we deal with homonymy as a communicative problem. It is argued that languages avoid
phonological mergers for they create a large scale homonymy. Here we have shown that despite the word final deaspiration in Deccani Urdu, we encounter only a few pairs of homonymous words. In addition, only one pair of homonymous words are created as a result of the merger of post-dorsal stop in Deccani Urdu.

In Chapter IV, an attempt has been made to evaluate the impact of vision as on orienting principle on the phonology of Deccani Urdu. We have provided a motivated rationale in terms of vision for the phonological skewings observed in word initial and word final positions, in favor of or against the labial versus non-labial consonants as they appear in the monosyllabic words in Deccani Urdu.

In section A, we have compared the frequency of occurrence for the labial consonants with that of apical, dorsal, and medial consonants, in both the initial and the final position of the monosyllabic words in Deccani Urdu. In section A1, the frequencies of the labial versus the non-labial among the stops have been comapred with a view to evaluating the role of vision in the distribution of consonantal units in the initial and final positions of the monosyllabic words in general, and of the CVC words in particular.

The frequency counts clearly indicate that the labial stops are usually most favored in the communicatively important word initial position, and are usually least favored in
the communicatively insignificant word final position. It is argued that this unusual skewing in the distribution of the stops in Deccani Urdu is motivated by vision as an orienting principle.

In section A2, we have assessed the impact of vision on the frequency of occurrence of the labial versus non-labial among the nasal consonants in the initial and final positions of the monosyllabic words in general, and of the CVC words in particular.

As the frequency counts clearly demonstrate, the labial m becomes the most favored nasal consonant in word initial position, whereas the apical n becomes the most favored nasal consonant in word final position. Again, we argue that this unusual skewing for the labial m in the two positions of the word, is brought about by vision.

In Chapter V, we have made an effort to gauge the impact of some select acoustic aspects that have a bearing on the make-up and distribution of phonological units in Deccani Urdu.

In section A, we have dealt with the acoustic base of the clearly audible versus the less clearly audible distinction of apertures. On the basis of audibility, we have classified 60 phonological units of Deccani Urdu into 20 vocalic units and 40 consonantal units. This classification is reflected in the
organization of the phonological units, as seen in the phonological grid of Deccani Urdu.

It has been noted that the audibility provides the theoretical basis to divide the lexical units into the monosyllabic, the bisyllabic, or the longer words on the basis of the combination of keystone and flanking units.

In section B, we have dealt with how two resonant cavities are formed within the supraglottal cavity and evaluated the role that these two cavities play in the production of vowels in a language.

In section C, we have provided the acoustic rationale for the rounding of the lips in the production of back dorsal vowels.

In section D, we have provided acoustic justification for the four-way classification of stops, and tried to gauge the impact of this classification on the frequency of usage of these stops types in the monosyllabic words in Deccani Urdu. As a yardstick, we have set up the scale of preference for the four stop types, and we predicted that the voiceless unaspirated stops should be most favored, the voiced unaspirated stops more favored, the voiceless aspirated stops less favored, and the voiced aspirated stops least favored. The fuller utilization of the opposing stops by forming 5 units each in the phonological paradigm is motivated by the communicative need for a greater number of distinctive units.
However, the marked skewings in the frequency of usage for the four stop types in the syntagmatic organization of the word, conforms to our expectations in terms of the degrees of preference based on the phydiologico-acoustic and human behavior constraints in the production of these stops.

**Section C: Conclusions**

We may conclude with the following observations:

1. A total of 60 phonological units (40 consonantal and 20 vocalic) have been set up for Deccani Urdu of Hyderabad, as presented in the phonological grid (Diagram I-1).

2. The phonological grid of Deccani Urdu though looks similar, is basically different from the “phonemic inventory” of the traditional American phonemicists. In Columbia school phonology and American descriptive phonemics, the basic phonological units (or the “phonemes”) of a language are established by contrast through minimal and subminimal pairs. However, as this procedure involves the recognition of meaning, the descriptive phonemicists use it as a short-cut for discovering the “phonemes”. For they insist that the “phonemes” must formally be established thorough distributional-substitutional criteria. In Columbia school phonology, it is perfectly all right to make full use of meaning for the identification of phonological units. For the phonological unit (the “phonemes”) is recognized as an
elemental unit of communication, and communication is an important orienting principle for phonological analysis.

(3) Unlike "phonemic inventory", the phonological grid is not just a mere listing of the phonological units. For the phonological grid highlights the value relationship of these units. Further, the phonetic substance of the phonological units in the grid is determined by the physiological parameters of articulators and apertures. Therefore, both phonetic substance and phonological value are weighed on equal scales in the present phonological analysis.

(4) An important theoretical difference between Columbia school phonology and American descriptive phonemics is that, in traditional phonemics, the physiological classification of speech sounds is treated as a non-linguistic level under articulatory phonetics. But in the present analysis, physiological mechanism is a problem solving device (an orienting principle) that provides a motivated rationale for the particular substantive make-up of the phonological units and the interrelationships of these units in the organization of the phonological grid and in the formation of morphemes and words in Deccani Urdu, as in any other language.

(5) The phonological analysis presented here, departs radically from the traditional analysis in that here we provide an explanation of the non-random distribution of phonological units in both their paradigmatic interrelationship in the grid
and their combinatory characteristics in the syntagm, in terms of independently known and verifiable principles of physiological mechanism, communication, human behavior, vision, and acoustic medium.

(6) The thesis contains both theoretical and methodological innovations in the study of Deccani Urdu phonology. The analysis presented in this thesis abandons description in favor of explanation, and provides quantitative procedures for the attestation of the hypothesis. The result of the present study support our claim that phonology is not random but motivated.

The evidence that we have presented for the establishment of the phonological grid of Deccani Urdu with 60 phonological units, and for their non-random distribution in the various positions of the words in terms of the phonological principles of Columbia school of linguistics, seems to prove the validity of our analysis beyond doubt. This thesis may not only explain the inner mechanism of the Déccani Urdu phonology, but may also contribute to our understanding of the phonological theory that presents new procedures for the validity of phonological units, and their particular distributional patterns.