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A Phonetic and Phonological Study of the Consonants of English and Arabic

by

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TABLE OF CONTENSTS

A PHONETIC AND PHONOLOGICAL STUDY OF THE CONSONANTS OF ENGLISH AND ARABIC

ABSTRACT

Since a contrastive analysis of any two languages will give us a clear picture of the areas of difficulty that the learners of a foreign language face, the researcher, as a teacher of English as a foreign language to Yemeni learners felt that it is vitally important to contrast the two languages—English and Arabic.

As a teacher, the researcher has noticed peculiar phonetic and phonological features in his learners' spoken English. So in this dissertation the researcher has attempted a contrastive analysis of one aspect of his learners' mother tongue with that of English. The area chosen for contrastive analysis is a phonetic and phonological study of the consonants of English and Arabic.

In chapter one of this dissertation, the researcher has discussed the value of contrastive analysis between the two languages and the pedagogical implications of such a study. The chapter also discusses briefly the relationship between linguistics and phonetics and the relationship between phonetics and phonology.

The second chapter is a brief outline of the aim and scope of the study. This chapter also gives reasons for choosing Classical Arabic and Received Pronunciation as the dialects to be compared and contrasted and the factors motivating this research.

In the third chapter, since this is a phonetic study, the researcher has discussed briefly the vocal organs that play an important role while producing sounds and the classification of speech sounds.

Chapter four has been devoted to the classification and description of the consonants of English and their occurrence in different positions in a word.

In chapter five, the researcher discusses the consonants of Arabic in the same way in which the consonants of English have been described and discussed in chapter four.

Chapter six is a chapter devoted to a contrastive analysis of the two systems. The points of similarities and dissimilarities between the two languages have been pointed out. This chapter also discusses those sounds in pronouncing which an Arabic learner of English may face problems and the pedagogical implications of this study.

INTRODUCTION

Language is used by human beings for the purposes of linguistic communication. Of course, language is not the only mean of communication. Communication is quite possible without the use of the language. For example, a dog barks and informs its master of the approach of a stranger. A child cries and informs its mother that it is hungry, thirsty or uncomfortable. In both the examples we have cited above, communication does take place, but these are examples of non-linguistic communication. In this research we will deal with linguistic communication.

A language can be used in one of two ways for the purposes of communication. We either speak the language or write in it. Whether to speak the language or to write in it, we use the same language but we do not use it in the same way. On each occasion, we use a different medium. When someone says something, he uses the spoken medium of language (aural medium) and when someone writes something and shows it to others, he uses the written medium of language (visual medium).

The medium of speech is more important than the medium of writing. This is because in the history of any language community, speech comes first and then writing follows, perhaps centuries later. Secondly, any human being in any society learns to speak first and then, long after this, he learns to write. Thirdly, the medium of speech is used much more than the medium of writing as a vehicle of communication by any society, anywhere in the world. Fourthly, writing is only an attempt to put down on paper the sounds that occur in a language, using graphic

symbols. Each letter of the alphabet of a language represents a sound (some letters represent more than one sound in several alphabets) that occurs in that language. Lastly, modern technology has contributed tremendously to the importance of speech - modern inventions like the telephone, the radio, the tape recorder and several such devices have raised several problems that are concerned with the spoken medium of communication.

Having established the importance of the spoken medium, it is not surprising to find that there is a special branch of linguistics that deals exclusively with speech. And that there is no branch of linguistics which deals exclusively with writing.

Linguistics is a systematic study of language. In fact the branch of linguistics that deals exclusively with the spoken medium of language is called phonetics. This branch of linguistics deals with the production, transmission and reception of the sounds of human speech. In the following chapters we shall look into some of these.

CHAPTER ONE

Contrastive Linguistic Analysis

1.1 General Remarks

It is a common belief that the learner's first language (which he learns in his infancy and therefore is well established in his mind) superimposes itself on the language he acquires later on in life when he attempts to learn a second language. The "foreign accents" in the second language (L2) speech of learners are the clearest support for this belief. When an Arab speaks English, his English sounds like Arabic. The learning of the new set of structures of any foreign language after the acquisition of the set of habits of the first language (L1) (mostly the mother tongue) is, therefore, bound to present problems, owing to the belief that the role of the L1 in second language acquisition is a negative one. That is, the influence of the L1 gets in the way or interferes with the learning of the L2, in such a way that features of the L1 are transferred into the L2, because the transfer, as Lado (1963) argues, is usually in one direction, from the native language to the foreign language or from L1 to L2.

1.2 Contrastive Linguistics and Language Teaching

Linguistics can be applied to many fields and language teaching is one of them. In this section let us briefly analyze the part played by linguistics in language teaching. Linguistic studies began in the world several centuries ago. For a long time, linguists have been looking at points of similarities and dissimilarities between

languages. Until the middle of the twentieth century, such a study was done purely for linguistic purposes—contrastive linguistic analysis was thus an end in itself. In 1957, Robert Lado changed the situation by publishing his epoch-making book *Linguistic Across Cultures.* A new era in linguistic studies and in language teaching began in the 1960's. The application of linguistics to language teaching, particularly foreign language teaching, gained ground across the world.

Lado's publication set in motion an important academic discipline. Lado's *Linguistic Across Cultures* was followed by many such useful publications in the form of books and research articles published in linguistic journals across the world. These discussed the various problems in foreign language teaching and the pedagogical implications of Contrastive Analysis.

Linguistics soon extended its scope. From what was an aid to the pronunciation of religious texts and from what was a study just for its own sake, linguistics came to be looked upon as a useful tool by people engaged in several disciplines. One such discipline is language teaching.

Linguists provide a description of languages and people engaged in teaching these languages gain useful insights into the languages from these scientific descriptions and use the description in their language classroom. A native speaker of English teaching English to other native speakers of English knows how to pronounce the various allomorphs of the plural morpheme, but he may not be aware of the rules governing the different phonological realizations of the plural marker *–s* or *–es.* A casual glance at a systematic description of English makes available to him a treasure-house of information regarding this. Again, a native speaker English teacher has no

hesitation in pronouncing *hanger* as /haŋə/ and *hunger* as /hʌŋgə/. He, inspite of his proficiency in the most effective use of his language, may not know why the two letters *–ng-* occurring in the middle of English words have two different pronunciations. A linguist provides him with the answer and a very simple, easy-to-remember rule. The teacher, in his turn, can tell his learners the same rule and thus ensure that his pupils have a reasonable chance not to make a mistake while attempting to pronounce word-medial *–ng-*.

The application of linguistics to foreign language teaching or second language teaching is tremendous. A person engaged in teaching any language as a foreign language gains very useful insights into the linguistics of the language he is teaching from a scientific description of the language made by a linguist. He will be at a double advantage if he knows something about the linguistics of the language that he is teaching as a foreign language and also about the language which he and/or his pupils speak as their mother tongue. This important role played by linguistics in language teaching leads us to a discussion of what is known as *Contrastive Analysis.*

1.3 Contrastive Analysis

Any comparison of languages depends on description and the process of conducting a contrastive analysis is taken in the order description and comparison. "The minimum requirement of 'parallel description' as James (1980) explains, is that the two languages be described through the same model of description because if the 'same' data from L1 and L2 are described by two different models, the descriptions are likely to highlight different facts of the data". Basically, contrastive analysis is

deeply rooted in 'structuralism'; that is, early contrastive studies were carried out in the structural framework, a model of structuralist linguists (e.g. Bloomfield 1933; Fries 1952; Lado 1957). According to Sridhar (1980), 'Taxonomic contrastive analysis demonstrated the differences and similarities between languages in terms of similarities and differences in (i) the form and (ii) the distribution of comparable units, comparability being based on nothing more spectacular than "gut feelings". This process stressed the significance of detailed 'scientific description' of languages rested upon a description of the various categories that constitute the patterns of a language. The differences among languages as Bloomfield (1933) notes were great to the extent that it was kind of impossible for scholars to set up any system of classification that would be suitable for all languages. It is obvious that contrastive analysis is deeply rooted in structuralism and almost all the contrastive analysis activities followed the structural grammatical model.

With the arrival of Chomsky's generative grammar theory, a new approach for contrastive analysis was offered to replace the taxonomic approach. For Chomsky's (1965) theory of grammar, contrastive analysis should be based on universal categories that can be found in all natural languages. Thus, the theory criticized taxonomic contrastive analysis and descriptive linguistics as well for their preoccupation with surface structure of language (Di Pietro, 1971). Contrastive analysis has profoundly been influenced by TG model in three aspects, as Sridhar (1980) suggests. These three aspects are (1) "the universal base hypothesis"; (2) the deep and surface structure distinction; and (3) the rigorous and explicit description of linguistic phenomena. The universal base hypothesis, it is claimed, provides a sounder theoretical foundation for contrastive analysis when contrasted with the structuralists'

relative hypothesis. The assumption that all languages are alike at an abstract, underlying level provides, theoretically at least, a basis for comparability.

1.4 The Aim of Contrastive Linguistics

The main concern of Contrastive Linguistics is to facilitate language teaching, particularly foreign language teaching. A good linguistic analysis of two languages—the mother tongue of the students and the foreign language they are learning—helps in producing effective teaching materials in the foreign language that is being taught, taking into account the points of linguistic similarities and dissimilarities between the two languages in question. Fries (1952) presents this role of contrastive linguistics in these words: "The most effective materials are those that are based upon scientific description of the language to be learned, carefully compared with a parallel description of the native language of the learners."

In fact, it is not only comparing languages which is the tool of this science called Contrastive Linguistics. As the name of the discipline indicates, contrasting languages is as important as comparing them. It is in fact the result of contrastive linguistics that is important as Nickel (1971) puts it. According to him, "Applied Contrastive Linguistics does not aim at drawing the pupils' attention constantly and systematically to language contrasts. Its objectives, rather, is to aid the textbook author in collecting and arranging his materials and to help the teacher in presenting his subject-matter."

A teacher, who is engaged in teaching a foreign language, if he is a linguist as well, can do both jobs—(a) comparing and contrasting his pupils' L1 and the target language and (b) applying his findings to his teaching—very effectively. One of his

jobs will complement and supplement the other. But not all teachers are linguists, nor are all linguists teachers. In a situation where the teacher and the linguist are two different persons, they can aid each other in their jobs. The teacher has an effective role in directing the research of the linguist. The teacher is the person who has first-hand knowledge of the areas of difficulty of his pupils. He knows, through his everyday contact with his pupils, the areas in which his pupils commit mistakes systematically. Most errors highlight mother tongue interference. He can attribute the errors made by his students to linguistic dissimilarities between the two languages. The teacher thus enriches the field of Applied Linguistics, though he himself is not a linguist. The relation between learners' errors and contrastive linguistics has been aptly described by Lado (1963) when he says: "the individuals tend to transfer the forms and meanings of their native language and culture to foreign language and culture— both productively when attempting to speak the language and act in the culture, and receptively when attempting to grasp and understand the language and the culture as practiced by natives."

1.5 Linguistics and Phonetics

While linguistics and phonetics have their different specialized roles in the study of language, the difference between them is less important than that which they have in common and which distinguishes them from other disciplines, including those involving some considerations of language, namely the study of language in its own right and for its own sake. To stress this essential unity of purpose and scope, some people use the term 'linguistics' to cover both, subsuming phonetics as one part of linguistics. This is quite acceptable, but raises the difficulty that there is then no single

name for that part of 'linguistics' which is not phonetics, and such a term is quite often needed in practice. The alternative, which we have adopted here, is to use *linguistics* and *phonetics* as mutually exclusive terms and to group them together as 'the linguistic science'. There was a practical convenience in separating the two when phonetics became a laboratory subject in the 1920s: it became possible for instrumental phonetics to dissociate itself from other aspects of linguistic theory, and indeed it was necessary for its own development that for a time it should do so. Linguistics did not become a laboratory subject till the 1950s, with the coming of tape recorders and computers into general use; even now computers are only just beginning to be widely used in the study of language. But the period when phonetics can profitably be separated from linguistics is now past; instrumentation on the one hand and theoretical developments on the other have reintegrated the two in the light of new observations and experience.

As far as those working in the linguistics sciences are concerned, they tend to be specialists either in linguistics or in phonetics. In general, a linguist needs to be a competent phonetician and a phonetician a competent linguist: especially so if he is a teacher of his subject. In research there is work for specialists distributed at all points along the scale, at the extremes as well as in the middle. Some laboratory phoneticians, qualified in physics or physiology may be very little involved with linguistics; while some linguists, especially if mathematically trained and oriented, may not be directly concerned with phonetics. Even then, each must be aware of the results obtained by the other. In the middle of the scale, there are those who specialize precisely in the meeting-ground of linguistics and phonetics, namely, in phonology. The real point is that neither subject flourishes if cut off from the other; this is perhaps

worth stressing to anyone who may be discussing the introduction of such studies into a college or university. The role of linguistics and phonetics in language teaching is not to tell the teacher how to teach. The teacher of the language is as much a specialist in his field as the linguist is in his, and will remain so. It is obviously desirable that the underlying description should be as good as possible, and this means that it should be based on sound linguistic principles.

This is the main contribution that the linguistic sciences can make to teaching of language: to provide good descriptions. Any description of a language implies linguistics; it implies, that is, a definite attitude to language, a definite stand on how language works and how it is to be accounted for.

1.6 Phonetics and Phonology

By the time a child goes to school and begins to learn a foreign language, the articulatory movements and perceptual strategies that he needs for communication in his own language are well established. He has learned to produce a very wide range of phonetically different sounds in speaking his own language in different situations and at different speeds. He has learned to interpret a very wide range of phonetically different sounds spoken by adults and children of varying social and dialectal backgrounds. If he hears a foreign word, he will recognize the sounds of the word in terms of the categories of his native language, unless the word contains a sound which is so exotic that he has not encountered it as a speech sound before. For instance if he hears one of the 'clicks' which occur in the 'click languages' of South Africa used as a speech sound, he will perceive this as something exotic, something which will not fit into any of the linguistic categories of his native language. Most sounds in most

foreign languages will occur as phonetic sounds either in his own speech or in the speech of those he hears around him. The child is so accustomed to unraveling an obscure acoustic signal, to making sense out of a very unclear message, that he finds little difficulty in dealing with a foreign word. He deals with it in the familiar way. He assigns each sound to the most reasonable of his established phonological categories. Then, when he is asked to reproduce the word, he pronounces it in terms of good clear members of each category. He hears the foreign word in terms of his own categories and he pronounces the foreign word in terms of these same categories.

We need to consider carefully what is meant by 'phonetically different sounds' and what is meant by 'phonological category' and what is the relationship between them. Let us begin by deciding what is meant by 'phonetically different sounds'. One sound, one actual physical acoustic event, may be said to be phonetically different from another sound if it can be shown to be measurably different on some scale—if it is louder, or longer, or higher in pitch, or if the structure of the acoustic waveform is different in some other measurable way. If I say the word *oh* carefully, three times in succession, it will be possible to show, by measuring the acoustic record, that in each case the waveform is slightly different. The physical sound is different. If three different native speakers say *oh,* the word may be shown to have strikingly different acoustic characteristics in each event. The sounds are phonetically different. If each of the speakers is x-rayed while he pronounces the *n* in *no* we will see that each speaker makes slightly different movements—a slight different area and amount of the tip and/or blade of the tongue is placed against a slight different area of the ridge behind the upper teeth for a longer or shorter time. Moreover, to begin with, there will be physiological differences between the speakers' tongue and the configurations of the

ridges behind their upper teeth. It would be possible to measure the differences between these speakers' gestures, this time in articulatory terms. The sounds produced by these gestures are, again, phonetically different. The infinitely wide range of phonetically different sounds produced by the members of a speech community will be identical, similar to or different from each other in terms of the phonological categories that characterize the speech habits of the community.

Phonetics provides us with a tool, a set of descriptive terms, by which we can describe, as minutely as is necessary for the task in hand, a particular physical sound and the gestures that produced it. It is a tool that is particularly useful for the pronunciation of a given sound and to teach the student to correct his pronunciation in a controlled and explicit way. It enables him to say 'that's better' when a student is moving his articulators in the right direction but has not yet achieved the right sound. The difficulty for the teacher who knows no phonetics is that there is no intermediate point between the 'right' and the 'wrong' sound. He has no way of detecting or of encouraging progress. He has no way of detecting, when a student changes one 'wrong' pronunciation for another, whether the change constitutes a step in the right direction, which should be consolidated, or whether the student has quite arbitrarily shifted a position which was in fact reasonably correct to begin with. A speech sound is produced by a number of articulatory variables—lip position, state of the glottis, to mention only two. If the student produces a 'wrong' sound only one of these variables may be at fault, but a teacher ignorant of phonetics will insist that the sound is the 'wrong' sound. Suppose he is trying to teach a student to produce an English [v] and the student produces instead a very creditable [f]. The student has everything correct except for the 'voicing' variable—the state of the glottis. If the teacher now says 'No,

that's still the wrong sound', without indicating that the student should hold on to the lower lip upper teeth position, the student may shift this variable in his attempt to find the 'right' sound and move even further away from the sound the teacher is trying to elicit. Phonetics offers the teacher a tool with which, in a controlled and systematic way, he can diagnose errors in pronunciation and devise strategies for correction.

We have seen that phonetically different sounds are physical sounds that are measurably different either in acoustic or articulatory characteristics. We turn now to consider what is meant by 'phonological category'. We mean that the child hears many phonetically different sounds but interprets them in terms of the phonological categories of his mother tongue. He hears the phonetically different vowel sounds in *oh* spoken by three native speakers and perceives them all as belonging to one phonological category [əʊ]. He hears *oh* pronounced by an Englishman, a Scotsman and Irishman and, despite the wide variety of phonetic differences, he recognizes all these utterances as pronunciations of *oh.* His phonological category /əʊ/ embraces not only the many possible phonetic variants of /əʊ/ in his own speech—as in *whole, roam, and coat*—but also those of different speakers of different accents. He will certainly be aware that they speak with different accents but this will very rarely affect this ability to understand what they say. It is important to note, however, that although his phonological category /əʊ/ embraces such a wide variety of phonologically dissimilar sounds, he will have a very distinct idea of how he himself ought to pronounce this vowel in a word spoken slowly and clearly in its citation form. If he is asked to pronounce a foreign word that he regards as similar to an English word, he

will produce the clear explicit form which he associates with the English citation form. An English child may produce from time to time in his own language a vowel very like the front rounded vowel in French *tu* (thou). In a form like 'Happy New Year' /hapɪnjʊjɪə/ the back rounded /ʊ/ vowel may be pulled forward by the surrounding /j/s in a fairly rapid style of utterance. The child is used to classifying a stimulus like this fronted vowel as a member of the category /ʊ/ and he is not consciously aware that this phonetic sound is different from any other realization of the category /ʊ/. When he is asked to interpret the French signal *tu* [y] he perceives it to be like his own 'too' /tu:/. When he is asked to repeat the French word he repeats it as the English word 'too'. His ability to produce a front rounded vowel in the sequence 'Happy New Year', where the phonetic context provokes the frontness, is just not available to him independently of the context. The phonetically different sounds are members, or realizations of one phonological category.

The foreign language teacher needs the concepts that phonological theory can provide in order to understand that in teaching the pronunciation of a foreign language he is not simply teaching 'new sounds' to his students. No single physical new sound can be taught, because each example of a phonological category will be phonetically different, however minutely, from every other example. The teacher must appreciate that in teaching a new sound he is very likely to be teaching a range of phonetic sounds that the student has heard before, either in his own speech or in that of speakers of different dialects of his own language. What he is teaching is not a new sound but a new phonological category. A new phonological category, however,

cannot be taught in isolation as though it were in some way self-contained. It has to be part of a system of phonological categories.

CHAPTER TWO

The Aim and Scope of the study

2.1 General Remarks

The *Longman Dictionary of Applied Linguistics* (1987:63) defines contrastive analysis as "the comparison of the linguistic system of two languages, for example, the sound system or the grammatical system. It is based on the following assumptions:

(a) The main difficulties in learning a new language are caused interference from the first language.
(b) These difficulties can be predicted by contrastive analysis.
(c) Teaching materials can make use of contrastive analysis to reduce the effect of interference."

According to James (1980:3) contrastive analysis "is a linguistic enterprise aimed at producing inverted (i.e. contrastive, not comparative) two-valued typologies (a contrastive analysis is always concerned with a pair of languages), and founded on the assumption that languages can be compared."

With this in mind, it is inevitable and vitally necessary for one to make a contrastive analysis of two languages when one is involved in teaching a language as a second/foreign language to native speakers of another language. It is well known that any person learning a language other than his own is bound to be influenced by the phonetic, phonological, syntactic and even semantic patterns of his mother tongue while trying to master the same features of the language he is learning. In other words, the features of the learner's L1 are bound to influence the same features of the target language of L2.

Since this researcher is a native speaker of Arabic engaged in teaching English to other speakers of Arabic, he thought it fit to attempt a contrastive analysis of one aspect of his students' L1 with that of English. He felt that the contrastive analysis would facilitate his teaching of English. The area chosen for contrastive analysis is a phonetic and phonological study of the two languages—the students' mother tongue and the target language. This area was chosen for this research because phonetic and phonological study plays a significant role in both the languages. A language is a system that operates with a few fixed rules. There are rules governing the phonological, morphological, syntactic and semantic patterns of any language. A linguist analyses a language scientifically to find out the rules governing the way in which the language operates. A linguistic analysis and its findings play a vital role in language teaching. A teacher of any language who has a thorough knowledge of the way in which that language operates and the rules governing the operation of that language will be an efficient and effective teacher of that language. A teacher of spoken English, for example, will be in a better position to teach it if he has knowledge of the phonetic and phonological rules that govern the language. No doubt,

a native speaker who teaches English needs no theoretical knowledge of the phonology of his mother tongue since he has an intuitive knowledge of the phonology of his mother tongue gained through years and years of exposure to a native variety of this language. A non-native speaker of English engaged in teaching spoken English to other non-native speakers of English, on the other hand, will benefit a lot in his teaching if he has some knowledge of the phonological structure of the language.

No doubt, books written on the structure of Arabic, written in Arabic, are available, but one does not find in such books statements about the language made on the basis of a scientific investigation of the language. I, to this date, have not found answers to important questions like the following:

(a) Are the so-called velarised consonants of Arabic really velarised or uvularised or pharyngealised?

(b) Are the consonants that begin the word [ti:n] (figs) and [di:n] (religion) dental or denti-alveolar?

(c) Do Arabic words begin only with consonants, the phonology of Arabic not permitting vowels to begin words?

(d) Is there any way in which we can systematize the pluralisation rules in Arabic?

It is possible that there are books and articles available on the linguistic features of Arabic elsewhere in the world, but we in Yemen are yet to come across a scientific description of Arabic and its many features. I tried, with the help of my supervisor Dr. Balasubramanian, to do an empirical description of the consonant

sounds of Arabic on the basis of an instrumental investigation of these sounds. We do not have any instruments here in Yemen and we attempted to have such an investigation made elsewhere, but our attempts, unfortunately, were unsuccessful. So we have to be satisfied with a description of the sounds of Arabic made on the basis of my and my supervisor's perception.

The aim of this research is to find similarities and differences between Arabic and English. I am, as it has been pointed out elsewhere in this dissertation, a native speaker of Arabic. During my last four years studying in the college and two years teaching experience as a teacher of English, I have come across innumerable linguistic problems faced by my students while engaged in learning English. There are problems in pronunciation, problems in the placement of accent on the correct syllable of a word made up of more than one syllable, problems in concord between the subject and a verb in a sentence, problems in the use of relative clauses, and so on.

In order to find out the possible reason for these problems, I decided to attempt a contrastive analysis of Arabic and English. A contrastive analysis of any two languages, embracing all the features of both the languages is a time-consuming, though fascinating, work. Owing to limitations of time, I decided to contrast one feature of the two languages. It is a contrastive phonetic and phonological study of the consonants of the two languages. A brief account of the part played by this branch of linguistics, phonetics and phonology, has been given in chapters 4 and 5.

It is proposed to examine carefully and in detail the phonetic and phonological patterns of Arabic and compare/contrast them with the same features operating in English, with a view to highlighting the points of similarity and points of dissimilarity between the two systems.

2.2 Dialects chosen for this study

It is a well-known fact that in any language, different varieties or dialects exist. When one attempts a linguistic description of any language, particularly a phonetic and phonological description, one faces a problem. The problem is about the variety or dialect of the language he is going to describe.

Let us take the English language as an example first. English has many dialects like British English, American English, Canadian English, etc. Each one differs from the others in terms of vocabulary, pronunciation and spelling. To illustrate the pronunciation differences between American English and British English for example, the word *either* is pronounced ['aɪðə] in British, but it is pronounced ['iːðə] in American English. The word *neither* is pronounced ['naɪðə] in British English and ['niːðə] in American English. The list will be endless if one goes on finding out aspects of differences between British and American English, or any other English dialect. Arabic, like English, has many dialects. People in the Middle East speak Arabic with different dialect. For example, in the Egyptian dialect the sounds [ɵ] and [ð] are missing and they are often replaced by [s] and [z]. So words like [ɵaːbɪ] (proper noun) and [ðɪkra] (proper noun) will be pronounced as [saːbɪ] and [zɪkra]. The Sudanese also replace the voiceless uvular plosive [q] with the voiced

uvular fricative [ʁ]. Both these sounds exist in different dialects of Arabic as two distinct phonemes, so a word like [qɑ:rɪb] (boat) will be pronounced as [ʁɑ:rɪb]. In the Iraqi dialect the voiceless velar plosive [k] as in the word [ʔɪħkɪ] (talk) is replaced by the voiceless palato-alveolar affricate [ʧ]—[ʔɪħʧɪ].

No doubt that among the varieties of dialects a number of regional dialects exist. This time let us take an example from Yemen. The most peculiar example can be taken from the dialect of the people who come from Hadramout. In this area the sound of the letter ق [q] is replaced by the sound [g], so these people will not say /qamar/ (moon) instead they will say /gamar/.

In a previous section of this chapter we have discussed the existence of different varieties in both languages English and Arabic. So what do we choose from all these varieties for a linguistic study? From all these dialects I have chosen RP (Received Pronunciation) because this variety forms the basis of printed English in newspapers and books, it is used in the mass media and it is used as a model in teacher-training institutions. It is the variety we normally try to teach those who want to learn English as a foreign language. It is also the variety of English which is easily intelligible the world over. For Arabic I have chosen Classical Arabic because it is the official language in the Arab World and because every speaker of Arabic understands his own colloquial variety and also Classical Arabic since it is the language of the Holy Qura'an.

2.3 Motivation

Since the researcher is a native speaker of Arabic engaged in teaching English to other speakers of Arabic, he often hears /bæk/ instead of /pæk/, thus, obliterating the minimal pairs distinction between *back* and *pack.* Similarly, /fæn/ instead of /væn/, also obliterating the minimal pair distinction between *fan* and *van.* The teacher is at a loss to know why there are such wide divergences between RP and what can be called, loosely, Arabic English. So a detailed account of the phonetics and phonology of the English consonants is vitally necessary particularly for a teacher of English as a foreign language.

The ideal thing would be to attempt such an analysis supported by instrumental evidence. In the absence of any instruments for phonetic research available in Yemen, the writer had to be content with an analysis based on his own perception, supported by that of his supervisor, an expert phonetician. This analysis will be compared and contrasted with the English consonants with a view to finding out the similarities and divergences between the two systems. It will, then, be possible to pinpoint the area of difficulties for native speakers of Arabic using English for communication.

The next three chapters deal with a detailed phonetic and phonological study of the consonants of English and Arabic

CHAPTER THREE

Articulatory Phonetics

5.1 General Remarks

Phonetics is concerned with the articulation of speech sounds and the production of speech and the branch of phonetics that deals with this is called *Articulatory Phonetics.* Since we are concerned with articulatory phonetics in this dissertation let us discuss very briefly what speech sounds are and how they fall into patterns.

5.2 The Vocal Organs

Before going into the details of this branch of phonetics, it is not out of place to say something about the parts of the human body that are involved in the production of speech. These parts of the human body are commonly referred to in phonetic literature as *the organs of speech* or *the vocal organs.*

The way in which speech is produced with the help of the vocal organs is called *the speech mechanism.* This mechanism operates with the help of three systems. The three systems work in a systematic and complicated way and the

organs belonging to each group are put together to form a system. These three systems are (a) the Respiratory system, (b) the Phonatory system and (c) the Articulatory system.

The respiratory system is important in speech production since the basic source of power in the articulation of most speech sounds is the lung-air being pushed out. Air from the lungs goes up the windpipe (the trachea, to use the more technical term) and into the larynx, at which point it must pass between two small muscular folds called *the vocal cords.* If the vocal cords are wide apart, as they normally are when breathing out, the air from the lungs will have a relatively free passage into the pharynx and the mouth. But if the vocal cords are adjusted so that there is only a narrow passage between them, the pressure of the air-stream will cause them to vibrate. Sounds produced when the vocal cords are vibrating are said to be *voiced,* as opposed to those in which the vocal cords are apart, which are said to be *voiceless.*

The parts of the oral tract that can be used to form sounds are called articulators. The articulators that form the lower surface of the oral tract often move toward those that form the upper surface. The names of the principal parts of the upper and lower surface of the vocal tract will be discussed in the next chapters. Human beings are able to produce many more speech sounds which are different from each other and it is necessary to classify them.

5.3 Classification of Speech Sounds

Speech sounds are very broadly divided into two categories, namely, *Vowels* and *Consonants.* Vowels are speech sounds articulated with a free oral passage for the

lung-air to escape. Consonants, on the other hand, are articulated with either total obstruction of the air-passage or with a narrow oral passage so that the air escapes with friction. Vowels are further classified taking into account the part of the tongue used, the height to which the tongue is raised and the position of the lips during their articulation. Consonants are classified further taking into account the state of the glottis during their articulation, the place of articulation and the manner in which a sound is articulated.

In the following chapters we shall attempt a detailed discussion of the consonant sounds that occur in English and Arabic.

CHAPTER FOUR

The Consonants of English

4.1 General Remarks

A consonant is "a speech sound where air-stream from the lungs is either completely blocked (stop), partially blocked (lateral), or where the opening is so narrow that the air escapes with audible friction (fricative). With some consonants (nasal) the air-stream is blocked in the mouth but allowed to escape through the nose." (Richard, 1971).

Thus, it is possible to abstract from a continuous utterance of English, by means of a process of commutation, twenty-four distinctive units[1] which are consonantal both in terms of their function (i.e. they tend to be non-central or marginal in the syllable) and also, in the majority of cases[2]; in terms of their phonetic form (i.e. they have, at least in some of their realizations, articulations involving the obstructions or narrowings which produce, acoustically, a noise component).

[1]No phonetic analysis of the consonants of English was done for purpose of this dissertation since it has been already established by famous native-speaker phoneticians that RP does have forty-four distinctive phonemes, excluding the voiceless labio-velar approximants [M] which is a distinctive phoneme, distinct from the voice [W], in the speech of some native speakers of English.

[2]Some of the realizations of /r/, /j/ and /w/ are vowels in their phonetic form or, to use Pike's terminology, they are non-syllabic vocoids.

When the English consonants are classified according to their manner of articulation, they fall into the following groups:

Plosives (6)	/p, b, t, d, k, g/
Affricates (2)	/ʧ, ʤ/
Nasals (3)	/m, n, ŋ/
Lateral (1)	/l/
Fricatives (9)	/f, v, θ, ð, s, z, ʃ, ʒ, h/
Frictionless continuant (1)	/r/[3]
Semi-vowel (2)	/w, j/

When, on the other hand, these consonants are classified according to the place of articulation. They fall into the following groups:

Bilabial (4)	/p, b, m, w/
Labio-dental (2)	/f, v/
Dental (2)	/θ, ð/
Alveolar/ (6)	/t, d, n, l, s, z/

[3]The letter r in English is pronounced in a number of different words. The phoneme which we symbolize /r/ has thus several allophones, and only one of these allophones is a frictionless continuant. The phoneme itself described as a frictionless continuant here for the sake of descriptional convenience.

Post-alveolar (1)	/r/
Palato-alveolar (4)	/ʧ, ʤ, ʃ, ʒ/
Palatal (1)	/j/
Velar (4)	/k, g, ŋ, (w)/[4]
Glottal (1)	/h/

Of these 24 consonant phonemes, nine consonants are voiceless: /p, t, k, ʧ, f, θ, s, ʃ, h/ and the remaining 15 are voiced: /b, d, g, ʤ, m, n, ŋ, l, v, ð, z, ʒ, r, w, j/

4.2 Classification of English Consonants RP

The twenty-four distinctive consonants in English (RP) are tabulated below. The first symbol of a pair in any box represents the voiceless sound and the second the voiced.

[4]The symbol w has been included both under bilabial and under velar. It is because, strictly speaking, a labio-velar sound. To avoid counting it twice, it has been written within brackets against the category *velar*.

Manner \ place	Bilabial	Labio-dental	Dental	Alveolar	Post-alveolar	Palato-alveolar	Palatal	Velar	Glottal
Plosive	p b			t d				k g	
Affricate						ʧ ʤ			
Nasal	m			n				ŋ	
Lateral				l					
Fricative		f v	Θ ð	s z		ʃ ʒ			h
Frictionless continuant					r				
Semi-vowel	w						j	(w)	

Table 1. The Consonants of English

4.3 Description of the Consonants of RP English

4.3.1 Plosives

A plosive sound is articulated with a stricture of *complete closure and sudden release.* There are three stages in the production of a plosive consonant. They are:

i) The *closure or closing stage*—the two articulators come together and make a firm contact with each other.

ii) The *hold or compression stage*—the two articulators remain in contact for some time.

ii) The released or explosion stage—the two articulators separate and the air escapes with a slight explosive sound. During these three stages, there is a velic closure, i.e. the soft palate is raised and the nasal passage of air is shut off completely.

During the articulation of a voiced plosive, the vocal cords vibrate during all the three stages. During the articulation of a voiceless plosive, the vocal cords are wide apart during stage 1 and 2. If the vocal cords start vibrating simultaneously with stage 3, the plosive is said to be unaspirated. If the vocal cords start vibrating a little after stage 3 is completed, the plosive is said to be aspirated.

RP has three pairs of plosives: bilabial /p, b/, alveolar /t, d/, and velar /k, g/. /p, t, k/ are voiceless, and /b, d, g/ are voiced.

4.3.1.1.4 Bilabial plosive /p/ and /b/

During the articulation of the principal allophones of /p/ and /b/, the soft palate is raised and therefore the nasal passage of air is closed completely. At the same time, the two lips are in firm contact with each other and so the oral passage of air is also closed completely. Lung air is compressed behind these closures, during which stage the vocal cords are held wide apart stage for /b/ according to its

situation in the utterance. When the two lips are separated suddenly, the air escapes with an explosive sound.

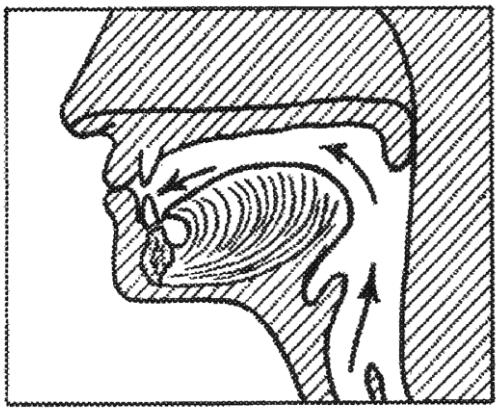

Figure (1) -- /p, b/

On the basis of the articulatory description of /p/ and /b/, we can label them as:

/p/ is a voiceless bilabial plosive.

/b/ is a voiced bilabial plosive.

4.3.1.4.1 The allophones of /p/ are four:

(a) /p/ is a heavily aspirated [pʰ] (that is, it is released with a strong puff of breath) when it occurs initially in a stressed syllable as in *pen* [pʰen] and *please* [pʰli:].

(b) /p/ is unaspirated [p] when it occurs in an unaccented syllable and in words in which it is preceded by [s] as in *potato* [pə'tʰeɪ'təʊ] and *stamp* [stæmp˗].

(c) /p/ is nasally exploded [pᴺ] (that is, the oral closure is retained and the velum is lowered so that the air escapes through the nose instead of through the mouth) when it is immediately followed by its homorganic nasal /m/ either within a word or at word-boundaries as in *topmost* ['tʰɒpnməʊst˗].

(d) /p/ is inaudibly released [p˗] when it occurs word-finally or when it is followed by another plosive or affricate as in *cap* [kʰæp˗], *captain* ['kʰæp˗tɪn] and *capture* ['kʰæp˗ʧə].

4.3.1.4 The allophones of /b/ are five:

(a) /b/ is partially devoiced [b] (that is, the vocal cords may not vibrate during all the three phases of its articulation; they may start vibrating only during phase3) when it occurs initially, finally and when it is followed by a voiceless sound as in *bill* [bɔɪl], *cab* [kʰæb˗], *obstruct* [əbs'tʰrʌk˗t˗].

(b) /b/ is nasally exploded [bᴺ] when it is immediately followed by its homorganic nasal /m/, both within a word at word-boundaries as in *submit* [səbᴺ'mɪt] and *Bob made it* [bɒbᴺmeɪdɪt˗]

(c) /b/ is a fully voiced [b] when it is intervocalic and when it is followed by a voiced sound as in *above* [ə'bʌv] and *robbed* ['rɒbˌdˌ].

(d) /b/ is inaudibly released [bˌ] when it is word-final and when it is followed by another plosive or affricate as in *cab* [kʰʌbˌ], *robbed* ['ɒbˌdˌ] and *object (v.)* [əbˌdʒekˌ'tˌ].

4.3.1.2 Alveolar plosive /t/ and /d/

During the articulation of the main allophones of /t/ and /d/, the soft palate is raised and therefore the nasal passage of air is shut off completely. The tip or blade of the tongue makes a firm contact with the teeth-ridge and therefore the oral passage is also closed. Lung air is compressed behind these closures during which stage the vocal cords are wide apart for /t/, but may vibrate for all or part of the compressed stage for /d/ according to its situation in the utterance. When the tip or blade of the tongue is removed suddenly from the teeth-ridge, the lung air escapes with a slight explosive noise.

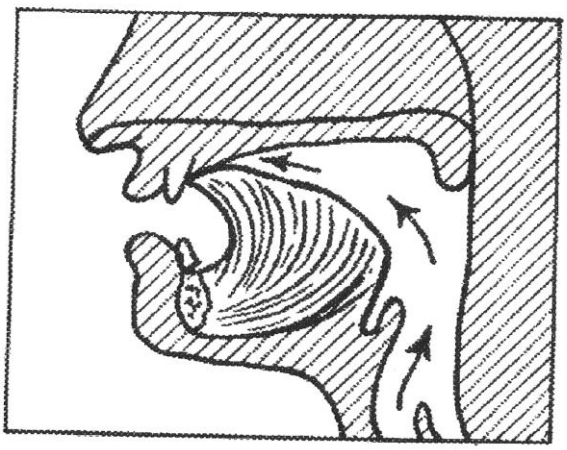

Figure (2) -- /t, d/

On the basis of the articulatory description of /t/ and /d/, we can label them as:

/t/ is a voiceless alveolar plosive.

/d/ is a voiced alveolar plosive.

4.3.1.2.1 The allophones of /t/ are seven:

(a) /t/ is a heavily aspirated [tʰ] when it occurs initially in a stressed syllable as in *time* [tʰaːɪm] and *attain* [əˈtʰeiːn].

(b) /t/ is unaspirated [t] when it occurs in an unaccented syllable and in words preceded by [s] as in *eight* [ˈeɪtɪ] and *stop* [stɒp˗].

(c) /t/ is a nasally exploded [tᴺ] when it is immediately followed by its homorganic nasal /n/ as in *cotton* [ˈkʰɒtᴺn].

(d) /t/ is a laterally exploded [tᴸ] (that is, the central closure is retained and the two sides of the tongue are lowered; the compressed air escapes along the sides of the tongue) when it is immediately followed by its homorganic lateral /l/ as in *bottle* [bɒtˡ ɬ].

(e) /t/ is an inaudibly released [t˺] when it occurs word-finally and when it is followed by another plosive or affricate as in *cat* [kʰæt˺], *catcall* ['kʰæt˺kɔːɬ] and that *church* [ðæt˺ʧɜːʧ].

(f) /t/ is a dental plosive [ ] if it is followed by /ϴ/ as in *eighth* ['eɪ ϴ].

(g) /t/ is a post-alveolar plosive [t] if the following sound is /r/ as in *try* [tʰraːɪ]

4.3.3.3 The allophones of / / are seven:

(a) / / is a partially devoiced [ ] in the speech of some people when it occurs initially and finally as in *door* [ ] and *bad* [ ].

(b) / / is a fully voiced [d] when it occurs in the neighborhood of voiced sounds as in under ['ʌndə] and leader ['liːdə]

(c) /d/ is a nasally exploded [dᴺ] when it is immediately followed by its homorganic nasal /n/ as in sudden ['sʌdᴺn].

(d) /d/ is a laterally exploded [dᴸ] when it is immediately followed by /l/ as in cuddle ['kʰʌdᴸɬ].

(e) /d/ is an inaudibly released [d˺] when it occurs word-finally and when it is followed by another plosive or affricate as in bad [bæd˺], bad boy [bæd˺bɔɪ] and good jam [gʊd˺ʤæm].

(f) /d/ is a dental plosive [ ] when it is followed by /ɵ/ as in width [wɪ ɵ].

(e) /d/ is a post-alveolar [d] when the following sound is /r/ as in dry [dra:ɪ].

4.3.1.3 The velar plosives /k/ and /g/

During the articulation of the main allophones of /k/ and /g/, the soft palate is raised and therefore the nasal passage is shut completely. The back of the tongue makes a firm contact with the soft palate and therefore the oral passage is also closed. When the back of the tongue is removed suddenly from the soft palate, the lung air escapes with a slight explosive noise. The vocal cords are wide apart during the articulation of /k/, and they vibrate during the articulation of /g/.

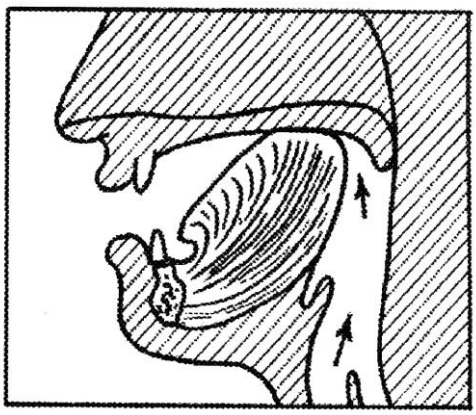

Figure (3) -- /k, g/

On the basis of the articulatory description of /k/ and /g/, we can label them as:

/k/ is a voiceless velar plosive.

/g/ is a voiced velar plosive.

4.3.1.3.1 The allophones of /k/ are five:

(a) /k/ is a heavily aspirated [kʰ] when it occurs initially in an accented syllable as in king [kʰɪŋ].

(b) /k/ is unaspirated [k] when it occurs in an unaccented syllable and when it is preceded by /s/ in words as in sky [skaːɪ] and uncle ['ʌŋkɬ].

(c) /k/ is articulated further forward in the mouth (between palatal and velar regions) [k⁺] when it is followed by a front vowel as in keen [kʰ⁺iːn] and scheme [sk⁺iːm].

(d) /k/ is articulated further back in the mouth (in the post-velar region of the roof of the mouth) [k⁻] when it is followed by a back vowel as in school [sk⁻uːɬ].

(e) /k/ is an inaudibly released [k˙] when it is word-final and when it is followed by another plosive or affricate as in pick [pʰɪk˙], active ['æk˙tɪv] and structure ['strʌk˙tʃə].

4.3.1.3.2 The allophones of /g/ are six:

(a) /g/ is a partially devoiced [g] in the speech of some people when it occurs initially and finally as in *good* [gʊd˙] and *egg* [eg˙].

(b) /ɡ/ is a fully voiced [ɡ] when it occurs in the neighborhood of voiced sounds as in *beggar* ['begə] and *rugby* ['rʌg·bɪ].

(c) /ɡ/ is articulated further forward in the mouth [ɡ+] when it is followed by a front vowel as in *geese* [ɡ+i:s].

(d) /ɡ/ is articulated further backward in the mouth [ɡ-] (in the post-alveolar region) when it is followed by a back vowel as in *goose* [ɡ-u:s].

(e) /ɡ/ is an in audibly released [ɡ·] when it is word-final or followed by another plosive or affricate as in *bag* [bæɡ·] and *rugby* [rʌg·bɪ].

4.3.2 Affricates

Affricates are consonant sounds pronounced with a stricture of *complete closure and slow release.* Because of the gradual separation of the articulators, friction is heard at the same point where the complete closure is made. This friction is less and of a shorter duration that the friction that we hear during the articulation of fricative consonants. In English there are two affricates and these are palato-alveolar.

4.3.2.1.4 Palato-alveolar affricates /ʧ/ and /ʤ/

During the articulation of the main allophones of /ʧ/ and /ʤ/, the soft palate is raised so as to shut off the nasal passage of air. The tip and blade of the tongue make a firm contact with the alveolar-ridge, thereby blocking the oral passage of air as

well. At the same time, the front of the tongue is raised in the direction of the hard palate. When the tip and blade of the tongue are removed slowly from the teeth-ridge, the air escapes with a little friction. The vocal cords are wide apart during the articulation of /ʧ/ and they vibrate during the articulation of /ʤ/.

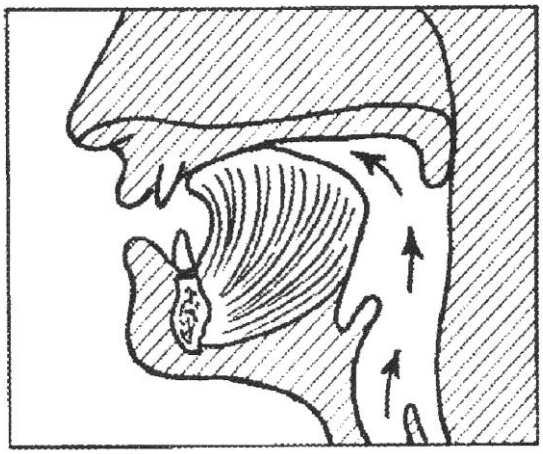

Figure (4) -- /ʧ, ʤ/

On the basis of the articulatory description of /ʧ/ and /ʤ/, we can label them as:

/ʧ/ is a voiceless palato-alveolar affricate.

/ʤ/ is a voiced palato-alveolar affricate.

There are no important allophonic variants of /ʧ/ occur except in the degree of lip-protrusion used during their articulation.

4.3.3.1.4 The allophones of /ʤ/ are two:

(a) /ʤ/ is a partially devoiced [ʤ] when it occurs initially and finally in words as in *judge* [ʤʌʤ].

(b) /ʤ/ is a fully voiced [ʤ] when it occurs in the vicinity of voiced sounds as in *suggest* [səˈʤestˌ].

4.3.3 Nasals

A nasal consonant is articulated with a stricture of complete oral closure. That is to say, the active and the passive articulators make a firm contact with each other, but there is a velic opening so that the air escapes freely through the nostrils. RP has three nasal consonants: the bilabial nasal [m], the alveolar nasal [n] and the velar nasal [ŋ].

4.3.3.1 The bilabial nasal /m/

During the articulation of the principal allophone of /m/, the soft palate is lowered and therefore the nasal passage is open, velic opening. The oral passage is closed by shutting the two lips firmly. The lung air escapes freely and continuously through the nose. The vocal cords vibrate, producing voice.

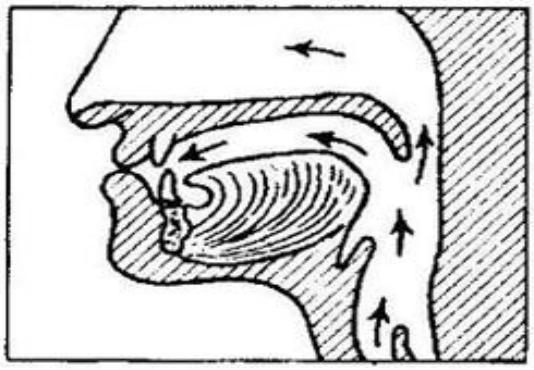

Figure (5) – /m/

On the basis of the articulatory description of /m/, we can label it as:

a voiced bilabial nasal.

4.3.3.1.1 The allophones of /m/ are two:

(a) /m/ is a labio-dental nasal [ɱ] when it is immediately followed by /f/ and /v/, both within words and at word-boundaries as in *comfort* ['kʰʌɱfət] and *same village* ['seːɪɱ'vɪlɪʤ].

(b) /m/ is a partially devoiced [m̥] in the speech of some people when /s/ precedes it as in *small* [smɔːɬ].

4.3.3.2 The alveolar nasal /n/

During the articulation of the principal allophone of /n/, the oral closure is affected by the tip or blade of the tongue making a firm contact against the alveolar-ridge. The soft palate is lowered and thus the nasal passage of air is open. The lung air escapes freely through the nostrils. The vocal cords vibrate, producing voice.

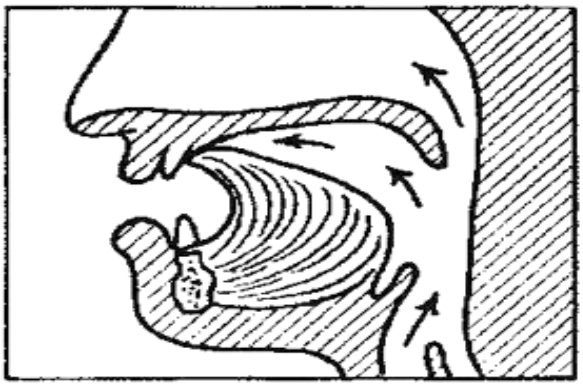

Figure (6) -- /n/

On the basis of the articulatory description of /n/, we can label it as

/n/ is a voiced alveolar nasal.

4.3.3.4 The allophones of /n/ are four:

(a) /n/ is a dental nasal [ ] when it is followed by /θ/ or /ð/ as in *tenth* [tʰe θ].

(b) /n/ is a post-alveolar [ɳ] when it is followed by /r/ as in *enroll* [ɪn'rəːʊɬ].

(c) /n/ is a partially devoiced [n] in the speech of some people when it is preceded by /s/ as in *snake* [sneɪkˑ].

(d) /n/ is a fully voiced [n] when it occurs in the neighborhood of voiced sounds as in *ignore* [ɪgˈnɔː].

4.3.3.3 The velar nasal /ŋ/

During the articulation of the principal allophone of /ŋ/, the oral closure is affected by the back of the tongue making a firm contact with the soft palate. The soft palate is lowered, thereby opening the nasal passage of air. The lung air escapes freely through the nostrils. The vocal cords vibrate, producing voice.

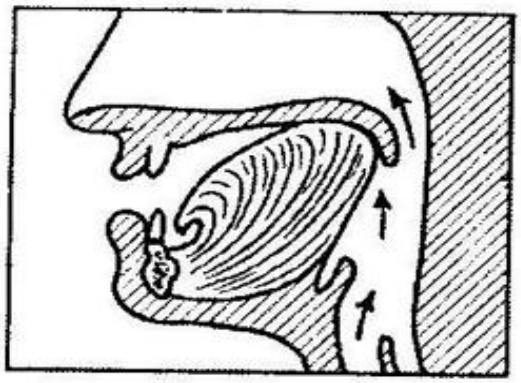

Figure (7) – /ŋ/

On the basis of the articulatory description of /ŋ/, we can label it as:

/ŋ/ is a voiced velar nasal

There are no allophonic variants of /ŋ/ except the voiced velar nasal [ŋ] which occurs in all the words which have /ŋ/ in them.

4.3.4 Lateral

A lateral consonant is articulated with a stricture of complete closure in the center of the vocal tract. The sides of the tongue are lowered and the air escapes along the sides of the tongue without any friction. There is only one lateral consonant in English which is symbolized /l/.

4.3.4.1 The alveolar lateral /l/

During the articulation of the principal allophone of /l/, the soft palate is raised and so that the nasal passage of air is shut off completely. The tip or blade of the tongue makes a firm contact with the teeth-ridge and so the oral passage of air is also closed completely. But the sides of the tongue are lowered and the air from the lungs escapes along the sides of the tongue freely and continuously. The vocal cords vibrate, producing voice.

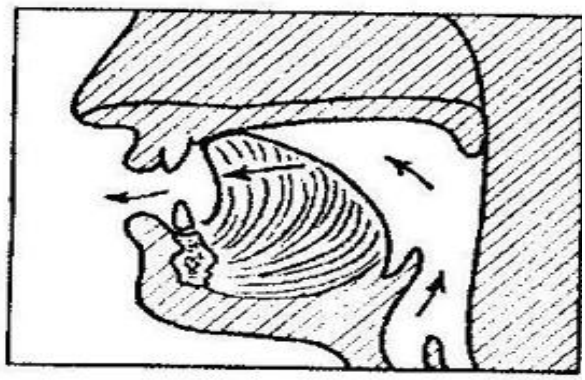

Figure (8) -- /l/

On the basis of the articulatory description of /l/, we can label it as:

/l/ is a voiced alveolar lateral

4.3.5.4 The allophones of /l/ are four:

(a) / / is a dental lateral [ ] when it is immediately followed by /θ/ or /ð/ as in *health* [he θ] and *call them* ['kʰɔ: ðm].

(b) /l/ is a voiceless [l] when it is preceded by an aspirated /p/ or /k/ as in *please* [pʰli:z] and *clear* [kʰlɪə].

(c) /l/ is a 'clear' or palatalized [l] when it is immediately followed by a vowel or the semi-vowel /j/ as in *leave* [li:v] and *million* ['miljən].

(d) /l/ is a 'dark' or velarised [ɬ] when it is word-final or when it is immediately followed by a consonant as in *pill* [pʰɪɬ] and *wealth* [weɬθ].

4.3.5 Fricatives

Fricatives are articulated with a stricture of close approximation. There are nine distinctive fricatives in English. Labio-dental /f, v/, dental /θ, ð/, alveolar /s, z/ palato-alveolar /ʃ, j/ and glottal /h/.

4.3.5.1 The labio-dental fricatives /f, v/

During the articulation of the principal allophone of /f/ and /v/, the soft palate is raised and so the nasal passage of air is shut off completely. The lower lip is brought very close to the upper front teeth so that there is a very narrow gap between them. The air from the lungs escapes through this narrow gap with audible friction. The vocal cords are wide apart during the articulation of /f/ and they vibrate during the articulation of /v/.

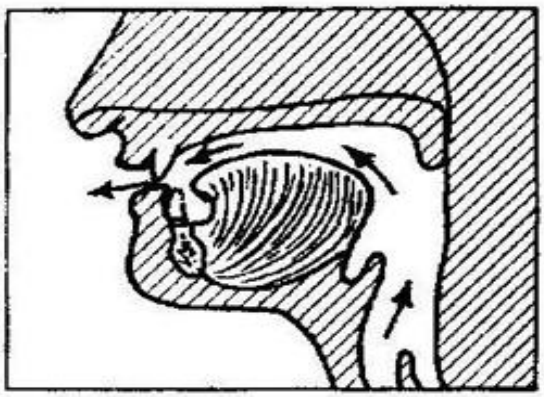

Figure (9) -- /f, v/

On the basis of the articulatory description of /f/ and /v/, we can label them as:

/f/ is a voiceless labio-dental fricative.

/v/ is a voiced labio-dental fricative.

There are no important allophonic variants of /f/ occur except in respect of the position of the lips which depends on the lip position required by an adjacent vowel.

4.3.5.1.1 The allophones of /v/ are two

(a) /

v/ is a partially voiced [v] when it occurs initially and finally in a word as in *veal* [viːɬ] and *leave* [liːv].

(b) /

v/ is a fully voiced [v] when it occurs in the vicinity of voiced sounds as in *review* [rɪˈvjuː].

4.3.5.2 The dental fricatives / θ / and / ð /

During the articulation of the principal allophones of /θ/ and /ð/, the soft palate is raised and so the nasal passage of air is shut off completely. The tip or blade of the tongue is brought between the two rows of teeth in such away that there is a very narrow gap between them. The lung air escapes through this narrow space with audible friction. The vocal cords do not vibrate during the articulation of /θ/, but they vibrate during the articulation of /ð/.

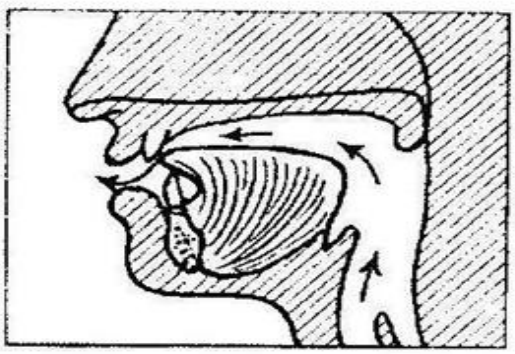

Figure (10) – /θ, ð/

On the basis of the articulatory description of /θ/ and /ð/, we can label them as:

/θ/ is a voiceless dental fricative.

/ð/ is a voiced dental fricative.

There are no important allophonic variants that differ significantly from each other and thus /θ/ can be said to have one allophone [θ] which occurs in all the words in which / θ / occurs.

4.3.5.2.1 The allophones of /ð/ are two:

(a) /ð/ is a partially voiced [ð] when it occurs initially and finally as in *there* [ðeə] and *with* [wɪð].

(b) /ð/ is fully voiced when it occurs in the vicinity of voiced sounds as in *breathing* ['briːðɪŋ]

4.3.5.3 The alveolar fricatives /s/ and /z/

During the articulation of the principal allophone of /s/ and /z/, the soft palate is raised so as to shut off the nasal passage of air. The tip and blade of the tongue are brought near the teeth-ridge in such away that the space between them is

very narrow. The lung air escapes through this narrow gap with audible friction. The vocal cords are kept wide apart during the articulation of /z/.

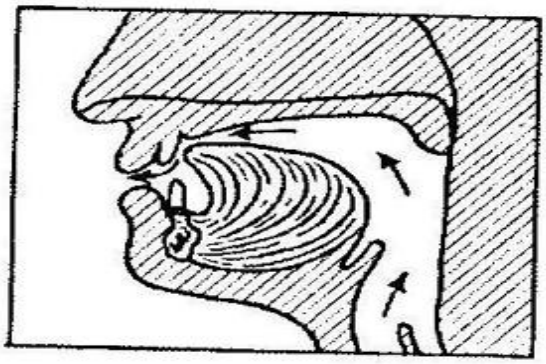

Figure (11) – /s, z/

On the basis of the articulatory description of /s/ and /z/, we can label them as:

/s/ is a voiceless alveolar fricative.

/z/ is a voiced alveolar fricative.

There are no allophonic variants of /s/ other than the one involving lip rounding.

4.3.5.3.1 The allophones of /z/ are two:

(a) /z/ is a partially voiced [z] when it occurs initially and finally in a word as in *zoo* [zu:] and *buzz* [bʌz].

(b) /z/ is a fully voiced when it occurs in the vicinity of voiced sounds as in *easy* ['i:zɪ].

4.3.5.5 The palato-alveolar fricatives /ʃ/ and /ʒ/

During the articulation of the principal allophones of /ʃ/ and /ʒ/, the soft palate is raised so as to shut off the nasal passage of air. The tip and blade of the tongue are brought very near the teeth-ridge. At the same time, the front of the tongue is raised in the direction of the hard palate. The lung air escapes through the narrow gap between the tip and blade of the tongue and the teeth-ridge and between the front of the tongue and the hard palate with audible friction. The vocal cords are wide apart during the articulation of /ʃ/, but they vibrate during the articulation of /ʒ/.

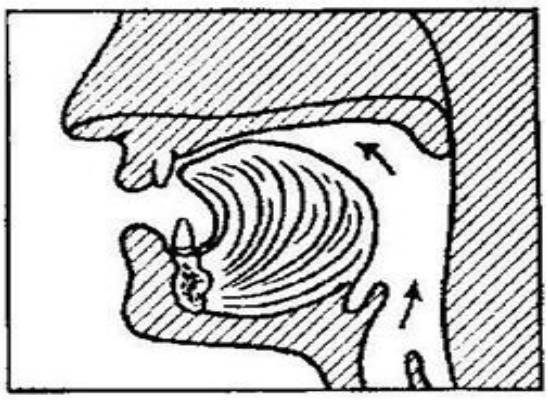

Figure (12) —/ʃ, ʒ/

On the basis of the articulatory description of /ʃ/ and /ʒ/, we can label them as:

/ʃ/ is a voiceless palato-alveolar fricative.

/ʒ/ is a voiced palato-alveolar fricative.

There are no allophonic variants of /ʃ/ and /ʒ/ other than the involving the lip-rounding.

4.3.5.4 The glottal fricative /h/

During the articulation of the principal allophone of /h/, the soft palate is raised so as to shut off the nasal passage completely. The two vocal cords brought very near to each other, the air from the lungs escapes through this narrow glottis with audible friction. The tongue is doing nothing during the articulation of /h/, but it takes the position of the next vowel sound. On the basis of the articulatory description of /h/, we can label it as:

/h/ is a voiceless glottal fricative.

4.3.5.4.1 The allophones of /h/ are two:

(a) /h/ is a voiced [ɦ] when it occurs in intervocalic position as in *behind* [bə'ɦaɪnd].

(b) /h/ is a voiceless when it occurs initially as in *heat* [hi:t].

4.3.5.5 Frictionless continuant /r/

During the articulation of the principal allophone of /r/, the soft palate is raised so as to shut off the nasal passage of air. The tip of the tongue is brought near the rear part of the teeth-ridge in such away that there is sufficient gap between the two for the air to escape freely without any friction. The vocal cords vibrate, producing voice.

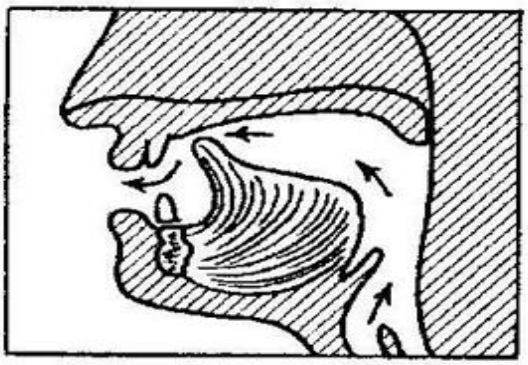

Figure (13) – /r/

On the basis of the articulatory description of /r/, we can label it as:

/r/ is voiced post-alveolar frictionless continuant.

4.3.5.5.1 The allophones of /r/ are four:

(a) /r/ is a voiceless post-alveolar fricative [r̠] when it is preceded by an aspirated /p/, /t/ and /k/ as in *pray* [pʰre:ɪ], try [tʰra:ɪ] and *cry* [kʰra:ɪ].

(b) /r/ is a voiced post-alveolar fricative [r̠] when it is preceded by /d/ as in *dry* [dra:ɪ].

(c) /r/ is a voiced post-alveolar tap [ɾ̠] when it occurs between two vowels or when it occurs after /θ/ as in *very* [veɾ̠ɪ] and *three* [θɾ̠i:].

(d) /r/ is a voiced post-alveolar frictionless continuant [r̠] when it occurs initially as in *reek* [ri:k˗].

4.3.5.6 Semi-vowels /j/ and /w/

During the articulation of the principal allophone of /j/, the front of the tongue takes up a position necessary for the articulation of a vowel between front close and front half-close depending upon the closeness or openness of the vowel that follows /j/. The soft palate is raised so as to shut off the nasal passage of air. The

vocal cords vibrate, producing voice. The tongue moves immediately to the position of the following sound. The lips are spread but there may be anticipatory lip rounding if /j/ is followed by a rounded vowel. On the basis of the articulatory description of /j/, we can label it as:

/j/ is a voiced palatal semi-vowel.

4.3.5.6.1 The allophones of /j/ are two:

(a) /j/ is a partially devoiced [j] when it is preceded by unaspirated /p/, /t/ and /k/ as in *stew* [stju:].

(b) /j/ is a voiceless palatal fricative [ç] when it is preceded by aspirated /p/, /t/ and /k/ and by /h/ as in *pure* [pʰçɔ:], *tune* [tʰçu:n], *cure* [kʰçɔ:] and *huge* [hçu:ʤ].

During the articulation of the principal allophone of /w/, the back of the tongue assumes a position required for the articulation of a vowel between back close and back half-close depending upon the closeness and openness of the vowel that follows it. The soft palate is raised so that the nasal passage of air is blocked completely. The tongue moves immediately to the position of the sound that follows /w/. The tips are rounded during the articulation of /w/, the degree of lip-rounding

depending upon the lip-position of the vowel that follows it. The vocal cords vibrate, producing voice. On the basis of the articulatory description of /w/, we can label it as:

/w/ is a voiced labio-velar semi-vowel.

4.3.5.6.2 The allophones of /w/ are three:

(a) /w/ is a voiceless labio-velar semi-vowel [w] or [ʍ] when it is preceded by aspirated /t/ and /k/ as in *twist* [tʰwɪstˌ] and *queen* [kʰwiːn].

(b) /w/ is a partially devoiced [w] when it is preceded by any other voiceless sound as in *sweet* [swiːtˌ].

(c) /w/ is voiced [w] when it occurs in the vicinity of voiced sounds as in *beware* [bɪˈweə].

4.4 Lip-position during the articulation of the consonants of English

The position of the lips during the articulation of the consonants depends upon the lip-position required for the articulation of the vowel that immediately follows them or precedes them. Any consonant is pronounced with spread lips if the vowel that follows it is an unrounded one. There will be anticipation of a consonant if the vowel that follows it is a rounded one. Here are some examples of the consonants that are articulated with spread and rounded lips:

Consonant	Lip-spread	Lip-rounded
/p/	peel	pool
/b/	been	Boon
/d/	deal	do
/k/	keel	cool
/g/	geese	goose
/ʧ/	cheap	choose
/ʤ/	jeep	job
/m/	mean	moon
/n/	neat	noon
/ŋ/	sing	song
/f/	feel	fool
/v/	veal	voice
/θ/	thin	thaw
/ð/	this	those
/s/	seen	soon
/z/	zip	zoo
/h/	he	hot
/r/	read	road
/j/	Year	Yoke

During the articulation of /ʃ/, however, there is a certain amount of lip-protrusion irrespective of the vowel that follows it. But the lip-protrusion is more

during the articulation of /ʃ/ in a word like *shoe* than it is during the articulation of /ʃ/ in a word like *she.*

4.5 Occurrence in different position of the consonants of English:

As we said earlier on in this dissertation that there are 24 consonant phonemes in RP English. These consonants occur in different positions in a word. These phonemes are listed below with examples that illustrate their occurrence in the initial, medial and final position.

Consonant	**Initial**	**Medial**	**Final**
p	peak	speak	ship
b	buy	rabbit	lamp
t	take	retain	cut
d	do	sudden	sad
k	key	sky	lack
g	great	struggle	bag
ʧ	cheap	future	catch
ʤ	jail	majority	manage
m	made	lemon	sum
n	name	send	open
ŋ	_____	singer	hang

l	life	Below	tool
f	fat	sphere	life
v	view	evening	live
θ	thin	method	bath
ð	there	mother	clothe
s	some	ask	less
z	zoo	buzzed	maze
ʃ	shade	admission	fresh
ʒ	_____	decision	garage (only in French loan sounds)
h	hot	behave	_____
r	rain	around	_____
w	waist	sweet	_____
j	year	tune	_____

CHAPTER FIVE

The Consonants of Arabic

5.1 Introductory Remarks

There are twenty-eight distinctive consonants in Arabic.[5] These consonants are listed below, with one example each for their word-initial, word-medial and word-final occurrence. The phonetic symbols used here are those of the International Phonetic Alphabet (IPA). The phonetic symbols have been enclosed within square brackets here since their phonemic status has not yet been established in this dissertation. After classifying them according to their manners of articulation, the consonants belonging to each manner (i.e., plosives, fricatives, etc.) are established as belonging to different phonemes, with the help of minimal pairs.

[5]By the term "Arabic" here, as elsewhere in this dissertation, is meant the classical variety of Arabic. There are differences between the classical dialect and the different colloquial dialects (be they national varieties or regional varieties within a nation) as far as the consonants are concerned. Some of these differences are mentioned, where relevant, in appropriate sections of this chapter. But by and large, the description is based on the classical variety of Arabic which is perfectly intelligible all over the Arab-world.

5.2 The Arabic consonants and their occurrence in words

No	Arabic letter	Con-sonant	Word-initial	Word-medial	Word-final
1.	ب	[b]	[ba:b][6] (door)	[maʕbad] (temple)	[qalb][7](heart)
2.	ت	[ ]	[i:n] (fig)	[ka: ɪb] (writer)	[bɪn][8] (girl)
3.	ط	[ ][9]	[a:lɪb] (student) (student-masc.)	[la i:f] (kind)	[saʊ] (whip)
4.	د	[ ]	[ʊb] (bear-n)	[ʕa l] (justice)	[ʤa i:d] (new)
5.	ض	[ ]	[aʊ] (light)	[fa l] (favorite)	[maɾa][10](illness)
6.	ك	[k]	[kʊra] (ball)	[ja:kʊ] (he eats)	[samak] (fish - n)
7.	ق	[q]	[qalam] (pen)	[saqf] (ceiling)	[bu:q] (horn)
8.	ء	[ʔ]	[ʔab] (father)	[qʊrʔa:n] (the Holy Qura'an)	[samaʔ] (sky)
9.	ج	[ʤ][11]	[ʤami:l] (beautiful-masc.)	[maʤnu:n] (mad man)	[ϴalʤ] (snow)

[6]Subtle phonetic differences such as the differences between [b] and [b] (the released and unreleased or inaudibly released varieties of the voices bilabial plosive are NOT indicated in these transcriptions. These are discussed and described later in this chapter, when the allophones of each phoneme are listed.

[7]The vowel phoneme represented in the Arabic orthography by the mark "kasrah" has two allophones, [a] and [a]. Their occurrence is not discussed here. The appropriate phonetic symbol has been used in transcriptions. In phonemic transcriptions, only /a/ has been used.

[8]The phoneme represented by the Arabic letter ن "noon" has a denti-alveolar allophone. This is discussed under the section **nasal.**

[9]The diacritic [~] is used across the symbols [t], [d], [θ] and [s] in this dissertation. This diacritic, according to the principals of IPA, refers to velarization or uvularization. This diacritic is used to symbolize the consonants represented by the Arabic orthographic symbols ط [ ], ض [ ], ظ [ ] and ص [S]. More about this secondary articulation is said in appropriate places in this dissertation.

[10]The Arabic latter ر is a voiced alveolar tap (as indicated in the transcription of this word) when it occurs single in a word. It is [r] (the voiced alveolar trill) when it is doubled intervocalically. The phoneme symbol used is /r/.

[11]The sound represented the symbol [ʤ] here and elsewhere in this dissertation is the one represented by the Arabic orthographic symbol ج. It is certainly an affricate in classical Arabic, but it is NOT a palato-alveolar affricate as at the beginning of the English word *joy*. When I articulate the Arabic sound represented by the letter ج, the tip of the tongue does NOT touch the alveolar ridge is down in the mouth. On the basis of my own perception, I feel it is a voiced palatal fricative which, strictly speaking, should be symbolized [jj]. Since this is a complicated symbol, for the sake of transcription simplicity, the symbol [ʤ] has been used to represent this sound throughout this dissertation.

10.	م	[m]	[mɪftaħ] (key)	[barmi:l] (barrel)	[kari:m] (generous) (generous)
11.	ن	[n]	[na:ʕ] (fire)	[manzɪl] (house)	[wa an] (country) (country)
12.	ف	[f]	[fanna:n] (artist-masc.)	[nafs] (soul)	[la i:f] (kind)
13.	ث	[Θ]	[Θalʤ] (snow)	[kaΘi:ʕ] (abundant)	[jalhaΘ] (he gasps)
14.	ذ	[ð]	[ðarrah] (atom)	[ʔaðn] (permission)	[ʔɪð] (whereupon)
15.	ظ	[ð]	[ðaʕf] (envelope)	[ʕaði:m] (great)	[ħað] (luck)
16.	س	[s]	[saħa:b] (cloud)	[rasu:l] (prophet)	[maʤlɪs] (assembly)
17.	ص	[S]	[Sa:bu:n] (soap)	[ʕaSa] (stick)	[ba:S] (bus)
18.	ز	[z]	[zaman] (time)	[mɪzma:ʕ] (pipe)	[ʔaʕʊz] (rice)
19.	ش	[ʃ]	[ʃams] (sun)	[ħaʃi:ʃ] (grass)	[kabʃ] (ram)
20.	خ	[χ]	[χa:S] (special)	[naχl](date-palm)	[ʔaχ] (brother)
21.	غ	[ʁ]	[ʁʊla:m] (boy)	[ʃaʁf](eagerness)	[ba:lɪʁ] (adult)
22.	ح	[h]	[ħʊlm] (dream)	[baħʕ] (sea)	[mɪlħ] (salt)
23.	ه-	[h]	[hɪla:l] (crescent)	[lahab] (flame)	[ʔɪlah] (God)
24.	ل	[l]	[laħm] (meat)	[kalb] (dog)	[fi:l] (elephant)
25.	ر	[r]	[ʕaʤʊl] (man)	[kaʕi:m] (generou)	[χabi:ʕ] (expert)
26.	ع	[ʕ]	[ʕadl] (slave)	[sa:ʕa] (watch-n)	[ʕʊbaʕ] (quarter)
27.	ي	[j]	[jad] (hand)	[jaħja] (proper-noun)	----------[12]
28.	و	[w]	[walad] (boy)	[aʊwal] (first)	----------[13]

[12]In traditional descriptions of Arabic, [j] has been described as occurring in word-final position. Word like [kʊrsI] (chair) are quoted as example. The letter ي (which stands for [j] in syllable-initial position, [i:] between two consonants, and [I] word-finally) is often described as [j] in traditional description in its medial and final occurrences. In this dissertation the combination "fathah" + ي (the short vowel [a] followed by the letter ي) is treated as a diphthong [aI]. Word-final occurrences of the letter ي are treated as [I] because word-final ي is always pronounced [I].

[13]What is said in 8 above is applicable to the letter و in Arabic. In its syllable-initial occurrences, it is pronounced as [w], between two consonants it is always the long vowel [u:]. When it is doubled in the middle of words, it is treated as the diphthongs [aʊ] + [w] in this dissertation. When the letter و occurs finally as in عدو [ʕadu:] (enemy), it is distinctly pronounced as the long vowel [u:].

5.3 The Arabic consonants and their places of articulation

When the consonants of Arabic are classified according to their places of articulation, they fall into the following twelve groups.

No	Place of articulation	Sounds which fall under this category	Total number of sounds in this category
1.	Bilabial	[b] [m]	2
2.	Labio-dental	[f]	1
3.	Dental	[Ɵ] [ð] [ð]	3
4.	Denti-alveolar	[ ], [ ], [ ], [ ]	4
5.	Alveolar	[n], [s], [S], [z], [ɹ/r], [l]	6
6.	Palato-alveolar	[ʃ]	1
7.	Palatal	[ʤ][14], [j]	2
8.	Velar	[k]	1
9.	Uvular	[q], [χ], [ʁ]	3
10.	Pharyngeal	[ħ],[ʕ]	2
11.	Glottal	[h], [ʔ]	2
12.	Labio-velar	[w]	1
Total			28

[14]See footnote 7 of this chapter.

5.4 The Consonant of Arabic according to the state of the glottis during their articulation.

Twelve of these consonants are voiceless. They are: [ ], [ ], [k], [q], [f], [Θ], [s], [S], [ʃ], [χ], [ħ] and [h]. Fifteen others are voiced, articulated with a vibrating glottis. These are: [b], [ ], [ ], [ʤ], [m], [n], [ð], [ð], [z], [ɣ], [l], [ɹ/r], [j] and [w]. The glottal stop [ʔ] cannot be included in either of these categories since, during its articulation, the glottis tightly shut and then suddenly opened.

5.5 The Consonants of Arabic according to the manner in which they are articulated.

According to their manner of articulation, the consonants of Arabic can be divided into the following categories.

No	Manner of articulation	Sounds in this category	Number of sounds in this category
1.	Plosives	[b], [ ], [ ], [ ], [ ], [k], [q], [ʔ]	8
2.	Affricate	[ʤ]	1
3.	Nasals	[m], [n]	2
4.	Fricatives	[f], [v], [Ɵ], [ð], [ð], [s], [S], [z], [ʃ], [χ], [ʁ], [ħ], [h]	12
5.	Lateral	[l]	1
6.	Tap/Flap	[ɾ / r]	1
7.	Frictionless continuant	[ʕ]	1
8.	Semi-vowel	[j], [w]	2
Total			28

The consonants of Arabic are tabulated below in the form of a chart, indicating places and manner of articulation. According to international conventions, if there are two sounds in a box, the one on the left stands for the voiceless sound and the one on the right indicates the voiced sound. For the sake of convenience, the orthographic symbols representing the consonants are also given in the chart.[15]

[15]This chart is a slightly modified version of Al-Ani (1970). The modifications have been done after Balasubramanian (1999).

place / manner	Bilabial	Labio-dental	Dental	Denti-alveolar	Alveolar	Palato-alveolar	Palatal	Velar	Uvular	Pharyn-geal	Glottal	Labio-velar
Plosive	b ب		t ت د ض ط					k ك	q ق		ʔ ء	
Nasal	m م				n ن							
Affricate							ʤ ج					
Fricative		f ف	Θ ث ð ذ ð ظ		s س z ز S ص	ʃ ش			X خ ɤ غ	ħ ح	h ه	
Tap/Flap					ɾ ع (r)							
Lateral					l ل							
Friction-less continuant										ʕ ع		
Semi-vowel							j ي					w و
Total	2	1	3	4	6	1	2	1	3	2	2	1

Table 2: The Consonants of Arabic

5.6 A brief Phonemic Analysis of the Consonants of Arabic

A brief phonemic analysis of the consonants of Arabic is attempted below. The sounds belonging to each type of consonants are taken up and phonemic status of each is established with the help of minimal pairs.

5.6.1 Plosives

The plosives that occur in Arabic are eight in number. They contrast with each other in minimal pairs like the following:

(i) [b] and [ ] [baːb] (door) and [aːb] (repented)

(ii) [ ] and [ ] [ ] (fig) and [ ] (religious)

(iii) [ ] and [ ] [ ] (fig) and [iː] (soil)

(iv) [ ] and [ ] [aːʕ] (house) and [aːʕ] (dangerous)

(v) [k] and [q] [kalb] (dog) and [qalb] (heart)

(vi) [k] and [ʔ] [kaθiːʕ] (abundant) and [ʔaθiːʕ] (broadcasting)

5.6.2 Affricate

There is only one affricate in Arabic and it occurs in environments similar to those in which the different plosives occur, namely, word-initially followed by a vowel, word-medially and word-finally, necessitating the establishment of a separate phoneme to accommodate the sound.

5.6.3 Nasals

The two nasal sounds [m] and [n] contrast with each other in minimal pairs like

[mahˤ] (dowry)

[nahˤ] (river)

and therefore belong to two different phonemes.

5.6.4 Fricatives

The fricatives which are twelve in number show several phonemic contrasts such as the following:

(i) [f] and [ɵ] [faʔˤ] (rat) and [ɵaʔˤ] (taking revenge)

(ii) [ɵ] and [ð] [bʊɵuːˤ] (scares) and [bʊðuːˤ] (seeds)

(iii) [ð] and [ð] [ðʊl] (despising) and [ðʊl] (seducing)

(iv) [ɵ] and [s] [ɵaːɕ] (state of anger) and [saːɕ] (walked)

(v) [s] and [ʂ] [siːn] (name of a letter) and [ʂiːn] (China)

(vi) [s] and [z] [mɪsmaːɕ] (nail) and [mɪzmaːɕ] (flute)

(vii) [s] and [ʃ] [siːn] and [ʃiːn] (names of letters)

(viii) [ʃ] and [χ] [ʃʊmuːl] (containment) and [χʊmuːl] (laziness)

(ix) [χ] and [ʁ] [χaːb] (non fulfilment) and [ʁaːb] (absent)

(x) [χ] and [ħ] [χaːb] (vinegar) and [ħal] (solution)

(ix) [ħ] and [h] [naħɕ] (slaughter) and [nahɕ] (river)

5.6.5 Lateral

There is just one lateral sound in Arabic. It is [l] whish occurs in the same environments in which the plosives, affricates, nasals and fricatives occur. Also, since the manner of articulation of this sound is different from those of the plosives, affricates, nasals and fricatives, we have to establish a separate phoneme to accommodate this sound. But since [l] and [r] contrast with each other in minimal pairs like the examples given below, we have to establish two phonemes to accommodate them.

[l] and [r] [liːm] (lemon) and [riːm] (proper noun)

5.6.6 The Frictionless Continuants and Semi-vowel.

There is again one frictionless continuant in Arabic which is [ʕ]. This again should be assigned to a separate phoneme since it occurs in the same environments in which the plosives, affricates, nasals, fricatives and lateral occur. Also, there is phoneme contrast between [ʕ], [j] and [w], as proved by the following minimal pairs:

(i) [ʕ] and [l] [ʕa:m] (a year) and [la:m] (name of a letter)

(ii) [ʕ] and [j] [ʕaʊm] (swimming) and [jaʊm] (day)

(iii) [ʕ] and [w] [ʕa: ɪ] (normal) and [wa: ɪ] (valley)

(iv) [j] and [w] [jalaʕ](a kind of pigeon) and [walaʕ] (to miss someone)

5.7 An articulatory description of the Arabic Consonants

Having listed the consonants of Arabic, categorized them according to the state of the glottis, and the places and manners of articulation, and having established the phonemic status of the consonants, let us now turn our attention to an articulatory description of each consonant and a brief discussion of the allophonic variants of each.

5.7.1 The plosives

5.7.1.1 Bilabial plosive /b/

During the articulation of the principal allophone of /b/, the soft palate is raised and therefore the nasal passage of air is closed completely. At the same time, the two lips are in firm contact with each other and so the oral passage of air is also closed completely. Lung air is compressed behind these closures, during which stage the vocal cords may vibrate for all or part of the compressed stage according to its situation in the utterance. When the two lips are separated suddenly, the air escapes with an explosive sound.

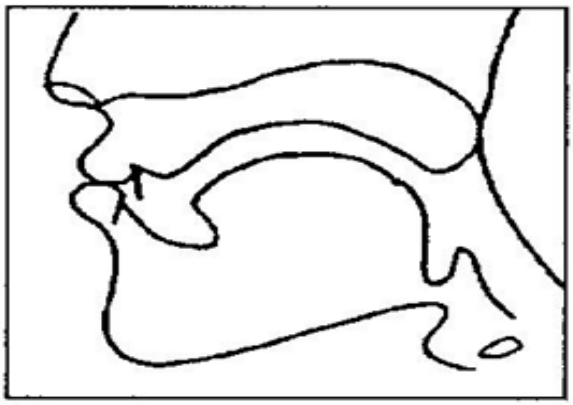

Figure (13)— /b/

On the basis of the articulatory description of the principal allophone of /b/, we can label it as:

a voiced bilabial plosive.

The allophones of /b/ are the following:

a) /b/ is a partially devoiced [b̥] when it occurs initially, finally and when it is followed by a voiceless sound as in [ba:b̥] (door). This happens in the speech of some people. [16]

b) /b/ is a fully voiced [b] when it is intervocalic and when it is followed by a voiced sound as in [Θa:bi] (proper noun) and [ʕamba] (papaya).

c) /b/ is an inaudibly released [b̚] when it occurs finally and when it is followed by another plosive or affricate as in [ʕab̚] (slave) and [Θaub̚ ʤa i:] (new dress).

d) /b/ loses its voice and is realized as [p] (voiceless bilabial plosive) when it is immediately followed by voiceless sound as in /ħabs/ = [ħaps] (prison), /sab / = [sap̚ ˥] (Saturday).[17]

5.7.1.2 Denti-alveolar plosives / /, / /, / / and / /

During the articulation of the main allophones of / / and / /, the soft palate is raised and therefore the nasal passage of air is shut off completely. The tip or blade of the tongue makes a firm contact with the upper front teeth and the teeth-ridge and therefore the oral passage of air is also closed. Lung air

[16] It is quite natural for an initial or final voiced sound to get devoiced because of the preceding/following silence. This phenomenon of devoicing has been described on the basis of perception. No experimental work was possible in Hodeidah.

[17] Strangely, this happens only when /b/ is followed by a voiced sound. When it is preceded by a voiceless sound /b/ retained its voice and is realized as [b̥] as in /ʔakbaɕ/ = [ʔak˥ baɕ] (the greatest).

is compressed behind these two closures, during which stage the vocal cords are wide apart for / /, but may vibrate for all or part of the compression stage for / / according to the phonetic environment in which it occurs in an utterance. When the tip or blade of the tongue is removed suddenly from the upper front teeth and the teeth-ridge, the lung air escapes with a slight explosive noise.

The principal allophones of the two phonemes / / and / / are articulated in the same way as the principal allophones of / / and / / are articulated. The only difference is that during the articulation of the principal allophone of / / and / /, the back of the tongue is raised in the direction of the soft palate[18] and therefore they are velarised or they have a back vowel quality.

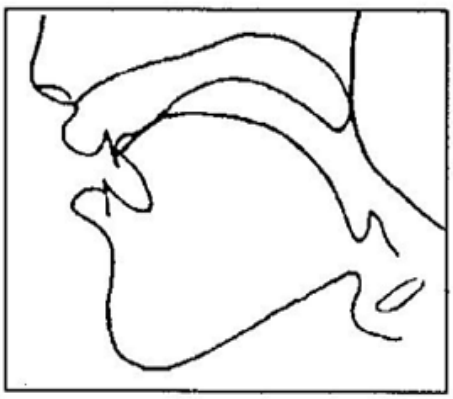

Figure (14) – /t,d/

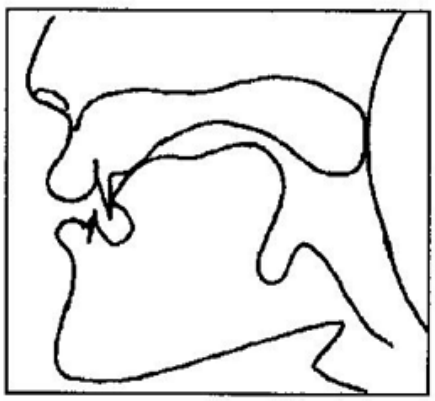

Figure (15)– /ṭ,ḍ/

[18]We have called these velarized on the basis of perception. The secondary articulation involved may be one of uvularisation (the extreme back of the tongue being raised in the direction of the uvular). In the absence of experimental evidence to the contrary, we have chosen to call the secondary articulation one of velarization.

On the basis of the articulatory description of the principal allophone of / /, / /, / / and / /, we can label the as:

/ / is a voiceless denti-alveolar plosive

/ / is a voiceless velarised denti-alveolar plosive

/ / is a voiced denti-alveolar plosive

/ / is a voiced velarised denti-alveolar plosive

The allophones of / / are two in number:

a) / / is an inaudibly released [ˀ] when it occurs word-finally as in [qaː ˀ] (qat leaves) and when it is followed by another plosive or affricate as in [uː aɪb] (tasteful mulberry) and [laʕɪba ˀʤaliːlah] (Jalieela played). This happens at word boundaries.

b) / / is a voiceless alveolar plosive when it is immediately followed by /ʃ/ as in [aʃ ɪ] (Do you want?)

The allophones of / / are two in number:

a) / / is an inaudibly released [̚] when it occurs word-finally and when it is followed by another plosive or affricate as in [su: ̚] (whip) and [mata: ̚ʤaɪd] (good rubber).

b) / / is a fully released [ ] when it is followed by a vowel as in [i:n] (soil).

The allophones of / / are three in number:

a) / / is a partially devoiced [ ] in the speech of some people when it occurs initially and finally as in [ub] (bear-n) and [ja] (hand).

b) / / is a fully voiced [d] when it occurs in the neighborhood of voiced sounds as in [ʕab̬] (slave).

c) / / is an inaudibly released [̚] when it occurs word-finally and when it is followed by another plosive or affricate as in [maʤ ̚] (glory) and [ʔaʤa: ̚ʤa:bar] (well done Jaber).

The allophones of / / are three:

a) / / is a partially devoiced [ ] in the speech of some people when it occurs initially and finally as in [baɪ] (eggs) and [aba:b] (fig).

b) / / is a fully voiced [ ] when it occurs in the neighborhood of voiced sounds as in [wa ʕ] (situation).

c) / / is an inaudibly released [˺] when it occurs word-finally and when it is followed by another plosive or affricate as in [maʕa ˺] (sickness) and [nʌ ˺ʤ] (ripeness).

5.7.1.3 Velar plosive /k/

During the articulation of the principal allophone of /k/, the soft palate is raised and therefore the nasal passage of air is shut off completely. The back of the tongue makes a firm contact with the soft palate and therefore the oral passage is also closed. When the back of the tongue is removed suddenly from the soft palate, the lung air escapes with a slight explosive noise. The vocal cords are wide apart during the articulation of /k/.

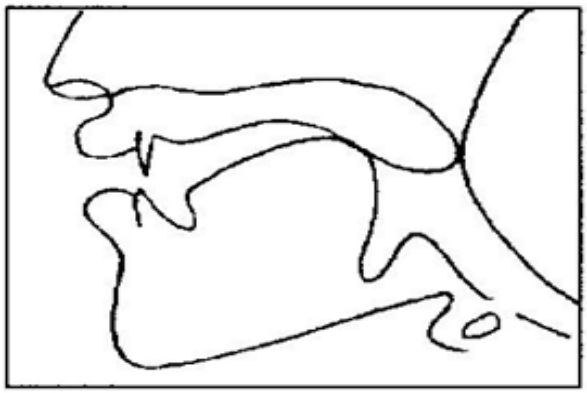

Figure (16) — /k/

On the basis of the articulatory description of /k/, we can label it as:

a voiceless velar plosive

The allophones of /k/ are three:

a) /k/ is articulated further forward in the mouth [k+] when it is followed by a front vowel as in [k+i:s] (bag).

b) /k/ is articulated further back in the mouth [k-] when it is followed by a back vowel as in [k-ʊ ʊb] (books).

c) /k/ is an inaudibly released [kˀ] when it is word-final as in [samakˀ] (fish) and when it is followed by another plosive or affricate as in [makˀ abˀ] (office) and [jan ahikˀʤa:rʊh] (offends his neighbor).

5.7.1.4 The uvular plosive /q/

During the articulation of the principal allophone of /q/, the soft palate is raised and therefore the nasal passage of air is shut off completely. The extreme back of the tongue is in form contact with the uvular to form the oral

closure. When the extreme back of the tongue is removed suddenly from the back wall of the pharynx, the lung air escapes with a slight explosive noise. The vocal cords are wide apart during the articulation of /q/.

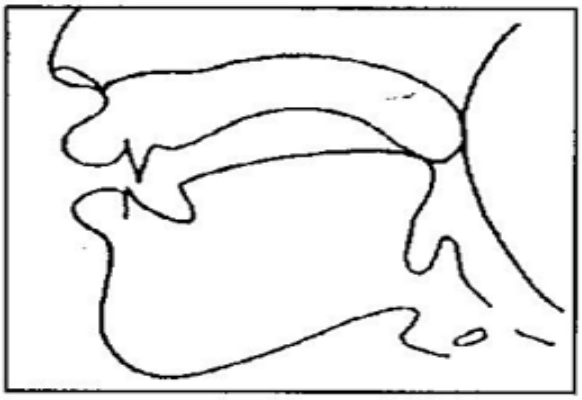

Figure (17) -- /q/

On the basis of the articulatory description of /q/, we can label it as:

a voiceless uvular plosive

The allophones of /q/ are three:

a) /q/ is articulated further forward [q⁺] when it is followed by a front vowel as in [q⁺ɪsm] (department).

b) /q/ is articulated further backward [q⁻] when it is followed by a vowel as in [q⁻ʊwah] (force).

c) /q/ is an inaudibly released [qˀ] when it is word-final as in [suːqˀ] (market) and when it is followed by another plosive or affricate as in [waq̚ˀ] (time) and [barquːq̚ʤaɪ] (good plum).

5.7.1.5 Affricate

In Arabic there is only one affricate and that is palatal.

5.7.1.6 Palatal affricate /ʤ/

During the articulation of the principal allophone of /ʤ/, the soft palate is raised so as to shut off the nasal passage of air. The front of the tongue touches the hard palate. When the front of the tongue is removed slowly from the hard palate, the lung air escapes with a little fricative. The vocal cords vibrate, producing voice.

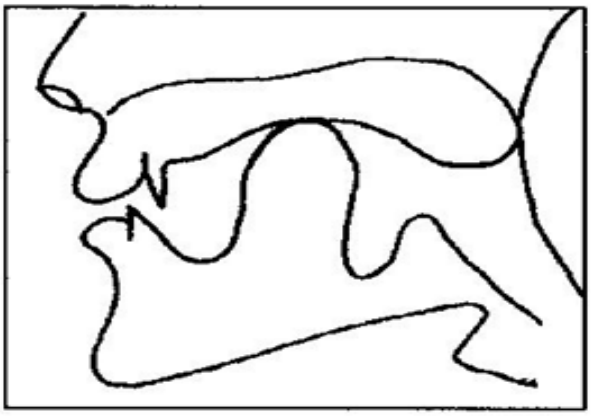

Figure (18)– /ʤ/

On the basis of the articulatory description of /ʤ/, we can

label it as:

a voiced palatal affricate

The allophone of /ʤ/ are two:

a) /ʤ/ is a partially devoiced [ʤ] when it occurs initially and finally as in

[ʤami:l] (beautiful) and [ϴalʤ] (snow).

b) /ʤ/ is a fully voiced [ʤ] when it occurs in the vicinity of voiced sounds

as in [naʤm] (star).

5.7.1.7 Nasals

There are two nasal phonemes in Arabic: the bilabial nasal [m] and the

alveolar nasal [n].

5.7.1.8 Bilabial nasal /m/

During the articulation of the principal allophone of /m/, the soft palate is lowered and therefore the nasal passage is open. The oral passage is closed by shutting the two lips firmly. The lung air escapes freely and continuously through the nose. The vocal cords vibrate, producing voice.

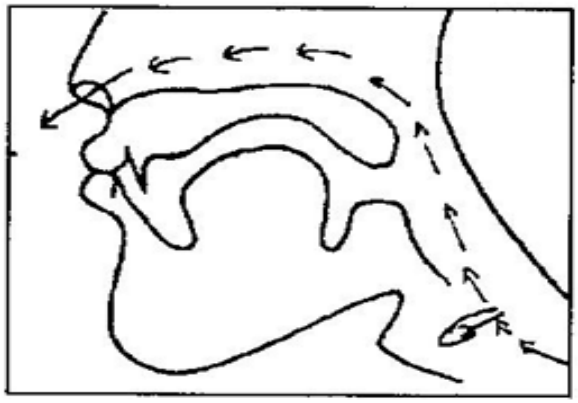

Figure (19)— /m/

On the basis of the articulatory description of the main

allophone of /m/, we can label it as:

a voiced bilabial nasal

The allophones of /m/ are two:

a) /m/ is a labio-dental nasal [ɱ] when it is immediately followed by /f/ as

in [na:ɱfa ħ] (Fatħ slept).

b) /m/ is bilabial in all other environments.

5.7.1.9 Alveolar nasal /n/

During the articulation of the main allophone of /n/, the oral closure is

affected by the tip or blade of the tongue making a firm contact against the

alveolar-ridge. The soft palate is lowered and thus the nasal passage of air is open. The lung air escapes freely through the nostrils. The vocal cords vibrate, producing voice.

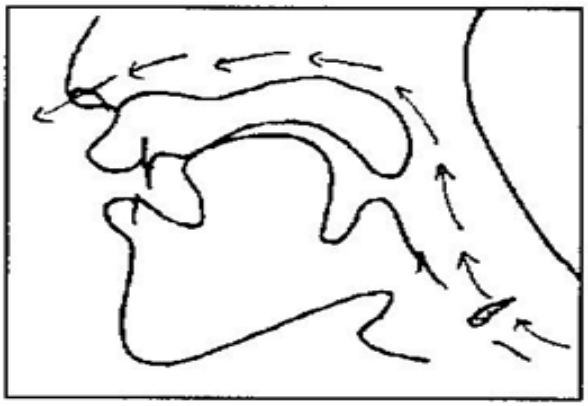

Figure (20) — /n/

On the basis of the articulatory description of the principal allophone of /n/, we can label it as:

a voiced alveolar nasal

The allophones of /n/ are the following:

a) /n/ is a dental nasal [n̪] when it is following by /θ/, /ð/, /ð̞/, / /, / /, / / and / / as in [bɪn̪] (girl), [mʊ̃ha ɪs] (engineer), [waha θa:bɪ] (Thatbit is weakened), [hasa ð̞afr] (Hassan won).

b) /n/ is an alveolar nasal when it occurs initially as in [nuːء] (light), intervocalicaly (single and double) as in [hanaːʕ] (proper noun) and [fannaːn] (artist masc.) and finally as in [tiːn] (fig)..

c) /n/ is a velar nasal [ŋ] when it is followed by /k/ or /q/ as in [ʃaŋq] (hanging), [baŋk] (bank).

5.7.1.10 Lateral

There is only one lateral consonant in Arabic which is symbolized /l/.

5.7.1.11 The alveolar /l/

During the articulation of the main allophone of /l/, the soft palate is raised and so the nasal passage of air is shut off completely. The tip or blade of the tongue makes a firm contact with the teeth-ridge and so the oral passage of air is also closed completely. But the sides of the tongue are lowered and the air from the lungs escapes along the sides of the tongue freely and continuously. The vocal cords, producing voice.

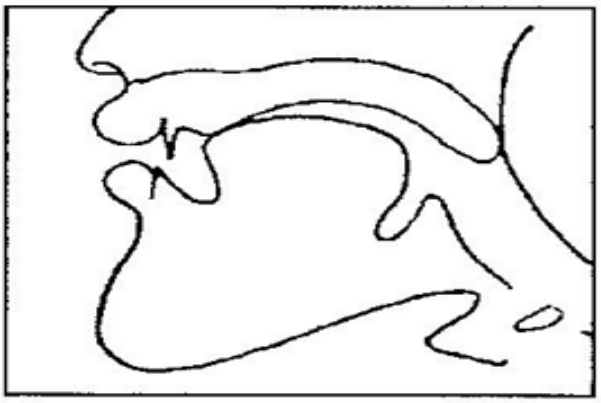

Figure (21)— /l/

On the basis of the articulatory description of / l /, we can

label it as:

a voiced alveolar lateral

The allophones of / l / are the following:

a) / l / is a dental lateral [ ] when it is immediately followed by /ɵ/ or /ð/

or /ð/ as in [χaɪ ðaːmaʔ] (a thirsty horse).

b) / l / is clear or palatalized [l] when it is immediately followed by a vowel

or the semi-vowel /j/ as in [liːm] (lemon), [lɪjaʊm] (for one day).

c) / l / is dark or velarised [ɬ] only in the word [ʔaɬɬah] (Allah).

5.7.1.12 Fricative

In Arabic, there are twelve fricatives: the labio-dental fricative /f/, the dental fricatives /ɵ, ð, ð/, the alveolar fricatives /s, z, S/, the palato-alveolar / ʃ /, the uvular fricatives /x, ʁ/, the pharyngeal fricative /ħ/ and the glottal fricative /h/. /f, ɵ, s, S, χ, ħ, h/ are voiceless, and /ð, ʃ, ʁ, ð, z/ are voices.

5.7.1.13 The labio-dental /f/

During the articulation of the principal allophone of /f/, the soft palate is raised and so the nasal passage of air is shut off completely. The lowed lip is brought very close to the upper front teeth so that there is a very narrow gap between them. The air from the lungs escapes through this narrow gap with audible friction. The vocal cords are wide apart during the articulation of /f/.

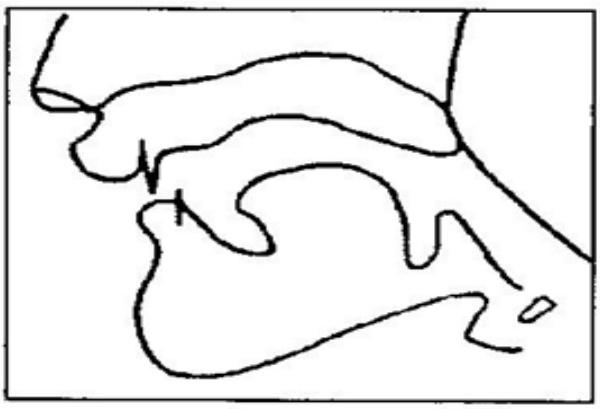

Figure (22)– /f/

On the basis of the articulatory description, we can label it as:

a voiceless labio-dental fricative

No important allophonic variants of /f/ occur except in respect of the position of the lip position required by an adjacent vowel.

5.7.1.14 The dental fricatives /ɵ/, /ð/ and /ð/

During the articulation of /ɵ/ and /ð/, the soft palate is raised and so the nasal passage of air is shut off completely. The tip or blade of the tongue is brought between the two rows of the teeth in such away that there is a very narrow gap between them. The lung air escapes through this narrow space with audible friction. The vocal cords do not vibrate during the articulation of /ɵ/, but they vibrate during the articulation of /ð/.

The principal allophone of the phoneme /ð/ is articulated in the same way as /ɵ/ and /ð/ are articulated. The only difference is that during the articulation of the principal allophones of /ð/, the back of the tongue is raised in the direction of the soft palate and therefore it is velarised or it has a back vowel quality.

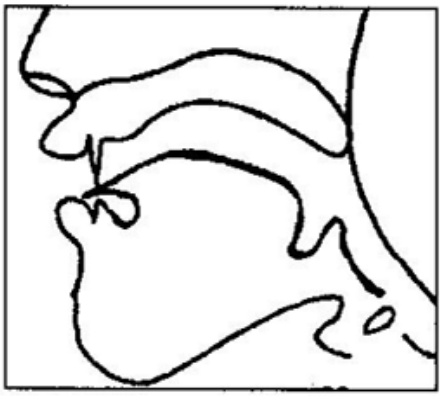

Figure (23)– /ɵ, ð /

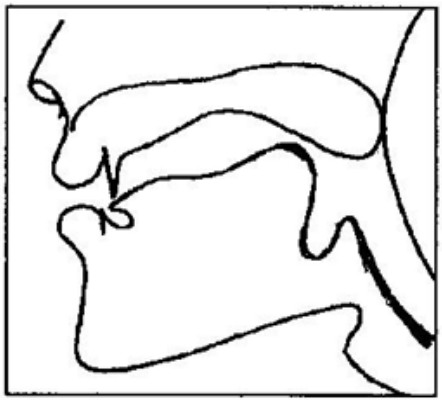

Figure (24)-- /ð/

On the basis of the articulatory description of /ɵ/, /ð/and /ð/, we can label them as:

/ɵ/ is a voiceless dental fricative

/ð/ is a voiced dental fricative

/ð/ is a voiced velarised dental fricative

There are no allophones variants that differ significantly from each other and thus /ɵ/, /ð/ and /ð/ can be said to have one allophone each [ɵ], [ð] and [ð] which occurs in all the words in which /ɵ/, /ð/ and /ð/ occurs.

5.7.1.15 The alveolar fricatives /s/, /S/ and /z/

During the articulation of the principal allophone of /s/ and /z/, the soft palate is raised so as to shut off the nasal passage of air. The tip and blade of the tongue are brought near the teeth-ridge in such away that the space between them is very narrow. The lung air escapes through this narrow gap with audible friction. The vocal cords are kept wide apart during the articulation of /s/, but they vibrate during the articulation of /z/.

The principal allophone of the phoneme /S/ is articulated in the same way as /s/ and /z/ are articulated. The only difference is that during the articulation of the principal allophone of /S/, the back of the tongue is raised in the direction of the soft palate and therefore it is velarised or it has a back vowel quality.

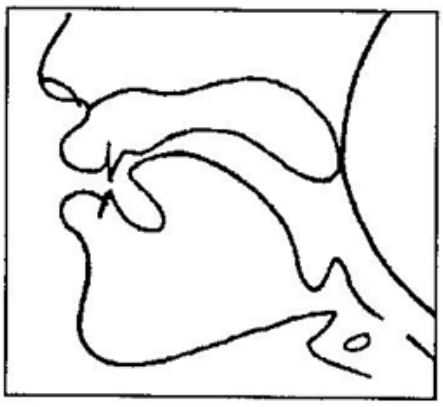

Figure (25)– /s, z/

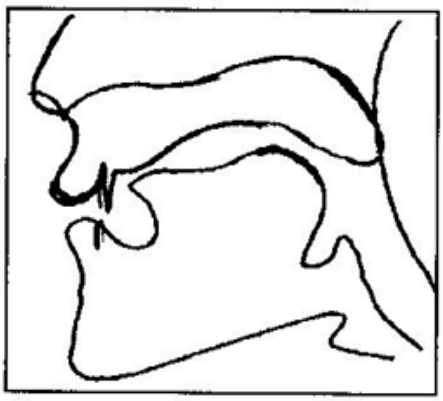

Figure (26)– /S/

On the basis of the articulatory description of /s/, /z/ and /S/, we can label them as:

/s/ is a voiceless alveolar fricative.

/S/ is a voiceless velarised alveolar fricative.

/z/ is a voiced alveolar fricative.

There are no allophonic variants that differ significantly from each other and thus /s/, /z/ and /S/ can be said to have one allophone each [s], [S] and [z] which occurs in all the words in which /s/, /S/ and /z/ occurs.

5.7.1.16 The palato-alveolar fricative /ʃ/

During the articulation of the principal allophone of /ʃ/, the soft palate is raised so as to shut off the nasal passage of air. The tip and blade of the tongue are brought very near the teeth-ridge. At the same time, the front of the tongue is raised in the direction of the hard palate. The lung air escapes through the narrow gap between the tip and blade of the tongue and the teeth-ridge and between the front of the tongue and the hard palate with audible friction. The vocal cords are wide apart during the articulation of /ʃ/.

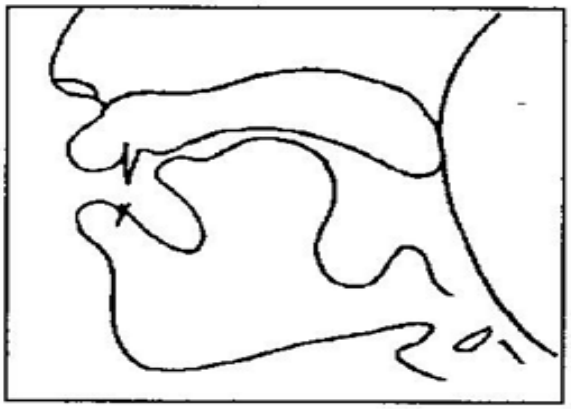

Figure (27)— /ʃ/

On the basis of the articulatory description of /ʃ/, we can label it as:

a voiceless palato-alveolar fricative

There are no allophonic variants of /ʃ/ other than the one involving the lip-rounded.

5.7.1.17 The uvular fricative /χ/ and /ʁ/

During the articulation of the principal allophone of /χ/, and /ʁ/, the soft palate is raised and so the nasal passage of air is shut off completely. The extreme back of the tongue is brought very close to uvular so that there is a

very narrow gap with audible friction. The vocal cords are wide apart during the articulation of /χ/, but they may vibrate during the articulation of /ʁ/.

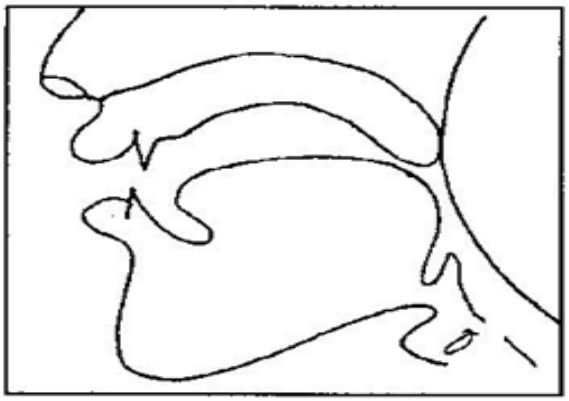

Figure (28)-- /χ, ʁ/

On the basis of the articulatory description of /χ/ and /ʁ/, we can label them as:

/χ/ is a voiceless uvular fricative.

/ʁ/ is a voiced uvular fricative.

There are no important allophonic variants of /χ/ and /ʁ/ occur except in respect of the position of the lips which depends on the lip position required by an adjacent vowel.

5.7.1.18 The pharyngeal fricative /ħ/

During the articulation of the principal allophone of /ħ/, the soft palate is raised and so the nasal passage of air is shut off completely. The root of the tongue is brought very close to the back wall of the pharynx so that there is a very narrow gap between them. The air from the lungs escapes through this narrow gap with audible friction. The vocal cords are wide apart during the articulation of /ħ/.

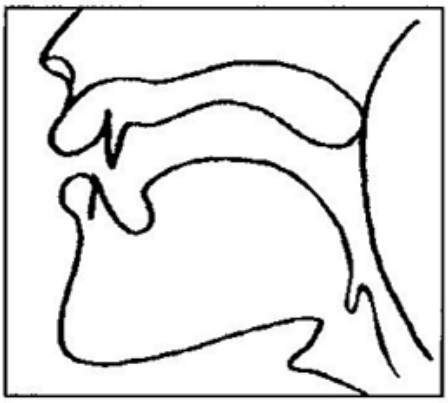

Figure (29) – /ħ/

On the basis of the articulatory description of /ħ/, we can label it as:

a voiceless pharyngeal fricative

There are no important allophonic variants of /ħ/ occur except in respect of the position of the lips which depends on the lip position required by an adjacent vowel.

5.7.1.19 The glottal fricative /h/

During the articulation of the principal allophone of /h/, the soft palate is raised so as to shut off the nasal passage of air completely. The two vocal cords brought very near to each other, the air from the lungs escapes through this narrow glottis with audible friction. The tongue is at rest during the articulation of /h/, but it takes the position of the next vowel sound.

On the basis of the articulatory description of /h/, we can label it as:

a voiceless glottal fricative.

The allophones of /h/ are two:

a) /h/ is a voiced [ɦ] when it occurs in intervocalic position as in [mʊɦandɪs] (engineer).

b) /h/ is a voiceless [h] when it occurs initially as in [hɪlal] (crescent).

5.7.1.20 The tap or flap

There is only one tap consonant in Arabic which is symbolized as /r/.

During the articulation of the principal allophone of /r/, the soft palate is raised as to shut off the nasal passage completely. The tip or blade of the tongue strikes quickly against the teeth-ridge just once. There is sufficient gap between these two articulators for lung air to escape freely without any friction. The vocal cords vibrate, producing voice.

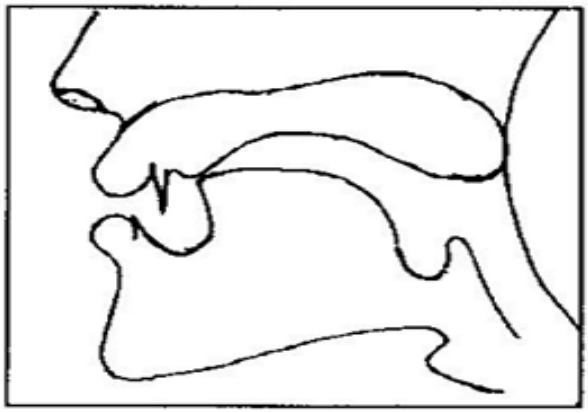

Figure (29) -- /r/

On the basis of the articulatory description of /r/, we can label it as:

a voiced alveolar tap or flap

The allophones of /r/ are the following:

a) /r/ is a voiced alveolar tap [ɾ] when it occurs single or when it occurs single or when it occurs after /θ/ as in [kaɾi:m] (generous) and [ʕaθɾah] (false step).

b) It is /r/ when it is doubled as in [ʕarrafa] (defined).

5.7.1.21 The frictionless continuant and semi-vowels

There are three sounds in Arabic which come under these two categories: the pharyngeal /ʕ/, the palatal /j/ and the labio-dental /w/.

5.7.1.22 The pharyngeal frictionless continuant /ʕ/

During the articulation of the principal allophone of /ʕ/, the soft palate is raised and so the nasal passage of air is shut off completely. The root of the tongue is brought near the back wall of the pharynx so that there is a wide gap between them. The air from the lungs passes through this wide gap freely, without any friction. The vocal cords vibrate, producing voice.

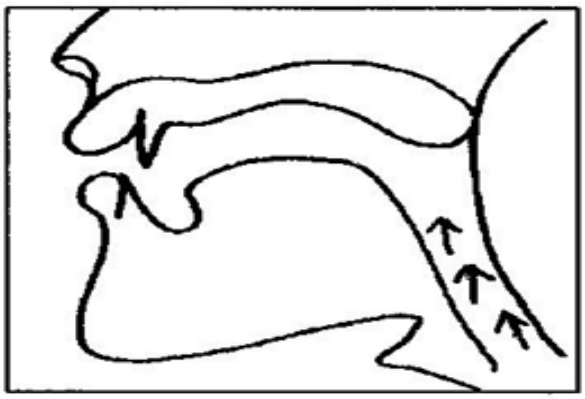

Figure (30)– ʕ/

On the basis of the basis of the articulatory description of /ʕ/, we can label it as:

a voiced pharyngeal frictionless continuant[19]

There are on important allophonic variants of /ʕ/ occur except in respect of the position of the lips which depends on the lip position required by an adjacent vowel.

[19]In many traditional and even British books, the sound represented by the letter ع has been described as a fricative.

5.7.1.23 The palatal frictionless continuant /j/

During the articulation of the principal allophone of /j/, the front of the tongue takes up a position necessary for the articulation of a vowel between front close and front half-close depending upon the closeness or openness of the vowel that follows /j/. The soft palate is raised so as to shut off the nasal passage of air. The vocal cords vibrate, producing voice. The tongue moves immediately to the position of the following sound.

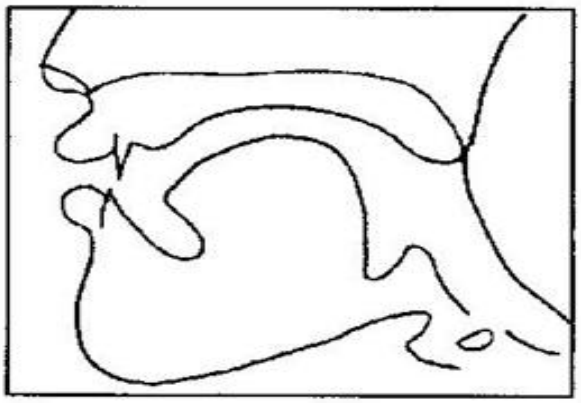

Figure (31)-- /j/

On the basis of the articulatory description of /j/, we can label it as:

a voiced palatal frictionless continuant

The allophones of /j/ are the following:

a) /j/ is a voiceless [j] when it is preceded by a voiceless consonant as in [jaɦja] (proper noun).

5.7.1.24 The labio-velar frictionless continuant /w/

During the articulation of the principal allophone of /w/, the back of the tongue assumes a position required for the articulation of a vowel between back close and back half-close depending upon the closeness or openness of the vowel that follows it. The soft palate is raised so that the nasal passage of air is blocked completely. The tongue moves immediately to the position of the sound that follows /w/. The vocal cords vibrate, producing voice.

On the basis of the articulatory description of /w/, we can label it as:

a voiced labio-velar frictionless continuant

There are no important allophonic variants of /w/ occur.

5.8 Lip-position during the articulation of the consonants of Arabic

Consonant	Lip-spread	Lip-rounded
/b/	/bɪju:t/ (houses)	/bʊr/ (flour)
/ /	/ i:n/ (fig)	/ u: / (mulberry)
/ /	/ ɪju:r/ (birds)	/ a:lɪb/ (student)
/ /	/ i:k/ (cock)	/ ʊb/ (bear-n)
/ /	/ ɪjaʕ/ (loss)	/ ʊr/ (harm)
/k/	/ki:s/ (bag)	/kʊrah/ (ball)
/q/	/qɪja:s/ (measurement)	/qu: / (living)
/ʔ/	/ʔɪna/ (where)	/ʔaʊraq/ (papers)
/ʤ/	/ʤi:l/ (generation)	/ʤʊbn/ (cheese)
/m/	/mɪf ħ/ (key)	/mʊhan ɪs/ (engineer)
/n/	/nɪabah/ (substitution)	/nu:r/ (light)
/f/	/fi:l/ (elephant)	/fu:l/ (broad bean)
/Ɵ/	/Ɵɪja:b/ (dresses)	/ƟʊlƟ/ (third)
/ð/	/ðɪkra/ (memory)	/ðarrah/ (atom)
/ð/	/ðɪlʕ/ (limp)	/ðarf/ (envelope)
/s/	/si:rah/ (career)	/sʊʔ/ (evil)
/S/	/Sɪja:m/ (fasting)	/Sa:bu:n/ (soap)
/z/	/zɪʔbaq/ (mercury)	/zʊʤa:ʤ/ (glass)
/ʃ/	/ʃɪba:m/ (city in Yemen)	/ʃʊkr/ (thankfulness)
/χ/	/χɪju: / (yarns)	/χʊbz/ (bread)
/ʁ/	/ʁɪja:b/ (absence)	/ʁʊla:m/ (boy)

/ħ/	/ħɪ a / (mourning)	/ħʊb/ (love)
/h/	/hɪlal/ (crescent)	/hʊda/ (right path)
/l/	/li:m/ (lemon)	/lʊʔlʊʔ/ (peal)
/r/	/rɪba:t/ (tie)	/ru:ħ/ (soul)
/ʕ/	/ʕi: / (festival)	/ʕu: / (lute)
/j/	/ja:smi:n/ (proper noun)	/jɔ:m/ (day)
/w/	/wɪʤh/ (face)	/wala / (boy)

CHAPTER SIX

A Comparison and Contrast of the Consonant systems of the two languages and its Pedagogical Implications

6.1 General Remarks

No doubt, English and Arabic have two different sound systems. Some of the sounds that occur in English occur in Arabic as well, because no two sound systems can be expected to be one hundred percent different from each other. Since the aim of this research work is to contrast the consonant systems of English and Arabic on the basis of the analysis of the two systems given in chapters 4 and 5, some points of similarities and dissimilarities between the two languages have been listed in this chapter.

In this chapter, we shall attempt a contrastive analysis of the English and Arabic consonant systems. We shall discuss the phonetic and phonological systems of these two languages as far as the consonant sounds are concerned.

The phonology of English taken as a point of reference, as mentioned earlier,

is essentially that of Received Pronunciation (RP) as described by A. C. Gimson in his book *An Introduction to the Pronunciation of English* (2nd edition, 1976). The point of reference regarding Arabic is based on the words so far available on the phonology of Arabic and also on the researcher's

knowledge of Arabic as a native speaker. Listed below are some phonetic and phonological differences between the two systems.

6.2 Phonetic Differences

The voiceless plosives of English have heavily aspirated allophones which occur when the plosives occur initially in accented syllables. Thus /p/, /t/ and /k/ are heavily aspirated in words like /'pensl/, /pə'teɪtəʊ/ and /ə'kaʊnt/ respectively. The voiceless plosives that occur in Arabic are unaspirated in whatever phonetic environments they occur. Native speakers of Arabic are therefore likely to use the unaspirated variety of /p/, /t/ and /k/ in their English speech in whatever phonetic environments they occur. This is likely to affect the intelligibility of their English only when they speak to native speakers of English who tend to hear an unaspirated voiceless plosive as a voiced plosive. Within the Arabic-speaking world, this allophonic substitution does not create any problems of unintelligibility.

The major allophones of /t/ and /d/ in English are alveolar plosives. On the other hand, the major allophones of / / and / /, / /, and / / in Arabic are denti-alveolar plosives. Therefore it is very common to hear Yemeni learners of English saying [i:n] instead of [di:n] and [ɪn] instead of [tɪn], replacing the alveolar plosives by the more familiar denti-alveolar

plosives. This again does not cause any problems of unintelligibility within the Arab world because they do make a distinction between the English [t] and [ϴ] and [d] and [ð] since [ ], [ ], [ϴ] and [ð] are four distinct phonemes in Arabic.

The English phoneme /ʤ/ has an allophone which is [ʤ], the voiced palato-alveolar affricate. The Arabic phoneme (which we have chosen to represent with the symbol /ʤ/ for the sake of transcriptional convenience), on the other hand, has one major allophone which is a voiced palatal affricate. Arabic speakers of English who pronounce the Arabic latter ج as an affricate are likely to use the palatal affricate in their English speech. This again, except to the ears of a trained phonetician, does not cause any problem of unintelligibility.

There are however, a vast majority of Arabic speakers who pronounce the Arabic letter ج as a voiced plosive. The affricate (either palatal or palato-alveolar) just does not occur in their speech at all. These people face a major problem because they systematically substitute [ʤ] in English words by [g], resulting in a lot of confusion and sometimes total unintelligibility. Thus, they say [gʌmp̚] for *jump*, [gɒn] for *John*, [frɪg̚] for f*ridge*, [bæg̚] for *badge*.

Minimal pairs distinctions like *bag – badge*, *egg – edge* just do not occur in their speech at all.[20]

In native varieties of English the two letters *ng* are pronounced [ŋ] (that is, without the voiced velar plosive [g] after [ŋ]) when these two letters end a word and when these two letters occur in the middle of words which are derived from verbs. Thus *singer* is /'sɪŋə/ but *finger* is /'fɪŋgə/. Native speakers of Arabic pronounce the Arabic combination ن and ج (if they pronounce ج as [g]) as [ŋg], that is, always with a voiced velar plosive following [ŋ]. Thus they pronounce words like /zaŋga'bi:l/ (ginger), /zɪŋgɪ'ba:r/ (name of a town in Abjan governorate) and so have no problems in pronouncing English words like *hunger* and *finger*. But they do tend to pronounce the two letters *ng* as [ŋg] wherever these two letters occur in an English word. This, it must be pointed out here, does not cause any problem of unintelligibility whatsoever, even to native speakers of English.

Arabic speakers who have no [g] at all in their Arabic speech are confronted with a serious problem. Since they have a voiced palatal affricate and not a voiced velar plosive in their Arabic speech, the sound [ŋ] does not

[20]We have not included [g] in our list of Arabic consonants in this dissertation since we have chosen to describe Classical Arabic for purposes of this research. But since many of the Yemeni learners of Arabic speak a colloquial variety of Arabic in which [g] occur and not [ʤ], this difference is listed in this chapter.

occur at all in the speech. Most of these replace the English [g] by their voiced palatal affricate and so the orthographic *n* which occurs before the affricate is automatically pronounced as [n]. It is not uncommon to hear *finger* pronounced ['fɪnʤaɾ] and *hunger* pronounced ['hʌnʤaɾ]. These people do face serious problems of unintelligibility as far as their English speech is concerned.

The English phoneme /r/ has a wide variety of allophones in native varieties of British English. It is pronounced variously as [r] (a voiced past-alveolar frictionless continuant in word-initial position), [r] (a voiced past-alveolar fricative in word-medial position preceded by /b/, /d/ and /g/), [r] (a voiceless post-alveolar fricative in word-medial position preceded by a heavily aspirated voiceless plosive) and [ɾ] (a voiced alveolar tap in the intervocalic position and when /r/ is preceded by /θ/). On the other hand, the phoneme /r/ in Arabic has just two allophones [ɾ] and [r], a tap and trill, both articulated as alveolar sounds. The tendency on the part of native speakers of Arabic when they speak English is to use the tap variety [ɾ] wherever /r/ occurs in an English word. We must hasten to add here, however, that their use of [ɾ] wherever /r/ occurs in English does not render their English speech unintelligible at all.

6.3 Phonological Differences

In English [p] and [b] belong to two different phonemes because the two sounds contrast with each other in innumerable minimal pairs like *pin – bin, pull – bull*, etc. On the other hand, in Arabic, the two sounds are in complementary distribution. [p] occurs only word-medially when the following sound is voiceless. /sabt/ = [saptˀ] (Saturday), /ˈʔabkar/ = [ˈʔapˀkaɾ] (proper noun) and /ħabs/ = [ħaps] (prison) can be cited as examples. The voiced plosive [b] occurs in all of the phonetic environments like word-initial (as in /bɪnt/ (girl) which is [bɪntˀ]), intervocalically (as in /ka:bi:r/ (big) which is [kaˈbi:ɾ]), word-medially but in non-intervocalic position (as in /ˈʕamba/ (papaya) which is [ˈʕamba]) and word-finally (as in /kɪˈta:b/ which is [kɪˈta:bˀ]). Native speakers of Arabic learning English as a foreign language have therefore the tendency to substitute [b] for [p] in their English speech when [p] occurs initially, medially (both intervocalic and non-intervocalic) and finally. It is not at all uncommon to hear *pill* pronounced [bɪl], *supper* pronounced [ˈsabaɾ], *compose* pronounced [kamˈbo:z] and *cap* pronounced [kæbˀ] in English speech of native speakers of Arabic. This is a serious sound-substitution because this phonemic substitution is bound to make the English

speech of native speakers of Arabic totally unintelligible. This ought to be remedied.

The voiceless palato-alveolar sound [ʧ] occurs in English and it is a separate phoneme since it contrasts with [t], [ʃ] and [ʤ]. In fact, the series *chin, tin, shin* and *gin* establish the phonemic status of all the four sounds listed above. In Arabic, classical as well as colloquial, the voiceless affricate sound just does not exist, even as an allophone. The sound does not form part of the sound system of any variety of Arabic. The natural tendency on the part of native speakers of Arabic learning English as a foreign language is to substitute the [ʧ] sound by [ʃ], the fricative articulated in the same place and which does form part of the sound system of Arabic. Thus *chin* is [ʃɪn] in Arabic English, *cheat* is [ʃi:t] and *catch* is [kæʃ]. The three examples listed above (chin – shin, cheat – sheet and catch – cash) are minimal pairs establishing the contrast between [ʧ] and [ʃ]. Such minimal pair distinction is obliterated in Arabic English because of the total absence of the affricate [ʧ] from the sound system of Arabic. This, like the [p] – [b] substitution discussed above, is an example of a serious sound-substitution which ought to be remedied if Arabic English has to be intelligible.

In English the voiced alveolar nasal [n] and the voiced velar nasal [ŋ] belong to two separate phonemes because of the existence of minimal pairs

like *sin* and *sing, win* and *wing*, etc. In Arabic, on the other hand, the two sounds are allophones of the same phoneme, [ŋ] occurring only before [k][21] and [q], and [n] occurring elsewhere. So native speakers of Arabic learning English have no problem whatever in pronouncing words like *bank, uncle, hunger* and *finger* because these words fit neatly into their native Arabic phonological system. But they do have a problem while pronouncing words like *sing* and *singing*. They pronounce these words with a [ŋg]. But this pronunciation does not lead to unintelligibility. So a teacher of English need not bother too much about this substitution.

The voiced labio-dental fricative [v] occurring in English as a phoneme, distinct from its voiceless counterpart [f]. These are minimal pairs like *fat* and *vat*, establishing the phonemic status of [f] and [v]. In Arabic, both classical and colloquial, the voiced fricative [v] just does not occur. Many native speakers of Arabic, therefore, have the tendency to use [f] in place of [v] in whatever position in a word [v] occurs. Thus we hear [fa:stˁ] in place of [va:stˁ], [li:f] in place of [li:v], ['i:fən] in place of ['i:vən], etc. This, needless to say, is a serious sound-substitution since it results in minimal pair distinction being lost and therefore ought to be remedied.

[21][ŋ] occurs also before [g] in colloquial varieties of Arabic in which [g] is used in places of the classical Arabic [ʤ].

The sounds [s] and [z] occur in both Arabic and English and in both the languages the minimal pairs like sip – zip (English) and [mɪsmaːع] (nail) and [mɪzmaːع] (flute) (Arabic). So Arabs learning of English have no problems in articulating the two alveolar fricative sounds. But the different phonetic realizations of the plural morpheme of regular nouns of English are a bit of a problem to Yemeni learners of English. They do pronounce *dogs* and *cabs* properly, may be because of the voiced plosives that end the singular forms of these words. But it is not uncommon to hear *sons, sums* and *bells* being pronounced as [sʌns], [sʌms] and [belz] respectively, with a voiceless alveolar fricative at the end. This substitution, no doubt, does not affect the intelligibility of Yemeni English, but one feels that the different phonological shapes of the plural morpheme ought to be taught to Arabic learners of English.

The voiced palato-alveolar fricative [ʒ] has phonemic status in English, though its frequency of occurrence is limited and is also restricted to the word-medial position. Because of its total absence from the phonological system of Arabic, Arabic speakers of English tend to replace it by [ʃ], its voiceless counterpart. Thus we hear words like *occasion, measure, leisure* and *pleasure* with a [ʃ] in them. This substitution does not affect the intelligibility of Arabic English and therefore need not cause serious concern to teachers of English to native speakers of Arabic.

The phoneme /r/ is a source of difficulty to many Arab learners of English. In Arabic, the phoneme /r/ has just two allophones, the tap [ɾ] and the trill [r]. In English, on the other hand, the trilled [r] does not occur at all (except in Scottish English, which is not our concern in this dissertation) and the tap [ɾ] occurs in English intervocalically and after [θ]. The other three allophones of /r/ ([ɹ], the voiced palato-alveolar frictionless continuant, [ɹ], the voiced post-alveolar fricative and [ɹ], the voiceless post-alveolar fricative) just do not occur in Arabic therefore, Arabic speakers of English use the tap variety [ɾ] wherever /r/ occurs in English. Further, in English, /r/ is pronounced only when orthographic *r* or *rr* is followed by a vowel. Final orthographic *r* or *r* + *mute vowel* is never pronounced. Arabic speakers of English, since they are used to a spelling-pronunciation, tend to pronounce the letter *r* wherever it occurs in a word. Neither the use of [ɾ] wherever /r/ occurs in a word nor pronouncing /r/ wherever *r* is found in the spelling seems to affect the intelligibility of Arabic English.

In English, the phoneme /l/ has four allophones, the dental lateral [l̪], voiceless [l̥], clear [l] and dark [ɬ]. In Arabic, on the other hand, the dark [ɬ] occurs only in one word which is /ʔaɬɬah/ (God) and the clear [l] occurs in all the other words in which /l/ occurs. Therefore, Arab speakers of English

use the clear [l] wherever /l/ occurs in English. But this does not render Arabic English unintelligible.

The phoneme /w/ in English has a voiceless allophone when it occurs proceeded by aspirated voiceless plosives or when it is followed by an orthographic *h*. This allophone does not occur in Arabic and so Arabic speakers of English use just the voiced allophone of the phoneme /w/.

The sound [t] and [d] occur in English as two separate phonemes with minimal pairs like *teem* [tiːm] and *deem* [diːm]. Arabic learners of English have no problems in articulating these two alveolar plosive sounds except perhaps that many Arabic speakers substitute the English alveolar plosives by the denti-alveolar plosives that occur in Arabic. But the different phonetic realizations of the past tense marker morphemes of regular verbs of English are a bit of a problem to Yemeni learners of English. It is not uncommon to them *cooked, pushed* and *attached* being pronounced as [kʊkd], [pʊʃd] and [əˈtæʃd] respectively, with a voiced alveolar fricative at the end. This substitution, no doubt, does not affect the intelligibility of Yemeni English, but one feels that the different phonological shapes of the past tense morpheme ought to be taught to Arabic learners of English.

Arabic permits consonants to occur both single and geminated (= doubled) between vowels in a word. The word /ʃæ a/ (the mark ◌ً is called

/ʃæ a/) itself is an example of the consonant / / occurring geminated. For example, the /l/ is single in the word *Ali* (proper noun) but it is geminated in the word /kʊllɪ:jæh/ (college). The / / is single in the word *Huda* (proper noun) but it is geminated in the word /ʃædda/. In English, on the other hand, consonants never occur geminated in the intervocalic position. Even if the letter appears twice in the written forms of words (like *pp* in *supper, bb* in *rubber, gg* in *beggar, mm* in *summer, nn* in *running, ll* in *pulley, cc* in *account*, etc.) the two letters represent a single sound in the pronunciation of the word. Within a word, between vowels, consonants in English always occur single. At word-boundaries, however, when one word ends in a certain consonant and the second word begins with the same consonant that ends the previous word, the consonant is pronounced long or doubled. For example, if someone advises someone else to rob somebody called Badr, he will say *Rob Badr*, with a doubled /b/ at the boundary between the two words. In the expression "Some mad person…", the /m/ will be doubled in speech, but within a word the phenomenon of gemination or doubling never occurs in English. Since Arabic permits both single and doubled consonants intervocalically and since English orthography permits the same consonant letter to be written twice, the Arab tendency will be to pronounce a single *t* as /t/ and a doubled *tt* as /tt/.

6.4 Consonant Clusters in English and Arabic

English permits consonant clusters at the beginning and end of syllables, but in Arabic, consonant clusters can occur only at the end of syllable and that too, only clusters made up of just two consonants.

Initial consonant clusters in English can be made of either two or three consonants and final clusters can be made up of two, three or four consonants. The following are some examples of clusters that occur in English:

/pr-/	/pres/	/str-/	/stri:t/
/-mp/	/læmp/	/-lp/	/help/
/-skt/	/a:skt/	/-kts/	/ækts/
/-ksts/	/teksts/	/-mpts/	/tempts/

Arabic, on the other hand, does not permit initial consonant clusters at all. There can be just one word-initial consonant in any Arabic word. In the syllable-final position, Arabic permits consonant clusters, but these clusters can be made up of just two consonants. Given below are some of the final consonant clusters permissible in Arabic.

/-zq/	/rɪzq/ (fortune)
/-ldʒ/	/θaldʒ/ (snow)

/-rs/ / ærs/ (lesson)

/-fs/ /næfs/ (soul)

This difference between the English Arabic systems is likely to create problems of pronunciation to native speakers of Arabic learning English as a foreign language. It is likely that they break the cluster by inserting a vowel between the consonants forming the cluster. By doing this, they are increasing the number of syllables in a word by one (if /stri:t/ is pronounced /ɪstri:t/, the word has an extra syllable) and this is bound to affect the speech-rhythm of their English. Though Arabic does permit syllable-final consonant clusters, these clusters are made up of just two consonants, while English permits upto four consonants to cluster together at the end of a syllable. A thorough and exhaustive list of the Arabic consonant clusters will reveal the differences between the clusters that are permissible in English and those that are permissible in Arabic. For example, /ðz/ is cluster that occurs in English (as in *clothes* /kləʊðz/) but I do not think this cluster is a permissible one in Arabic, because most Arabic speakers pronounce the word *clothes* as /kləʊðɪz/. To cite another example, /ŋks/ is a permissible cluster in English, but since Arabic does not permit more than two consonants to form a cluster at the end of a syllable, most Arabic speakers pronounce the word *thanks* as /'Θæŋkɪs/. It is likely that all clusters made up of three and four consonants at

the end of a syllable and those two-consonant clusters that occur in English but not in Arabic will present difficulties to native speakers of Arabic learning English.

6.5 Conclusion

We have made an elaborate list of the differences between the consonant systems of English and Arabic and we are now in a position to predict the problems in pronouncing individual consonants and cluster of consonants faced by Arabic learners of English. The remedial measures are in the hands of the teachers. Bearing in mind the dissimilarities between the two language systems, a teacher can prepare remedial drills to teach the problem sounds of English to native speakers of Arabic.

BIBLIOGRAPHY

Al-Ani, S. (1970). *Arabic Phonology*, Janua Linguarum Series Practica, 61, The Hague/Paris: Mouton.

Allen, J. B., and S. Pit Corder (eds.). (1974). *The Edinburgh Course in Applied Linguistics. Vol. 3. Techniques in Applied Linguistics*. London: OUP.

Balasubramanian, T. (1981). *A Textbook of English Phonetics for Indian Students*, India, Macmillan Limited.

Bloomfield, L. (1933). *Language*. New York: Henry Holt.

Bloomfield, L., (1935). Linguistic aspects of science. *Philosophy of Science*, 2, 499-517.

Chomsky (1965). *Cartesian Linguistics*. New York: Harper and Row. Reprint. Cartesian Linguistics. A Chapter in the History of Rationalist Thought. Lanham, Maryland: University Press of America, 1986.

Di Pietro, R.J. (1971) *Language Structures in Contrast*, Newbury House.

Fries, C. C. (1952). *The Structure of English*. New York: Harcourt, Brace and Co.

Gimson, A. C. (1969). *An Introduction to the Pronunciation of English*. London, Edward Arnold.

Hatim, B. (1997). *Communication across Cultures. Translation Theory and Contrastive Text Linguistics*, University of Exeter Press.

Heltai, P. (1988). Contrastive analysis of terminological systems and bilingual technical dictionaries, *International Journal of Lexicography. 1*(1), pp. 32-40.

James, C. (1980). *Contrastive Analysis*. London: Longman.

Ladefoged, Peter. (1975). *A Course in Phonetics*. New York, Harcourt Brace Jovanovich, Inc.

Lado, R. (1957). *Linguistics across cultures: Applied linguistics for language teachers*. University of Michigan Press: Ann Arbor.

Lado, R. (1963). *Linguistic across Culture*, Toronto, Ann Arbor the University of Michigan Press.

Nickel, G. (1971). *Papers in Contrastive Linguistics*, Cambridge, Cambridge.

Essam, N. (1992). *علم الأصوات اللغوية (Phonetics)*, Lebanon. Dar Al-Fekr.

O' Connor, J. D. (1991). *Phonetics. A simple and practical introduction to the nature and use of sound in language*. London, Penguin Books.

Othman, H. S. (1990). *حق التلاوة (Recitation Property)*. Jordan. Al-Zarka'a.

Richards, C. J.; Platt, J. T.; Weber, H. (1987). *Longman Dictionary of Applied Linguistics*. Harlow, Essex, England: Longman.

Richards, J. C. (1971). Error analysis and second language strategies. *Language Sciences 17*, 12-22.

Robins, R. H. (1980), *General Linguistics. An introductory survey*. U.S.A., Longman Group Ltd.

Sridhar, S. N. (1980). Contrastive analysis, error analysis and interlanguage. In *Readings on English as a Second Language*, ed. Kenneth Croft, 91-119. Cambridge, MA: Winthrop; reprinted in *Contrastive Linguistics and the Language Teacher*, ed. Jacek Fisiak, 207-42. Oxford: Pergamon Press, 1981.

Umm Muhammad. (1993). *A brief Introduction to Tajweed in the English Language*. Jeddah. Abul-Qasim Publishing House.

Wallwork, J. F. (1969). *Language and Linguistics*. Fakenham Press Limited Fakenham, Norfolk.

Wilkins, D. A. (1978). *Linguistics in Language Teaching*, Soffplk, Edward Arnold.

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