INTERFERENCE PATTERNS IN THE SPOKEN ENGLISH OF IRAQIS WITH PARTICULAR REFERENCE TO STUDENTS SPECIALISING IN ENGLISH

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ABSTRACT

Interference patterns in Second and Foreign language learning take several forms. The aim of this study is to investigate the causes of the problems which Iraqis face when attempting to pronounce English consonant clusters. Generally speaking, the main causes of such errors may be phonological and/or pedagogical.

Chapter One discusses 'Diglossia' in general terms and Arabic 'diglossia' in particular.

Chapter Two considers the sound systems of Iraqi Arabic and RP. Cairene Arabic is also compared with Iraqi Arabic.

Chapter Three investigates and compares the phonotactics of Iraqi Arabic and RP. This chapter also indicates which morphological processes in Iraqi Arabic, Moroccan Arabic, Jordanian Arabic, Kuwaiti Arabic and Egyptian Arabic (Cairene) tend to produce consonant clusters.

Chapter Four looks at different definitions of the syllable. Particular reference is made to the syllable in Iraqi Arabic, as compared with Classical Arabic and RP. Reference is also made to stress.

Chapter Five looks at epenthesis in general and discusses it synchronically and diachronically.

Theory must be supported by experimental data. Chapter Six embodies the experiment designed and carried out at Universities in Iraq, Morocco, Jordan, Kuwait and Egypt. A paragraph in English containing familiar and unfamiliar words, was used as a test of the students' ability to recognise and produce the English consonant clusters under investigation.

Chapter Seven includes an analysis of the results as well as statistical findings. These showed that the 5 Universities could not be considered as having a homogoneous error rate for either the large or small consonant clusters even after allowing for the different balance of males to females in each University.

Finally, chapter eight includes recommendations to improve the status of English in Iraq.

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CHAPTER THREE

INTRODUCTION

As this thesis deals with errors made by Iraqis in general and Iraqi students specialising in English in particular, the two dialects to be compared must be Iraqi Arabic (IA) and one form of English.

For English, I have chosen RP as the model, since Iraqi students are exposed to RP more than any other variety of English. This is attrributed to the fact that English language departments in Iraqi universities recruit (when possible) British lecturers who are speakers of RP. Iraqis tend to listen to the BBC World service more than any other English-speaking station. Tapes bought for the English language laboratories are from England with RP speakers. Most Iraqi lecturers are graduates of British universities where RP is mainly spoken. Therefore, whenever the term 'English' is used in this thesis it refers to RP.

Iraqi Arabic is not the only variety of Arabic concerned here, since I visited four other Arab capitals in the course of my fieldwork. For this reason it has been necesary to detail the phonotactics and syllable structures of these dialects.

The Classical Arabic (CA) referred to in this thesis is in fact Modern Standard Arabic (MSA). Classical Arabic of the Holy Koran and early Arab literature is nowadays used for prayer and for pedagogical purposes when Arabic language and literature is taught. The standard used nowadays in journalism, broadcasting and teaching is this MSA. Although I have occasionally used the term CA, this should be understood as synonymous with MSA. (The foregoing does not necessarily refer to the terms 'English' and 'CA' when used in quotations).

1. DIGLOSSIA

'Diglossia' has been defined as

> "a relatively stable language situation in which, in addition to the primary dialects of the language ...... there is a very divergent, highly codified ...... superposed variety, the vehicle of a large and respected body of written literature ..." (Ferguson, 1959, p. 336).

'Diglossia' is the situation of

> "one particular kind of standardization where two varieties of a language exist side by side throughout the community with each having a definite role to play" (Ferguson, 1959, p. 232).

What is implied in the quotations above is that people use one form for writing and another for speaking. If there is a wide gap between the written and spoken forms of a language in a certain society then the epithet 'diglossia' is employed (Wexler, 1971).

Before I start relating the term 'diglossia' to the Arabic-speaking world, I would like, first, to elaborate on a general discussion of 'diglossia'.

1.1. DIFFERENT INTERPRETATIONS OF 'DIGLOSSIA'

Although it is commonly accepted in the literature that Ferguson (1959) modelled the term 'diglossia' on the article 'La diglossie Arabe' written by the French Arabist William Marçais in 1930 (El-Hassan, 1977), others have suggested that

"According to Sotiropoulos (1977:10), the term diglossia was first introduced by the German linguist Karl Krumbacher, in his book das Problem der Modernen griechischen Schriftsprache (1902) in which he dealt with the nature, origin and development of diglossia with special reference to the Greek and Arabic situation" (Zughoul, 1979, p. 201).

As will be seen below, the term 'diglossia' has not been generally accepted.

Ferguson's (1959) model was based on the notion that some languages can be regarded as comprising of two or more varieties:

"In many speech communities two or more varieties of the same language are used by some speakers under different conditions" (Ferguson, 1959, p. 232).

Since Ferguson (1959) first advanced the term 'diglossia', certain sociolinguists and sociologists have accepted it, while others have extended and refined it (Fishman, 1972), as will be seen below. This expansion and refinement went as far as to include bilingual and multilingual communities where two or more languages are spoken. They have justified this by drawing an analogy between 'diglossia' and 'bilingualism' (Hussein, 1980).

Fishman (1972) has divided speech communities in which 'diglossia' and/or 'bilingualism' exist into four quadrants:

1- speech communities characterised by both 'diglossia' and 'bilingualism';

2- speech communities characterised by 'bilingualism' without 'diglossia';

3- speech communities characterised by 'diglossia' without 'bilingualism';

4- speech communities characterised by neither 'diglossia' nor 'bilingualism'.

I shall only relate quadrants 1 and 3 to the discussion here, as quadrants 2 and 4 are not immediately relevant to the topic of 'diglossia'.

1.1.1. 'BILINGUALISM' AND 'DIGLOSSIA'

It is not possible to equate 'bilingualism' with 'diglossia' as different languages are used in the former while different varieties of the same language are used in the latter to fulfil different societal functions. Fishman (1972) has dealt with 'diglossia'

> "from a sociological rather than a linguistic point of view, and attempted to trace the maintenance or disruption of diglossia at the national or societal levels. He, likewise, regards diglossia as a distinct form of bilingualism which was initially used in connection with a society which recognised two or more languages for intra-societal communication" (Hussein, 1980, p. 5).

Fishman (1972, p. 93) states that

> "there are really few nations that are fully bilingual and diglossic".

He gives Paraguay as an example, where two languages, Spanish and Guarani, are used by more than half of the population for different functions. It was with this type of understanding and interpretations that the term 'diglossia' "gained new dimensions and meanings" (Hussein, 1980, p. 5).

In addition, Fishman (1972, p. 92)

> "has attempted to tract the maintenance of diglossia as well as its disruption at the national or societal level"

as well as

"to relate diglossia to psychologically pertinent considerations such as compound and co-ordinate bilingualism".

As mentioned above (p. 10), Ferguson's (1959) model recognized two separate and specialized roles for his (Ferguson) 'High' and 'Low' varieties. Ferguson (1959) regards 'H' as "superposed" upon 'L' as it is usually learned at a later stage in life and is used in more formal situations.

According to Fishman (1972), Gumperz has, among others, added several significant considerations to Ferguson's (1959) original model:

"Gumperz (1961, 1962, 1964, 1966) is primarily responsible for our greater awareness that diglossia exists not only in multilingual societies which officially recognize several 'languages', and not only in societies that utilize vernacular and classical varieties, but also in societies which employ separate dialects, registers, or *functionally differentiated language varieties of whatever kind*" (Fishman, 1972, p. 92).

Even-Zohar (1970) has

"defined diglossia as the most common variant of multilingualism" (Wexler, 1971, p. 330).

Wexler (1971, p. 330) goes on to quote Even-Zohar (1970) on this point:
"'There is a difference between multilingualism (or bilingualism) in which the speaker uses the languages he knows for all purposes, and multilingualism in which each language fills diverse functions which are not entirely over-lapping. The latter situation is the more prevalent

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and has been described by many investigators; in order to distinguish it from multilingualism in general, a special name has been suggested - diglossia'".

Even-Zohar (1970) justifies his treatment of diglossia as a form of multilingualism on the basis that different codes which occur in diglossic and multilingual societies are functionally different.

Wexler (1971) also states that Kučera (1958), who offers a similar model, does not use the term 'diglossia'. To Kučera (1958)

"bilingualism 'in the narrower sense' involves two languages and bilingualism 'in the broader sense' - two dialects or two social codes of the same language" (Wexler, 1971, p. 330).

Hymes' (1964) definition of 'diglossia' is very similar to that of Even-Zohar (1970):

"'Diglossia is an excellent example of co-existence in the same community of *mutually unintelligible codes*, correlated with values and situations, and of the necessity of taking the community as the frame of reference to avoid distorting the communication situation'" (in Wexler, 1971, p. 330).

Besides Paraguay, Fishman (1972) gives examples from other countries where 'diglossia', according to him, co-occurs with wide-spread 'bilingualism'. One such example is Switzerland where both High German (Ferguson's H) and Swiss German (Ferguson's L) are alternated by school children and the older generation. Another example Fishman (1972) chooses is the language situation in Montreal where English (Ferguson's H) and French (Ferguson's L) are used in many agencies and businesses among customers and management coming from different backgrounds and origins.

I do not feel it is possible to equate linguistically Fishman's (1972)

examples chosen from Paraguay and Montreal with that of
Switzerland. In the case of Paraguay and Montreal two different
languages are in question, namely Spanish vs. Guarani and English
vs. French respectively. This is, therefore, a case of 'bilingualism'.
In the case of Switzerland two varieties of German are considered.
Here, it is a matter of 'diglossia'.

1.1.2. 'DIGLOSSIA' WITHOUT 'BILINGUALISM'

It was remarked in 1.1.1. above that Fishman (1972) regards
'diglossia' as a distinct form of 'bilingualism'. In his third quadrant,
Fishman (1972, p. 98) looks at

> "polities in which diglossia obtains whereas bilingualism
> is generally absent. Here we find two or more speech
> communities united politically, religiously, and/or
> economically into a single functioning unit
> notwithstanding the sociocultural cleavages that separate
> them. At the level of this larger (but not always
> voluntary) unity, two or more languages or varieties
> must be recognized as obtaining".

Fishman (1972) exemplifies this from pre-World War 1 Europe. Fishman
(1972, p. 98) believes that the elite in certain European countries
stood in a 'diglossic' situation with their compatriots. The elite spoke
fashionable French, for example, in their "intragroup purposes", while
the masses spoke another language, which was not necessarily
linguistically related, for their "intragroup purposes". The definition
given above by Fishman (1972) differs from Ferguson's (1959) in that
it suggests a speech community can be in a 'diglossic' situation even
if the languages used are genetically unrelated .

Ferguson (1959) does not identify 'diglossia' with 'multilingualism'.
Ferguson (1959) has

"intended diglossia to describe both the function and distribution of the norms which stand in a dialect-to-language relationship in a speech community, and their structural relationships. One of Ferguson's conditions is that the multiple norms be more than just existing or holding. They must be intelligible to the speakers themselves" (Hussein, 1980, p. 9).

Among those who propose a distinction between 'diglossia' and 'bilingualism' is Martinet (1961). In differentiating between the two, Martinet (1961) designates 'diglossia' to multiple norms in a community; and 'bilingualism' to multiple norms of an individual speaker (Hussein, 1980).

Kaye (1970), on the other hand, feels that Ferguson (1959) has missed an important point in his classification of the two codes 'H' and 'L'.

Kaye (1970) advances an alternative model and substitutes the term 'ill-defined' for H and 'well-defined' for L. By the former, Kaye (1970) means that language 'X' is learnt non-natively, i.e. at school, for example, as is the case for Classical Arabic; while 'well-defined' can be applied to a language acquired naturally, as is the case for the Arabic dialects. I do not want to go into the pros and cons of Kaye's (1970) argument. Suffice it to say that Kaye (1970) argues that 'well-defined' systems are more systematic and lend themselves better to description than their 'ill-defined' counterparts (Hussein, 1980). From his arguments on Arabic, it is not possible to judge whether Kaye (1970) ascribes to Ferguson's (1959) model or that postulated by Fishman (1972). Kaye's (1970, p. 389) statement, that there

"is no such entity as any Colloquial coming closer to Classical Arabic; the two are not even comparable",

suggests that he (Kaye, 1970) tends to equate 'diglossia' with 'bilingualism'. In other words, he (Kaye, 1970) is postulating the idea that CA and the Arabic dialects are two separate languages.

1.2. 'DIGLOSSIA' IN ARABIC

A name can sometimes cause a great deal of confusion. The term 'Arabic', without any doubt, is a good example of this. It could be taken for granted, for example, that 'English' designates a single language comprehended by Britons, Americans, Australians, etc. Could the same be said of Arabic? It is commonly assumed that

> "*Arabic* designates a single language uniting in ties of mutual comprehension speakers from countries as widely separated as Iraq, Egypt and Morocco, but this is not so" (Mitchell, 1973, p. 10).

One form of Arabic is perhaps more or less common to the whole Arab World: this is Classical Arabic (CA), the language of the Holy Koran and early literature. The sacredness and divinity the Arabs attribute to Classical Arabic have influenced their attitudes towards the language. On this point Chejne (1978, p. 9) writes:

> "The doctrine of the divine nature of the Qur'an with respect to its meaning, wording, and even its most minute details, came to encompass the Arabic language as a whole. The issue of whether Arabic was God's gift, and hence superior to all languages in beauty, wealth, and nobility, has deeply concerned philologists, theologians, philosophers, religious scholars, and others".

Classical Arabic has also played an instrumental role in preserving the Arabic Islamic culture. Regarding this point, Cachia (1976, p. 12) says:

> "Above all, the Classical is the key to the immense treasure-chest of the past. Its stability has seldom been paralleled in other languages and today any Arab with a secondary education can, if he is interested and prepared to go to a little trouble, gain access to the entire record of the past 1300 years".

Classical Arabic has been the

> "mainstay of Arab nationalism and the most unifying
> force in the politically divided Arab World, after Islam"
> (Zughoul, 1979, p. 204).

This kind of Arabic has also maintained

> "a high degree of uniformity and functions as the official
> language in all Arab countries" (Al-Toma, 1969, p. 3).

At the other end we have the various dialects of Arabic spoken throughout the Arab World. It is spoken by both the educated and the uneducated in the Arab World. These dialects are the means of daily informal communication. Each Arab country has more than one dialect spoken throughout its land. Differences in these varieties are found primarily in the phonology and lexicon (Zughoul, 1979).

It is possible to make, among others, the following general contrasts between Classical Arabic and the dialects:

1- CA has a complicated and rigid grammatical system which was written by the Arab grammarians in the eleventh century.

2- While CA has a highly inflectional system, the dialects have dropped their inflections.

3- CA has a rich lexicon. Colloquial Arabic, on the other hand, has a much more simple vocabulary.

Masses of data would be required to show the similarities and the differences between CA and the Arabic dialects at their levels of phonology, morphology, syntax and lexicon. This would be beyond the scope of this thesis. I would, therefore, like to mention some (not all) of the differences found between CA and IA. The differences which are immediately relevant to the topic researched in this thesis will be elaborated on in greater detail in the ensuing

chapters. Differences between any two colloquial dialects will also be mentioned occasionally.

Phonologically, IA has almost all the sounds of CA (28 in number) as well as a few more, e.g.
/p/, /g/, /tʃ/. (The reader is refered to Chapter Two where the distribution and comparison of consonants is given in greater detail).

IA has lost /ɑ/ from its inventory of consonants.

IA retains all CA vowels as well as two additional ones, namely: /e:/ and /o:/.

The rules for consonant clustering (which will be discussed in greater detail in Chapter Three) are different in CA and IA. Suffice it to say that the rule in CA, which stipulates that initially, a vowel must follow a consonant in initial position, is not adhered to in IA. e.g.
CA /tu'ra:b/ 'soil' ⟶ IA /tra:b/.

IA has most of the medial consonant sequences which are to be found in CA.

IA has much fewer final clusters than CA. IA tends to break up final 2 consonant clusters, e.g.
CA /baħr/ 'sea' ⟶ IA /'baħir/.

From the phonology I move onto the morphology.

I- Most morphemes in CA and IA

> "have a stem which consists of interlocking parts, a root
> consisting typically of three consonants and a pattern of
> vowels fitting around the consonants of the root"
> (Al-Toma, 1969, p. 31).

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This is found in all verbs, most nouns and in some particles. The system found in CA is retained in IA. The roots have almost the same meaning in CA as in IA. There are, however, two basic differences:

1- The vowel patterns found in IA are not identical with CA, as shown by Al-Toma (1969). For example, the following patterns found in CA are peculiar to IA (although a very few examples can be cited):

a- CCVCC IA /ʃbint/ 'dillweed'

b- CCV: IA /hna:/ 'here'

c- CCV:C IA /tʃbi:r/ 'big'.

2- The root patterns in CA are occasionally different from the root patterns in IA. This is due mainly to the fact that IA employs non-Classical phonemes.

II- Contrary to CA, IA has no case endings.

III- There are several discrepancies between the use of gender in CA and IA. A few nouns take opposite genders, e.g.
/sinn/   'tooth'   (feminine in CA, masculine in IA)
/'katif/   'shoulder'   (feminine in CA, masculine in IA).

IV- IA has a restricted use of the dual, contrary to CA. The former

> "does not provide dual forms for adjectives, pronouns, demonstratives and verbs" (Al-Toma, 1969, p. 108).

V- The complex relative pronoun system found in CA has been simplified in IA. e.g.
CA /al'laði/ 'who, which' ⟶ IA /il(li)/.

VI- Different demonstratives are used in IA, e.g.

CA /tilk/ 'that' ⟶ IA /ði:tʃ/.

VII- Salient differences between CA and IA with regards to the verb are as follows:

a) Contrary to CA, IA is characterised by reduplicated roots *FaDFaD*, e.g.

/'dagdag/ 'to pound'.

The above is lacking in CA.

b) IA does not retain any of the modal changes affecting the imperfect in CA (AL-Toma, 1969).

c) Instead of the passive voice, IA employs

> "reflexive patterns to indicate the passive voice, extending them to verbs for which CA uses only the passive form: CA /qil/ 'it was said' IA /ingāl/" (Al-Toma, 1969, p. 110).

With regards to the differences found in the syntax of CA and IA, the following, among others, have been noted:

1- In verb and subject clauses, the verb in IA agrees with the subject. This is contrary to the rules of CA.

2- Many prepositions and adverbs which are to be found in CA are lacking in IA, e.g.

/fi/ 'in'

/ka/ 'like'.

3- Indefinite nouns in CA are characterised by the use of the nunation /-n/, e.g.

/kita'bun/ 'a book'.

In IA the following morphemes are used to show that the noun is indefinite:

/fad/, /fard/, or /'farid/.

4- Most of the subjunctive and jussive particles found in CA are nonexistent in IA,

> "and those which are retained do not have their Classical function as far as the modal changes of the imperfect are concerned" (Al-Toma, 1969, p. 111).

As far as the lexicon is concerned, non-cognate items can be classified into several categories. These can be abbreviated forms, loanwords, modified Classical lexical items, words pertaining to the different parts of the body as well as words used in daily activities (Al-Toma, 1969), e.g.

CA /'dʒalab/ 'to bring'——→ IA /dʒaːb/

CA /famm/   'mouth' ——→ IA /'ħalig/

CA /ra'maː/ 'throw' ——→ IA /ðabb/.

The second important difference between lexical items in CA and IA is the phonemic differences which exist between these lexical items. e.g.

CA /ħaj'waːn/ 'animal' ——→ IA /ħi'waːn/.

> "An examination of 176 cognate items reveals that the percentage of non-identical items is higher than that of the identical items" (Al-Toma, 1969, p. 112).

The above was not an exhaustive list of contrasting features of CA with IA. The reader is referred to Al-Toma (1969) for a fuller description of the differences which exist between CA and IA. I shall also, in the ensuing chapters, look at and compare certain phonological phenomena which are relevant to the topic discussed in this thesis. (Chapter Four, for example, compares the syllabic structure of CA and IA. Stress is also compared in Chapter Four).

To give a detailed contrastive description between one dialect of Arabic and another would require masses of data. Therefore, I have chosen only a few examples to show how one dialect of Arabic differs from another. I have, however, in the forthcoming chapters (Three and Four), concentrated on morphological processes which tend to produce consonant clusters, as well as outlines of the syllable structure of the other dialects discussed in this thesis.

1- Negation differs from CA and IA and from Egyptian Arabic as well:

Classical: /la:'ju:dʒad/ 'there isn't'

Iraqi: /'ma:ku/

Egyptian: /ma'fi:ʃ/.

2- At the semantic level certain lexical items differ in meaning from one dialect to another, e.g.

/'basta/:   IA 'beating; Cr.A 'fun'

/ħa'li:b/:   IA 'milk';   Cr.A 'yoghurt'

/ʕe:ʃ/:   KA 'rice';   Cr.A 'bread'.

It must also be mentioned that each Arab country has more than one distinctive dialect. In Iraq, for example, the Christians and the Jews have their own dialect. The people of Mosul speak differently to those of Baghdad. The beduoins of Mosul speak differently to their urban compatriots. The people of the South speak differently to those in Baghdad. The difference is not based on accent only. These differences are found mainly in the phonology and lexicon, e.g.

/g/ in Baghdadi Arabic ⟶ /q/ in Maslawi or 'Christian' or 'Jewish' Arabic.

From the above description it is safe to state that

"The Arabic-speaking world exists in a linguistic situation of diglossia" Herbolich (1979, p. 301).

1.3. 'DIGLOSSIA', 'TRIGLOSSIA' OR 'QUADRIGLOSSIA'?

However, this 'diglossic' situation has been challenged by a few. Hussein (1980), for example, replaces the term 'diglossia' with the notion 'triglossia'. He has made this possible by identifying a third language variety, namely Modern Standard Arabic (MSA). Literature on 'triglossia', Hussein (1980, p. 15) maintains, is "scanty" and "virtually non-existent". It was first suggested to him by Garvin, although, he first came across it in an article written by Mkilifi (1978): 'Triglossia and Swahili English Bilingualism in Tanzania'. Mkilifi (1978) equates 'triglossia' with 'multilingualism'.

Within the context of the Arab World, Hussein (1980) equates 'triglossia' with three different varieties of the same language, namely: Arabic. In his thesis, Hussein (1980, p. 16) propounds the hypothesis that

> "MSA exists as an independent, functionally operative variety"

which has a more varied lexicon than CA

> "as it is more receptive to foreign and colloquial borrowings".

Zughoul (1979, p. 206) also recognizes MSA as an intermediary variety of Arabic:

> "Modern Standard Arabic emerged with the development
> of journalism in the Arab World and the spread of the
> mass media. MSA is the variety in which the newspapers
> are written, and the news and cultural educational radio
> programs are broadcast. MSA differs very little from FA
> (Fusha Arabic, i.e. Classical Arabic), practically speaking
> it is a simplified form which is readable and
> comprehensible by any literate Arab" (parenthesis
> mine).

According to Zughoul (1979, p. 207), MSA employs the same phonology (same vowels and consonants), the same syntactic and morphological rules.

"The only practical difference ... lies in the lexicon".

On this, Hussein (1980, p. 17) writes:

> "We can safely say that Intermediate Arabic (MSA) is a modern version of CA, since it shares with it almost the same structural patterns; the syntactic base, therefore, is Classical, with few morphological and syntactic borrowings from colloquial. To cite a single morphological process borrowed from Colloquial Arabic and incorporated into MSA, we should mention the case endings which are totally deleted in MSA, but in CA are normally manifested on words according to their grammatical role in a sentence".

The following is an example to show the case endings adhered to in CA:
/'walad/ 'boy' is:
/wala'd<u>u</u>(n)/ in the nominative;
/'walad<u>a</u>/ in the accusative;
and
/wala'd<u>i</u>(n)/ in the genitive.

In the light of the above, it is not possible to ignore the fact that an intermediary or 'middle' variety of Arabic does exist. But is it feasible to construct a third variety and claim that the Arab World exists in a linguistic situation of 'triglossia'? I feel that the argument propounded by Zughoul (1979) and Hussein (1980) lacks conviction.

Moreover, with the progress of science, most languages and countries, whether developed or developing, have had to incorporate into their individual lexicon new foreign words. There has been no substitute in English, for example, for the Russian words:

<u>Sputnik</u>, <u>Glastnosts</u> and <u>Perestroika</u>. The incorporation of such terms into the English language would under no circumstances lead linguists to consider setting up a new dialect of English. This being the case, I do not see the need for setting up MSA as an individual dialect and isolating it from CA as a result of borrowed scientific terms. In any case, these scientific terms are not used on a daily basis. They are the specialist's vocabulary and are used in conferences or in the science class or laboratory. Abdo (1969, p. 1) writes:

> "MSA differs very little from Classical Arabic in phonology, morphology, or syntax. The main difference lies in the realm of lexicon, but even here the difference is not large".

Besides MSA, Zughoul (1979), on the other hand, recognizes another variety of Arabic which he places on the continuum between CA and the dialects, namely Educated Arabic (EA). This being the case, then the term 'triglossia' would become obsolete and a new term must be coined, namely 'quadriglossia'!

Zughoul's (1979) argument for the need to establish this other variety of Arabic (EA) is weak. He admits that EA

> "is not a well-defined variety in the sense that it is completely unstructured" (Zughoul, 1979, p. 206).

The features he analyses for EA are derived from the speech of the ten Arab graduate students who participated in the panel discussion described in his article. These features are:

1. The SVO word order of the individual's dialect was maintained;

2. Case endings were deleted: Morphological rules of the individual's dialect were applied to EA;

3. Lexical entries of EA rely heavily on borrowings from CA;

4. EA is open to foreign borrowings;

5. Phonologically, the vowels of EA are the same as CA, while the consonant phonemes stay close to the individual's dialect;

6. Phonological processes remain dialectal;

7. EA can be marked by code-switching to foreign languages specially French and English. On this point Zughoul (1979) first quotes Blanc (1960):

> "It is the exception rather than the rule to find any
> sustained segment of discourse in a single one of the
> style varieties alluded to. Speakers tend to pass from
> one to the other, sometimes within a single sentence".

The above was Blanc's (1960) conclusion after analysing the speech of the four educted Arabs participating in the experiment. Zughoul (1979) also refers to another study carried out by Shaaban (1978). In this study, Shabaan (1978) concludes that

> "EA remains strikingly dominated by dialectal features
> especially in phonology and syntax and that switching to
> FA (Fusħa Arabic or Classical Arabic) depends on the
> nature of the topic, country of the speaker, and
> familiarity with other interlocutor's and other dialects"
> (Zughoul, 1979, p. 206, parenthesis mine).

This being the case, I do not see the need to establish this variety of Arabic, namely EA. This complicates rather than simplifies matters.

Although Arabists usually prefer to limit the application of the term Classical Arabic to a certain (Medieval) historical period, I would like to propound the hypothesis in this thesis that MSA is synonymous with CA which is equivalent to the Arabic term /al-luɣa al-fusħa/. It is used in the sense opposed to non-standard, i.e. 'dialect'.

As mentioned above, (p. 10), Ferguson (1959) modelled the term 'diglossia' on that coined by the French Arabist William Marçais. This phenomenon, however, was not new to the Arab grammarians and philologists. Altoma (1969, p. 4) traces it back to a pre-Islamic period (before the seventh century A.D.):

> "and a number of its facets has been the subject of many philological and literary studies which began in the ninth century and continued up to the present".

On this point, Ferguson (1959, p. 233) writes:

> "diglossia is not assumed to be a stage which occurs always and only at a certain point in some kind of evolution, e.g. in the standardization process. Diglossia may develop from various origins and eventuate in different language situations. Arabic diglossia seems to reach as far back as our knowledge of Arabic goes, and the superposed 'Classical' language has remained relatively stable".

It is beyond the scope of this thesis to trace the beginnings of 'diglossia' in Arabic. Here, I can only echo Al-Toma's (1969, p. 5) words when he writes:

> "To trace the evolution of the problem as it has been repeatedly treated in Arabic during the last hundred years is beyond the task of this study. Such an undertaking would have to deal with various aspects associated with diglossia such as literary, religious and political implications".

Owing to this diglossic situation, there have emerged two main schools of preference with contradictory views. The first school favours the colloquial dialects over the Classical. The second school opposes this view and favours the Classical over the Colloquial dialects (Chejne, 1978). As cited by Chejne (1978, p. 35), supporters

of the first view argue that although the Classical possesses a "great wealth of expression", "flexibility" of language, "potentiality of adapting itself to new situations", as well as

> "its ability of absorbing new words in conformity with syntactical and grammatical patterns",

it (CA)

> "has not undergone any noticeable change in the past 1,500 years or so, and therefore it has become stagnant and far removed from the people".

The main advocate of this point of view is Anis Frayha, a professor of Semitic languages at the university of Beirut.   Frayha feels that

> "a dialect is a language on its own right even if it lacks a literary tradition.   Moreover, it is not a linguistic degeneration, as is often alleged by the promoters of classical Arabic, but a linguistic evolution conforming to that of the people.   In fact, it excells the classical in many respects; mainly, it is near to the heart and mind and, above all, possesses the human element, which the classical lacks." (Chejne, 1978, p. 35).

Frayha believes that the success of any one dialect over the others depends on one or more of the following factors: military; political; religious; literary; social.

Frayha advances four possibilities to solve the Arabic linguistic problem:
1- usage of Classical Arabic in everyday conversation;

2- the linguistic problem should be left as it is;

3- a specific dialect should be imposed;

4- a 'constructed language' should be set up (Chejne, 1978).

None of the above suggestions seems feasible and could not lead to a workable solution. Frayha also suggests that a united dialect of the intelligentsia should be adopted which would be understood by the educated of the Arab world. This dialect should lack declension and derive its sources from Classical Arabic. Such a plan could only succeed

> "provided that a literature would spring up, that Arabic
> script be changed to Latin characters, that phonetic,
> syntactical and grammatical rules be set up, and all
> Arabs accept it" (Chejne, 1978, p. 36).

Frayha wants the dialect to be adopted to function as the general instrument of inter-communication among the Arabs (Chejne, 1978).

Since Classical Arabic already exists, I do not see the need for setting up this new dialect alongside with Classical Arabic. Frayha's main concern seems to be the educated of the Arab world. This being the case, why not simply use Classical Arabic (the educated already know CA) instead of working on a new dialect which would complicate rather than resolve the problem of the Arabic language.

Even before that date and as far back as 1896, the famous Iraqi poet Az-zahawi surprised readers and intellectuals by publishing an intensive linguistic study in which he proposed to substitute the dialect for the Classical language as well as the Latin alphabet for the Arabic one (as reported in Asharaq Al-Awsat, p. 13, published on 12.11.1983). I cannot go into the pros and cons of Az-Zahawi's study in detail here, suffice it to say that Az-Zahawi knew that his project would outrage Arabists and would meet with great opposition and for this reason he wrote a poem defending his project. In those lines he warned people not to reject new ideas they were not familiar with nor to dismiss ideas before examining them. He strongly believed that without innovation man would be without honour and would not overcome stress.

Al-Toma (1969, pp. 4-5) gives even an earlier example of this:

"One of the earliest attempts to challenge the classical emerged in 1881, when Al-Muqataf carried a series of short articles and comments dealing with 'the Arabic language and success'. In these articles, a suggestion was made for the replacement of the Classical by the colloquial coupled with a remark to the effect that 'the loss arising from the abandonment of the Classical is trivial in comparison to the gains which can be attained by relying on the language of the common people'.

"A few years later, the new movement favoring the colloquial seemed to have gained such strength that an Egyptian writer, Amin Fikri, felt the necessity to refute its premises in a paper prepared for the Congress of Orientalists held in 1899. Despite the opposition of the Classicists, much support, Arab and non-Arab, continued to develop in favour of the adoption of the colloquial and of the concept that the Classical was an obstacle to the progressive development of the Arab World".

On the other hand, proponents of the other view, as expressed by Murqis (1943) and cited by Chejne (1978, p. 36) feel that although

"it is true that the vernacular is a natural process common to many languages and not without virtues, it is limited in many respects. Important among them is the fact that it fails to serve as a common denominator that binds the Arabic-speaking peoples. Only Classical Arabic can meet this requirement since it has a long history embodying Arab cultural heritage in all its ramification".

I, myself, support this latter view. I feel that in Classical Arabic there is the embodiment of the Arab culture;

"the pan-Arabic aspirations of the Arab world" (Weaver, 1970, p. 7);

as well as the only way for 150 million people to communicate. The school which favours the classical over the colloquial has prevailed so far. Unlike Old Greek and Latin, Classical Arabic has been able to penetrate the life of a large community up to the present time.

"This factor of survival in itself should convince the upholders of dialects that the language will never die - as Greek and Latin did - especially at this time of general awakening and independence" (Chejne, 1978, p. 37).

This does not mean that one must turn a blind eye to the problem and say it does not exist. The main objective of all schools of thought is to make the Arabic language

"a workable instrument of expression in all layers of Arab society" (Chejne, 1978, p. 37).

It is not enough to suggest a unified curriculum, or a simplified version of the language, but rather to eliminate illiteracy. With the eradication of illiteracy, the Arab people will hopefully 'learn' and appreciate their beautiful and rich language. Without the Classical, the Arab world would certainly be divided into different linguistic patterns. The result would be so drastic that if an Iraqi, or Egyptian or Syrian wrote in his own dialect, it would have to be translated into the other's dialect.

It would not be an exaggeration to claim that the different colloquial dialects spoken all over the Arab world are as far from each other as French is from Portuguese or Spanish or Italian. The difference between one dialect of Arabic and another is so great that it can be totally incomprehensible.

Any traveller in the Arab world can immediately see how different

one dialect is from another.

> "If a speaker of a particular Arabic vernacular travels outside his country in another Arab country for an extended length of time, he finds three possibilities of communication open to him. Firstly, he can try to communicate solely in his native vernacular, but this may be difficult except with fellow countrymen who are abroad. Secondly, he may attempt to use classical Arabic, or what is now termed 'Modern Standard Arabic', but usage of this level of Arabic depends on the topic of discussion and requires a degree of formality which is seldom present in carrying out everyday activities.... Lastly, the Arab in an Arab country other than his own can attempt, if he has spent some time in the host country, to adapt to the local vernacular" (Herbolich, 1979, p. 302).

Of the three options above, the second seems to be the most feasible, because it is extremely difficult, for example, for an Arab from North Africa to understand an Arab from the Arabian Gulf and vice versa except when speaking MSA. As an example, I would mention my experience on my last trip to Morocco, where I collected data for this thesis. In hotels I communicated in English and outside (in shops and to taxi-drivers) in MSA. The same happens here in England. Whenever one meets with a North African, especially from Algeria and Morocco, one can only communicate in English or MSA, but not in vernacular Arabic. Although Weaver (1970, p. 8) writes that:

> "In actual situations, daily observed by the writer during the past year, a Jordanian, a Cyrenaican, a Tripolitanian, a Saudi-Arabian and a Syrian were constant members of the same social group and conversed freely, each using his own L with what appeared to the writer to be an adjustment as minimal as that between a Devonian and a Yorkshireman".

This is, perhaps, partially true.   I feel it applies to those individuals who have travelled extensively throughout the Arab world. Perhaps, the author was not aware of the fact that these different Arab nationals used classical lexical items and expressions as will be exemplified below.

In the same vein, El-Hassan (1977) cites a study carried out by Ali Ezzat: *Intelligibility Among Arab Dialects* (1974). Ezzat carried out this study while lecturing in linguistics at the Beirut Arab University attended by several different Arab nationals. Ezzat (1974) decided to investigate why the students did not raise the question of lack of reciprocal intelligibility while each national spoke in his own dialect. This puzzled Ezzat and led him to investigate the reasons behind this mutual comprehensibility.

El-Hassan (1977, p. 128) negates this statement, i.e.

"It is almost certainly untrue to say that students of different origins 'conduct their daily affairs in their own national dialects'. For while it may seem that they are using their national dialects a closer investigation would show that they in fact resort to a common koineized variety of Arabic - Educated Spoken Arabic. Although Ezzat himself elsewhere recognizes this fact, it is irreconcilable with the preceding claim".

I agree with El-Hassan (1977) on this point. If we take examples from everyday life, we find that if two North Africans or two Iraqis converse in Moroccan, Algerian, Tunisian, Libyan or Iraqi Arabic respectively, most other Arab nationals would not understand the conversation (nationals from the Arab Gulf would understand an Iraqi, for example, and vice versa). Special effort would have to be made, either by using Classical or Egyptian lexical items.

Besides the above, copious amount of work has been done on communication between Arabic speakers from different Arab countries. As it is not possible to cite all works carried out, I have listed a few

below:

1- Blanc, H. (1960), 'Stylistic variation in spoken Arabic: a sample of interdialectal conversation' in Ferguson, C.A. (ed.), *Contributions to Arabic Linguistics.* Harvard Middle Eastern Monograph Series.

2- Bishai, Wilson (1966), 'Modern Inter-Arabic', in *Journal of the American Oriental Society* 86, pp. 319-323.

3- Ferguson, Charles (1968), 'Myths about Arabic' in Fishman, J.A. (ed.), *Readings in the Sociology of Language.* Mouton, The Hague.

4- Nader, Laura (1968), "A Note on Attitudes and the Use of Language" in Fishman, J.A. (ed.), *Readings in the Sociology of Language.* Mouton, The Hague.

5- Cachia, P. (1977), 'The Use of the Colloquial in Modern Arabic Literature', in *Journal of the American Oriental Society* 7, pp. 307-315.

The dialects of Egypt and of Lebanon are more widely understood in the Arab world. This is largely due to the fact that the film and song industries in these two countries are influential everywhere Arabic is spoken. One must not forget to mention the fact that many Egyptians and Palestinians, for example, work abroad in the Arab world which helps to promote their dialects. It cannot be denied, though, that through television and travel, nowadays, this diversity is being bridged and people tend to understand the various dialects a little bit more easily than before. With science and technology, this gap, among the dialects, can be still further bridged. Arab scientists have launched an Arab satellite called 'Arabsat' which is currently transmitting television programmes across the Arab world. It might be argued that not all Arabs are educated and therefore would not be able to comprehend or communicate in MSA. With illiteracy being eradicated throughout the Arab world this should no longer be a problem. In fact this adds to the predominent role of CA (MSA).

Without CA (MSA) it would be impossible for the literature written in

Algeria or Iraq to be circulated and understood by the millions of educated Arabs, for example, in Egypt or Lebanon and vice versa. A very good example is popular poetry, which is written in local dialects and is hence idiosyncratic to each of the Arab countries. The status of poetry written in CA or MSA from that of poetry written in an individual dialect is very different (Ferguson, 1959). The former is learned and appreciated by all specialists in the field while the latter by only a handful of those who appreciate that kind of poetry in any specific country.

The difference between CA (MSA) and a given colloquial variety is so great that one would be justified in treating them as two different languages. Treating them as two different languages should be distinguished from treating them as two separate languages, although, as Hudson (1980, p. 54) points out, these two distinct varieties are

"sufficiently distinct for the layman to call them separate languages".

It should also be pointed out that there is little difference in colloquial Arabic between the educated and the uneducated speakers of any given locality of any given community.

I have pointed out the preceding facts in order to make the point that if the interference patterns among the students I have recorded in the different Arab countries should vary, (as indeed they do), such variations can be attributed to the fact that the various dialects spoken by these students are linguistically divergent. This linguistic divergence is such that even the patterns of errors produced would not necessarily be expected to be uniform between one geographically defined group of students and another, even though there is one common denominator among the groups, i.e. CA (MSA).

The preceding pages dealt with 'diglossia' in general and Arabic 'diglossia' in particular.

2. The Phonological Systems of Arabic and English

'Diglossia' was defined in Chapter One as

> "a relatively stable language situation in which, in
> addition to the primary dialects of the language ......
> there is a very divergent, highly codified ......
> superposed variety, the vehicle of a large and respected
> body of written literature, either of an earlier period or
> in another speech community, which is learned largely by
> formal education and is used for most written and formal
> spoken purposes, but is not used by any sector of the
> community for ordinary conversation" (Ferguson, 1959, p.
> 336).

'Classical Arabic', which is also defined as 'Modern Standard',
'literary', 'formal' or 'written', is the official language of all Arab
countries.   It exists side by side with the colloquial which is the
everyday language of people.   It is, however, beyond the scope of
this thesis to do more than illustrate the problem of Arabic diglossia

> "by   outlining   salient   functional   and   structural
> characteristics of the varieties of Arabic existing side by
> side in the Arab World" (Al-Toma, 1969, p. 3).

I would, however, refer to this while discussing the phonological
system of IA.

2.1.   The Sounds of Iraqi Arabic (IA)

The sounds of IA can be grouped under two sub-headings:

a. Vowels (including diphthongs)
and
b. Consonants.

2.1.1. The Vowels

IA exhibits three phonemically distinct short vowels: /a/, /i/ and /u/, and five long vowels: /aː/, /iː/, /uː/, /eː/ and /oː/. Some authors have indicated other short vowels. For example, Erwin (1963) mentions /o/: a short, mid-back, rounded vowel. Ferguson (1951), and Blanc (1964) cite /e/: a short, mid-front, unrounded vowel. The former of these two short vowels is limited to loan words, e.g. /'pjaːno/ 'piano'; /'raːdjo/ 'radio'.

The latter is, in my view, an allophonic variant of /i/ as no minimal pairs can be cited.

The three short vowels can be classified as follows:

a) /i/: A short high front unrounded vowel, e.g.
/ʔi'raːqi/ 'Iraqi'.

b) /u/: A short high back rounded vowel, e.g.
/mu'diːr/ 'director'.

c) /a/: A short low central unrounded vowel, e.g.
/ma'ħall/ 'place'.

Similarly, the five long vowels can be classified as follows:

a) /iː/: A long high front unrounded vowel, e.g.
/tiːn/ 'figs'.

b) /eː/: A long mid front unrounded vowel, e.g.
/χeːr/ 'good'.

c) /aː/: A long low central vowel, e.g.
/baːb/ 'door'.

d) /uː/: A long high back rounded vowel, e.g.
/suːf/ 'wool'.

e) /oː/: A long mid back rounded vowel, e.g.
/θoːb/ 'shirt'.

The short vowels are not only shorter "in actual time of duration" than the long vowels, but also "differ from them in quality" (Erwin, 1963, p. 17). It can be said that

> "all vowels in Iraqi have a much wider range of variation than vowels in English. Within this range, the precise phonetic quality of a given vowel depends upon its position in the word and the nature of the adjacent consonants (the environment)" (Erwin, 1963, p. 17).

In CA, however, six vowels are usually recognized:

3 short vowels, namely /a/, /i/ and /u/, e.g.
/'kataba/   'he wrote'
/ki'taːb/   'a book'
/'kutub/   'books'

and

3 long vowels, namely /aː/, /iː/ and /uː/, e.g.
/sa'maː?/   'the sky'
/ka'biːr/   'big'
/wu'suːl/   'arrival'.

There is great phonetic similarity between the vowels of CA and IA. The only exceptions are the two long vowels /eː/ and /oː/ which do not occur in CA. They are purely colloquial and as will be shown below, they represent the Classical diphthongs /aw/ and /aj/ respectively. It must be noted, however, that the vowels in CA and IA "are not always used in identical manner or position" (Al-Toma, 1969, p. 20). As many lexical items and grammatical forms that exist in IA are derived from CA, I would like to look at a few aspects in which the vowels of CA and IA correspond or otherwise. (For a more detailed analysis, the reader is refered to Al-Toma, 1969).

2.1.1.1. The Short Vowels

1- /a/

The examples below show when this vowel is retained in IA and when it is not:

(a) It is retained if it follows a consonant which is [+back], e.g.

/qa'mi:s/	'shirt'
/ka'si:f/	'dirty'
/χa'fi:f/	'light'
/ɣa'mi:dʒ/	'deep'
/ħa'di:d/	'strong, iron'
/ʕa'ti:g/	'old'
/ʔa'mi:n/	'safe'
/ha'mi:m/	'energetic'.

(b) It is retained in nouns and adjectives which show classical influences, e.g.

/ʃa'ɾi:f/	'honest'
/ka'ɾi:m/	'generous'.

/a/ is omitted occasionally, as in:

(CA) /ka'bi:ɾ/ ——→ (IA) /tʃbi:ɾ/ 'big'.

It is replaced by /i/ or /u/ as in:

(CA) /sa'mi:n/ ——→ (IA) /si'mi:n/ 'fat'

(CA) /ta'wi:l/ ——→ (IA) /tu'wi:l/ 'tall'.

(c) /a/ is retained in IA in the patterns CaCu:C and CaCa:C, as in:

/ʕa'dʒu:z/	'old'
/ʃa'ba:b/	'youth'.

The rare exception is:

(CA) /dʒa'na:ħ/ ——→ (IA) /dʒna:ħ/ 'wings'.

(d) /a/ is retained in IA in the CA plural pattern *CaCa:Ci:C* if the plural is influenced by Classicism, e.g.

/madʒa:'ni:n/   'mad'

/ħawa:'ni:t/   'shops'.

It is omitted in words in which C_2 = [+semivowel], e.g.

/nwa:'ʕi:r/   'water wheels'

/ħja:'ti:n/   'walls'.

It can also be omitted before other consonants in the formation of the plural which denotes certain professions, e.g.

/bga:'gi:l/   'grocers'

/gsa:'si:b/   'butchers'.

(e) /a/ is preserved in the nominal pattern *CaCaC*, e.g.

/'safar/   'travel'

/'xabar/   'news'

except ...

/a/ ⟶ /u/ / —— [+labial] or [+emphatic], e.g.

(CA) /'qamar/ ⟶ (IA) /'gumar/ 'moon'

(CA) /'matar/ ⟶ (IA) /'mutar/ 'rain'.

/a/ is replaced by /i/ in the verbal pattern *CaCaC*, e.g.

(CA) /'katab/ ⟶ (IA) /'kitab/ 'to write'.

2- /i/

This vowel appears in IA as

(a) "an epenthetic vowel because of the tendency to break up final clusters" (Al-Toma, 1969, p. 27),

e.g.

(CA) /bard/ ⟶ (IA) /'barid/ 'cold'

(CA) /barq/ ⟶ (IA) /'bariq/ 'lightning'.

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(b) It is deleted from the Classical pattern CiCa:C, as in:

(CA) /ħi'sa:n/ ——→ (IA) /ħsa:n/ 'horse'.

It is, however, retained in words such as /qi'ta:r/ 'train', as the phonological system of IA does not allow the cluster [qt] in initial position.

3- /u/

This vowel is eliminated from the plural Classical pattern CuCu:C, e.g. (CA) /qu'lu:b/ ——→ (IA) /glu:b/ 'hearts'.

2.1.1.2. **The Long Vowels**

There is great identicality between the long vowels in CA and IA (except for the non-occurrence of /e:/ and /o:/ in CA). Below are examples where this is not the case:

(a) /a:/

Final (CA) /a:/ before /ʔ/ ——→ (IA) /a/, e.g.
(CA) /sa'ma:ʔ/ ——→ (IA) /'sama/ 'sky'
(CA) /ha'wa:ʔ/ ——→ (IA) /'hawa/ 'air'.

(b) /i:/

Most diphthongs which are to be found in CA have been lost in IA and have been replaced by /i:/ or the non-classical vowel /e:/, e.g.

	CA	IA	
	/ʃaj'taːn/	/ʃeː'taːn/	'devil'
	/raj'ħaːn/	/riː'ħaːn/	'myrtle'
	/maj'daːn/	/miː'daːn/	'square'
	/ħaj'waːn/	/ħeː'waːn/	'animal'.

The diphthong is retained in cases where it is followed by /j/ or /w/, e.g.

/χa'jjaːl/   'horseman'

/'ħajja/   'snake'

/'gawwal/   'he shot a goal'.

(c) /uː/

This vowel which occurs in the imperfect of certain CA verbs is replaced by either /aː/ or /i/ in IA, e.g.

(CA) /jas'fuː/ ⟶ (IA) /jis'faː/ 'to become clear'.

2.1.2. The Consonants

In CA there are 28 consonants. IA, on the other hand, has 31 consonantal phonemes.

The following commentary discusses the consonantal system of IA. Variations with CA will be mentioned when applicable.

All consonants in IA can occur in initial, medial or final positions. They can also be geminated except for /ʔ/.

The consonants of IA can be divided into two groups: obstruents and sonorants.

Obstruents can then be sub-divided according to their manner of

articulation into: plosives, fricatives, and affricates.   Sonorants can similarly be sub-divided into : nasals, liquids, and semi-vowels.

There follows a classification of these various speech sounds with appropriate commentary.

2.1.2.1. Plosives

1. /p/:   A voiceless aspirated bilabial plosive.   This phoneme occurs mainly in words which have been borrowed from Turkish and Persian, since there is no /p/ in CA. Although Cantineau (1956) has not considered /p/ as part of the phonological system of Damascus Arabic and maintains excluding it on account of its occurrence in loan words only, it is not possible to do so in IA.   /p/ occurs in too many words and it is possible to cite minimal pairs, e.g.

/'so:pa/   'heater'   vs. /'so:ba/ 'his side'
/'pra:wa/ 'fitting'   vs. /'bra:wa/'In Rawa' (a town in Iraq)
/'pawwaʃ/ 'to wear a veil' vs. /'bawwaʃ/'to put car in neutral'.

2. /b/: A voiced bilabial plosive, e.g.
/ba:b/   'door'.

3. /t/: A voiceless dental plosive, e.g.
/ki'ta:b/ 'book'.

4. /d/: A voiced dental plosive, e.g.
/'daris/ 'lesson'.[1]

5. /t̪/: A voiceless dental plosive, 'emphatic' (i.e. pronounced with a characteristic kind of pharyngealization), e.g.
/qa:t̪/ 'suit.

6. /k/: A voiceless velar plosive, e.g.
/mu'ka:n/ 'place'.

In certain specific lexical items /k/ and /q/ are used in free variation depending on the individual.   Testing it on my own

pronunciation, I feel that among family and friends the /k/ alternative would be used; while in more formal situations the /q/ alternative would be preferred:

/'kital/ : /'qital/ 'kill'

/'wakit/ : /'waqit/ 'time'.

7. /g/ : A voiced velar plosive. Like /p/ this speech sound is not found in CA; it has become part of the IA system as a result of certain historical sound changes, e.g.

/ga:l/ 'he said'.

8. /q/: A voiceless uvular plosive, e.g.

/qa:'mu:s/ 'dictionary'.

Although, very often, /g/ is a variant of /q/, they must be considered two contrastive phonemes since minimal pairs can be found, as in the following example:

/'xirag/ 'rags' vs /'xiraq/ 'to violate'.

9. /?/: A glottal plosive, e.g.

/'?a:ni/ 'I'.

Although the glottal stop /?/ may occur initially, medially or finally, it is greatly restricted in the last two positions.

As cited by Al-Toma (1966, p. 151), a statistical comparison based on 140 lexical items shows that out of the 98 occurrences of /?/ in CA only 59 could be found in IA in initial position; out of the 24 occurrences of /?/ finally, only 8 could be found in IA. In fact /?/ has almost disappeared from IA in final position except for those cases where the lexical item used is a borrowing of CA, e.g.

/idʒ'ra:?/ 'procedure'

/'mabda?/ 'doctrine'.

2.1.2.2. Affricates

1. A voiceless palato-alveolar affricate. This phoneme is not found in CA. It either occurs in borrowed words or in words which have undergone certain sound changes. It is sometimes a variant of /k/ and sometimes of /ʃ/, e.g.
a variant of /k/ as in /'tʃiðab/ 'to lie'
a variant of /ʃ/ as in /'tʃartʃaf/ 'sheet'.

> "In general the affrication of /k/ to /tʃ/ in IA, as in other dialects of the Arabian Peninsula, takes place in contiguity with the front vowels, whereas with the back vowel /k/ is usually retained. However, partly because of classicism, IA offers many examples of /k/ before or after front vowels: /sakit/ 'silent', /kisar/ 'to break' /akil/ 'eating, food'" (Al-Toma, 1966, p. 153).

One can also cite a few examples of /tʃ/ used as an allophone of /dʒ/, e.g.
/witʃ/   for   /'widʒih/   'face'
/'ʔatʃlaħ/ for   /'ʔadʒlaħ/   'bold'.

2. /dʒ/: A voiced palatoalveolar affricate, e.g.
/'dʒimaʕ/ 'to collect'.

/dʒ/ is an allophone of /q/ in a few instances, e.g.
/'ð̣a:dʒ/   'bored'
/ħari'dʒdʒijja/   'fire'
/dʒi:r/   'tar'
/'dʒidir/   'pot'.

2.1.2.3. Fricatives

1. /f/: A voiceless labio-dental fricative, e.g.
/fa:t/ 'he passed by'.
/v/: A voiced labio-dental fricative.

This phoneme appears in foreign names and can be excluded from the consonantal phoneme inventory of IA as no minimal pairs can be cited, e.g. 'Vienna', 'Vietnam', and 'Violet'.

2. /θ/: A voiceless interdental fricative, e.g.
/θu:m/ 'garlic'.

3. /ð/: A voiced interdental fricative, e.g.
/ðall/ 'to humiliate'.

4. /ẓ/: A voiced interdental fricative, emphatic.   This phoneme corresponds to two distinct phonemes in CA, namely /ẓ/ and /ḍ/. The amalgamation of the two distinct sounds of CA into one in IA has resulted in Iraq being called 'the land of /ẓad/'. To clarify this, /ḍ/ is neither preserved in IA nor in the pronunciation of CA by Iraqis.

> "This merger has given rise to a prevalent confusion
> among the speakers of IA when confronting minimal pairs
> which show /ẓ/ - /ḍ/ contrast in CA" (Al-Toma 1966, p.
> 154).

In fact, on this non-differentiation alone between /ẓ/ and /ḍ/ a reader of a CA text can be recognised to be Iraqi or not, e.g.
IA /'ẓaɣit/ 'pressure' = CA /ḍaɣt/;
IA /ẓann/   'doubt'   = CA /ḍann/.

It is possible to show the above four consonants (1-4) in contrast by means of minimal pairs:

f:θ	/fa:r/	'to boil'	/θa:r/	'to revolt'
f:ð	/fa:t/	'to go'	/ða:t/	'self'
f:ẓ	/farr/	'to run away'	/ẓarr/	'to be harmful'
θ:ð	/'θajjal/	'lawn'	/'ðajjal/	'to add on the end'
θ:ẓ	/'θilam/	'to chip'	/'ẓilam/	'to do wrong'
ð:ẓ	/ðill/	'humiliation'	/ẓill/	'shadow'.

5. /s/: A voiceless grooved (post)-dental fricative, e.g.
/sinn/ 'tooth'.

6. /z/: A voiced grooved (post)-dental fricative, e.g.
/ze:n/ 'good'.

7. /ṣ/: A voiceless grooved (post)-dental fricative, emphatic, e.g.
/ṣa:r/ 'o.k.'.

8. /ʃ/: A voiceless palato-alveolar fricative, e.g.
/'miʃa/ 'he walked'.

The above four sounds (5-8) can be contrasted by means of minimal
pairs as follows:

/s/ : /z/ : /ʃ/
/'misaħ/ 'to erase'
/'mizaħ/ 'to joke'
/'miʃaħ/ 'to administer Extreme Unction'.

/s/ : /ṣ/ : /ʃ/
/sabb/ 'to abuse'
/ṣabb/ 'to pour'
/ʃabb/ 'to grow up'.

/z/ : /ṣ/
/zaff/ 'to scold'
/ṣaff/ 'a class'.

9. /χ/: A voiceless uvular fricative, e.g.
/χe:r/ 'good'.

10. /ɣ/: A voiced uvular fricative, e.g.
/'ɣani/ 'rich'.

The above uvular fricatives (10) can be contrasted by means of the following minimal pair:

/'χilaq/ 'to create'

/'ɣilaq/ 'to close'.

11. /ħ/: A voiceless pharyngeal fricative, e.g.

/ħubb/ 'love'.

12. /ʕ/: A voiced pharyngeal fricative (approximant), e.g.

/ʕeːn/ 'eye'.

13. /h/: A voiceless glottal fricative, e.g.

/'hadaf/ 'target'

The following examples can contrast the above (11-13) three sounds:

/ħ/ : /ʕ/ : /h/

/ħibb/ 'love (Imp)'

/ʕibb/ 'shirt front'

/hibb/ 'blow (Imp)'.

2.1.2.4. Nasals

1. /m/: A voiced bilabial nasal, e.g.

 /meːz/ 'table'.

2. /n/: A voiced dental nasal, e.g.

/naːs/ 'people'.

The above two nasals can be contrasted by means of the following minimal pair:

/m/ : /n/

/'mizaħ/ 'to joke'

/'nizaħ/ 'to drain'.

2.1.2.5. Liquids

1. /l/:   A voiced dental lateral, e.g.
/leːl/ 'night'

2. /ɫ/:   A voiced dental lateral, emphatic.

1 and 2 must be considered as two distinct phonemes in IA, as minimal pairs exist, e.g.
/'χalli/ 'leave' and /'χaɫɫi/ 'my vinegar'.

On the other hand /ɫ/ is not considered an independent phoneme in CA, owing to its limited occurrence.

3. /r/:   A voiced alveolar flap, e.g.
/raːs/ 'head'.

2.1.2.6. Semi-vowels

1. /w/ :   A voiced high back rounded (labial-velar) semi-vowel, e.g.
/'walad/ 'boy'.

2. /j/:   A voiced high front unrounded (palatal) semi-vowel, e.g.
/jamm/   'near'.

It is possible to contrast the above two semi-vowels by means of the following minimal pair:

/'lawwan/ 'to colour'
/'lajjan/ 'to soften'.

2.1.2.7. Emphatics

Arab grammarians have identified EMPHASIS, which is present in all Arabic dialects, as ʔitˤbaːq

> "'spreading and raising of the tongue', ʔistiʕlaʔ 'elevation of the dorsum' and tafxim 'thickness, heaviness'" (Lehn, 1978, p. 305).

In Iraqi Arabic the phonemes /p,b,t,f,ð,s,z,m,l/ have their emphatic counterparts:

/pˤ, bˤ, tˤ, fˤ, ðˤ, sˤ, zˤ, mˤ, ɫ/. These are exemplified below:

1. /pˤ/: A voiceless bilabial stop, emphatic, e.g.

/ˈpˤamp/   'pump'

/ˈɫampa/   'lamp'.

2. /bˤ/: A voiced bilabial stop, emphatic, e.g.

/bˤang/   'bank'

/ˈbˤaːbˤa/   'daddy'.

3. /fˤ/: A voiceless labio-dental spirant, emphatic, e.g.

/fˤakk/   'he opened'

/sˤafˤf/   'class'.

4. /zˤ/: A voiced dental spirant, emphatic, e.g.

/dʒazˤzˤ/   'it creaked'.

5. /mˤ/: A bilabial nasal, emphatic, e.g.

/ˈmˤaːmˤa/   'mummy'

/mˤaj/   'water'.

'Emphatics' can be divided into two groups, namely: 'Primary' and 'Secondary'. 'Primary' emphatics in IA, which include /sˤ, tˤ, ðˤ/, are phonemically distinct sounds and vary from their plain counterparts, namely /t,s,d/. 'Secondary' emphatics, which include the remaining

phoneme consonants of this type have a less independent status as distinctive sounds (Erwin 1963). Only a few contrastive minimal pairs can be accounted for between these 'secondary' emphatics and their 'plain' counterparts, e.g.

/'ba:ba/	'his door'	: /'ḅa:ḅa/	'daddy'
/'χa:li/	'empty'	: /'χa:łi/	'my uncle'
/'ga:l-la/	'he told him'	: /'ga:łła/	'he fried'.

Emphasis is considered a tricky area of Arabic phonology, as it underlines important phonological contrasts in all Arabic dialects. Harrell (1957), on personal experience, claims that even educated Arabs are unable to decide whether a given phoneme is emphatic or not. I would like to suggest that this applies to the 'secondary' emphatics only, as I am certain that all Arabs, whether educated or not, can distinguish between the 'primary' emphatics /ṭ, ṣ, ð̣, ḍ/ and their plain counterparts /t, s, ð, d/.

It is not sufficient to simply name and exemplify the emphatic sounds which exist in IA. Harrell (1957, p. 82) prefers to say that

> "emphasis is a 'prosodic feature' which occurs over segments of variable length, but which has a minimal domain of a consonant plus a neighbouring vowel. In these terms there would be no such things as emphatic consonant or vowel phonemes, but a prosodic feature, 'emphasis', which may co-occur with the various consonant-vowel phonemes".

This statement is incomplete and seems to be true of 'secondary emphatics' only. I do not want to get embroiled in this argument. My view is that emphasis is an articulatory distinctive feature of individual segments. In the case of the 'primary emphatics' /ṭ, ṣ, ð̣, ḍ/, emphasis is regarded as a distinctive feature of the phonemes in question in the same manner as [cor], [ant], etc. It plays an important role in the phonological structure of Arabic. The emphatic consonants regularly occur in contrast with their non-emphatic

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counterparts /t, s, ð, d/.   Substituting the 'primary' emphatics for their plain counterparts

> "results in a different word or in unintelligible nonsense" (Erwin, 1963, p.15),

thus making their treatment as simply a prosodic feature of words impossible.

With regards to emphasis, it must be mentioned that this phenomenon also involves significant differences in the quality of adjacent vowels. Because emphasis involves velarization of the consonants, adjacent vowels are also velarized.   Thus, generally speaking,

> "The high front vowels are centralized, the high back vowels are lowered, and the low vowels are backed" (Harrell, 1957, p.69).

The above description of the Iraqi vowels and consonants can be further represented by the following figures.

Figs. 1 and 2 (p. 54) represent the short and long vowels in IA respectively;   and Fig. 3 (p. 55) represents the consonants in IA.
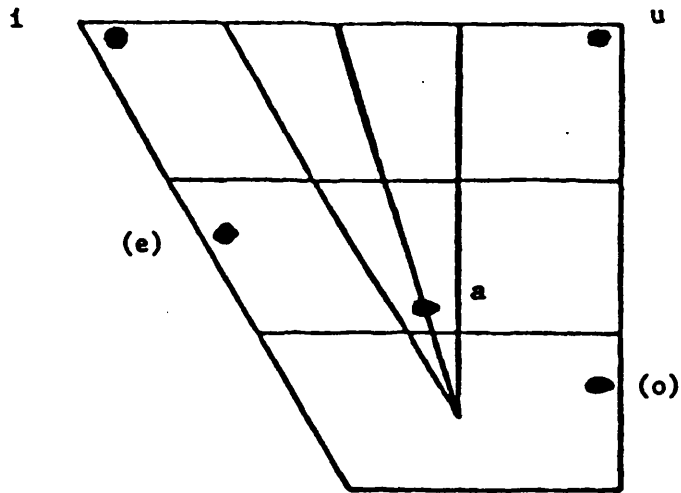
Fig. 1   The Short Vowels (IA)
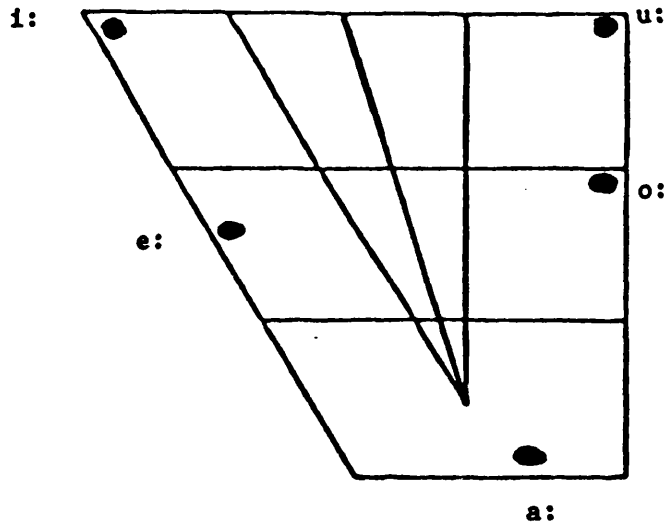
Fig. 2   The Long Vowels (IA)

	Bilabial	Labiodental	Interdental	Dental	Alveolar	Palato-Alveolar	Palatal	Velar	Uvular	Pharyngeal	Glottal
OBSTRUENTS PLOSIVES	/p,b/			/t,d,ṭ/					/q/		/ʔ/
AFFRICATES						/tʃ,dʒ/					
FRICATIVES		/f/	/θ,ð,ð̣/	/s,z,ṣ/		/ʃ/		/x,ɣ/		/ħ,ʕ/	/h/
SONORANTS NASALS	/m/			/n/							
LIQUIDS				/l,ḷ/	/r/						
SEMIVOWELS	/w/						/j/				

Fig. 3 (The Consonants)

2.2. A note on Cairene Arabic (Cr.A)

Owing to the fact that Egyptian Arabic is such an important dialect of Arabic - important in the sense that much has been written about it and is a dialect understood by most Arabic speakers - it is worthwhile looking at here and comparing it with IA.

Just as there are in other languages various dialects, I shall consider here Cairene Arabic because of the dominance of Cairo, not only because capital cities play an important role in setting the norm, but also because of the literary eminence Cairo is renowned for.

2.2.1. The Consonants

As CA is the common denominator between IA and Cr.A, the consonants of both dialects are similar. It is the phonetic realisation of these phonemes that differs in certain instances. Below I shall consider those phonemes that differ in their phonetic realisation from IA and CA.

1. /p/: This does not occur in Cr.A. Even in foreign borrowings such as /kub'baja/ 'cup', we find that /p/ is realised as [b] in Cr.A, while it is retained as [p] in /ku:p/ 'cup' in IA.

2. /ʔ/: This corresponds with CA /q/, except for /al-qa:'hira/ 'Cairo', /qur'ʔa:n/ 'koran' and all lexical items related to Koranic recitations and vocabulary. Mitchell (1973, p. 18) cites a few examples where /q/ is retained, according to him, in a few examples such as /'qarja/ 'village, /qu'ra:n/ 'koran' and /qa'di:ma/ "'old' in f-ilʕusuur ilqadiima 'in olden times'".

Words associated with the Holy 'Koran' have a special status and it would, therefore, be wrong to substitute [ʔ] for [q]. For example surat al-baqara (al-Baqara verse) would remain as it is. This, of course, would apply not only to Cr.A but to all other dialects of Arabic as far west as Morocco and as far east as Iraq.

Mitchell's choice of the other two lexical items is quite wrong. In colloquial speech /'qarja/ 'village' would not be used. Instead /falla'ñi:n/ or /'balad/ are two lexical items that would denote 'village'. The same is true of ſ-ilſusuur ilqadiima. This sentence is not one that would be used in colloquial speech.

3. In Cr.A, /g/ is a realisation of CA /dʒ/. This contrasts with IA where it is a realisation of /q/. e.g.
CA /ta:dʒ/ 'crown' becomes /ta:g/ in Cr.A.

Even in those instances where perhaps /dʒ/ is not realised as /g/, it is in free variation with /ʒ/. There is no [dʒ] in Cr.A. This /ʒ/ occurs mainly in loan words such as:

/ʒa'ketta/ 'jacket'
/ʒuki/ 'jockey'
/ʒu'lu:ʒi/ 'geologist'.

Thus, CA /dʒ/ ⟶ Cr.A [g] or [ʒ].

4. /θ/ : This is realised as [s] or [t], e.g.
CA [θu:m] 'garlic' becomes [tu:m] in Cr.A
and
CA ['θæbit] 'firm' becomes ['sæbit] (although, I hasten to add that some speakers might prefer the pronunciation ['tæbit])

5. /ð/ : This sound is realised as either [d] or [z], e.g.
CA ['ðenbi] 'my fault' becomes ['zenbi] in Cr.A.
and
CA ['ðanab] 'tail' becomes ['danab] in Cr.A.

6. As we saw earlier (p. 47) the two primary emphatics of CA, namely /ð̣/ and /ḍ/, are different from those of IA. While in IA the two sounds are amalgamated into one, namely [ð̣], in Cr.A. /ḍ/ is retained as [ḍ] while /ð̣/ becomes [ṣ], e.g.
CA ['ð̣a:hiɾ] 'clear' ⟶ ['ṣa:hiɾ] in Cr.A.

2.2.2. The Vowels

Like IA, Cr.A has three short vowels, /a/, /i/ and /u/ and five long vowels: /aː/, /iː/, /uː/, /eː/ and /oː/. There exists a difference of opinion among authors as to the analysis of these long vowels. Harrel (1957, p. 52), for example, analyses them as short vowels plus a phoneme of length. Lehn (1978) analyses them as geminates and because his paper is on "Emphasis in Cairo Arabic", does not elaborate. On these and other analyses Cowan (1970, p. 94) writes:

> "In these more or less equivalent analyses, vowel quality is secondary to length - that is, the first vowel in /miʃi/ 'he walked' is phonetically [ɪ]; the first vowel of /biːna/ 'in us', excluding length, is phonetically [i]. The allophonic variation between [ɪ] and [i] is conditioned by the presence of the feature of length."

This also applies to the first /u/ of /ˈkutub/ 'books' and the first /u/ of /ˈʃuːfu/ 'You see him'.

I shall not elaborate any further on the vowels of Cr.A as they are very similar to the vowels of IA. Suffice it to say that if any modification exists, it is a question of minor context sensitive allophonic differences, which are the specifications on the phonetic level reflecting systematic phoneme variations.

2.3. DISTINCTIVE FEATURE ANALYSIS (IA)

Having described the sounds of IA according to their place and manner of articulation and tabulated as in Figs. 1, 2 and 3, I shall now present them in terms of distinctive features.

The Iraqi Consonant System described in terms of distinctive features. A plus sign '+' indicates that each particular phoneme possesses that feature while a minus sign '-' indicates the lack of that feature in the phoneme in question.

1. [+ obstruent]:

A. [+ labial]:

　　　　p　　　　　　b　　　　　　f

$$
\begin{bmatrix} + \text{ant} \\ - \text{cor} \\ - \text{voice} \\ - \text{cont} \end{bmatrix}
\quad
\begin{bmatrix} + \text{ant} \\ - \text{cor} \\ + \text{voice} \\ - \text{cont} \end{bmatrix}
\quad
\begin{bmatrix} + \text{ant} \\ - \text{cor} \\ - \text{voice} \\ + \text{cont} \end{bmatrix}
$$

B) [+ dental]:

　　　　t　　　　d　　　　θ　　　　ð　　　　s　　　　z

$$
\begin{bmatrix} - \text{back} \\ - \text{low} \\ + \text{ant} \\ + \text{cor} \\ - \text{voice} \\ - \text{cont} \\ - \text{emph} \end{bmatrix}
\begin{bmatrix} - \text{back} \\ - \text{low} \\ + \text{ant} \\ + \text{cor} \\ + \text{voice} \\ - \text{cont} \\ - \text{emph} \end{bmatrix}
\begin{bmatrix} - \text{back} \\ - \text{low} \\ + \text{ant} \\ + \text{cor} \\ - \text{voice} \\ + \text{cont} \\ - \text{emph} \end{bmatrix}
\begin{bmatrix} - \text{back} \\ - \text{low} \\ + \text{ant} \\ + \text{cor} \\ + \text{voice} \\ + \text{cont} \\ - \text{emph} \\ - \text{strid} \end{bmatrix}
\begin{bmatrix} - \text{back} \\ - \text{low} \\ + \text{ant} \\ + \text{cor} \\ - \text{voice} \\ + \text{cont} \\ - \text{emph} \\ + \text{strid} \end{bmatrix}
\begin{bmatrix} - \text{back} \\ - \text{low} \\ + \text{ant} \\ + \text{cor} \\ + \text{voice} \\ + \text{cont} \\ - \text{emph} \\ + \text{strid} \end{bmatrix}
$$

C) $\begin{bmatrix} + \text{dental} \\ + \text{emphatic} \end{bmatrix}$

　　　　ṭ　　　　　ṣ　　　　　ḍ

$$
\begin{bmatrix} + \text{back} \\ + \text{low} \\ + \text{ant} \\ + \text{cor} \\ - \text{voice} \\ - \text{cont} \\ + \text{emph} \end{bmatrix}
\quad
\begin{bmatrix} + \text{back} \\ + \text{low} \\ + \text{ant} \\ + \text{cor} \\ - \text{voice} \\ + \text{cont} \\ + \text{emph} \end{bmatrix}
\quad
\begin{bmatrix} + \text{back} \\ + \text{low} \\ + \text{ant} \\ + \text{cor} \\ + \text{voice} \\ - \text{cont} \\ + \text{emph} \end{bmatrix}
$$

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D) [+ palatoalveolar]:

$$
\begin{array}{ccc}
\text{d\textthreeinferior} & \text{t\textipa{S}} & \text{\textipa{S}} \\[4pt]
\begin{bmatrix} -\text{ ant} \\ +\text{ cor} \\ +\text{ voice} \\ -\text{ cont} \end{bmatrix} &
\begin{bmatrix} -\text{ ant} \\ +\text{ cor} \\ -\text{ voice} \\ -\text{ cont} \end{bmatrix} &
\begin{bmatrix} -\text{ ant} \\ +\text{ cor} \\ -\text{ voice} \\ +\text{ cont} \end{bmatrix}
\end{array}
$$

E) [+ velar]:

$$
\begin{array}{cc}
\text{k} & \text{g} \\[4pt]
\begin{bmatrix} +\text{ high} \\ -\text{ ant} \\ -\text{ cor} \\ -\text{ voice} \\ -\text{ cont} \\ +\text{ back} \end{bmatrix} &
\begin{bmatrix} +\text{ high} \\ -\text{ ant} \\ -\text{ cor} \\ +\text{ voice} \\ -\text{ cont} \\ +\text{ back} \end{bmatrix}
\end{array}
$$

F) [+ uvular]:

$$
\begin{array}{ccc}
\text{\textchi} & \text{\textgamma} & \text{q} \\[4pt]
\begin{bmatrix} -\text{ high} \\ +\text{ back} \\ -\text{ low} \\ -\text{ ant} \\ -\text{ cor} \\ -\text{ voice} \\ +\text{ cont} \end{bmatrix} &
\begin{bmatrix} -\text{ high} \\ +\text{ back} \\ -\text{ low} \\ -\text{ ant} \\ -\text{ cor} \\ +\text{ voice} \\ +\text{ cont} \end{bmatrix} &
\begin{bmatrix} -\text{ high} \\ +\text{ back} \\ -\text{ low} \\ -\text{ ant} \\ -\text{ cor} \\ -\text{ voice} \\ -\text{ cont} \end{bmatrix}
\end{array}
$$

G) [+ pharyngeal]

ʕ　　　　　ħ

$$
\begin{bmatrix}
- \text{high} \\
+ \text{back} \\
+ \text{low} \\
- \text{ant} \\
- \text{cor} \\
+ \text{voice}
\end{bmatrix}
\begin{bmatrix}
- \text{high} \\
+ \text{back} \\
+ \text{low} \\
- \text{ant} \\
- \text{cor} \\
- \text{voice} \\
+ \text{cont}
\end{bmatrix}
$$

H) [+ glottal]:

ʔ　　　　　h

$$
\begin{bmatrix}
- \text{high} \\
- \text{back} \\
+ \text{low} \\
- \text{ant} \\
- \text{cor} \\
- \text{cont}
\end{bmatrix}
\begin{bmatrix}
- \text{high} \\
- \text{back} \\
+ \text{low} \\
- \text{ant} \\
- \text{cor} \\
+ \text{cont}
\end{bmatrix}
$$

2. [- obstruent]

A) [+ nasal]:

m　　　　　n

$$
\begin{bmatrix}
+ \text{nasal} \\
- \text{cor}
\end{bmatrix}
\begin{bmatrix}
+ \text{nasal} \\
+ \text{cor}
\end{bmatrix}
$$

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B) [+ liquid]:

$$
\begin{array}{ccc}
l & ł & r \\[2mm]
\begin{bmatrix} - \text{ nasal} \\ + \text{ lateral} \end{bmatrix} &
\begin{bmatrix} - \text{ nasal} \\ + \text{ lateral} \\ + \text{ emphatic} \end{bmatrix} &
\begin{bmatrix} - \text{ nasal} \\ - \text{ lateral} \end{bmatrix}
\end{array}
$$

3. [+ semivowel]:

$$
\begin{array}{cc}
j & w \\[2mm]
\begin{bmatrix} - \text{ cons} \\ - \text{ syllabic} \\ - \text{ back} \end{bmatrix} &
\begin{bmatrix} - \text{ cons} \\ - \text{ syllabic} \\ + \text{ back} \end{bmatrix}
\end{array}
$$

2.4.   The Sounds of English[2]

The same pattern used in classifying the sound system of IA will be followed here in classifying English.   Therefore, the sounds of English can be divided, for the purpose of this research, into:

(a) Vowels

and

(b) Consonants

2.4.1. The Vowels

The vowels of English will not be discussed in detail here. The reader is referred to Gimson (1978, pp. 90-148) for a more detailed account of the vowels in English. For the purpose of this research it is sufficient to say that English has six short and five long "relatively pure" (Gimson 1978, p. 98) monophthongs. /ə/, which is the seventh short vowel is not considered as a "relatively pure vowel" by Gimson. This is because /ə/ varies greatly in quality "according to its situation" (Gimson, 1978, p. 98). Respectively, these are: /ɪ/, /e/, /æ/, /ʌ/, /ɒ/, /ʊ/, /ə/, /iː/, /aː/, /ɔː/, /ɜː/ and /uː/. Since diphthongs are not immediately relevant here, they have been omitted. It must also be mentioned here that each of these monophthongs has several variants.

Figures 4 and 5 (p. 70) represent the short and long vowels in English.

2.4.2. The Consonants

The following tree-diagram represents the consonantal sound system of English:
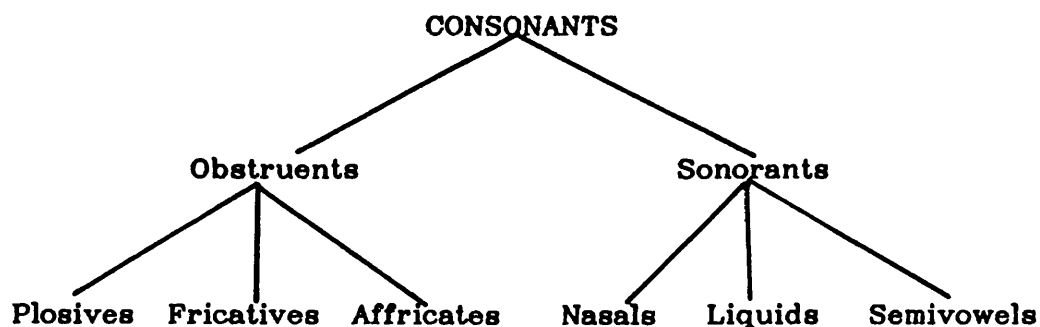
2.4.2.1. Plosives

1. /p/: a voiceless bilabial plosive, e.g.
'pin' /pɪn/.

2. /b/: a voiced bilabial plosive, e.g.
'bin' /bɪn/.

3. /t/: a voiceless alveolar plosive, e.g.
'tin' /tɪn/.

4. /d/: a voiced alveolar plosive, e.g.
'dim' /dɪm/.

5. /k/: a voiceless velar plosive, e.g.
'come' /kʌm/.

6. /g/: a voiced velar plosive, e.g.
'girl' /gɜːl/.

2.4.2.2. Affricates

1. /tʃ/: a voiceless palato-alveolar affricate, e.g.
'church' /tʃɜːtʃ/.

2. /dʒ/: a voiced palato-alveolar affricate, e.g.
'judge' /dʒʌdʒ/.

2.4.2.3. Fricatives

1. /f/ a voiceless labio-dental fricative, e.g.
'fun' /fʌn/.

2. /v/: a voiced labio-dental fricative, e.g.
'van' /væn/.

3. /θ/: a voiceless interdental fricative, e.g.
'theatre' /'θɪətə/.

4. /ð/: a voiced inter-dental fricative, e.g.
'this' /ðɪs/.

5. /s/: a voiceless alveolar fricative, e.g.
'sister' /'sɪstə/.

6. /z/: a voiced alveolar fricative, e.g.
'zoo' /zu:/.

7. /ʃ/: a voiceless palato-alveolar fricative, e.g.
'ship' /ʃɪp/.

8. /ʒ/: a voiced palato-alveolar fricative, e.g.
'vision' /vɪʒn/.

9. /h/: a voiceless glottal fricative, e.g.
'hen' /hen/.

2.4.2.4. Nasals

1. /m/: a voiced bilabial nasal, e.g.
'mother' /'mʌðə/.

2. /n/: a voiced alveolar nasal, e.g.
'nasal' /neɪzl/.

3. /ŋ/: a voiced velar nasal, e.g.
'thing' /θɪŋ/.

2.4.2.5. Liquids

1. /l/: a voiced alveolar lateral, e.g.
'light' /laɪt/.

2. /r/: a voiced post-alveolar frictionless continuant, e.g.
'race' /reɪs/.

2.4.2.6. Semivowels

1. /w/: a voiced high back rounded (bilabial) semivowel, e.g.
'win' /wɪn/.

2. /j/: a voiced high front unrounded (palatal) semivowel, e.g.
'yesterday' /'jestədɪ/.

Gimson (1978) has pointed out that in addition to the preceding phonemes the following may necessarily be added to some types of RP:

1. /ʌ/: a voiceless labio-velar fricative, e.g.
'which' /ʌɪtʃ/.

2. /tr/: a voiceless post-alveolar affricate, e.g.
'tram' /træm/.

3. /dr/: a voiced post-alveolar affricate, e.g.
'dram' /dræm/.

Fig. 6 (p. 71) represents the English consonantal sounds.

2.5. DISTINCTIVE FEATURE ANALYSIS (RP)

The English Consonant System classified in terms of distinctive features.
1) [+ obstruent]:
A) [+ labial]:

$$
\begin{array}{ccccc}
p & b & \text{ʌ} & f & v \\
\begin{bmatrix} + \text{ant} \\ - \text{cor} \\ - \text{voice} \\ - \text{cont} \end{bmatrix} &
\begin{bmatrix} + \text{ant} \\ - \text{cor} \\ + \text{voice} \\ - \text{cont} \end{bmatrix} &
\begin{bmatrix} + \text{ant} \\ - \text{cor} \\ - \text{voice} \\ + \text{cont} \\ + \text{hi} \\ + \text{back} \end{bmatrix} &
\begin{bmatrix} + \text{ant} \\ - \text{cor} \\ - \text{voice} \\ + \text{cont} \\ - \text{hi} \end{bmatrix} &
\begin{bmatrix} + \text{ant} \\ - \text{cor} \\ + \text{voice} \\ + \text{cont} \end{bmatrix}
\end{array}
$$

B) [+ dental]:

$$
\begin{array}{cc}
\theta & \eth \\[4pt]
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
+ \text{ ant} \\
+ \text{ cor} \\
- \text{ voice} \\
+ \text{ cont} \\
- \text{ strid}
\end{bmatrix}
&
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
+ \text{ ant} \\
+ \text{ cor} \\
+ \text{ voice} \\
+ \text{ cont} \\
- \text{ strid}
\end{bmatrix}
\end{array}
$$

C) [+ alveolar]:

$$
\begin{array}{cccc}
t & d & s & z \\[4pt]
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
+ \text{ ant} \\
+ \text{ cor} \\
- \text{ voice} \\
- \text{ cont}
\end{bmatrix}
&
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
+ \text{ ant} \\
+ \text{ cor} \\
+ \text{ voice} \\
- \text{ cont}
\end{bmatrix}
&
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
+ \text{ ant} \\
+ \text{ cor} \\
- \text{ voice} \\
+ \text{ cont} \\
+ \text{ strid}
\end{bmatrix}
&
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
+ \text{ ant} \\
+ \text{ cor} \\
+ \text{ voice} \\
+ \text{ cont} \\
+ \text{ strid}
\end{bmatrix}
\end{array}
$$

D) [+ palatoalveolar]:

$$
\begin{array}{cccc}
t\int & d_3 & \int & 3 \\[4pt]
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
- \text{ ant} \\
+ \text{ cor} \\
- \text{ voice} \\
- \text{ cont}
\end{bmatrix}
&
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
- \text{ ant} \\
+ \text{ cor} \\
+ \text{ voice} \\
- \text{ cont}
\end{bmatrix}
&
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
- \text{ ant} \\
+ \text{ cor} \\
- \text{ voice} \\
+ \text{ cont}
\end{bmatrix}
&
\begin{bmatrix}
- \text{ back} \\
- \text{ low} \\
- \text{ ant} \\
+ \text{ cor} \\
+ \text{ voice} \\
+ \text{ cont}
\end{bmatrix}
\end{array}
$$

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E) [+ velar]:

     k   g

$$
\begin{bmatrix} + \text{high} \\ + \text{back} \\ - \text{ant} \\ - \text{cor} \\ - \text{voice} \\ - \text{cont} \end{bmatrix}
\begin{bmatrix} + \text{high} \\ + \text{back} \\ - \text{ant} \\ - \text{cor} \\ + \text{voice} \\ - \text{cont} \end{bmatrix}
$$

F) [+ glottal]

     h

$$
\begin{bmatrix} - \text{high} \\ - \text{back} \\ + \text{low} \\ - \text{ant} \\ - \text{cor} \\ + \text{cont} \\ - \text{voice} \end{bmatrix}
$$

2.6. SUMMARY

The preceding pages described the sounds of IA and RP. While many similarities exist, there are differences as well. For example, Iraqis tend to find difficulty in differentiating between /p/ and /b/. The outcome is quite comic at times. On a recent visit to Baghdad, I found a notice saying "no barking please" for "no parking please". This is rather interesting for two reasons. First, IA (as opposed to other dialects of Arabic) seems to differentiate between /p/ and /b/ phonologically, yet Iraqis tend to substitute /b/ for /p/ in many instances when speaking English.

Secondly, the third item of the notice read 'please' and not 'blease'!
One wonders why the first /p/ was substituted by /b/ and not the
second. Is it perhaps because the word /bli:s/ 'devil' exists in IA?

The majority of Iraqi speakers, in particular, and Arabic speakers in
general, also find difficulty in pronouncing English diphthongs and
so-called triphthongs, specially if these involve the orthographic 'r'
in words such as:

'here' /'hɪə(r)/
'hire' /'haɪə(r)/.

Although not immediately relevant to the topic under investigation in
this thesis, one cannot but mention the difficulty native speakers of
English are confronted with when pronouncing the Arabic
pharyngeals /ħ/ and /ʕ/. The late Professor Gimson (personal
communication) mentioned that it was his ambition to be able to
pronounce these two sounds naturally. He managed to pronounce
them correctly only once out of five or six tries.
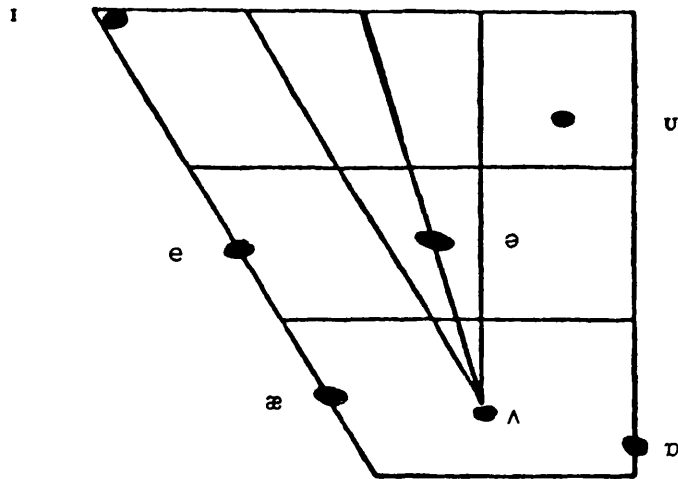
Fig. 4   The Short Vowels   (RP)
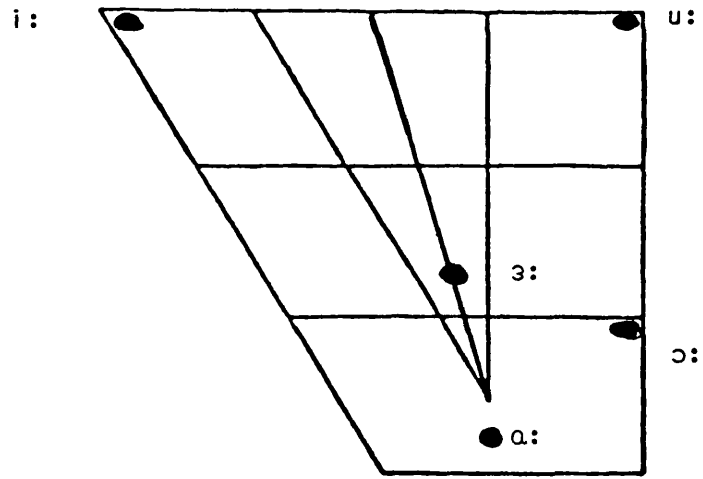
Fig 5.   The Long Vowels   (RP)

	Bilabial	Labio-Dental	Inter-Dental	Alveolar	Post-Alveolar	Palato-Alveolar	Palatal	Velar	Glottal	Labio-Velar
OBSTRUENTS PLOSIVES	/p,b/			/t,d/				/k,g/		
AFFRICATES						/tʃ,dʒ/				
FRICATIVES		/f,v/	/θ,ð/	/s,z/		/ʃ,ʒ/			/h/	/ʍ/
SONORANTS NASALS	/m/			/n/				/ŋ/		
LIQUIDS				/l/	/r/					
SEMIVOWELS							/j/			/w/

Fig. 6 (The Consonants)

CHAPTER THREE

3. THE PHONOTACTICS OF ARABIC AND ENGLISH

3.1 Summary

In order to establish the phonological character of any language it is essential to consider and describe not only the phonemes but also the distribution of these phonemes.

Having described the phonemes of both IA and RP, I now turn to the distribution of these phonemes, i.e. the phonotactic structure of the two dialects under investigation. It would not be sufficient to investigate the phonotactic structure of IA only. Other students in the Arab world were also tested to determine whether they broke up English consonant clusters with an epenthetic vowel or not. As a result this chapter concentrates on morphological processes that tend to produce consonant clusters in IA and in the other four dialects discussed here, namely: Moroccan Arabic (MA), Jordanian Arabic (JA), Kuwaiti Arabic (KA) and Egyptian Arabic (Cr.A).

It can be said that even if two languages possess an identical phoneme inventory the distribution of their phonemes will vary greatly. The rules for how this phoneme inventory should be structured are part of the phonotactic restrictions each language superimposes on its consonant sequences. Needless to say, this varies from one language to another. This fact will immediately apply to the problem under investigation in this thesis. In other words, the hypothesis that Iraqi students, in particular, find it difficult to pronounce English clusters of three or more consonants and tend to insert an epenthetic vowel is largely due to the fact that the phonotactics of IA does not allow such clusters in any position. This hypothesis will later on be validated by means of specific tests. At the same time I am not positing that IA and RP have the same phoneme inventory. As seen in the preceding pages, they do differ. Not only this but also cross-language phonetic interference tests have proved

"the hypothesis that both the phonological structure and phonetic characteristics of a speaker's native language will influence his pronunciation of sounds in a foreign language learned in adulthood". (Flege and Port, 1981, p. 125).

As Sigurd (1965, pp. 13-14) has pointed out,

"the study of phonotactic structure aims at discovering the characteristic patterns of the language. These patterns are of great interest to those who coin new words as names for industrial products and trade marks. Our reactions to new words and our ability to remember them seem largely to be an effect of the phonemic and graphemic structure of the words. The accidental gaps found in the analysis of phoneme combinations suggest potential words that can be used as trade names without breaking the phonotactic patterns".

This statement can be reinforced by a quotation from Abercrombie (1973, p. 76):

"Such structural regularities in the phonology of a language produce, in its speakers, deep-rooted habits of speech which are difficult to change. This is shown by the way new words introduced into a language - conform to the existing structural patterns. Recent examples from English are blurb, snoop, grotty, derv, daz, blitz. The nonsense words of Lewis Carroll and Edward Lear - brilllig, slithy, borogove, jumblies - are not complete nonsense, as J.R. Firth has pointed out: they are English nonsense, conforming strictly to English patterns of structure. Nobody would think of calling a new detergent fnodr, or shnatk, which violates the structural rules of English".

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I have taken up this point because I feel that a study of the
phonotactics of IA is of great importance to those working on
Arabisation of scientific texts for the universities in Iraq. That is,
it is impossible to coin new technical words in Arabic without at least
the intuitive knowledge of the phonotactic structure of Arabic.

The study of the phonotactic structure of any language also helps
lexicographers in assessing whether certain words are loan-words or
not.

This chapter looks at consonant clustering in IA as well as the other
dialects discussed in this thesis. Substantival morphemes which yield
initial and final consonant clusters are exemplified in detail.

The verb morphemes of IA, like those of other dialects of Arabic
consist mainly of three and sometimes four consonant radicals, which
can be termed triliteral and quadriliteral verb roots respectively.

As there is no infinitive in Arabic, the two, three, four or five
radicals of the root act as a base on which the different forms of the
verb are built. Other lexical items are also built on this root in the
sense that very often words with the same root have related
meanings.   For example, if we take the word /'daras/ 'to study',
we find that several derivatives can be obtained from the same root
d̲ r s̲ such as /'jadrus/ 'he studies', /'madrasa/ 'school',
/mu'darris/ 'teacher', etc.   At the same time words with the same
root but a different pattern of vowels and affixes can yield different
meanings.   For example, if we take the root ʃ ʕ r, the pattern
/'ʃaʕir/ will give us the meaning 'hair', whereas the pattern /'ʃiʕir/
means 'poetry'.   Although it is not possible to predict the pattern
in the two examples above, the vowels are necessary in most cases to
derive other lexical items.   As a result, it can be said that the root

> "is not enough for predicting the phonetic representation
> of lexical items" (Abdo, 1968, p.48).

With regards to this point, Bulos (1965, p. 5) writes that

"Arabic is a superb example of a language employing internal vocalic patterns for its grammatical processes".

This can be exemplified as follows:

a. One way of forming plurals in IA is:

CVCCV:C ⟶ CCV:CV:C, e.g.

/sal'bi:ħ/ ⟶ /sla:'bi:ħ/ 'snail(s)'.

b. Another way is to form the singular (feminine), e.g.

/'faħam/ ⟶ /'faħma/ 'coal', 'one piece of coal'

/'furas/ ⟶ /'fursa/ 'chance','chance (one)'.

3.2. CONSONANT CLUSTERING

There are two types of consonant clustering in initial and final positions which

"provide distinctive features, the first peculiar to IA, the other characteristic of CA in pausal form. Both IA and CA share most of the occurring clusters of the medial type" (Al-Toma, 1969, p. 17).

There is no initial 2 consonant clusters in CA:

"The rule that the first consonant in a word in initial position (or after pause) should always be followed by a vowel exludes the occurrence of initial clusters in CA. Even in situation most favorable for initial cluster, i.e. in words starting with prosthetic hamza plus vowel which have no phonetic value in context, the Classical rule calls for a full phonetic realization of the elements cited above" (Al-Toma, 1969, p. 18).

As an example:

(CA) /ʔista'fa:d/ ⟶ (IA) /sta'fa:d/ 'he gained'.

3.2.1. INITIAL TWO CONSONANT CLUSTERS IN IA

3.2.1.1. Verbs

In assessing which derivational classes in verbs tend to produce consonant clusters, I have based my analysis on Erwin's (1963) triliteral and quadriliteral verbs. Erwin (1963, p. 62) has based his classification

> "according to the system traditionally used in works on Classical Arabic".

The term 'verb', here, is the third person masculine singular form of the perfect tense.

3.2.1.1.1. TRILITERAL VERB MORPHEMES

Class I :

This type of verb follows different patterns such as $CVCVC$ (where V_1= /a, i, u/ and C_2 is either [+consonant] or [+semivowel]). [j] is prefixed to the patterns $CV:C$ and $CVDC$ to form the third person masculine singular. As a result we have initial 2 consonant clusters, e.g.

$CV:C$:

/ʃa:f/	'to see'	⟶	/jʃu:f/	'he sees'
/χa:f/	'to be afraid'	⟶	/jχa:f/	'he is afraid'
/ẓa:ʕ/	'to get lost'	⟶	/jẓi:ʕ/	'he gets lost'

and
$CVDC$:

/ħabb/	'to like, love'	⟶	/jħibb/	'he likes, loves'
/wann/	'to moan'	⟶	/jwinn/	'he moans'.

It must be mentioned that there is no restriction on the type of consonant to follow [j-].

Class V :

[t-] is prefixed to this type of verb which is characterised by a double middle radical. The patterns this type of verb yields are tCVDCVC and tCVDCV, e.g.

tCVDCVC :

/'tħassan/	'to improve'
/'twannas/	'to enjoy oneself'
/'tjattam/	'to be orphaned'
/'tmaddad/	'to stretch out'
/'t?ahhal/	'to get married'.

tCVDCV :

/'tɾaqqa/	'to make progress'
/'tfajja/	'to get in the shade'
/'tɣadda/	'to have lunch'.

The prefixed [t-] assimilates to certain following consonants as shown below:

(a) [t-] assimilates to [+voice] before [d, dʒ], e.g.

/'ddaχχal/	'to interfere'
/'ddʒannab/	'to avoid'.

(b) [t-] assimilates to [+emphasis] before [ṭ], e.g.

/'ṭṭallab/	'to be required'.

(c) Complete assimilation before [θ, ð, ɖ], e.g.

/'θθabbat/	'to be made permanent'
/'ððakkaɾ/	'to remember'
/'ɖɖamman/	'to include'.

(d) Partial ([+voice] or [+emphasis]) or complete assimilation before [z, ʂ], e.g.

/'zzawwadʒ/	or /'dzawwadʒ/	'to marry'
/'ʂʂawwaɾ/	or /'tʂawwaɾ/	'to suppose' or 'to take a photograph'.

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(e) Complete or no assimilation before before [s, ʃ], e.g.

/ˈssallam/   or /ˈtsallam/   'to be delivered'

/ˈʃʃammas/   or /ˈtʃammas/   'to sunbathe'.

[t-] above can precede any [+C].

Class VI :

This class of verbs is very similar to Class V.   It is also characterised by a prefixed [t-] which assimilates to specific following consonants in the same manner as described above.   The only difference which distinguishes Class V from Class VI is the long vowel /a:/ between the first and second radicals.   Class VI follows the patterns *tCV:CVC* and   *tCV:CV*, e.g.

tCV:CVC :

/ˈtχa:bar/   'to talk on the telephone'

/ˈtɾa:han/   'to have a bet'

/ˈtwa:ʕad/   'to make an appointment'.

tCV:CV :

/ˈtba:ha/   'to be proud of'

/ˈtsa:wa/   'to become equal'.

Class VII :

A prefixed [n-] yields the following patterns:

nCVCVC ; *nCVCVC* where medial C= [w]); *nCVDC* ; *nCV:C* ; *nCVCV* e.g.

nCVCVC :

/ˈndiras/   'to be studied'

/ˈndʒubar/   'to be forced'.

nCVwVC :

/ˈnθuwal/   'to be confused'.

nCVDC :

/nḥall/   'to be solved'.

nCV:C :

/nχaːn/   'to be deceived'.

nCVCV :

/'nliga/   'to be found'.

Again, there is no restriction on the type of [+C] to follow initial [n-].

There are a few words which can be used in free variation, e.g.

/'ʔaχaδ/'to take' ⟶ /'nʔiχaδ/ or /'nniχaδ/ 'to be taken'
and
/'ʔakal/'to eat' ⟶ /'nʔikal/ or /'nnikal/ or /nkaːl/'to be eaten'.

Class VIII :

This is characterised by an infixed [-t] after the first radical. The following patterns exemplify this:
CtCVCV ; *CtVDC* ; *CtV:C* ; *CtVCV* , e.g.

CtVCVC :

/'χtilaf/   'to differ'
/'ʕtubar/   'to consider'.

CtVDC :

/htamm/   'to become interested'.

CtV:C :

/ḥtaːdʒ/   'to need'.

CtVCV :

/'ʃtika/   'to complain'
/'ḥtuwa/   'to contain'.

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Certain assimilations also occur here:

(a) [-t-] ⟶ [+emphatic] / [+emphatic] ⎯, e.g.

/'ṭṭalaʕ/   'to observe'

/'ṣṭubar/   'to be patient'

/'ṣṭidam/   'to collide'

/'ḍṭirab/   'to be nervous'.

(b) [-t-] ⟶ [+voice] / [d,z] ⎯, e.g.

/'ddiʕa/   'to claim'

/'zdiħam/   'to be crowded'.

(c) [+semivowel] ⟶ [t] / ⎯ [t]

/'ttidʒah/ 'to head for' (here the first radical of the verb is [w])

/'ttiqan/ 'to master' (here the first radical of the verb is [j]).

(d) [ʔ] ⟶ [t] / ⎯ [t] in one example only:

/'ttixaδ/   'to take measures'.

Class IX :

This class of verbs follows the pattern:
CCVDC where C_2 can be any [C] or [+semivowel].

This type of verbs is

> "derived from adjectives of color and defect, and have
> the meaning 'to have or acquire a certain color or
> defect'" (Erwin, 1963, p. 75).

e.g.

/swadd/   'to turn black'

/bjaḍḍ/   'to turn white'

/xḍarr/   'to turn green'

/ħmarr/   'to turn red'

/sfarr/   'to turn yellow'

/ṭraʃʃ/   'to turn deaf'

/slaʕʕ/   'to become bald'

/mṭass/   'to absorb'.

<u>Class X</u> :

[st-] is prefixed to this type of verbs thus giving the following patterns:

stVCCVC ; *stVCVDC* ; *stVCV:C* ; *stVCCV* , e.g.

stVCCVC :
/sta'ʔnaf/   'to appeal (a court case)'.

stVCVDC :
/sta'ħaqq/   'to come due'
/sta'marr/   'to continue'.

stVCV:C :
/sta'ra:ħ/   'to rest'
/sta'ʃa:r/   'to seek help'.

stVCCV :
/sta'θna/   'to exempt'.

3.2.1.1.2. Quadriliteral Verb Morphemes

Erwin's (1963) 'simple' quadriliteral verbs do not contain initial consonant clusters. His two types of derived verbs, on the other hand, follow the patterns below:

(a) A prefixed [t-] gives the pattern *tCVCCVC* as in the following examples:
/'tbarhan/   'to be proved'
/'ttardʒam/   'to be translated'.

The same type of assimilations occur here as described in Class V verbs above.

While some [t-] prefixed quadriliteral verbs are derived from simple

quadriliteral verbs, others are derived directly from nouns, though with a derogatory meaning. e.g.

/fajla'suːf/ 'philosopher' ⟶ /'tfalsaf/ 'to pretend to speak learnedly, though without knowledge'.

(b) *CCVCVDC* :

/ʃma'ʔazz/   'to be disgusted'

/tma'ʔann/   'to feel reassured'

/qʃa'ʕarr/   'to feel a shudder'.

3.2.1.2. NOUNS

3.2.1.2.1. Verbal Nouns

Verbal nouns are derived from verbs and have

> "the general meaning 'action' or 'state' indicated by that verb (Erwin, 1963, p. 148).

English nouns which are equivalent to these nouns are those which end in -ing, -ness, -tion, -ance, for example 'reading', 'bashfulness', 'partition', 'removal', 'appearance';

> "or they may be nouns not marked by any particular endings, for example 'anger', 'work', 'talk'. Verbal nouns thus generally have an abstract meaning; but many of them also have a specialized concrete meaning, frequently indicating the physical result of the action indicated, for example 'act of wounding' or 'wound' and 'act of reporting' or 'report'" (Erwin, 1963, p. 148).

Verbal nouns are derived from verbs. Thus the patterns followed are the same as triliteral and quadriliteral verb derivations as described in 3.2.1.1.1. and 3.2.1.1.2. above. This being the case, only examples of verbal nouns with an initial 2 consonant cluster will

be given and reference will be made to the type of verb from which they are derived.

Class I :

Verbs following the pattern CVCVC ———→ C(i)CV:C(a) when used as a verbal noun, e.g.

/'nibaħ/ 'to bark'   ———→   /n(i)ba:ħ/ 'barking'
/'kitab/ 'to write'   ———→   /'k(i)ta:ba/'writing'.

Verbs following the pattern CV:C ———→ C(i)CV:C(a) when used as a verbal noun, e.g.

/sa:ħ/   'to shout'   ———→   /s(i)ja:ħ/ 'shouting'
/sa:q/   'to drive'   ———→   /'s(i)ja:qa/'driving'.

The /(i)/ above is optional and is idiosyncratic of speakers. This is more commonly not inserted than otherwise.

Class II :

Verbs of this type following the patterns CVDCVC and CVDCV yield verbal nouns by adding a prefixed [t-] and change in the vowel quality, e.g.

CVDCVC :
/'battal/ 'to quit'   ———→   /'tbuttil/ 'quitting'
/'sallam/ 'to deliver'   ———→   /'tsillim/ 'delivery'.

CVDCV :
/'ħaʃʃa/ 'to stuff'   ———→   /'tħiʃʃi/ 'stuffing'
/'naʃʃ/ 'to starch'   ———→   /'tniʃʃi/ 'starching'.

This initial [t-] assimiltes to certain following consonants in the same manner as described in Class V above.

Class III :

The verbal noun pattern *mCV:CV:* is derived from the verb pattern *CV:CV* by adding the prefix [m-] and the feature [+length] to V_2, e.g.

/'daːɾa/	'to take care of'	⟶	/mdaː'ɾaː/	'taking care of'
/'msaːwa/	'to level'	⟶	/msaː'waː/	'levelling'
/'laːga/	'to meet'	⟶	/mlaː'gaː/	'meeting'.

Class VII :

Verbal nouns are derived from this type of verb in the following manner:

(a) *nCVCVC* ⟶ *nCVCV:C* , e.g.

| /'nziʕadʒ/ | 'to be upset' | ⟶ | /nzi'ʕaːdʒ/ | 'upset feeling' |
| /'nfidʒaɾ/ | 'to explode' | ⟶ | /nfi'dʒaːɾ/ | 'explosion'. |

(b) *nCVDC* ⟶ *nCVCV:C* , e.g.

| /nɦatt/ | 'to decline' | ⟶ | /nɦi'taːt/ | 'decline' |
| /nɦall/ | 'to be dissolved' | ⟶ | /nɦi'laːl/ | 'disbanding'. |

(c) *nCV:C* ⟶ *nCVCV:C* , e.g.

| /nɦaːɾ/ | 'to collapse' | ⟶ | /nhi'jaːɾ/ | 'collapse'. |

(d) *nCVCV* ⟶ *nCVCV:ʔ* , e.g.

| /'nɦina/ | 'to bow, bend' | ⟶ | /nɦi'naːʔ/ | 'bowing, bending'. |

Class VIII; Class IX; Class X

To derive verbal nouns from the above classes of verbs, the same intervocalic changes take place as in (a), (b), (c) and (d) in Class VII above.

3.2.1.3. SIMPLE QUADRILITERALS

[t-] is prefixed to certain simple quadriliteral verb morphemes to produce verbal nouns with initial 2 consonant clusters. These verbal nouns follow the patterns:

(a) *tCVCCVC* , e.g.

/'baqbaq/   'to bubble' $\longrightarrow$ /'tbuqbuq/   'bubbling'.

(b) *tCV:CV* , e.g.

/'ne:ʃan/   'to aim' $\longrightarrow$ /'tne:ʃin/   'aiming'.

(c) *tCV:CV* , e.g.

/lo:la/ 'to sing a lullaby' $\longrightarrow$ /'tlu:li/   'singing a lullaby'.

This initial [t-] assimilates to certain following consonants in the same manner as described in Class V verbs above.

While most nouns in IA follow the pattern *CVCV...* initially, the following list shows certain nouns that do not:

CCV(:)C ...

/'sfardʒal/	'quinces'
/'mqawwa/	'cardboard'
/zma:l/	'ass'
/'mzajjin/	'barber'
/ʃtira:'kijja/	'socialism'
/ħsa:n/	'horse'
/plakk/	'plug'
/'mħadʒdʒar/	'railing'
/'pja:no/	'piano'.

3.3. PLURALS

(a) Certain plurals are formed following the pattern *CCV:C* as below:

/'balam/	—→	/bla:m/	'rowboats'
/'dʒaras/	—→	/dʒra:s/	'bells'
/'qafas/	—→	/qfa:s/	'cages'
/'qalam/	—→	/qla:m/	'pencils'
/'naʕal/	—→	/nʕa:l/	'sole'
/'dʒibal/	—→	/dʒba:l/	'mountains'
/'dʒimal/	—→	/dʒma:l/	'camels'
/'sabiʕ/	—→	/sba:ʕ/	'lions'
/'tʃalib/	—→	/tʃla:b/	'dogs'
/ba:b/	—→	/bwa:b/	'doors'
/θo:b/	—→	/θwa:b/	'shirts'
/'ʃaʕab/	—→	/ʃʕu:b/	'people'
/'satiħ/	—→	/stu:ħ/	'roofs'.

The above list is not exhaustive.

(b) Other plurals follow the patterns *CCV:CVC* as follows:

/'χa:tam/	—→	/'χwa:tim/	'rings'
/'ʃe:bag/	—→	/'ʃja:bug/	'rolling-pins'.

(c) Certain plurals follow the patern *CCV:CV* as in the examples below:

/'bu:ri/	—→	/'bwa:ri/	'pipes'
/'ʃa:di/	—→	/'ʃwa:di/	'monkeys'.

(d) A few nouns with an [m-] prefix and a stem with a double root have the pattern *CCV:CV:C* in the plurals, e.g.

/mdʒarr/	—→	/mdʒa:ri:r/	'drawers'
/'mχadda/	—→	/mχa:'di:d/	'pillows'.

3.4. NOUN PREFIXES

3.4.1. The Definite Article

A noun in IA is defined by /l/ which has two forms depending on the first consonant of this noun. If the first consonant is what is called in Arabic a 'sun' consonant, then the /l/ of the definite article assimilates completely to it. The following are examples of this type of assimilation:

/t/	/'timman/	'rice'	⟶	/'ttiman/	'the rice'
/θ/	/θo:b/	'shirt'	⟶	/θθo:b/	'the shirt'
/dʒ/	/'dʒunta/	'suitcase'	⟶	/'dʒdʒunta/	'the suitcase'
/d/	/di:'na:r/	'dinar'	⟶	/ddi:'na:r/	'the dinar'
/ð/	/ði'ba:n/	'flies'	⟶	/ðði'ba:n/	'the flies'
/r/	/ruk'ka:b/	'passengers'	⟶	/rruk'ka:b/	'the passengers'
/z/	/'zibid/	'butter'	⟶	/'zzibid/	'the butter'
/s/	/'sana/	'year'	⟶	/'ssana/	'the year'
/ʃ/	/'ʃahar/	'month'	⟶	/'ʃʃahar/	'the month'
/ş/	/'şu:ra/	'picture'	⟶	/'şşu:ra/	'the picture'
/ʓ/	/'ʓa:but/	'officer'	⟶	/'ʓʓa:but/	'the officer'
/ţ/	/'ţo:ba/	'ball'	⟶	/'ţţo:ba/	'the ball'
/l/	/'le:la/	'night'	⟶	/'lle:la/	'the night'
/n/	/na:r/	'fire'	⟶	/nna:rr/	'the fire'
/tʃ/	/tʃa:'ku:tʃ/	'hammer'	⟶	/tʃtʃa:'ku:tʃ/	'the hammer'.

As a natural class these can be described in terms of distinctive features as: [+cor].

The following rule can then be formulated to explain the above phenomenon of assimilation:

$$
\begin{bmatrix} +\text{Cor} \\ +\text{lateral} \end{bmatrix} \rightarrow \begin{bmatrix} \text{C} \\ \alpha\text{Features} \end{bmatrix} \Big/ \underline{\quad\quad} \begin{bmatrix} \text{C} \\ +\text{Cor} \\ \alpha\text{Features} \end{bmatrix}
$$
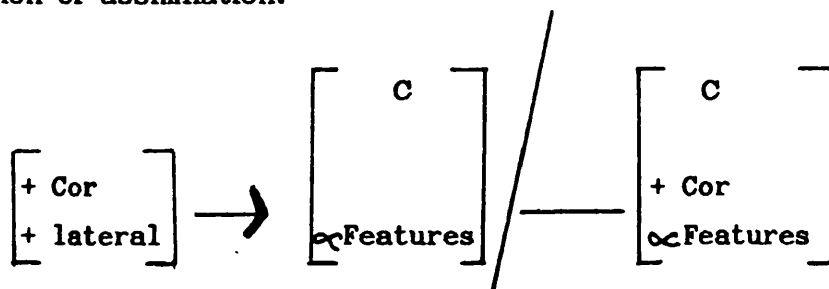
The above rule applies vacuously to nouns in /l-/.

On the other hand in words which begin with one of the other consonants (corresponding to the consonants known as 'lunar', 'moon' - Arabic 'qammarriyya'), the /l/ of the definite article is retained, e.g.

/ʔ/	/'ʔakil/	'food'	⟶	/'lʔakil/	'the food'
/b/	/beːt/	'house'	⟶	/lbeːt/	'the house'
/ħ/	/ħa'liːb/	'milk'	⟶	/lħa'liːb/	'the milk'
/χ/	/χeːl/	'horses'	⟶	/lχeːl/	'the horses'
/ʕ/	/'ʕinab/	'grapes'	⟶	/'lʕinab/	'the grapes'
/ɣ/	/'ɣada/	'lunch'	⟶	/'lɣada/	'the lunch'
/f/	/'fikra/	'idea'	⟶	/'lfikra/	'the idea'
/q/	/'qisim/	'part'	⟶	/'lqisim/	'the part'
/k/	/'kaːtib/	'clerk'	⟶	/'lkaːtib/	'the clerk'
/m/	/moːz/	'bananas'	⟶	/lmoːz/	'the bananas'
/h/	/'hawa/	'air'	⟶	/'lhawa/	'the air'
/w/	/'wakit/	'time'	⟶	/'lwakit/	'the time'
/j/	/joːm/	'day'	⟶	/ljoːm/	'the day'
/p/	/paːs/	'bus'	⟶	/lpaːs/	'the bus'
/g/	/'gutun/	'cotton'	⟶	/'lgutun/	'the cotton'.

If the noun to be defined by /l/ begins with an initial 2 consonant cluster, a helping vowel /i/ is inserted after /l/ to avoid an initial 3 consonant cluster which is not permitted in IA. e.g.

/blaːm/	'rowboats'	⟶	/li'blaːm/	'the rowboats'
/fluːs/	'money'	⟶	/li'fluːs/	'the money'.

3.4.2. Preposition Prefixes

(a) The preposition /b-/ 'in, at, by means of' occurs only as a prefix, e.g.

/bbaɣ'daːd/   'in Baghdad'
/bsa'jjaːrti/   'in my car'
/btʃaː'kuːtʃ/   'with a hammer'.

Yet again, if /b-/ precedes a noun which begins with an initial 2 consonant cluster, a helping vowel /i/ is inserted to avoid an impossible initial 3 consonant cluster.

(b) The preposition /l-/ 'to, for'

"is identical with the article prefix and, like it, occurs in both an l- form and a doubled form depending on the following consonant" (Erwin, 1963, p. 217),

as described above (pp. 87-88), e.g.

/lbaɣ'daːd/   'to Baghdad'

and

/'dʒdʒaːsim/   'To Jasim'.

Yet again, a helping vowel /i/ would split any initial 3 consonant cluster that could be formed by /l-/ and a noun which begins with an initial 2 consonant cluster.

(c) /mn-/ 'from, of' occurs before words beginning with initial two consonant clusters. A helping vowel /i/ splits any impermissible initial 3 consonant clusters, e.g.

/mni'fluːsi/   'from my money'
/mnil'beːt/   'from the house'
/mni'ʃʃaːriʕ/   'from the street'.

3.5. ADJECTIVES

In this section I shall look at those derived adjectives which yield initial two consonant clusters. In IA

"participles are adjectives derived from verbs and closely related to them in meaning. They are sometimes called 'verbal adjectives'. Participles are of two kinds, active and passive" (Erwin, 1963, p. 219).

CLASS II :

Participles of Clas II verbs have the following patterns:

Active Participles (AP) = *mCaDCi(u)C* or *mCaDCi* e.g.

/'mbaddil/	'to change'
/'mdabbur/	'to arrange'
/'msammi/	'to name'.

Passive Participles (PP) = *mCaDCaC* or *mCaDCa* e.g.

/'mbaddal/	'to change'
/'mdabbar/	'to arrange'
/'msamma/	'to name'.

CLASS III :

Participles of this class of verbs have the patterns:

· AP = *mCa:Ci(u)C* or *mCa:Ci* e.g.

/'mʕa:qib/	'to punish'
/'mða:ʕuf/	'to double'
/'mda:ri/	'to take care of'.

PP = *mCa:CaC* or *mCa:Ca* e.g.

/'mʕa:qab/	'to punish'
/'mða:ʕaf/	'to double'
/'mda:ra/	'to take care of'.

3.6. SIMPLE QUADRILITERALS

Participles of simple quadriliteral verbs follow the patterns:

AP

(a) *mCaCCi(u)C* e.g.

| /'mhandis/ | 'to design' |
| /'mxarbut/ | 'to mess up'. |

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(b) *mCo:(e:)Ci(u)C e.g.*

/'mdo:lib/   'to fool'

/'mde:wuɾ/   'to turn'.

(c) *mCo:Ci e.g.*

/'mlo:li/   'to sing a lullaby'.

PP

(a) *mCaCCaC e.g.*

/'mhandas/   'to design'.

(b) *mCo:(e:)CaC e.g.*

/'mdo:lab/   'to fool'

/'mde:waɾ/   'to turn'.

(c) *mCo:Ca* (This pattern is seldom used).

3.7. BROKEN PLURAL PATTERNS

The following is a list of broken plural patterns of adjectives which
yield initial 2 consonant clusters :

(a) *CCa:C*

/ʕra:ɗ/   'wide'

/ɣma:dʒ/   'deep'

/nʃa:ṭ/   'lively'

/nɗa:f/   'clean'

/bʕa:d/   'far'

/θga:l/   'heavy'

/sma:n/   'fat'

/kba:ɾ/   'old, big'

/ṭwa:l/   'long, tall'

/χsa:s/   'mean'

/ʃħa:ħ/   'mean'

/ʕza:z/   'dear'

/dʒla:f/   'rude'

/χʃa:n/   'blunt'

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/sba:ʕ/	'brave'
/ɸχa:m/	'huge'
/fɢa:ɗ/	'rude'
/sɣa:r/	'little'
/gsa:r/	'short'.

(b) *CCa:Ca*

/'tʕa:ba/	'tired'
/'zʕa:la/	'angry'
/'ska:ra/	'drunk'
/'ʃba:ʕa/	'satisfied with food'
/'ʕta:ʃa/	'thirsty'
/'ksa:la/	'lazy'
/'nʕa:sa/	'sleepy'
/'wdʒa:ʕ/	'sick'
/'hla:ka/	'exhausted'
/'dʒwa:ʕa/	'hungry'.

3.8. NISBA ADJECTIVES

The nisba adjectives which produce initial two consonant clusters are those which have the meaning 'native', or 'resident of', e.g.

3.8.1. Singular

/'swi:di/	'Swedish'
/'swi:sri/	'Swiss'
/'fransi/	'French'
/'kwe:ti/	'Kuwaiti'
/'ʕma:ratli/	'from Amara (a town in Iraq)'
/'spa:ni/	'Spanish'.

3.8.2. Plural

/'bsa:rwa/	'from Basrah'
/'bɣa:da/	'from Baghdad'
/'msa:lwa/	'from Mosul'
/ʃwa:m/	'Damascene'
/kra:d/	'Kurds'
/hnu:d/	'Indians'.

3.8.3. NUMERALS

The following are the numbers which begin with an initial two consonant cluster :

(a) Cardinals

/θne:n/	'two'
/'θla:θa/	'three'
/'θma:jna/	'eight'
/'θnaʕaʃ/	'twelve'
/θlat'taʕaʃ/	'thirteen'
/χmus'taʕaʃ/	'fifteen'
/sba:'taʕaʃ/	'seventeen'
/θmun'taʕaʃ/	'eighteen'
/tsa:'taʕaʃ/	'nineteen'
/tla:'θi:n/	'thirty'
/θma:'ni:n/	'eighty'.

3.8.4. PREPOSITIONS

I have noted three prepositions with initial two consonant clusters. These are:

/bda:l/	'instead of'
/bdu:n/	'without'
/'blajja/	'without'.

3.8.5. INTERROGATIVE PRONOUNS

(a) /ʃ-/ is a prefix meaning 'what'. It is used

> "(1) as the subject of a verbal sentence, (2) as the direct object of a verb, (3) as the first element of an equational sentence, and (4) preceding ʔaku 'there is/are'" (Erwin, 1963, p. 293).

3 consonant clusters are not permitted in IA. Therefore, if /ʃ-/ is to precede any morpheme beginning with an initial 2 consonant cluster, it must be broken up by means of the epenthetic vowel /i/. e.g.

/ʃ-it'ɾiːd/   'what do you want?'.

(b) Another interrogative pronoun beginning with an initial 2 consonant cluster is:

/ʃgadd/ 'how much?'.

3.8.6. INTERROGATIVES

The main interrogative particles which yield initial two consonant clusters are:

/ʃloːn/   'how, what kind of?'
/'ʃwakit/   'when?'
/mneːn/   'from where?'.

3.8.7. SUMMARY

Al-Toma (1969) has summarised the possibilities of occurring initial 2 consonant clusters in IA as follows:

1- Only 50% of theoretically possible clusters occur in initial position.

2-   No consonantal phoneme combines with /?/ to give an initial
consonant cluster.

3-   Only two examples can be cited for initial 2 consonant clusters
beginning with /l/, (excluding those words which are preceded by
/l-/ of the definite article as given on p. 88) as in :

/lwa:s/   'nonsense'
/lta:f/   'pleasant'.

3.9. MEDIAL 2 CONSONANT SEQUENCES

Medial consonant sequences can be found in most morphological
processes in CA and IA (and indeed in all other Arabic dialect). Most
occurring examples of consonant sequences in CA can be found in IA.
IA has the additional medial consonant sequences formed with /p/,
/g/ and /tʃ/. CA archaic or rare words include medial 2 consonant
sequences which cannot be found in IA (Al-Toma, 1969), e.g.

/'jaðʒul/   'to oppress'
/'jaðɣul/   'to push'
/'jaðħul/   'to drive'
/?uθ'fijja/   'trivet'
/'jaθdʒar/   'to expand'
/'jaθduq/   'to flow'
/'jaθʕab/   'to drain'
/'jaθħadʒ/   'to drag'
/'jaθhat/   'to call'
/'jatθur/   'to curdle'
/'jatzaʕ/   'to desist from invading'
/'jaθta?/   'to step on'
/'jaθtan/   'to spoil'
/'jatdʒun/   'to cook well'.

It is not possible to find any examples in IA which include the CA medial consonant sequences /k?/, /kχ/, /ks/, /ɣh/, /χq/, /hq/, /hk/, /sɣ/, /ds/, /dj/, /ʃs/, /ʃs/, /dʒχ/ and /dʒθ/:

> "The fact that most of the clusters (sequences) cited above rarely occur in CA minimizes the significance of this difference between CA and IA" (Al-Toma, 1969, p. 19) (parenthesis mine).

3.10. FINAL 2 CONSONANT CLUSTERS

In CA, final 2 consonant clusters occur in the pausal form 'al-waqf', e.g.

Pausal /'?al-qalb/ ⟶ Contextual /?al-'qalbu/ 'the heart'
   " /?amɾ/   ⟶   "   /'?amɾun/   'command'
   " /lajl/   ⟶   "   /'lajlun/   'night'.

> "Theoretically, a great number of final clusters can be produced in CA, for there are lexical items which may yield 610 different clusters (out of a possible 784). However, not all these examples are actually used. Nevertheless they indicate the wide possibilities of final clusters in CA if rules regarding pausal form are applied" (Al-Toma, 1969, p. 19).

Contrary to CA, IA tends to break up final 2 consonant clusters, as follows:
CA /baħɾ/   ⟶ IA /'baħaɾ/   'sea'.

Malick (1956-57, p. 82) has classified those final clusters which are retained in IA into two groups, namely:

(a) words which are foreign borrowings such as:
/sfandʒ/   'sponge'
/tʃans/   'chance, opportunity'
/bang/   'bank'
/kaɾt/   'card'.

(b) Proper names from CA such as:

/zajd/   'Zayd, a boy's name'
/lajθ/   'Layth, a boy's name'
/qajs/   'Qays, a boy's name'
/hind/   'Hind, a girl's name'.

(a) and (b) above can be represented by the following schema:

. . . [+V] [+son] [+C]#

It is also possible to find other lexical items (nouns) in IA which end with a final 2 consonant cluster. These are direct borrowings from CA and they are, in my opinion, idiosyncratic of the speaker, e.g.

/ʔawdʒ/   'peak, top'
/ʔins/   'people'
/barq/   'lightning'
/dʒins/   'category'
/madʒd/   'glory'
/nafs/   'person'.

3.11. CONCLUSION

To summarize the preceding pages it is possible to note the following:

1. No clusters of more than 2 consonants have been noted in either initial or final positions. This excludes a geminate consonant plus a consonant in initial position. With regards to consonant sequences, the Iraqi Arabic Dictionary (1967) cites four examples (with their derivatives) of three consonant sequences in examples such as /kunˈkriːt/ 'concrete', /ʔimbraːˈtoːr/ 'emperor', /paːnˈsjoːn/ 'boarding house' and /tuːrkˈmaːni/ 'Turkish'. Testing the accuracy of this on my own pronunciation, a native speaker of IA, I would prefer breaking up the three consonant sequences in the examples above with an epenthetic vowel. I would hasten to add that it is possible that these pronunciations, as provided by the Dictionary, will be retained in the speech of some IA speakers.

It is possible to have (phonologically) three-consonant sequences across morpheme boundaries on condition that the last two consonants of the first morpheme constitute a geminate consonant and the second morpheme is a suffix which begins with a consonant e.g. /ma'ħallha/ 'her place'.   This also applies to geminate consonants across word boundaries, as will be seen below.   Harrell (1957, p. 31) defines internal geminates

> "as a given consonant articulation <u>held across a syllable boundary</u>, so that a fall of air pressure behind the closure after the formation of the articulation is followed by a rise of air pressure from a new intercostal pulse before the release of the articulation.   The crucial factor is not length per se, but length across a syllable boundary so that a given articulation functions independently in two syllables".

Across word boundaries, it is possible to have phonologically a sequence of three or four consonants.   e.g.

/ʔiʃt 'ððill ma tin'ra:d/ 'a life of subjugation is unacceptable' (IA Dictionary, p. 176)
and
/hind 'ħlewa/ 'Hind is pretty' (Malick, 1956-57, p. 86).

In the above examples, /i/ breaks up the four consonant sequences giving the phonetic output:

[ʔiʃt i'ððill ma tin'ra:d]
and
[hind i'ħle:wa].

With regards to final geminates, Harell (1957, p. 31) writes

> "since a final compound consonant functions in only one syllable, a prepause geminate becomes definable only in terms of length".

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The only examples where it is possible to have the output CC-C are phrases where one of the words is a foreign borrowing, particularly from English. e.g. [tʃans 'maːku] 'no luck' and [bang 'maːku] 'no bank open'. Although these are possible sentences syntactically speaking, yet most Iraqis seem to favour the formation

['maːku tʃans] and ['maːku bang] instead.

2. As far as initial and final clusters are concerned, we find that the former are to be found extensively in IA while the latter are scarce. If I am to regard CA as point of comparison, as indeed I should, then these are cases of the following correspondences:

i. CA : CVC = IA : CCV

This is because CA has the following rule:

C_1 must be followed by a vowel, thus excluding the possibility of an initial cluster occurrence. Even in words which start with prosthetic hamza /ʔ/ + vowel (which are of no phonetic value in CA),

> "the classical rule calls for a full phonetic realisation of
> the elements cited above" (Al-Toma, 1966, p. 160).

For example, the colloquial IA /sta'faːd/ 'he profited' is pronounced /ʔista'faːd/ in CA.

ii. CA : CVCC = IA : CVCVC

as in the following example:

CA /nasɾ/ = IA /'nasiɾ/ 'victory'

The concept of 'cluster' and 'consonant sequence' as defined by Abercrombie (1973) in <u>Elements of General Phonetics</u> (first published

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in 1967) is applied in this thesis.   These concepts were previously introduced by Pulgram (1965 p. 76):

"I am proposing to call a series of consonants a <u>cluster</u>
if they occur in the same syllable, and a <u>sequence</u> if in
two consecutive syllables".

So far, I have discussed the morphological patterns which yield initial and final consonnant clusters in IA.   Medial consonant sequences were touched upon, since the results of the tests showed that medial two consonant sequences posed no real problem to the students. Also,

"There are no restrictions which could be stated on the occurrence of any consonant, except the general constraint which applies on all varieties of Arabic, and which prevents the occurrence of any of the uvular or pharyngeal fricatives /χ/, /ɣ/, /ħ/, and /ʕ/ next to one another in the same root" (Sayed, 1981, p. 35).

The following schema summarizes the above:

$$\cdots \quad \begin{bmatrix} +\text{uvular} \\ +\text{fricative} \end{bmatrix} \quad ([+V]) \quad \begin{bmatrix} +\text{pharyngeal} \\ +\text{fricative} \end{bmatrix} \quad \cdots$$

With regards to the tables which represent initial and final 2 consonant clusters in IA, the phonemes tabulated horizontally represent the first of the two consonants, while the vertical phonemes represent the second of the two consonants of the cluster:

a. Table I represents initial 2 consonant clusters in IA.

b. Table 2 represents final 2 consonant clusters in IA.

3.12. MOROCCAN ARABIC (MA)

A short introductory note on MA is necessary before detailing the morphological processes which tend to produce consonant clusters in this dialect of Arabic.

Like other dialects of Arabic, MA does not imply a single homogeneous dialect spoken throughout Morocco. The dialect discussed here is that spoken around the capital Rabat.

As the Arab world occupies a vast stretch of land, it has been convenient for Arabists to divide the different modern Arabic dialects into Eastern and Western groups (Keegan, 1986).

"The numerous Moroccan dialects constitute, together with similar dialects spoken in Algeria, Tunisia and Libya, the main part of this western group .... The different Arabic dialects spoken within Morocco, and for the most part, within Western Arabic, are mutually intelligible" (Keegan, 1986, p. 5).

The influence of Berber on MA has resulted in making the latter sound very different from Eastern dialects, such as Iraqi, Egyptian and Lebanese. It is safe to state that mutual incomprehensibility does result when an Iraqi and Moroccan converse in their own dialects. The situation can be rescued by the use of MSA as MA is related to CA. This does not imply that there are no significant differences in the morphology and phonology of MSA and MA:

"There are, nonetheless, significant morphological and phonological differences, and more importantly, a large portion of the more commonly used lexical items are not the same. As a result, the Moroccan who has not studied literary Arabic at school is unable to understand television and radio broadcasts in this (MSA) language" (Keegan, 1986, p. 6) (parenthesis mine).

"The considerable differences between Moroccan and Classical Arabic, at the levels of phonology, grammar and vocabulary, should not be underestimated. For instance, some of the phonemes of Classical Arabic have no counterparts in Moroccan Arabic, which also lacks many of the inflections of Classical Arabic, but exhibits more freedom in word order. Many lexical items existing in both varieties have different meanings in each, while Moroccan Arabic's vocabulary also differs from that of Classical Arabic in the large number of words which have been borrowed into it from French and Spanish" (Bentahila, 1983, p. 4).

It must also be mentioned that MA, like all the other dialects of Arabic, is the language of everyday usage and folk literature. Unlike IA and Cr.A, for example, MA has no written form. As in other Arab countries, CA is the form of Arabic used for broadcasting, literature, newspapers and religious ceremonies (Bentahila, 1983).

3.12.1. CONSONANT CLUSTERS IN MA

MA differs from the other dialects of Arabic discussed in this thesis in that it permits initial three consonant clusters, and medial 3 and 4 consonant sequences, as will be seen below. There is also the case of syllabic /l/ and /n/. The syllabicity of /l/ and /n/ is a unique phenomenon in MA: it cannot be found in any other dialect of Arabic (Sayed, 1981), e.g.

/tn̩dem/   'you regret'
/tl̩to/   'they multiplied by three' (/ll/ is a geminate consonant).

Syllabic consonants are, of course, frequent in English, e.g.
'garden'   /'ga:dn̩/
'little'   /'lɪtl̩/.

The tendency of most speakers of Arabic is to epenthesize a vowel before the consonant which ought to be syllabic, thus the examples above become:

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['gaːdɪn], ['lɪtɪl].

The quality of the epenthetic vowel inserted here is similar or identical to that which is inserted in heavy clusters, e.g. 'street' /striːt/ ⟶ [sɪ'triːt].

3.12.1.1. INITIAL 2 CONSONANT CLUSTERS

3.12.1.1.1. THE VERB

3.12.1.1.1.1. TRILITERAL VERB MORPHEMES

Like all other dialects of Arabic, MA has ten basic patterns for triliteral verbs. I shall discuss those measures whose derivational and inflectional processes tend to produce patterns with initial and final consonant clusters. Like the other dialects, medial consonant clusters will not be discussed in detail here, for the same reasons stated above (p. 100).

The classification below is based on Harrell's (1962) A Short Reference Grammar of Moroccan Arabic.

Measure I

This is the most common type of verb stem following the pattern *FʕeL*, e.g.

/kteb/   'to write'
/ʃreb/   'to drink'.

Measure I types of verbs with final-weak roots following the pattern *Fʕaː* are "referred to as defective verbs" (Harrell, 1962, p. 3). e.g.

/bra:/   'to get well'
/ʃra:/   'to buy'.

Measure IIa and Measure IIIa

A prefixed /t-/ is added to the stems of Measures II and III which gives the surface initial cluster [tC-] (where C stands for any consonant), e.g.

II /ɣet'ta:/ 'to cover'   ⟶ /tɣet'ta:/ 'to get covered'
III /saff/   'to put in line' ⟶ /tsaff/   'to get into line'.

This prefixed /t-/ is also added to the stems in Measure I, but as was mentioned above, initial three consonant clusters are only to be found in a few instances, an epenthetic /e/ is inserted to avoid this type of cluster, e.g.

I /kteb/ 'to write' ⟶ Ia /tek'teb/ or /ttek'teb/ 'to be written'.

Measure VII

This verb measure is derived by prefixing /n-/ to Measure I stems.

> "It usually serves as a kind of passive for Measure I"
> (Harrell, 1962, p. 34),

e.g.

I /dfen/ 'to bury' ⟶ VII /ndfen/ 'to be buried'.

The above is the first example of initial 3 consonant clusters, although according to Harrell (1962, p. 34)

> "Measure VII is the rarest of all the verb measures, and
> many Moroccans do not use it at all. Measure VII for
> such speakers is regularly replaced by Measure Ia with
> the same meaning; e.g. Measure Ia *ttedfen* 'to be
> buried'".

Measure VIII

A /-t-/ is inserted after the first consonant of the root to give us
Measure VIII type of verbs, e.g.

/ħtemm/   'to be concerned'
/ħta:ʒ/   'to need'
/rta:ħ/   'to rest'.

Measure IX

This measure follows the pattern FʕaL, e.g.

/sman/   'to become fat'
/ʕwaʒ/   'to become bent'
/bjaḍ/   'to become white'.

Measure X

This pattern is derived by adding the prefix /st-/ to Measure I
types of verbs which begin with a single consonant; and /ste-/ to
Measure I types of verbs which begin with a two consonant cluster,
e.g.

/stɣell/   'to benefit from'
/steχ'ber/   'to make inquiries'.

The first of these examples provides the second occasion on which
initial 3 consonant clusters can be found in MA.

3.12.1.1.1.2. QUADRILITERAL VERB MORPHEMES

> "The derived quadriliteral verb form is the medio-passive
> of the base form" (Harrell, 1962, p. 38),

e.g.

Base Form: /fer'geʕ/ 'to (make something) explode'
becomes
Derived Form: /tfer'geʕ/ 'to explode'.

When the first consonant of the base form is [+voice], the /t/ of the derived form assimilates to voice, as in:

Base Form: /ʒer'ʒer/ 'to drag'
becomes
Derived Form: /dʒer'ʒer/ 'to be dragged'.

The inflectional categories of the verb in MA will not be discussed in detail here.   The reader is referred to Harrell (1962) for a more detailed analysis. Suffice it to say that certain inflectional categories do produce initial 2 and 3 consonant clusters which do not differ on the surface from those discussed above.

3.12.1.1.2. NOMINAL DERIVATIONS

3.12.1.1.2.1. The Verbal Noun

1- The verbal noun pattern *FʕiL* is derived from transitive Measure I verbs with sound roots, e.g.

/dbeɣ/ 'to tan'	⟶	/dbiɣ/	'(the action of) tanning'
/knes/ 'to sweep'	⟶	/knis/	'sweeping'
/rbet̪/ 'to tie'	⟶	/rbit̪/	'tying'.

2- The verbal noun pattern *tFeʕja:* is derived from Measure II verbs with final-weak roots, e.g.

| /feɖ'ɖa:/ | 'to finish' | ⟶ | /tfeɖ'ja:/ | 'termination' |
| /sef'fa:/ | 'to purify' | ⟶ | /tsef'ja:/ | 'purification'. |

3- The verbal noun pattern *mFaʕLa:* is derived from Measure III verbs, e.g.

| /'da:wem/ | 'to continue' | ⟶ | /mdaw'ma:/ | 'continuation' |
| /'sa:meħ/ | 'to pardon' | ⟶ | /msam'ħa:/ | 'pardoning'. |

4- Verbal nouns are also obtained from derived forms of quadriliteral verb morphemes. The only difference is that the second /e/ ⟶ /i/, e.g.

| /tfer'geʕ/ | 'to explode' | ⟶ | /tfer'giʕ/ | 'explosion'. |

5- The noun of instance, a sub-class of the verbal noun, is very rarely formed not following its usual pattern *Fe⁇La*, e.g.

/qtel/ 'to kill' ⟶ (verbal noun) /qtil/ '(the action of) killing ⟶ (noun of instance) /qti'la/ 'a killing, a murder'.

3.12.1.1.2.2. Nouns

Many singular, plural and collective nouns following different patterns begin with a 2 consonant cluster. I shall not give a detailed analysis of these patterns. Suffice it to say that they begin with an initial 2 consonant cluster, e.g.

/χɾif/	'Autumn'	(compare IA /χa'ɾiːf/)
/'ħsiːra/	'(straw) mat'	(compare IA /ħa'siːra/)
/tben/	'straw'	(compare IA /'tibin/)
/'bṭaːna/	'sheep-skin'	(compare IA /ba'ṭaːna/)
/'nzaːha/	(sing) 'picnic'	
/'nzaːjeh/	(plural) "	
/dheb/	'gold'	(compare IA /'ðahab/)
/ħdiːd/	'iron'	(compare IA /ħa'diːd/)
/nħel/	'bees'	(compare IA /'naħal/)
/nχel/	'date palms'	(compare IA /'naχal/ .

The above are but a few examples of the actual nouns that have an initial 2 consonant cluster. Broken plurals following the pattern *CCaCeC*, account for about half of all broken plurals, e.g.

/'fnaːdeq/	'hotels'	(compare IA /fa'naːdiq/)
/'mdaːfe⁇/	'canons'	(compare IA /ma'daːfi⁇/).

3.12.1.1.3. ADJECTIVAL DERIVATIONS

3.12.1.1.3.1. The Nisba

Nisba stems are formed from singular and plural nouns, from adjectives, particles and numerals. I shall only discuss 'nisba' stems which are formed from numerals, as initial CVC... of the numeral ⟶ CCVC... in the 'nisba' stem. Such changes do not occur in the other formations, i.e. an affix, such as /i/ or /ni/ or

/ani/, is added to the noun, adjective or particle without affecting the initial syllable pattern, e.g.

/di:n/	'religion'	$\longrightarrow$	/di:ni/	'religious'
/juːm/	'day'	$\longrightarrow$	/juːmi/	'daily'
/berˈraː/	'outside'	$\longrightarrow$	/berˈraːni/	'external'
/fuːq/	'above'	$\longrightarrow$	/fuˈqaːni/	'upper'.

Nisba Stems formed from Numerals

"There is a group of eight nisbas with a special stem form based on the numerals from three through ten. The nisba based on *tlata* 'three' deviates from the pattern of the other members of this group" (Harrell, 1962, p. 71).

/rebˈʕaː/	'four'	$\longrightarrow$	/ˈrbaːʕi/	'three-fold'
/xemˈsaː/	'five'	$\longrightarrow$	/ˈxmaːsi/	'five-fold'
/setˈtaː/	'six'	$\longrightarrow$	/ˈsdaːsi/	'six-fold'
/sebˈʕaː/	'seven'	$\longrightarrow$	/ˈsbaːʕi/	'seven-fold'
/tesˈʕuːd/	'nine'	$\longrightarrow$	/ˈtsaːʕi/	'nine-fold'
/ʕeʃˈraː/	'ten'	$\longrightarrow$	/ˈʕʃaːri/	'ten-fold'.

I have not included 'eight' as it also deviates from the above:

| /tmenˈjaː/ | 'eight' | $\longrightarrow$ | /ˈtmaːni/ | 'eight-fold'. |

Initial 2 consonant cluster, in the example above, is the same in both morphemes.

3.12.1.1.3.1.2. The Diminutive

"Diminutives are derived from a great variety of nouns and adjectives. The distinguishing characteristic common to all dimunitives is an initial cluster of two consonants followed by *i* " (Harrell, 1962, p. 81).

Although this is the case, it must also be mentioned that some of these diminutives are formed from stems which already begin with an

initial 2 consonant cluster, e.g.

/bɣel/   'mule'   ⟶ (Diminutive) /bɣij'jel/

/bten/   'belly'   ⟶ ("   ) /btij'jen/.

I shall look at a few examples whose base does not begin with an initial 2 consonant cluster, e.g.

/kelb/   'dog'   ⟶ (Diminutive) /klij'jeb/

/χobz/   'bread/   ⟶ ("   ) /χbij'jez/.

3.12.1.1.3.1.3. The Comparative

1- Adjectives following the patterns $FʕiL$, $FʕuL$ and $FaʕeL$ have the pattern $FʕeL$ in the comparative. I shall only look at a few examples which have the pattern $FʕeL$, as I am only concerned with morphological processes which produce consonant clusters. e.g.

/'baːred/ 'cold'   ⟶   (Comparative) /bred/

/'waːseʕ/ 'wide'   ⟶   ("   ) /wseʕ/.

2- Adjectives following the pattern $FiyyeL$ have the comparative patterns $FyeL$ or $FweL$, e.g.

/χij'jer/ 'good'   ⟶   (Comparative) /χjer/

/ʒij'jed/ 'noble'   ⟶   ("   ) /ʒwed/.

3.12.1.1.3.2. Adjectives of Colour and Defect

Only the masculine singular of this type of adjectives begins with an initial 2 consonant cluster, e.g.

/bhel/   'simple-minded'

/bkem/   'mute'

/ʕma/   'blind'

/χḍer/   'green'

/kḥel/   'black'.

3.12.1.1.4. NUMERALS

Like other dialects of Arabic, MA has separate forms for cardinal and ordinal numbers from one to twelve.

"From two through ten, there are separate fractional
forms. From eleven on, fractions are not definable, and
from thirteen on there is no distinction of form between
cardinal and ordinal" (Harrell, 1962, p. 89).

I shall only concern myself here with numerals which begin with a
consonant cluster.

3.12.1.1.4.1. The Cardinals

1- The cardinal numerals from three to ten have both a full and
short form, e.g.

FULL FORM	SHORT FORM	
/'tlaːta/	/telt/	'three'
/reb'ʕaː/	/rbeʕ/	'four'
/seb'ʕaː/	/sbeʕ/	'seven'
/tmen'jaː/	/temn/	'eight'
/tes'ʕuːd/	/tseʕ/	'nine'.

2- The cardinal numerals from 11-19:

/ħdaːʃ/	'eleven'
/tnaːʃ/	'twelve'
/tlet'taːʃ/	'thirteen'
/rbeʕ'taːʃ/	'fourteen'
/sbeʕ'taːʃ/	'seventeen'
/tmen'taːʃ/	'eighteen'
/tseʕ'taːʃ/	'nineteen'.

3- Only two of the cardinal decades begin with an initial 2 consonant
cluster:

/'tlaːtin/	'thirty'
/'tmaːnin/	'eighty'.

4- The Hundreds:

The morpheme for a hundred is /mja:/ which is appended on the cardinals from 3-9 to give us the respective hundreds, e.g.

/rbeʕ'mja:/   'four hundred'.

This will be discussed in more detail below when discussing three consonant sequences.

The term for 'two hundred', however, differs slightly.   It is either /mja'ta:jn/ or /'mitin/.

5- The other two cardinal numerals which begin with a consonant cluster are the plurals of 'million' /'mla:jen/ and 'billion' /'mla:jer/.

3.12.1.1.5. PRONOUNS

1- Personal Pronouns

/ħna:/   'we' (First Person Plural)
/nta:/   'you' (Second Person masculine singular)
/nti:/   'you' (Second Person feminine singular)
/'ntu:ma/ 'you' (Seond Person Plural).

3.12.1.1.6. PREPOSITIONS

The preposition with an initial consonant cluster is:
/ʕla/   'on'.

3.12.1.1.7. INTERROGATIVE PRONOUNS

Of the five interrogative pronouns found in MA only one begins with a consonant cluster:
/ʃku:n/   'who'.

3.12.1.1.8. THE ARTICLE

Like other dialects of Arabic, the definite article in MA is prefixed to nouns and adjectives. The same phonological rules also apply here, as in other dialects of Arabic, i.e. if the first consonant of the morphemes to be defined is a 'sun' phoneme. Thus, we have:

/t-tben/   'the straw'

/s-sok'ka:n/   'the inhabitants'

/l-lħem/   'the meat'.

The definite article /l(i)/ is, on the other hand retained in morphemes which begin with a 'moon' phoneme. It is /l-/ before a single consonant and /li/ before an initial 2 consonant cluster, e.g.

/l-ba:b/   'the door'

/l-mek'tu:b/   'the pocket'

/l-weld/   'the boy'

/li-'flajki/   'the boatman'

/li-'kbi:r/   'the big (one)'

/li-'ħri:ra/   'the soup'.

3.12.1.2. FINAL TWO CONSONANT CLUSTERS

3.12.1.2.1. VERBS

Verb Stem Classes

"Certain regular stem changes take place with the addition of the suffixes of the perfect tense" (Harrell, 1962, p. 42).

I shall only deal with those changes that yield final 2 consonant clusters.

1- Stems ending in -eC (Measures I, Ia and X of sound roots): First Person Singular, e.g.

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/kteb/	$\longrightarrow$	/ktebt/	'I wrote'
/ttex'le?/	$\longrightarrow$	/ttex'le?t/	'I got scared'
/qed'dem/	$\longrightarrow$	/qed'demt/	'I presented'
/sij'jeb/	$\longrightarrow$	/sij'jebt/	'I threw'
/'?a:jen/	$\longrightarrow$	/'?a:jent/	'I waited'
/ɣer'bel/	$\longrightarrow$	/ɣer'belt/	'I sifted'.

2- Stems ending in -aC (Measures I and Ia of middle-weak roots; Measures VIII of middle-weak roots; and all types of Measure IX roots):

First Person Singular, e.g.

/ba:?/	$\longrightarrow$	/be?t/	'I sold'
/ka:n/	$\longrightarrow$	/kont/	'I was'
/qa:l/	$\longrightarrow$	/qolt/	'I said'.

3.12.1.2.2. NOUNS AND ADJECTIVES:

1- Verbal nouns following the pattern FeʕL provide final two consonant clusters in MA, e.g.

/ḍerb/ 'hitting'
/ḍeħk/ 'laughter'
/ṭerz/ 'embroidering'.

2- Place names, e.g.

/l-hend/ 'India'.

3- Collective nouns, e.g.

/xobz/ 'bread'
/left/ 'turnips'
/ke?k/ 'cookies'.

4- Monosyllabic nouns, e.g.

/kelb/	'dog'
/šerf/	'piece'
/bent/	'girl'
/qerd/	'monkey'
/ʕelm/	'science'
/remz/	'symbol'
/ferd̴/	'religious obligation'
/ʕebd/	'slave'
/ʔamr/	'matter'
/merd̴/	'illness'
/oχt/	'sister'.

5- Alternative morphemes to Cardinals from 1-10, e.g.

/rebʕ/	'four'
/sebʕ/	'seven'
/tesʕ/	'nine'.

6- The Thousands, e.g.

/al'fajn/ 'two thousand'.

3.12.1.3. INITIAL 3 CONSONANT CLUSTERS:

It was mentioned above (p. 102) that MA permitted initial 3 consonant clusters in a few instances only. This occurrence is "controlled by limited sequential constraints" (Sayed, 1981, p. 35) as in the following:

1- /stC-/ (C represents any consonant), e.g.

/stħeq/ 'he deserves'
/stra:ħ/ 'he rested'.

3.12.1.4. MEDIAL 3 AND 4 CONSONANT SEQUENCES:

I have noted 3 consonant sequences, across morpheme boundaries, as in the following examples:

/r̥beʕ-'mja/	'four hundred'
/sbeʕ-'mja/	'seven hundred'
/tseʕ-'mja/	'nine hundred'
/ktebt-'lek/	'I wrote to you (sing.)
/ktebt-'lu/	'I wrote to him'.

Medial 4 consonant sequences are also derived (across morpheme boundaries) when certain prepositions (beginning with an initial 2 consonant cluster) are suffixed onto a verb ending with a 2 consonant cluster, e.g.

/ktebt-'lha/	'I wrote to her'
/ktebt-'lkom/	'I wrote to you (pl.)'
/ktebt-'lhom/	'I wrote to them'.

The preceding pages make it possible to postulate that phonological rules for elision are applied to derive surface structures in MA which vary greatly from those in other dialects discussed in this thesis. In fact, none of the other dialects discussed here shows such an extensive amount of lexical items beginning with an initial 2 consonant cluster. MA is also unique in that it permits initial 3 consonant clusters, and medial 3 and 4 consonant sequences, across morpheme boundaries. The literature I consulted on MA did not provide long vowels and stress. In order to mark the appropriate stress and distinguish between long and short vowels, I have based the notations above on the speech of a female from Rabat.

3.13. JORDANIAN ARABIC (JA)

The linguistic situation in Jordan is no different to that in Iraq, Egypt, Morocco and all other Arab states. In other words, it is characterised by the presence of two major language varieties, namely: CA (MSA) and a dialect. It is possible to divide this colloquial level into sedentary versus non-sedentary. Hussein (1980, p. 39) has used the terms Bedouin (pastoral), Fallahi (rural), and Madani (urban) to represent the two types of colloquial dialects mentioned above. I shall deal with the Madani type, as most of the students who participated in this research came from cities in Jordan.

3.13.1. MEDIAL 3 CONSONANT SEQUENCES

I have started the discussion with medial 3 consonant sequences because JA, unlike the other dialects of Arabic discussed in this thesis (except MA), permits medial 3 consonant sequences (across syllables).

Verbal and Nominal Words

Words such as

/'ʕanizti/   'my goat'
/'fariʃtak/   'my mattress'
/'χubuztu/   'his piece of bread'

are attested with anaptyxis. On the other hand, words

> "in which C_2 is an alveolar liquid (i.e. /l/, /r/ or /n/), and C_3 has a feature of alveolarity in its articulation, are attested with or without anaptyxis, though the variants with anaptyxis are more widely distributed" (El-Hassan, 1969, p. 38).

e.g.

/'ʔinizlu/	⟶	/'ʔinzlu/	'come down (imp. pl.)'
/'ʔilizmu/	⟶	/'ʔilzmu/	'push it (imp. s.)'
/'ʕanizti/	⟶	/'ʕanzti/	'my goat'
/'fariʃtak/	⟶	/'farʃtak/	'your (m.s.) mattress'.

The quotation from El-Hassan (1969) above does not apply to nominal words in which C3 is a denti-alveolar plosive. e.g.

/'girdtak/ and not /'giridtak/ 'your (m.s.) monkey (f)'.

3.13.2. INITIAL 2 CONSONANT CLUSTERS

El-Hassan (1969, p. 42) states that in principle, initial 2 consonant clusters in JA are not permitted. Like other dialects of Arabic, a word may not begin with a vowel either.

> "A post-pausal glottal stop in this dialect is often no more than a means of obviating these inadmisible features".

El-Hassan (1969, p. 43) goes on to say that native speakers of JA do not adhere to this rule and pronounce such words

> "without both the initial glottal stop and the following anaptyctic vowel".

e.g.

/ʔis'miʕna/	⟶	/'smiʕna/	'we heard'
/ʔiʃ'ribna/	⟶	/'ʃribna/	'we drank'
/ʔik'taːb/	⟶	/ktaːb/	'a book'
/ʔiħ'maʕr/	⟶	/ħmaːr/	'a donkey'
/ʔiz'raːʕa/	⟶	/'zraːʔa/	'act of planting'.

El-Hassan (1969, p. 43) gives three different functions for the use of these forms with anaptyxis:

"(1) if the style of speech is deliberately slow, e.g. as in story-telling;

(2) under emotional circumstances, as when somebody is angry and shouts at his interlocuter /#?iħma:r/ 'donkey' and

(3) in general, if the particular word is emphasized for one reason or another. In these situations, it can be reasonably accurately predicted that the native speaker will employ the initial glottal stop followed by the anaptyctic vowel; but it is otherwise difficult to foresee whether #C₁C₂ or #?əC₁C₂ will be used by a particular speaker".

3.13.3. FINAL 2 CONSONANT CLUSTERS

In JA certain words, which in CA contain final 2 consonant clusters, tend to be pronounced in free variation, i.e. with or without an anaptyxis vowel. e.g.

/bint/	⟶	/'binit/	'girl'
/ʕurs/	⟶	/'ʕurus/	'a wedding'
/bund/	⟶	/'bunud/	'a button'
/banʒ/	⟶	/'baniʒ/	'anaesthetic'.

It must be mentioned that the variants with the anaptyxis vowel are more commonly used.

There are, on the other hand, words in JA in which the final two consonant cluster is retained, e.g.

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1- Verbal Nouns (Gerunds)

/bals/   'cheating'.

2- Nouns

/ʔins/   'human'

/ba:ns/   'a stomach'

/lanʒ/   'brand new'

/ʃaɾt/   'debris'

/luɾd/   'Lord'

/ʕa:ɾs/   'pimp'

/buʃt/   'a swear term'

/ʔa:χs/   'a word which expresses dissatisfaction'.

/daɾs/   'a lesson'

/tifl/   'a child'.

3- Adjectives

/bift/   'white'

In conclusion, the following statements sum up the occurrences of consonant clusters in JA:'

1- El-Hassan (1969) has postulated the view that initial consonant clusters are inadmissible in JA.

2- Final 2 consonant clusters are admissible in JA.

3- Medial 2 and 3 consonant sequences are admissible in JA.

3.14. KUWAITI ARABIC (KA)

The dialect under study is the variety of Arabic spoken in the State of Kuwait.

> "Owing to the small size of the country, the dialect is more or less homogeneous" (Yahia, 1979, p. 17).

Like CA and IA, KA does not permit sequences of three consonant clusters in its morphology. This being the case, I now move on to describe those morphological processes which produce 2 consonant clusters in KA.

3.14.1. INITIAL 2 CONSONANT CLUSTERS

3.14.1.1. THE VERB:

3.14.1.1.1. Simple Verb:

(a) Perfect:

/'ktibat/   'she wrote'
/'ʃribat/   'she drank'.

This contrasts with IA. In IA the forms are:
/'kitbat/   'she wrote'
/'ʃirbat/   'she drank'.

(b) Imperative:

There are two possible forms:

1- The verb is preceded by a prosthetic /i/, e.g.
/'iʃrab/   'drink' (second person masculine singular)
/ik'tibi/   'write' (second person feminine singular)
/ik'tibu/   'write' (second person c. plural)
/iʃ'rabu/   'drink' (second person c. plural).

2- If in the first place there is a prosthetic /i/, it is dropped and
the verb begins with an initial consonant cluster, e.g.

/ʃrab/	'drink' (second person masculine singular)
/'ktibi/	'write' (second person feminine singular)
/'ktibu/	'write' (second person c. plural)
/'ʃrabu/	'drink' (second person c. plural).

(c) <u>Verbal Noun (Gerunds)</u>, e.g.

/hbu:b/   'blowing of wind'.

(d) <u>Derived Verbs</u>:

Verbs formed with the prefixes /j/, /t/ and /m/ as in:

Imperfect	/'jxabbir/	'he informs'
Perfect	/'tsabbaħ/	'he bathes'
Active Participle	/'mxabbir/	'he informed'.

3.14.1.1.2. <u>THE NOUN</u>:

(a) <u>Names of countries</u>, e.g.

| /kwe:t/ | 'Kuwait' |
| /ʕra:g/ | 'Iraq'. |

(b) <u>Broken Plurals</u>, e.g.

/jha:l/	'children' (compare IA /dʒa'ha:l/)
/sbaj'ja:n/	'boys'
/'mxa:bi/	'pockets'
/'nma:jin/	'kind' (compare IA /na'ma:jin/).

(c) <u>Singular Nouns</u>, e.g.

/'dri:ʃa/	'window'
/sbajj/	'boy'
/gma:ʃ/	'pearls'
/'dre:wil/	'driver'
/'bduwi/	'Beduin'.

(d) Irregular Plurals, e.g.

/χwaːt/   'sisters'   (compare IA /χaˈwaːt/.

3.14.1.1.3. NUMERALS

(a) Cardinals, e.g.

/θneːn/   'two' (masculine)

/tlatˈtaʕaʃ/ 'thirteen' (no distinction for gender).

3.14.1.1.4. THE ARTICLE

Like IA, the definite article in KA is /il-/ prefixed to the noun it modifies. It is in fact /l/ preceded by the prosthetic vowel /i-/ when the noun it is defining is a 'lunar' phoneme, e.g.

/bint/ ⟶ /ilˈbint/   'the girl'.

It is assimilated to the 'sun' phoneme, as described above for IA. e.g.

/iʃˈʃams/   'the sun'.

But with nouns beginning with an initial 2 consonant cluster, it becomes /li/, e.g.

/li-ˈsɣaːr/   'the little ones'.

3.14.1.1.5. PARTICLES

(a) Prepositions:

1- /b-/ 'with, in', e.g.
/ˈbdaːrna/   'in our house'.

2- /l-/ 'to, for', e.g.
/lbaɣˈdaːd/   'to Baghdad'.

If, on the other hand, the morphemes they precede begin with an initial 2 consonant cluster, an epenthetic vowel /i/ must be inserted to avoid an initial three consonant cluster. e.g.

/bi'χsu:s/   'with regards to'

/li'hna:k/   'up to there'.

3- /bdu:n/   'without'

(b) Adverbs, e.g.

/hni:/   'here'

/hna:k/   'there'.

(c) Adverbial Compounds with /ʃ/, e.g.

/ʃlo:n/   'how'

/ʃgadd/   'how much'

/'ʃkibir/   'how large'

/'ʃkiθir/   'how much'.

3.14.1.1.6. CLASSICAL ARABIC ACCUSATIVES

/'χsu:san/   'specially' (Compare IA /χu'su:san/).

3.14.2. FINAL 2 CONSONANT CLUSTERS:

From initial 2 consonant clusters I move on to final 2 consonant clusters.

Unlike IA, KA exhibits a wider range of final 2 consonant clusters as seen below:

3.14.2.1. Simple Verb

(a) Perfect:

/ʃribt/   'I drank'   (Compare IA /ʃi'rabit/)

/ka'tabt/   'I wrote'   (Compare IA /ki'tabit/).

3.14.2.2. Verbal Nouns (Gerunds)

/ħilf/	'swearing'	(Compare IA /'ħilif/)
/nagl/	'transport'	(Compare IA /'nagil/
/ʃurb/	'drinking'	(Compare IA /'ʃurub/)
/ðikr/	'mentioning'	(Compare IA /'ðikir/).

3.14.2.3. NOUNS

These constitute, like IA, words which are borrowed from other languages, e.g.

/lanʃ/	'boat'
/ʃans/	'chance'
/bang/	'bank'.

3.14.2.4. NUMERALS

(a) **Cardinals**

/χams/	'five'	(Compare IA /'χamis/).

(b) **Higher Numerals**

/ʔalf/	'one thousand'	(Compare IA /'ʔalif/).

(c) **Fractions**

/θilt/	'third'	(Compare IA /'θuluθ/)
/χums/	'fifth'	(Compare IA /'χumus/).

3.14.2.5. PRONOUNS

/ʔint/   'you'   (Compare IA /'ʔinta/).

3.14.2.6. PARTICLES

(a) Prepositions

/taħt/   'under'   (Compare IA /'taħit/).

3.14.3. MEDIAL CONSONANT SEQUENCES

As mentioned above (p. 120), KA does not permit more than 2 consonant sequences whether in any specific morpheme or across word boundaries.   To prevent impermissible 3 consonant sequences across word boundaries, the prosthetic vowel /i/ is inserted . e.g.
/il 'joːm it tu‚wiːl/   'the long day'.

To avoid repetition, what was said previously (p. 100) regarding medial 2 consonant sequences in Arabic is applicable to medial 2 consonant sequences in KA.   KA, however, would lack consonant sequences with /p/, as this phoneme is not listed in the phoneme inventory of KA (Yahia, 1979) as an independent phoneme.

3.15. EGYPTIAN ARABIC (Cr.A)

Like CA, IA and KA, Cr.A does not permit 3 consonant clusters or sequences in any position. Mitchell, (1973, p. 34) writes:

> "Three successive consonants are inadmissible in Egyptian Arabic. Such succession could potentially occur when a word ending in two consonants is followed by a consonant - beginning word or suffix, but the pattern is avoided by the introduction of an 'extra' vowel between the second and third consonants".

3.15.1. INITIAL 2 CONSONANT CLUSTERS

At the same time, Cr.A like CA does not permit initial 2 consonant clusters. This is contrary to what is admissible in the other Arabic dialects investigated here. There are, however, certain modifications in connected speech.

For example, if we take the following:
/'ʔinta/   'you' (masculine, singular)
+
/ti'ʕibt/   'tired',

we find that in isolation they are pronounced as:

[ˌʔintə ti'ʕibt].

But in connected speech this becomes:
['ʔintə ˌtʕibt]   'you are tired'.

Elision of this type also occurs elsewhere, e.g.
(a)   the vowels of the particles /fi/ 'in', /bi/ 'by, with', /li/ 'to, for' and /wi/ 'and', e.g.
/ˌhuwwa-'f maṣr/   'he is in Cairo';

(b)   elision does not occur in emphatic utterances in which each syllable is enunciated deliberately (Mitchell, 1973), e.g.

/'ya: 'xu'sa:'ra/ 'what a pity' (more usually, this is [jə-'xsa:rə]);

(c)   /u/ is elided as in the following example:
/'ʕindi/ + /ħu'ma:r/ ⟶ [,ʕindi 'ħma:r] 'I have a donkey' (Mitchell, 1973);

(d)   /a/ is elided before /ħ/ and /ʕ/, as in the following examples:
/'ʃufti/+/'maħammad/ → [,ʃufti 'mħammad] 'Did you (fem) see Mohammed?'
and
/ma/ + /ma'ʕi:ʃ/ ⟶ [mə-'mʕi:ʃ] 'I haven't got any' (Mitchell, 1973).

3.15.2. MEDIAL 2 CONSONANT SEQUENCES

Similar to other dialects of Arabic, (Cr.A) displays an abundant number of medial 2 consonant sequences. Except for /ʔ/, it is true to say that all consonantal phonemes can be geminated in medial position in Cr.A. The general constraint, which applies to other dialects of Arabic, regarding the non-occurrence of the uvular or pharyngeal fricatives /x/, /ɣ/, /ħ/, and /ʕ/ next to each other in the same root, also applies to Cr.A (see p. 100).

3.15.3. FINAL 2 CONSONANT CLUSTERS

Unlike IA, Cr.A preserves its final 2 consonant clusters in 'al-waqf' position. The same applies here as was discussed above with reference to CA (p. 96). Below are some of the morphological processes which produce final 2 consonant clusters in Cr.A.

3.15.3.1. TRILITERAL VERB MORPHEMES

3.15.3.1.1. Regular Verbs

(a)   Perfect:

2nd person masculine singular and 1st person singular, e.g.

/ka'tabt/   'you, I wrote'

/fi'himt/   'you, I understood'

/ta'labt/   'you, I requested'.

3.15.3.1.2. Hollow Verbs

(a) Perfect:

2nd person masculine singular and 1st person singular, e.g.

/ʃilt/   'you, I carried'

/nimt/   'you, I slept'

/ruħt/   'you, I went'

/χuft/   'you, I was afraid'.

3.15.3.2. NOUNS

As described above (p. 96), IA tends to break final 2 consonant clusters in nominals, adjectivals, etc., except for a few borrowed words whether from other languages or CA. This does not happen in Cr.A. Below are some examples of nouns ending with 2 consonant clusters.

1-Miscellaneous

/ʔifl/	'lock'	(compare IA /'qifil/)
/ʔarɖ/	'earth'	(compare IA /'ʔariɖ/)
/bard/	'cold'	(compare IA /'barid/)
/durg/	'drawer'	(compare IA /'durudʒ/)
/dars/	'lesson'	(compare IA /'daris/)
/ɖuhr/	'afternoon'	(compare IA /'ɖuhur/)
/gild/	'leather'	(compare IA /'dʒilid/)
/kalb/	'dog'	(compare IA /'tʃalib/)
/saħn/	'plate'	(compare IA /'saħin/)
/ʃans/	'chance'	(compare IA /tʃans/)
/ʃams/	'sun'	(compare IA /'ʃamis/)

/ʃakl/	'type, sort'	(compare IA /'ʃikil/)
/saʔf/	'ceiling'	(compare IA /'saqif/)
/satħ/	'roof'	(compare IA /'satiħ/)
/talg/	'ice'	(compare IA /'θalidʒ/)
/waʔt/	'time'	(compare IA /'waqit/).

2- Nouns of Relationships

/ʔuxt/	'sister'	(compare IA /'ʔuxut/
/ʔibn/	'son'	(compare IA /'ʔibin/)
/bint/	'daughter'	(compare IA /'binit/).

3- Names of Towns

| /masr/ | 'Cairo' | (compare IA /'masir/). |

4- Parts of the Body

/rigl/	'leg'	(compare IA /'rigil/)
/widn/	'ear'	(compare IA /'ʔuðun/)
/daʔn/	'chin'	(compare IA /'ðaqin/)
/batn/	'stomach'	(compare IA /'batin/).

3.15.3.3. Numerals

Cardinals: (Fractions)

/tilt/	'one third'	(compare IA /'θuluθ/)
/rubʕ/	'one quarter'	(compare IA /'rubuʕ/)
/xums/	'one fifth'	(compare IA /'xumus/)
/suds/	'one sixth'	(compare IA /'sudus/)
/subʕ/	'one seventh'	(compare IA /'subuʕ/)
/tumn/	'one eighth'	(compare IA /'θumun/)
/tusʕ/	'one ninth'	(compare IA /'θumun/)
/ʕuʃr/	'one tenth'	(compare IA /'ʕuʃur/).

3.15.3.4. ADJECTIVES

I have noted the following adjective which end with 2 consonant clusters:

/ḥilw/   'sweet'   (compare IA /'hilu/)

/suχn/   'hot'   (compare IA /'suχun/).

3.15.3.5. PARTICLES

I have noted only the following particles which end with 2 consonant clusters:

/taḥt/   'under'   (compare IA /'taḥit/)

/ʔabl/   'before'   (compare IA /'qabil/)

/ʕand/   'with'.

We have seen so far, how divergent these Arabic dialects are from one another . This no doubt confirms what was said about Arabic 'diglossia' in Chapter One. It also confirms the fact that

> "the problem of what constitutes 'colloquial' speech
> cannot be fully resolved for any dialect of Arabic, due to
> the all-prevailing influence of the literary language"
> (Wise, 1975, p. ix).

3.16. THE PHONOTACTICS OF RP

As this study deals with the difficulties speakers of Arabic in general, and IA in particular are faced with in pronouncing three or more consonant clusters and sequences, I shall now look at those combinations in RP as well as their phonotactic constraints. Like most languages, "English", probably

> "does not exploit in the word and the syllable, all the possible combinations of its phonemes" (Gimson, 1978, p. 239).

Since phonotactic constraints apply universally to all languages, i.e., the combinations of phonemes in a particular language often prove difficult to non-speakers of that particular language[3], I do not wish to describe what combinations would prove difficult to speakers of English from other languages, as it is not relevant here. Instead, I shall look at the permitted combinations in English in order to see how they differ from IA. Before detailing the possible cluster combinations in English, I shall look at other occurrences of vowels and consonants in RP. e.g.

(a) __INITIAL V....__ :

Unlike Arabic, all vowels in RP may occur initially except for /ʊ/ and /ʊə/.

(b) __INITIAL CV....__ :

Except for /ŋ/ and /ʒ/[4] all consonant phonemes can occur initially.

(c) __FINAL ....VC__ :

Except for /r,h,j,w/, all other consonant phonemes can occur finally.

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3.17. INITIAL CONSONANT CLUSTERS

Initial consonant clusters in English can be summarized as follows, where C_n stands for the C occupying position n in a cluster. All initial consonant possibilities conform to the schema:

(C_1) C_2 (C_3)

where

(C_1) = /s/

C_2 = any consonant, (except /ŋ, ʒ/)

(C_3) = /r,l,w,j/.

The following constraints operate upon the above formula:

a. If C_1 is present, then C_2 must be a voiceless plosive, nasal, or /f/.

b. If C_3 is present, then C_2 cannot be an affricate or semivowel.

c. If C_2 is either /t/ or /d/, then C_3 cannot be /l/.

d. If C_3 is either /r/ or /l/, then C_2 must be plosive or fricative.

e. If C_2 is either /s/ or /z/, then C_3 cannot be /r/.

f. If C_3 is /j/, then C_2 cannot be /ʃ/ or /r/.

g. If C_3 is either /r/ or /l/, then C_2 cannot be a voiced fricative.

h. If C_3 is /w/, then C_2 cannot be labial or liquid.

i. If C_3 is /j/, then C_2 is not alveolar. (Wells, 1980, a Lecture on the Phonology of English).

A consequence is that the following clusters are the only ones which do occur:

/pl, pr, pj, tr, tj, tw, kl, kr, kj, kw, bl, br, bj, dr, dj, dw, gl, mj, nj, lj, fl, fr, fj, vj, θr, θj, θw, sl, sj, sw, sp, st, sk, sm, sn, sf, ʃr, hj, spl, spr, spj, str, stj, skl, skr, skj, skw/.

3.18. FINAL CONSONANT CLUSTERS

Final consonant clusters in English can be summarized as follows, where C_n stands for the C occupying position n in a cluster. All final consonant possibilities conform to the schema:

... V (C$_1$) C$_2$ (C$_3$ (C$_4$))

where

C$_1$ = /l/ or a nasal homorganic with C$_2$

C$_2$ = any consonant (except /j,w,h/)

C$_3$ = /s,z,t,d,θ/

C$_4$ = /s,t/.

The following constraints apply to the above patterns:

a. If C$_1$ is present, then C$_2$ cannot be /d,ʒ,ŋ/.

b. C$_1$ cannot be identical with C$_2$; C$_2$ cannot be identical with C$_3$.

c. If C$_1$ is /N/, then C$_2$ cannot be /b,g,v,l/.

d. If C$_3$ is /s,z/, then C$_2$ cannot be /s,z,ʃ,ʒ,tʃ,dʒ/.

e. If C$_3$ is /t,d/, then the preceding C cannot be /t,d/.

f. If C$_3$ is /θ/, then the preceding C must be /p,t,d,f,s,m,n,ŋ,l/. Otherwise, C$_3$ must agree in voicing with C$_2$. (Wells, 1980, a Lecture on the Phonology of English).

In addition to the clusters covered by this schema (above), the clusters /sp, sk/ are also formed. A consequence is that the following clusters are the ones which do occur in final position:

/pt, pθ, ps, tθ, ts, bd, bz, dz, gd, gz, tʃt, dʒd, mp, md, mf, mθ, mz, nt, nd, ntʃ, ndʒ, nθ, ns, nz, ŋk, ŋd, ŋz, lp, lt, lk, lb, ld, ltʃ, ldʒ, lm, ln, lf, lv, lθ, ls, lz, lʃ, ft, fθ, fs, vd, vz, θt, θs, ðd, ðz, sp, st, sk, zd, ʃt, ʒd, pts, pθs, pst, tθs, tst, kts, kst, mps, mfs, mpt, nts, nθs, nst, ntʃt, ŋks, ŋkt, lps, lts, lks, lfs, lθs, lst, lpt, lkt, ltʃt, lʃt, fts, fθs, sps, sts, sks, spt, skt, dst, ndz, lbz, ldz, lmz, lnz, lvz, ndʒ, nzd, ldʒd, lmd, lvd, ksθ, ntθ, ŋkθ, lfθ, mpts, mpst, lkts, lpts, lfθs, ksts, ksθs, ntθs/.

3.19. MEDIAL CONSONANT SEQUENCES

The same combinations of initial and final consonant clusters can

"occur medially at syllable boundaries in polysyllabic
words" (Gimson, 1978, p. 239).

In fact these combinations can be of guidance as to where the
syllable boundary should fall,

"where onset of accent or other phonetic features do not
supply the solution" (Gimson, 1978, p. 239).

For example, if we look at the word 'naturally',

"it is reasonable to assume that the syllable boundary
falls between /tʃ/ and /r/, since /-ætʃ/ and /rə-/ are
possible word final and initial sequences, whereas word
final /-æ/ and initial /tʃrə-/ do not occur" (Gimson, 1978,
p. 239).

3.20. CONCLUSIONS

The preceding pages have shown how restricted Arabic is in the size
of its consonant combinations. While IA only permits initial, medial
and final 2 consonant clusters, RP displays much larger consonant
cluster combinations.

Chapter Three discussed the morphological processes which yield
consonant clusters in the dialects of Arabic investigated in this
thesis. In conclusion, I would like to summarize the differences
which exist among these dialects. I would also like to indicate which
of the dialects has a wider or narrower range of possible initial and
final clusters than IA:

1- Cr.A, like CA, does not permit initial 2 consonant clusters.

2- JA does not permit (phonologically) initial 2 consonant clusters.

3- MA has a much wider range of possible initial clusters than any other dialect.

4- MA permits initial 3 consonant clusters (although in two instances only).

5- KA has a wider range of initial 2 consonant clusters than IA.

6- IA is the only dialect, among those discussed in this thesis, which tends to break up most of its final two consonant clusters. All the other dialects retain their final 2 consonant clusters as in CA.

7- JA and MA are the only two dialects which permit medial three consonant sequences (in a few instances only).

8- MA is the only dialect which permits 4 consonant sequences.

9- MA is the only dialect which has syllabic consonants.

CHAPTER FOUR

4. The Syllable

A phonotactic description of a language cannot be complete without a look at the syllabic structure of that language. The syllable accounts for constraints on possible phoneme sequences.

In order to compare the syllabic pattern of IA and RP, this chapter looks at the nature of the syllable as a crucial linguistic unit in the description of language. No attempt is made to define the syllable; rather, definitions given by various linguists will be looked at. These linguists have attempted

"to give the syllable a rigorous phonetic and/or phonological defintion" (Bell and Hooper, 1978, p. 4)

which has not been

"entirely successful in accounting for the wide range of data associated with" (Bell and Hooper, 1978, p. 4)

it.

There are many arguments for and against the use of the syllable

"as a basic frame of reference at least at the outset of a phonotactic investigation" (Sigurd, 1965, p. 24).

Its use in this research is convenient, since the insertion of an epenthetic vowel by Arab students in general, and by Iraqi students in particular, within clusters and sequences of two, three, or more consonants, changes the syllabic structure of English drastically. On this point, Pike (1947, p. 90) writes:

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"For the particular language the student must be prepared to find that the phonetic syllable does not correspond with the most pertinent structural grouping of segments. Just as segments must be analysed into structural phonemes, so phonetic syllables must be analysed into the structural phonemic syllables. The reason for this difficulty is that the interpretation of syllable unit varies from language to language. A speaker of English 'hears' fewer syllables in English than a speaker of Spanish is likely to do. Spanish speakers, for example, are likely to think they hear two syllables in the English word cow, since Spanish structural units differ from those of English".

Similar considerations apply to Arabic speakers of English: for instance street is monosyllabic, but to a number of Iraqis it might sound to comprise of two syllabes /si/ + /'triːt/.

From past investigations of the linguistic mechanism underlying speech production, the errors elicited

"have told us a great deal about syllable structure and segment organisations. They have shown that syllables constitute a fundamental unit in terms of which segments are organised and that syllabication is not a single matter of inserting syllable boundaries into a string of segments" (Mackay, 1978, p. 201).

Not only this but also the fact that syllable structure patterns a language makes use of is in direct corollary with the consonant clusters permitted in each language (Odisho, 1979).

The nature of the syllable, according to its advocates, is threefold: phonetic, phonemic and phonological/phonotactic. Fudge (1969, p. 254) maintains that the syllable has a double function:

1. "To provide a basis for distinctive prosodic features"

and

2. "To account for constraints on possible phoneme sequences".

Fudge (1969, p. 254) postulates two types of syllables which

"correspond roughly to the traditional phonetic syllables
and phonemic or phonological syllables".

The first type will be defined

"as an element of the systematic phonetic level (more
specifically of the extrinsic allophonic type)";

and

"will not necessarily bear any close relation to actual
pronunciation. Such syllables will consist of bundles of
systematic phonemic features (preferably labelled in
non-phonetic terms); it is hoped that they will provide a
common basis for the description of mutually
comprehensible dialects, even when these are phonetically
very different from each other".

This, no doubt, applies to the various Arabic dialects spoken
throughout the Arab world. The second type, i.e. the phonological
syllable, "will be defined as an element of the systematic phonemic
level" and

"will represent the norm of pronunciation of a particular
dialect or variety, and such syllables might consist of
bundles of articulatory features, or some representation
of the neurophysiological basis of the relevant
articulations".

According to Fudge (1969), it is not necessary for a phonemic
syllable to be isomorphic with a phonetic one. As described by Pike

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(1976, p. 145) the syllable is characterised by the following functions:

> "If the nuclei of phonetic syllables do not coincide with
> such units of tone or stress placement it is frequently
> helpful to postulate for descriptive purposes phonemic
> syllables which are structural units, related to phonetic
> syllables, but whole nuclei do not coincide".

As an example, Fudge (1969, p. 255) has given the French "mute e",

> "which although normally realised as zero must be taken
> into consideration at a phonemic level;   on any other
> basis, various morphological facts are more difficult to
> state, while the rules of French metrics cannot be stated
> at all".

Another example has been chosen from Arabic by Al-Ani and May (1979) to support this theoretical principle, i.e. that phonetic and phonological syllables are not necessarily identical. The word /ma:rr/ 'passer-by' was examined. The word has a geminate ending which is phonetically realised as one consonant segment and pronounced as [ma:r], while within the phonological-phonotactic system of Arabic it should be counted as two. Automatically, when an inflectional ending such as (-un) is added to the word /ma:rr/, a new syllabic configuration arises and we no longer have /ma:rr-'un/ but /ma:r-'run/. This can also be explained by the fact that Arabic does not allow the syllabic structure VC in any position. (Gemination is phonemic in Arabic.   Thus we have a lexical contrast between /'kataba/ 'he wrote' and /kat'taba/ 'he made someone write').

Bondarko (1969, p. 2) holds a similar view to that of Fudge. To him, the syllable is "the minimal unit of pronunciation"; he concludes

> "that it is essential to study the mechanism of realisation
> of the distinctive features within the framework of a
> whole syllable. It is thus necessary to emphasise once
> again the importance of studying not only the opposition

of phonemes to each other, but also the means by which they are contrasted within the syllable".

Until recently (with the rise of interest in 'autosegmental' and 'metrical ' phonology, theories which will not be further considered here), most linguists have been interested in the phonetic rather than the phonemic properties of the syllable.

The following are some of the linguists who have given the syllable a physical definition:

1- The phonetic syllable, according to Pike (1976), is constituted of a chest-pulse.

2- According to Malmberg (1955, p. 80)

"the syllable frontier is a phonetic phenomenon which may be utilised in a phonemic system".

3- Stetson (1951, p. 2) states that

"no air pulse from the nozzle of the hand bellows can be made without inflating the bellows and maintaining the position of the boards of the bellows which the hands make the little strokes for the air pulse. No syllable can be uttered without inflating the chest and while the rib muscles (intercostals) made the quick strokes of the syllable".

On the other hand, Pulgram (1970, p. 22) suggests

"that the term 'syllable' is not to be used in either a phonetic or a phonemic sense, but rather that it names a linguistic unit composed of phonemes that are arranged according to certain phonotactic criteria".

In other words

"the syllable is a phonological unit with phonotactically determined boundaries" (Pulgram, 1970, p. 22).

Pulgram (1970, p. 65) gives the syllable the following definition:

"The syllable is a linguistic unit of the figura type, a segment of the section, which contains one vowel nucleus and whose phonological boundaries, which may be but are not always necessarily signalled phonetically (as particularized in the statement on phonetic realization), are determined by a general set of phonological-phonotactic rules of syllabation that are applied to the specific phonotactics of a given language".

O'Connor and Trim (1953, pp. 103-104) maintain that the syllable as a phonological concept is not coincident with the phonetic syllable and as a result must be defined separately:

"Purely phonetic definitions are of undoubted value in describing the sound features of the utterances of a language. They generally provide units corresponding fairly well to the phonological units otherwise elicited; but obviously such a relationship can only be a rough and never an exact correspondence. The many cases in which a phonetic syllable can be correlated with no phonological syllable and vice versa, the case of the 'fricative vowel', and the like, are too well known to require quotation here".

Haugen (1956, p. 216) holds a similar view to that of O'Connor and Trim (1953) in that the syllable is "a purely phonological unit".

As with any other issue, the syllable has its opponents as a linguistic (i.e. phonological and not phonetic) concept. Although until now it has been considered as a universal linguistic phenomenon, yet there are those, Kohler (1966, p. 207), for example, who consider the syllable as

"an *unnecessary* concept, because the division of the speech chain into such units is known for other reasons, or an *impossible* one, as any division would be arbitrary, or even *harmful* one, because it clashes with grammatical formatives".

It has been suggested by Pulgram (1970, p. 1) that

"conscience, courtesy, and caution require that anyone wishing to concern himself with the syllable read all, or at least most, of the enormous literature on it".

This seems an impossible task when considering how much has been written on the syllable particularly when some of it, as Pulgram has pointed out, has become obsolete. It is also a lengthy process to collect data which is not always available in Britain. (In addition some of the literature on the subject is written in languages not known by me).

I would like to conclude here with the fact that the syllable was first represented in writing by the Sumerians, who wrote with a syllabary rather than with an alphabet. This was unlike the script of the ancient Egyptians and Chinese who had

"achieved a developed form of writing in which the words (and sometimes groups of words) came to be represented by single characters" (Stetson, 1951, p. 132).

The three factors which compose the syllable, as given by Stetson (1951, p. 132) are:

1- "Releasing factor, usually a consonant with an inherent vowel-suffix".
2- "Vowel shape giving the syllable a definite quality".
3- "Arresting factor, usually a consonant with an inherent vowel prefix".

These factors have been found in the structure of Sumerian. In other words the Sumerian syllable exhibited the patterns CV, V and VC as well as CVC. The vowels in these patterns are of special interest as they can be of three types respectively:

a- Post-consonantal as in za-a

b- Intersonsonantal as in za-a-an

c- Pre-consonantal as in a-an.

Stetson (1951, p. 133) states that the

> "first approach to a true alphabet is the systematic syllabary of the early Semitic"

which was limited to CV patterns.

It was the Greeks later on who invented

> "a true alphabet in which all three syllable factors are represented and all four types of syllables are written. Like the Sumerian, the Greek has all four varieties of syllables, often makes syllables by fusion, and recognised the vowel as an independent syllable. And unlike the Semitic languages, in the Greek the vowel is quite as important and as stable in the syllable as are the consonants" (Stetson, 1951, pp. 133-134).

The above-mentioned four patterns found in Greek are CV, VC, CVC and V.

4.1. STRESS

Arabic, like English, is a stress-timed language. One of the idiosyncrasies of Arabic, like other Semitic languages, is that the syllable plays an important part in its morphology. The syllable plays an important role in the verbal system of Arabic as the number of consonants in the root of the verb also denotes the number of syllables that makes up that particular verb. For example, the verb /'kataba/ 'to write' has the root k̲ t b̲ which is made up of three consonants and has the potential for three syllables. The syllable also plays an important role in the prosody of Arabic as well as in its rhythm. If we take stress as one of the prosodic features, for example, we find that we can easily determine stress placement by the shape of the Arabic syllable.

It should also be pointed out here that stress in Arabic is phonologically conditioned and not lexically distinctive like English. e.g.

'export' /'ekspɔːt/ (noun) vs. /eks'pɔːt/ (verb).

In Arabic (CA, IA and Cr.A), primary stress falls on:

1- (a) The first syllable of a word which consists of two or more CV type syllables, e.g.
/'?ana/   'CVCV   'I'
/'kataba/   'CVCVCV   'he wrote'.

  (b) The first syllable of a word which is made of CV syllables plus a last heavy syllable CVC, e.g.
/'katabit/   'CVCVCVC   'she wrote'.

2- The syllable CV: of a word containing only one such syllable, e.g.
/'kaːtib/   'CV:CVC   'writer
/fana'giːn/ CVCV'CV:C 'cups'.

3- The last syllable CV: if that word contains two such long syllables, (with long vowels), e.g.

/waːriˈdaːtahum/ CV:CVˈCV:CVCVC 'their income'.

Although most stress patterns in the above three dialects (CA, IA and Cr.A) are similar, there is one pattern which is strikingly different. If we take, for example, the nouns

'madrasa' 'school'
'farmala' 'applying car breaks'
'maktaba' 'bookshop, library',

we find that in CA and IA, stress falls as follows:

/ˈmadrasa/ ˈCVCCVCV
/ˈfarmala/ ˈCVCCVCV
/ˈmaktaba/ ˈCVCCVCV,

i.e. on the first syllable; whereas in Cr.A it falls on the penultimate syllable:

/madˈrasa/ CVCˈCVCV
/farˈmala/ CVCˈCVCV
/makˈtaba/ CVCˈCVCV.

Although other stress patterns exist, I have only selected a few, as it is beyond the scope of this thesis to go into greater detail about stress in Arabic. Suffice it to say that stress in Arabic "can be formulated within a few rules" because it

> "depends on the structure of the word in term of its
> constituent syllables" (Mitchell, 1973, p. 26).

4.2.

SYLLABIC STRUCTURES OF THE DIALECTS DISCUSSED IN THE THESIS

The difficulty in teaching primary-school children the Arabic alphabet led some teachers to teach the word as a whole and then ask the pupils to analyse them into the different phonemes (letters, alphabetic elements) which make up that specific word. This, undoubtedly, is a difficult process for the child of five or six or even seven to accomplish (See Al-Hussaini, 1965, pp. 319-32). To make children memorize their alphabet, all kinds of songs were written for this purpose in Egypt, for example.

The traditional method of teaching primary-school children the Arabic alphabet has been recently abandoned in Iraq. With the inclusion of linguists and phoneticians among the syllabus writers in Iraq, new primary readers have been introduced which teach children to read in syllables instead of single phonemes. Successful results have been achieved and it has been found that since this change children have improved their reading capabilities tremendously. Therefore, it can be said that the syllable in Arabic is so important that it has been used advantageously for reading.

4.2.1. COMPARISON OF THE SYLLABLE STRUCTURES OF CA, IA AND RP

Before comparing the syllabic structure of IA with that of RP I would like to compare it with CA first. This should help in showing how one dialect of Arabic differs from CA in one aspect at least. I would also like to add outlines of the syllable structures of the other dialects investigated, namely: MA, JA, KA, and Cr.A.

Differences

1- CA does not permit the pattern CC initially. Initial consonants must be followed by a vowel. This has led to the use of the prosthetic hamza /?/ plus vowel before the consonant in situations where such initial CC sequences are possible.

e.g.   /sta'qa:l/ 'he resigned' must be pronounced in CA as
[?ista'qa:l].

IA, on the other hand, permits such initial CC structures. In fact, IA
shows an extensive use of intial 2 consonant clusters.   The first
element of the cluster can be any of its phonemes with the exception
of /?/. (Appendix 1, Table 1).

Examples:

        <u>CA</u>   <u>IA</u>

    /ki'ta:b/   /kta:b/   'book'
    /?aq'la:m/   /qla:m/   'pens'
    /ki'ba:r/   /kba:r/   'elders'.

2-   CA permits the sequence CC finally. The patterns CVCC and
CV:CC occur only in the pausal form, e.g. 'al-waqf'.[5]   This is
preconditioned by the fact that no epenthetic vowel is used between
the last two consonants which can sometimes occur idiosyncratically
in the speech of speakers (especially Iraqis). For example the word
/qalb/ 'heart' is /al-'qalbu/ in one of its contextual forms and
/al-'qalb/ in the pausal form.

IA speakers tend to break up this pattern to ..CVC except in loan
words (pp. 96-97) and CA borrowings which are very few.

<u>Examples of foreign borrowings (not used in CA):</u>

/kart/   'card'
/sfandʒ/   'sponge'
/tʃans/   'chance, luck'
/bank/   'bank'.

<u>Examples of borrowings from CA</u>

/barq/   'lightning'.

Geminate consonants constitute an exception: they can occur in CA just as in IA. e.g.

1- CV:DC# ——— /ʃa:ðð/   'different (male)'

and

2- CV:DCV# ——— /'ʃa:ððə/   'different (female)'.

Similarities

The following patterns are found both in CA and IA:

a- CV   /bi/   'in,at'
b- CV: /la:/   'no'
c- CVC   /min/   'from'
d- CV:C   /ba:b/   'door'
e- CV:DC   /ħa:ɾɾ/   'hot'
f- ..CC.. /'jesɾuq/ 'to steal'·

From the above it is clear that the Arabic syllable must include either a long or a short vowel and that there are no syllabic consonants.

> "The marginal elements, on the other hand, contain only consonants" (Al-Ani and May, 1978, p. 117)

The onset in CA consists of a single consonant only, whereas in IA it can consist of up to two consonants. In open syllables the coda is zero, while in closed syllables it is one in both dialects; two in CA and can be two in IA in certain circumstances; it can be a double consonant in both.

Al-Toma (1966 and 1969) has used the term cluster to denote medial sequences within a word. As shown above (p. 100) the term abutting has been used here to refer to two contiguous consonants within a word.

I now turn to compare the syllabic structure of IA with that of RP.

Similarities

Except for the form CV:DC, all other types of syllable patternings which occur in IA (as shown above) occur in RP.

Examples of RP occurrences:

1-	CV	/ðə/	'the'	
2-	CV:	/ði:/	'thee'	
3-	CVC	/bed/	'bed'	
4-	CV:C	/bi:d/	'bead'	
5-	CCV	/θrʊ/	'threw'	
6-	VCC	/ækt/	'act'	
7-	.CC.	/ʌp'set/	'upset'.	

Differences

The differences in this regard are those syllable forms which occur in English and do not occur in IA. It is from these non-occurring forms that the trouble stems. Below, I shall look at the patterns occurring in English without their counterparts in Arabic.

1-	CCCV...	/stri:t/	'street'
2-	...VCCC	/ə'genst/	'against'
3-	..VCCCC	/'ɪnstɪŋkts/	'instincts'
4-			
a-	VC-CCV..	/ɪm'prɒbʊbl/	'improbable'
or			
b-	VCC-CV..	/ɪmp'rɒbʊbl/	'improbable'
5-			
a-	VCC-CCV	/eks'trə/	'extra'
or			
b-	VC-CCV	/ek'strə/	'extra'
or			
c-	VCCC-CV	/ekst'rə/	'extra'.

The dilemma which arises from arguments as to where one syllable should end and the following begin, i.e. acceptable syllable division, with regards to medial three and four consonant sequences is something I shall not elaborate on. Suffice it to say that this does not cause a problem in Arabic as it does not permit (in most cases) more than 2 consonant clusters or abutting consonants. Also, juncture in Arabic is determined by what is known as "sukun" (pause) (Pulgram, 1970, p. 24). In other words syllable division in Arabic is preconditioned.

There is no restriction in Arabic as there is in English on the types of C unit occurring in certain positions of these syllable types. For example, in Arabic a word may start with any of the phonemes, whereas in English, as seen earlier (pp. 131-134) there are restrictions.

4.3. THE SYLLABLE STRUCTURE OF MOROCCAN ARABIC

MA has ten types of syllable structures. The most frequent onset structure is a cluster of two consonants.

> "The onset could be one, two, or three [-Syllabic consonants]" (Keegan, 1986, p. 36).

As mentioned earlier (p. 102), MA is the only Arabic dialect, among those discussed here, that permits initial three consonant clusters, although this is limited to two occasions only. It was also mentioned earlier (p. 102) that syllabic consonants are idiosyncratic of MA only. The syllable in MA, like other dialects of Arabic, may not begin with a vowel. Geminates may also occur initially, medially or finally in MA. The coda, in MA, could be 0-2 consonants only.

With these constraints in mind, it is possible to enumerate the following ten sequential syllables, as given by Keegan (1986):

1- CV	/si/	'mister'	
2-			
a) CVC	/dis/	'rush'	
b) CÇC	/t̪l̪t̪/	'he multiplied'	
3- CVCC	/weld/	'boy'	
4- CV:C	/ti:n/	'figs'	
5- CCV	/bra/	'needle'	
6- CCVC	/sleq/	'to boil	
7- CCVCC	/ktebt/	'I wrote'	
8- CCV:C	/sna:n/	'teeth'	
9- CCCVC	/stḥeq/	'he deserves'	
10- CCCV:C	/stra:ḥ/	'he rested'.	

Sequential syllable structures with geminates have not been specified among the ten patterns given above. Suffice it to repeat that they can occur in initial, medial or final positions, as well as before or after short and long vowels.

4.4. THE SYLLABLE STRUCTURE OF JORDANIAN ARABIC

It is possible to base the types of syllable structures in JA on the following criteria:

a) A syllable cannot begin with a vowel.

b) Every syllable must contain a vowel.

c) Initial 2 consonant clusters (phonologically) are not admissible in JA.

d) Final 2 consonant clusters are admissible in JA.

There are six types of sequential syllable structures in JA. Syllable structure types with geminate consonants have not been listed, though it is worth mentioning that they can occur in medial and final positions, and after short and long vowels.

1- CV	/la/	'for'
2- CV:	/fi:/	'there is'
3- CVC	/miʃ/	'not'
4- CV:C	/ki:s/	'bag'
5- CVCC	/bint/	'girl'
6- CV:CC	/ba:ns/	'a stomach'.

Although it has been said that in principle JA does not permit initial 2 consonant clusters, on phonetic grounds, initial 2 consonant clusters may occur, e.g.

/'smiʕna/ 'we heard'

/'ʃribna/ 'we drank'

/kta:b/ 'a book'

/ħma:r/ 'a donkey'.

El-Hassan (1969, p. 43) postulates that

> "Forms with anaptyxis and those without are functionally different as follows. The forms with anaptyxis are regularly used:

> (1) if the style of speech is deliberately slow.

> (2) under emotional circumstances,

> (3) in general, if the particular word is emphasized for one reason or another".

El-Hassan (1969, p. 52) does not recognize phonologically such an initial 2 consonant cluster because such a recognition would, according to him, complicate matters

> "in view of the inadmissibility of initial clusters elsewhere in the (El-Hassan's) proposed model" (parenthesis mine);

and

> "in view of the variant /#?iktaab/, which .... regularly occurs in certain circumstances, and is in free variation with /#ktaab/ elsewhere";

and

> "as no <u>analytical</u> purpose is served by the recognition of such a cluster".

Both forms also

> "behave in exactly the same manner when in junction with a preceding word, particle or article" (El-Hassan, 1969, p. 52).

e.g.

/?il/ + /?ik'ta:b/ or /kta:b/ ⟶ /likta:b/ 'the book'.

4.5 THE SYLLABLE STRUCTURE OF KUWAITI ARABIC

Like the other dialects (except MA) discussed here, KA does not permit initial 3 consonant clusters. A syllable may not begin with a vowel. The following are the sequential syllabic patterns in KA:

1-	CV	/bi/	'in'
2-	CV:	/fi:/	'there is'
3-	CVC	/min/	'from'
4-	CV:C	/we:n/	'where'
5-	CCV	/bla/	'without'
6-	CCV:	/mni:/	'from here'
7-	CCVC	/ʃrab/	'drink'
8-	CCV:C	/hbu:b/	'blowing of wind'
9-	CCVDC	/sbajj/	'boy'
10-	CVCC	/hilf/	'swearing'.

Pattern 9 above occurs with final geminate consonants only.

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4.6. THE SYLLABLE STRUCTURE OF CAIRENE ARABIC

In Cr.A every syllable must begin with a consonant and must contain a vowel. There are five syllable types in Cr.A. These are as follows:

1-	CV	/ma/	'no'
2-	CV:	/la:/	'no'
3-	CVC	/geh/	'come'
4-	CV:C	/nu:r/	'light'
5-	CVCC	/da?n/	'beard'.

Geminates may occur word-finally. They have not been included as a separate category, because phonologically, geminates are regarded as two consonants and are therefore within pattern type 5 above.

4.7. CONCLUSION

Odisho (1979, p. 207) has pointed out that the phonetic differentiation between consonant clusters and abutting consonants

> "is quite important in training students in areas pertinent to pronunciation because it will stress the point that clusters are the real source of trouble, not abutting consonants".

The results obtained from the experiment carried out in this research show that this statement is only partially true. Yes, clusters of three and four consonants did carry the highest percentage of errors but sequences of this length, including abutting consonants, had their fair share of error percentage as will be seen later.

Although Odisho (1979, p. 208) expects students not

> "to encounter any difficulty in producing them (abutting consonants) because the syllable division will alleviate the difficulty, if any" (parenthesis mine),

nevertheless in practice they did, although, one must admit to a lesser extent. They reduced the difficulty by inserting an epenthetic vowel between the abutting consonants in three and four consonant sequences. Perhaps the teacher should concentrate his efforts in pointing out to students these differences and not, as Odisho (1979, p. 208) suggests,

> "hardly bother himself (the teacher) about abutting consonants" (parenthesis mine).

CHAPTER FIVE

5. EPENTHESIS

Because vowel insertion is a type of epenthesis, this chapter looks at epenthesis in general and discusses the various synchronic and diachronic terminology used by different writers which apply to epenthesis. Historical and modern lexical borrowings from one language to another, apart from the two languages under discussion in this thesis, i.e. IA and RP, are exemplified.

Epenthesis is a term used in phonetics and phonology to refer to a type of insertion which appears from 'zero' segment in the word or morpheme. This phenomenon is common both in historical change and in connected speech.

Two types of epentheses are defined separately by Lass, 1984 (p. 184),

> "as the processes they denote often have special theoretical status".

1. The first of these is known as "prothesis" which

> "is the insertion of an initial segment, namely a vowel - usually with a phonetic motivation" (Lass, 1984, p. 184).

Thus, in the Romance-speaking area covered by Spain and France we find that initial clusters with /s/ became unacceptable in Latin and old French. As a result words beginning with clusters such as /sp/, /st/, /sk/ were forced into accepting an additional syllable by the addition of the prothetic vowel /e/ initially. For example Latin spiritus 'spirit' became old French 'esprit'. Latin studium became old French estudia (modern French étude, where the /s/ has been lost), Spanish estudio and Portugese estudo, while Italian has studio (Bolinger, 1975, p. 394). It is interesting to note that Arabic speakers of English do not as a general rule treat initial English

consonant clusters in this manner, i.e. prothesis. In all the samples
I recorded, only <u>once</u> did a student break up an initial cluster by a
prothetic vowel /e/. This is the case as there is no phonotactic
motivation to do so, i.e. CA does not permit a word to start with a
vowel (this excludes the semivowels /j/ and /w/). I do not know of
any dialect of Arabic that permits this, except the dialect of Jebel
Bedouin Cyrenaican which is cited by Mitchel (1960, p. 382). In
discusing anaptyxis, Mitchell mentions three positions where this
phenomenon occurs. I shall mention here the prothetic type:
"initial and preceding two consonants" (1960, p. 382), e.g. /ik'tibat/
'she wrote' and /iʃ'taː/ 'winter'. Mitchell (1960, p. 382), though
does mention in a footnote that this initial /i/

> "may be very short, especially in rapid style, and may,
> in the presence of a voiceless first consonant, correlate
> not with vocalic form but with greater length of the
> consonant than in other contexts".

For example, /'ismiʕ/ 'he heard'

> "is always a disyllable, due partly no doubt to the length
> of the sibilant but probably also to its association with a
> specific chest pulse".

/'ismiʕ/ contrasts with /'simʕat/ 'she heard'. Mitchell goes on to
mention that in writing this anaptyctic vowel /i/ is realised as the
<u>alif</u>.

Since Arabic does not permit consonant clusters of three or more,
there exists the motivation to break them up either by inserting an
epenthetic vowel after the first or second consonant in a three
consonant cluster and medially in a four consonant cluster.

2. The second type of epenthesis named by Lass (1984, p. 184) is
"anapatyxis". Anaptyctic vowels which are also referred to as
"parasite" vowels or by the Sanskrit term "svarabhakti" "which
literally means 'splitting'" (Allen, 1953, p. 74). Here a vowel is

inserted between two consonants which are usually both sonorants or obs-son or son-obs clusters as in ['frləm] for 'film'.

> "The substandard forms ellum ['eləm] for elm and athalete ['æθəli:t] for athlete are sometimes heard in English, where the clusters /lm/ and /l/ have been broken up by the insertion of a shwa" (Bolinger, 1975, p. 394, [parenthesis mine].

> "Parasitic vowels within elements occur in forms of OE common words in accented syllables after the vowel, between [r] or [l] + consonant. Examples from the names on the coins are: Elfwered, Oδborn, Wulberen, wulfwerid, where the final vowel, represented by e or by i, is parasitic" (Colman, 1984-85, p. 113).

These types of parasitic vowels also occur before originally syllabic [l, r, m, n] as in moneyers' names such as Cδlδegen (-þegn), Rafen (hrafn), fugel (-fugll), Winterfuel (wintr-) (Colman, 1984-85).

> "Historically, thorough and borough acquired their second syllables by epenthesis (LOE θurh, burh)" (Hawkins, 1984, p. 267).

Japanese is another language that does a thorough job in breaking up clusters. Thus, we find that words which it borrows from English such as a strike (in baseball) becomes /sutɒ'raɪkʊ/.

Other types of epentheses such as vowel epenthesis which appears in the form of diphthongization, and consonant epenthesis also occur. These types will not be discussed here as they are of no relevance to the topic discussed in this thesis.

Mitchell (1960, p. 382) exemplifies the use of the anaptyctic vowel from Egyptian and Cyrenaican (Jebel Bedouin) Arabic. Of the latter he writes:

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"The vowel of the final syllable of these forms, however,
is structurally neither V nor v, but an anaptyctic vowel
[ə].   Initial and final clusters of two consonants are
inadmissible in the dialect and accordingly three contexts
of anaptyxis are recognised".

The first type was discussed earlier (p. 157).   The other two types
are:

(i). "medial, preceding two consonants and in a syllable following a
     short open syllable"
 e.g. /yi'kitbu/ 'they write'.

(ii). "in a final syllable following a short open stressed syllable"

e.g. /kita'bit/ 'her writings'.

Anaptyctic vowels also affect the prosodic feature of prominence.   If
we take for example the word /misikt/ + /ni/ 'you caught me', we
find that the anaptyctic /i/ is essential in order to avoid the pattern
- CC.C - which is an impossible pattern in Arabic.   As a result we
have [misi'kitni].   The prominence here falls on the anaptyctic vowel
/i/ by rule (Firth, 1969, p. 136).

Sanskrit, on the other hand, uses svarabhakti to distinguish between
the phonetic and phonological levels of the language.   Phonetically
speaking svarabharkti "is defined as vocalic in character", but

"from the phonological point of view it does not break up
the consonant group nor does it form an independent
syllable" (Allen, 1953, p. 80).

From the preceding pages, we saw how epenthesis affects certain
languages.   Many other languages, I am sure, are affected by this
phenomenon, which will be beyond the scope of this thesis.

6. THE EXPERIMENT

6.1. Objectives

The purpose of setting up this experiment is to determine the extent of native-language (IA) interference in one area of teaching and learning of a foreign language (English).   In this case the question is why English consonant clusters and sequences - of two consonants or more - are split by the insertion of an epenthetic vowel.   The grounds for expecting such epenthesis would be attributed to the (phonology) phonotactics of IA in particular and Arabic in general, which does not allow such sequences: as a result, students tend to insert this epenthetic vowel in order to make natural and pronounceable what to them seems unnatural and unpronounceable. Alternatively, these pronunciations might be attributed simply to bad teaching habits and consequent inadequate learning.

Not all errors made by second and foreign language learners are attributable to native language interference.   Applied linguists have disagreed on the importance of contrastive analysis in second (and foreign) language teaching and learning.   During the 40's and 50's it was believed that

> "a statement of the similarities and differences between
> various languages was enough to deal with the problem
> of teaching these languages"   (Ghadessy, 1980, p. 93).

Nickel and Wagner (1968) have argued that contrastive analysis, based on a generative transformational approach, is sufficient and that consequently it should take priority over any other approach.

The assumption that

> "Contrastive Analysis predicts the areas of linguistic
> difficulties encountered by learners of a second
> language" (Ďusková, 1969, p. 11)

was questioned later.

Oller (1972, p. 95) rejects contrastive analysis

> "as a foundation for second language instructional
> programs"

and claims that

> "Contrastive analysis is neither necessary nor a
> sufficient basis for program design".

Wilkins (1968) attributes students' errors not only to mother-tongue patterns but also, among other factors, to confusion between forms and functions of the language being learnt. Wilkins also claims that contrastive studies can be replaced entirely by an error-based analysis in determining the main areas of potential difficulty in second language learning. Rithcie (1967, p. 46) claims in his article:

> "This report, then, is an attempt to offer a 'Chomskian'
> view of language teaching and learning as an alternative
> to former more or less behavioristic ones".

At the same time, it is interesting to note that even the most adamant zealots who have rejected contrastive analysis

> "as a foundation for second language instructional
> programs"

concede that

> "contrastive analysis is recognised as a useful technique
> for research into the nature of human information
> processing" (Oller, 1972, p. 95).

At the same time, I would not agree with Oller (1972) that a teacher

"does not need to know how speakers of the target
language use the structure at issue".

As will be seen below, errors are committed even by students who,
after four years of studying English, are expected to graduate as
teachers of English.

In turn, these teachers will presumably transmit the same errors to
their pupils in secondary schools and the vicious circle will continue
for generations until, perhaps, an appropriate programme is
constructed to overcome such problems.   Consequently, in any
research project, a complete contrastive analysis of the
mother-tongue in question and the target language should be carried
out in order to pin-point some of the reasons for the errors made by
the students.   This would, without any doubt, assist syllabus
writers on the question on which linguistic aspects they should take
into consideration in order to overcome these errors:

> "The main purpose of contrastive analysis is to provide
> the text-book writer with linguistic principles of <u>didactic</u>
> <u>programming</u>" (Nickel and Wagner, 1968, p. 254).

Teachers should, therefore, be made aware of the possible errors
students will commit in order to overcome them when teaching.

> "According to one school of thought, errors are due to
> the inadequacy of our present teaching methods.   With a
> 'perfect' teaching method errors would never be
> committed" (Ghadessy, 1980, p. 96).

This is partially true - I say partially - because you cannot have a
'perfect' teaching method if teachers themselves make mistakes and
transmit those errors to their students.   Take, for example, the
errors which are the basis of this research.   If the teacher is not
made aware of the fact that English permits three and four consonant
clusters and sequences while Arabic does not, then the teacher would
not be able to correct the students.   This leads to the question put

"whether there are any parallels between the process of acquiring the mother-tongue and the learning of a second language".

Corder goes on to say that

"the differences between the two are obvious but not for that reason easy to explain: that the learning of the mother-tongue is part of the whole maturational process of the child, whilst learning of a second language normally begins only after the maturational process is largely complete: that the infant starts with no overt language behaviour, while in the case of the second language learner such behaviour, of course, exists: that the motivation for learning a first language is quite different from that for learning a second language".

No doubt, both the acquisition of the mother-tongue and the learning of the foreign language go through a certain <u>process</u>, but the question is whether the two processes are similar or not. The answer, whether positive or negative, is not in question here. What is of interest is the fact that errors are committed by second and foreign language learners; and to find a remedy for such errors is the issue here. Yet one cannot help but postulate that a child

"is born with an innate predisposition to acquire language; that he must be exposed to language for the acquisition process to start; that he possesses an internal mechanism of unknown nature which enable him from the limited data available to him to construct a grammar (and in this case - phonology) of a particular language" (Corder, 1967, p. 164) (parenthesis mine).

An adult, on the other hand, learning a new language does not possess this "innate" predisposition and this is why he commits

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errors.   If we compare a child going to a foreign country and learning the language of that country, we would find that it would take it less time to learn that foreign language than it would an adult.   Adults going to a foreign country still commit errors even after living there for a number of years, or indeed their lifetime.

"The philosophy of the second school"

as given by Corder (1967, p. 163),

> "is that we live in an imperfect world and consequently
> errors will always occur in spite of our best efforts.
> Our ingenuity should be concentrated on techniques for
> dealing with errors after they have occurred".

Both philosophies, for and against contrastive analysis as the basis for second and foreign language teaching, are similar.   They are similar in the sense that they both admit to errors being committed. Indirectly, they both seem to support the importance of contrastive analysis in foreign language research.

Another argument which supports the importance of contrastive analysis, if not in teaching but at least for the purpose of research, is the fact that different groups of foreign language learners commit different types of errors.   Chinese and Japanese learners of English, for example, commit different types of errors from those committed by an Arabic speaking group.   Confusion of /r/ and /l/ is typical of the former;   difficulty with /p/ is typical of the latter. As a result, syllabus writers must take different factors into consideration when devising programmes for their students.   In other words, a programme of English language written for Chinese and Japanese must make a different allowance for errors than that for an Arabic group.

6.2. Subjects

In order to carry out any statistical analysis, the data obtained should be representative of the group of speakers chosen. The criteria applied in the selection procedure is as follows:

Within the Iraqi group, the choice of respondents for this field work was not made on the basis of class, religion or locality, but on the grounds that they were Iraqi by birth, had attended Government schools in Iraq which use uniform text books, and had studied English[6] as a foreign language for the same number of years – in this case eight[7] – before entering university. Despite this fact, these students do not attain a reasonable command of English. This, therefore, implies that any student who had lived abroad in an English speaking society was eliminated. The students involved in the experiment were aged between 18 and 24.

Informants were chosen from three different English departments from three universities in Iraq, namely: the University of Basrah, College of Arts[8]; the University of Baghdad, College of Education[9]; and Mustansiriyah University, College of Arts.

I had hoped to include students from other departments, e.g. Arabic, History, or Geography and from other Colleges, e.g. Administration, but a pilot test carried out on samples of students of these departments proved too difficult . Their readings resulted in the deletion of the difficult words which are primarily the target in the experiment since most of these include the three consonant clusters. It also took such students over half an hour to read the passage, which would have been too time-consuming to record and later on analyse. On the other hand, I am certain students from the Science departments would have performed better as far as reading of the passage is concerned. This is due to the fact that the medium of instruction in the Science colleges is English. As a result students who graduate from the Science colleges usually have a better command of English than those graduating from the Arts colleges. For this reason, they were excluded from the experiment, and the

notion to include students from other departments and Colleges was accordingly abandoned.

Furthermore, it would not have been sufficient to restrict the experiment to Iraq only. The reason for extending the boundaries of the experiment to include four other Arab countries, namely Morocco, Jordan, Kuwait and Egypt, was to find out whether, like the Iraqi students, other Arab speakers' performance in English can or cannot be explained in terms of the phonotactics of their own variety: the different colloquial dialects spoken all over the Arab world are as far from each other as French is from Portuguese or Spanish or Italian.

The same basic criterion which applied to the choice of Iraqi students was applied to these other countries, i.e. the informants were indigenous to Morocco, Jordan, Kuwait and Egypt. Students who had attended other than Government schools, e.g. American or British (for there are many such schools in these areas of the Arab World) were pointed out by the lecturer and I did not ask them to read. It goes without saying that those who had lived abroad or were half Arab were also not asked, particularly if one of their parents was English-speaking. They were all 18-24 years of age.

Male data had to be separated from female data for a number of reasons.

Throughout the Arab World in general, and the countries which I visited in particular, there is a higher ratio of female students attending the Arts college. For example, 85% of the students accepted by the department of English, University of Jordan are females. In Kuwait, as well as Morocco and Egypt, it is approximately 65%-70%. Iraq has about 70-75% female students in the Colleges of Arts throughout its numerous universities (See 6.3. below).

It is also much more common for male students to attend Science colleges, as well as colleges of Economics and Administration and Law. In fact, male students who register in the Arts colleges are either

literary orientated (interest, for example, in poetry, drama and writing) or have achieved low grades in their Baccalaureate examinations (equivalent to 'A' level exams). This means that the Arts colleges do not get the bright male students. Unfortunately, males who do not attend Science colleges tend to be branded as 'unintelligent'.

As far as female students are concerned, it is much more fashionable to attend the Arts colleges (although, nowadays, we are getting many more female doctors, chemists, etc.).

In separating the male from the female data, I hoped to provide evidence in support of the popular notion that females are better than males at languages.

Male students were reluctant to participate in the experiment. Female students were more outgoing and volunteered freely. Male students had to be forced, occasionally, by the lecturers to read the passage. This inhibition might have resulted in a nervous output.

In Kuwait, for example, there is the Girls' College which does not admit male students. Selecting female students from this college meant that there was always going to be a higher number of female respondents in Kuwait.

The above factors necessitated separating the male from the female data.

In addition, analysis of the results in Chapter Seven shows a clear difference between the sexes. As a result I did not want differences which may be social to be confounded with differences among universities.

Why did I choose these and not other Arab countries? Herbolich (1979, p. 304) has "conveniently divided" the Arab world into four major linguistic and geographical areas:

1. North Africa, which includes Morocco, Algeria, Tunisia and Libya;

2. Egyptian, which includes Egypt and Sudan;

3. Syrian-Jordanian, which includes Syria, Jordan, Palestine and Lebanon;

4. Arabian, which includes Iraq, Saudi Arabia, Kuwait and the rest of the Arab Gulf States.

The same division was considered in this research when selecting the universities to be visited. Inclusion of all Arab countries would have been too expensive and time-consuming to carry out. It would also "have yielded an unwidely sample" (Herbolich, 1979, p. 304).

6.3. Procedure Followed For The Recordings

1. I made the first set of recordings in the language laboratory at the College of Arts, University of Basrah. A total of 42 students (20 male and 22 female) volunteered to record a standard test passage. Students from the four levels [10] had been previously requested by the Head of the Department of English to become informants. They were assured that these recordings would in no way prejudice any future oral grades and that their readings were purely for research investigations.

2. I made the second set of recordings in a lecturer's study (office) at the College of Arts, Mustansiriyah University. A total of 21 students (3 male and 18 female) from the first and second years were asked during lectures to leave the lecture hall and to record the passage. The lecturer's choice of students included those with good and bad grades. The location was not ideal for recording because of background noise and many interruptions, hence the small number of informants.

3. I made the third set of recordings in the English laboratory at the College of Education, University of Baghdad. Thirty seven students (17 male and 20 female) participated after having been requested by

one of the lecturers.   This lecturer made a random selection from all four years and although the turnout was higher than fifty respondents, only 37 managed to record the passage.   The rest, who were mainly first-year students, either found the passage too difficult to read and gave up half-way through; or were afraid it might affect future grades, despite assurances to the contrary.   In any case, the total number of students from the different English departments in Iraq had up to that point reached a hundred and I felt that this number constituted a satisfactory sample for analysis.

4. I made the third set of recordings in three sessions in different lecture halls at the College of Arts, University of Rabat[11], Morocco. The first session included students from the second and third year groups.   During lectures, students were asked to leave the lecture-hall individually and record the passage in an adjacent room. The same procedure was followed for the second session.   In the third session, a group of first-year students remained in their lecture-hall and the cassette player was moved from one student to another for the whole time of that lecture.   The lecturer had kindly given up that hour for the recordings.   The total number of students recorded in Rabat was ninety four (44 male and 50 female).

5. I made the fourth set of recordings in Amman, Jordan.   The Faculty of Arts in the University of Jordan

> "offers study programs which lead to the award of the Bachelor's degree in the following field of specialisation: Arabic, English, History and Archaelogy, Geography, Philosophy and Sociology.   The student has to complete successfully at least 132 credit hours according to the study plan of each department and each specialisation" (University of Jordan Prospectus for the Academic year 1982-83, p. 44).

The Department of English admits approximately 400 students, 85% being female.   The recordings here took place in lecture halls over four sessions.   The lecturers kindly gave up their classes to allow

me to record the students. Students from the second, third and fourth years participated. The total number of students recorded here was seventy six (24 males and 52 females).

6. The fifth set of recordings, which spread over two sessions only, was made at the College of Arts and the Girls' College, University of Kuwait. Although these are two different colleges, there is only one English Department. Except in certain cases, males and females study separately in Kuwait. Students in the English Department graduate with a B.A. after collecting 126 credit hours plus 15 other credit hours which they must pass. These 15 hours are not included in their grades. The course currently followed started in the academic year 1982-83 after much consideration and study. It was thought by the department to be a much more beneficial programme for the students than the course which preceded it. The aims of the department are very similar to those in other Arab countries, i.e. to produce graduates to teach in secondary schools or to work as translators and interpreters. The number of students in the Department (both Colleges) in April 1984 was 1152: 315 male and 837 female.

During the first session, which I made at the English Literary and Cultural Society, the head of the Society (a fourth-year student) approached students while they came to the room during their spare time. The turnout was 30 male students. In the second session, lecturers once again asked female students (30) to leave the lecture-hall and record the passage in an adjoining room.

7. The sixth and last set of recordings was made at the College of Arts, University of Cairo. Here, the turn out was the lowest. This is attributed to the fact that the final year examinations had started when I visited Egypt. I was only able to record 40 students: 10 male and 30 female. As in previous Arab universities students graduate from the College with a B.A. in Arts after pursuing a 4-year course in English Language, Literature and Linguistics.

The recordings which spread over four days, were held at times in a

lecturer's room and at others in the College of Arts's open grounds. The latter would have been impossible to carry out during ordinary university days but because of the examinations there were only comparatively few students around. Some of the students I appraoched myself and others were sent for by one of the lecturers. The students were very cooperative and except for the fact that a longer period would have been very expensive, I am sure the turnout would have been just as good as in other universities.

I had hoped to carry out surreptitious recordings of students' conversations as well. Although these students are majoring in English, their ability to converse in English had not reached the required standard. They would not have been able to think of the words which include the consonant clusters in question. Therefore such recordings would not have been beneficial. Secondly, if a questionnaire was to be set up, I would doubt it very much if students would have known to answer with words such as 'Multiple Sclerosis', 'squatted', 'crispness', etc. Labov (1970, p. 45) has pointed out the

"elementary steps of locating and contacting informants, and getting them to talk freely in a recorded interview are formidable problems for students".

Students were only made aware of the fact that the over-all purpose of the passage was for research investigations. Most of them thought it was their reading that was under consideration and concentrated on that aspect. Others thought it was the intonation patterns. Most of them commented on the use of difficult words which in their view was the factor which hindered their fluency in reading. This, in my opinion, was a positive step in favour of the results achieved, since it meant that the students were completely ignorant of the immediate aims of the passage, i.e. the possible breaking-up of consonant clusters by means of an epenthetic vowel.

Informants were not allowed to read the passage through before recording it. This procedure not only saved time but also meant

that students were committed to finish reading the passage. Had they been allowed to read before recording most of them, I am sure, would not have volunteered on the pretext it was too difficult. This procedure also prevented them from asking how 'x' word was pronounced before the actual recording started.

6.4. Types of Equipment Used

The first set of recordings were made in the language laboratory at the College of Arts in Basrah. The recordings were taped on a Philips three-hour tape at 3.75 ips.

The rest of the readings were recorded by means of a battery operated cassette-player with inbuilt microphones. Three types were used, namely: Philips, Pye and JVC. One-hour Sanyo and one and a half-hour BASF cassettes were used. This second method of recording proved more satisfactory, in the sense that it was easier to carry about and operate the cassette-player. Using a casssette-player also meant that I could take the experiment to the students instead of vice-versa. This is exemplified by the recordings where the location was a lecturer's study, a lecture hall, open ground and an alien laboratory which I would not have been able to operate[12].

It would not have been possible to analyse the data without recordings. Thus recordings have their advantage as

> "no data elicited from the respondent is lost in auditory
> or transcriptional confusions, and that anything that is
> queried can always be re-checked against the recording.
> It also means that the fieldworker is not obliged to keep
> writing things down during the interview, which could
> make the respondent uneasy" (Wells, 1973, p. 50).

6.5. Design

Since the real problem lies in the recognition and production of "clusters not existing" (Malik, 1956-57, p. 68) in IA, the bulk of the passage included mainly words with more than 2 consonant clusters.

At the same time it must be mentioned that

> "in spite of the fact that the two-element consonant clusters exist in much greater number (350) word initially in Arabic than in English, six of the English two-element initial clusters do not occur in Arabic. The non-existing clusters are /pw-/, /ky-/, /gy-/, /θr-/, /sθ-/ and /hy-/" (Malik, 1956-57, p. 72) (parenthesis mine).

Final two consonant clusters exist intensively in CA, but these tend to be broken up by means of an epenthetic vowel by Iraqi speakers. As pointed out previously (pp. 96-97), there still remains a few final two-element clusters in IA which are not broken up. These are mainly found in loan words, e.g. /bank/ [bʌŋg] 'bank'. It will be seen later that English final two consonant clusters do not pose a great difficulty for most of the groups tested. It is only the Moroccan students who tend to split them frequently, particularly in the past tense and past participle of verbs. I can only attribute this to English spelling which is not very helpful in a number of cases, e.g. 'praised, longed' etc. The factor of ignorance cannot be ruled out either. I took into consideration the pronunciation of native speakers when judging the errors made by the respondents.

Chapter Three (3.17, 3.18 and 3.19), above, lists the possible clusters found in English. The words used in the passage have been elicited from those possible combinations. In fact, the aim of the experiment, as has been stressed throughout this thesis, was to investigate how students from different Arab countries treated English consonant clusters. If the students broke up the clusters by use of an epenthetic vowel (whether after the first or second element of the cluster) that was regarded as an error.

6.6. The Passage

To write up the passage, I selected words on two bases:

1. words which are familiar to the students;

2. difficult words which I assessed not to have been heard by the students before.

The motivation behind this selection was to see how students pronounced familiar words and how they would react to unfamiliar ones.

Mispronunciations in the first category above are undoubtedly to be explained mainly as a consequence of bad teaching. I have used the word 'mainly' here because, as a teacher of English, I have encountered some difficulty with this aspect. Very often I have corrected students breaking up initial, medial and final consonant clusters and sequences. These same students have repeated my correction with the same mistakes. The students' unawareness that they have committed an error is proof of the fact that they perceive English through the filter of their spoken Arabic.

Behind the second reason would lie the fact that when confronted with a new lexical item, the student who has not yet mastered the new language has no other choice but to treat this new entry in parallel to what exists in his native tongue. This was exactly true of the word 'sclerosis' where most of those (In Iraq) who attempted to pronounce the word epenthesised the initial /skl-/, pronouncing it as [səkl-] or [skəl-].

The following is the passage prepared for the test.

It was Spring and amidst the splendid weather children and adults indulged in strawberries and cream. The daffodils were still in bulbs and the crowds, marvelling at the sights, squatted on the lawn in Hyde Park. In the Serpentine, one could hear the water splashing as swimmers dived straight into it. They shouted and screamed as they were struck by the crispness of the water. As the rays of the sun spread over a larger area, more people stripped down to their bathing suits, risked the coldness of the water and winced as they dived in.

Other crowds walked down Oxford Street, either on a shopping spree, or those with less strength, in one of the cafés drinking cofee and enjoying their ice-creams and orange squash. Some of the tourists gasped at the high costs of merchandise in the shops. Cosmetics and hair sprays had almost doubled in price; desks were very expensive and camera-films had trebled. The seventh and twelfth floors of one of the large departmental stores accommodated displays of new merchandise. Because of a Bus and Underground strike, many people preferred to walk down to Trafalgar Square and the Strand.

School children and University students, on their Easter holidays, increased the numbers out on the streets. Some vented their spleen on others whilst some were thrown into the water against their wish. Some were performing abstracts from Shakespeare's plays and others waltzed with joy for no apparent reason. A man, suffering from Multiple Sclerosis, sat on one of the benches hoping he could be in their midst. They glimpsed at him and their instincts told them he was unable to join in the fun. They tried to help him but he refused to get up.

Many Scotts were around wearing their kilts which added to the splendour of the sights. Others had come from Richmond and Kingston. Yet, amongst the frolic, some seemed sad and distressed. They seemed to be addicts of one sort or another. It is unavoidable that man yields to temptation once in his life.

7. Analysis Of The Results Including Statistical Findings.

As pointed out previously (p. 165), in order to carry out any statistical analysis, there should be little or no disparity among the sample(s) tested. Thus, all the samples of students which I tested for the experiment for each country were very closely linked in so far as age, social background and education is concerned.

To analyse the results, three null hypotheses need to be set up:-

(1) HO_1 :   There is no difference between universities in the performance of their students.

(2) HO_2 :   There is no difference in performance between male and female students.

(3) HO_3 :   There is no difference in the types of clusters which are subject to epenthesis.

The results were analysed by means of the MINITAB system used in UCL computer centre.   The universities of Iraq (three in number), Morocco (one), Jordan (one), Kuwait (one), and Egypt (one) were allocated Nos. 1, 2, 3, 4, 5 respectively.   Males were allocated 1 and females 2.   The computer was fed with the information as follows:

Nine columns were set up (Appendix 2, Table 3), the first three being social variables and the remaining six linguistic ones.   These were:

1. Identity (i.e. each student was allocated a specific number)

2. Subject:
(a) Male
(b) Female

3. University

Small clusters represented by:

4. M2 (Medial 2 consonant sequences)

and

5. F2 (Final 2 consonant clusters)

Large clusters represented by:

6. I3 (Initial 3 consonant clusters)

7. F3 (Final 3 consonant clusters)

8. M3 + 4 (Medial 3 and 4 consonant sequences)

9. F4 (Final 4 consonant clusters)

The minimum and maximum number of errors each student could make for each column 4-9 ranged as follows:

4. (0-26)
5. (0-38)
6. (0-23)
7. (0-22)
8. (0-15)
9. (0- 4)

I added the total errors for each of the categories for each student sample and tabulated them as in Appendix 2, Table (3). For example, sample 25, male, University 1 made the following total of errors for each of the columns 4-9 respectively:

0, 1, 9, 3, 6, 1.

Words, like 'sclerosis', which were split in two or three different ways are differentiated in Appendix 3, Tables (4-33). Yet, when analysing the data the three different results were added and considered as one type of error. Showing the different placements of the epenthetic vowel is helpful as no such thorough investigation

to my knowledge has previously been made.   Odisho (1979, p. 209) specifies that

> "that vowel is placed after the second element of the cluster from the right".

This was not so in all cases.   For example, the word 'sclerosis' /sklərəusɪs/, as mentioned above was split in three different ways:

1. /skələrəusɪs/

2. /səklərəusɪs/

3. /əsklərəusɪs/

Gross errors were categorised in separate columns.   These represent such errors as final Øs or complete omission of words as well as mispronunciations: e.g. 'bulbs'- /blʌbz/ for /bʌlbz/.   In categorizing these gross errors, I used my own discretion.   These were tabulated separately and were not included in the final statistical analysis.

The average number of errors per student for each sex and each university and for the small and large clusters are given in Appendix 4, Table 34.   I also give the standard deviation, a measure of the scatter between students, for each sex, university and cluster combinations.   These standard deviations are provided for guidance and must be considered with <u>caution</u>, particularly in the case of small clusters;   where the average number of errors is quite small, the conventional habit of looking at 95% limits based on 2 standard deviations either side of the mean would take us into the possibility of a student making a negative number of errors. Table 35 indicates the proportion of students making 0, 1 and 2, 3 + errors in each sex x university combination for the small and large clusters and provides a more detailed guide to the differences.

With regards to initial 2 consonant clusters, the number of errors

was nill. For this reason, initial 2 consonant clusters were not included in the analysis. The reasons for this nill error rate can be attributed to the following:

1- Students were familiar with the initial 2 consonant clusters in the passage. Perhaps the only word which might have caused any problem was 'frolic'. Yet, it was pronounced correctly.

2- Most of the dialects discussed here (except Cr.A and JA to a lesser extent) make an allowance for initial 2 consonant clusters. This means that there is no phonotactic constraints on the native speakers' phonological systems to insert an epenthetic vowel between the first and second phonemes of the initial 2 consonant cluster. In other words, the speakers' performance in English is explainable in terms of the phonotactics of their own variety.

3- If Cr.A does not contain initial 2 consonant clusters, it certainly contains final 2 consonant clusters which should imply that the production of initial 2 consonant clusters should not pose any difficulty for these students.

There remains the problems of whether these differences could be due to chance and, in particular, whether my original hypothesis of a high error rate in large clusters for Univ 1, which is clearly present in this data, could have arisen by chance.

The analysis is complex. Although we consider the possibility that each university or sex has its own measurable propensity for error, each student will also have his or her own ability superimposed. This would fit the standard 'analysis of variance' method if the measure being used was a fairly continuous examination mark; in this study, however, we have counted errors which are constrained to lie between 0 and 64 (for the small or large clusters) and in many cases the number of errors is close to the lower boundary.

A closer examination of the groups involved in the experiment shows a number of similarities and differences.

Initial 2 consonant clusters were discussed above (p. 179). Medial 2 consonant sequences (abutting), as expected, did not cause much of a problem to these groups either. In fact, students from Cairo made no errors at all. Students from Rabat and Jordan committed a total of 4 errors in each group. Students from Kuwait made a total of 5 errors and students from Iraq made a total of 7 errors. Table 3 (Appendix 2) shows that the total number of errors made by students in all universities was only 20. The possible number of errors each student could have made is 20. A quick multiplication (370 x 20) shows that the total number of errors that could have been made is 7400. A total of 20 is certainly only a drop in the ocean. I would also like to point out here that the tables representing medial 2 consonant sequences do not include all the lexical items within this category. Only those lexical items which the students epenthesized are included. Again, it is possible to attribute this to the fact that all the Arabic dialects discussed here permit medial 2 consonant sequences, i.e. the students' performance is English can be explained in terms of the phonotactics of their own variety.

Final 2 consonant clusters caused more of a problem to the students than initial 2 consonant clusters. Except for students from Jordan and Cairo (the former made a total of 6 errors and the latter made a total of 5 errors), the other three groups made a much higher number of errors. Iraqi students made a total of 91 errors; students from Rabat made 119 errors; and those from Kuwait made a total of 36 errors. One can perhaps relate the errors made by the Iraqi group to the fact that, as described in Chapter Three, IA does not permit final 2 consonant clusters except in a few proper names and loan words. It is, therefore, important to note here that the respondents' performances in English is not explainable in terms of the phonotactics of their own variety. MA, for example, permits final 2 consonant clusters, yet, the students from Rabat did better on heavy clusters and worst on small clusters. It is, therefore, not strange that the students from Rabat should do well on heavy clusters. We have seen earlier that MA permits initial 3 consonant clusters. In fact MA is the only dialect of Arabic discussed here which permits this type of heavy clusters. MA also permits final 2 consonant

clusters. This being the case, then why did the students from Rabat fare so badly with regards to final 2 consonant clusters. I can only attribute this to the fact that English spelling is not very helpful in cases such as these, as most of the errors committed had to do with past participles of verbs. The students could not have had enough training with regards to this type of verb. Let us take, for example, the word 'preferred'. It was necessary to include this item within the table including final 2 consonant clusters although it is pronounced as [prɪ'fɜːd], simply because 13 students from Kuwait (3 male and 10 female) pronounced it as [prɪ'ferɪd]. This shows that when students are ignorant of the pronunciation of a word, they read it as they see it, i.e. inserting the 'orthographic r'. The errors, in such cases, are, therefore, pedagogical and not phonological/phonotactic. e.g.
'dived' is pronounced [daɪvd] and not [daɪvɪd].

The same applies to the group of students from Kuwait, although the number of errors they made was much smaller than the other two groups.

Initial and final 3 consonant clusters were particularly difficult for the Iraqi group. Tables 6 and 7 (Appendix 3) indicate the high number of errors made by this group for these types of clusters. It is true that there are phonotactic constraints on this group's phonological system, as IA does not permit initial and final 3 consonant clusters, but, except for MA (MA allows for initial 3 consonant clusters) nor do the other groups.

With regards to initial 3 consonant clusters, the group from Rabat only found difficulty with the word 'Sclerosis'. This is understandable, as the word is not in everyday usage. As regards final 3 consonant clusters, again the group from Rabat committed errors mostly, if the word was either a past participle or an unfamiliar item such as 'midst', or 'kilts'. This is shown in greater detail in Table 13 (Appendix 3).

The same applies to the groups from Jordan and Cairo. Here, one

would have expected exactly the opposite. Cr.A does not permit initial 2 consonant clusters. Phonologically, JA also does not permit initial 2 consonant clusters. One would, therefore, expect students from Cairo and Jordan to do worse than the other groups. This does not happen. If this cannot be explained in terms of the phonotactics of their own variety, then it must be explained in terms of good pedagogy.

The group from Kuwait made a high number of errors in both initial and final 3 consonant clusters, yet the error rate cannot be compared with the Iraqi results.

With regards to medial 3 and 4 consonant sequences, the results were as expected: a very high error rate. They were so high that certain words, such as 'Shakespeare's', had an 80% error rate. It is necessary to repeat that the basic cause of such errors is the phonological constraints on the native speakers' phonological system. It would perhaps take years of training to adjust such incorrect pronunciations. The students from Rabat had difficulties with two words only: 'Shakespeare's' and 'crispness'. As JA allows for medial 3 consonant sequences, one might have expected a zero error rate with regards to medial 3 consonant sequences. Again, students from this group had difficulty with the words 'Shakespeare's' and 'crispness'. A few more errors were made in the pronunciation of other words containing medial 3 and 4 consonant sequences, but these were very slight. The number of errors made by the Kuwaiti group was higher than the number committed by either the group from Rabat or Jordan but not as high as that of the Iraqi group. The number of errors committed by the group from Cairo is insignificant in comparison with the error rate of the Iraqi or Kuwaiti groups.

As expected, the error rate for final 4 consonant clusters was high among the Iraqi group. The word which carried 65% of the error rate was 'waltzed'. The same word caused 32 students in Rabat to pronounce it as [wɔ:lzɪd]. To a lesser degree, the word 'glimpsed' made 5 students to pronounce it as [glɪmpsɪd]. It is necessary to

repeat that English spelling is not very helpful and the element of ignorance cannot be ruled out. In Jordan, 12 of the group had difficulty with the word 'waltzed' and 1 with each of the words 'glimpsed' and 'instincts'. With regards to the Kuwaiti group, 25 students mispronounced the word 'waltzed'; 11 mispronounced the word 'glimpsed'; and only 5 students mispronounced the word 'instincts'. The group from Cairo had no difficulty with the word 'instincts'; 18 had difficulty with the word 'waltzed'; and 2 only had difficulty with the word 'glimpsed'.

If I am to relate these findings to the phonotactic constraints on the native speakers' phonological systems, there is consistency only within the Iraqi group. In other words, it is possible to determine from the error rate that Iraqi students apply the phonotactic constraints which are to be found in IA to L2 (in this case – English). This is why we have such a low rate of error as far as initial and final 2 consonant clusters are concerned; and a much higher rate of error with regards to the other types of clusters. In simple words, only initial 2 consonant clusters are permitted in IA and final 2 consonant clusters are found occasionally.

The other four groups did not show such consistency. For example, MA permits final 2 consonant clusters, yet the error rate was rather high for such types of clusters among the group from Rabat. Cr.A. only permits final 2 consonant clusters, yet the error rate was low throughout. One would expect the Egyptian students to do worse than the Iraqi group as far as initial 3 consonant clusters are concerned, due to the fact that Cr.A does not permit any type of initial clustering. This is, of course, contrary to IA which, at least, permits initial 2 consonant clusters. The same is true of the Jordanian group. JA permits final two consonant clusters and medial 3 consonant sequences, yet the error rate was very low as far as initial and final 3 consonant clusters, for example. The causes of such low error rate can be attributed to good teaching and a higher aptitude among these groups.

I considered two ways of estimating the chances that the observed

differences are due to random variation.

The first was the number of students making less than 3 errors in small clusters or less than 3 errors in the large cluster group. Using a χ^2 analysis, this showed that the universities could not be considered as having a homogeneous error rate for either the large or small clusters even after allowing for the different balance of males to females in each university ($\chi^2_8 > 54$; p < .001). However, the performance of each sex was almost identical in each university except university 5 where there was a clear difference between the performance of the sexes ($\chi^2_1 = 5.3$; p < .05 for small clusters; $\chi^2_1 = 10.8$; p < .01 for large clusters). Indeed, in the large clusters, although half the forty females got less than 3 errors, none of the 10 males achieved this.

The difference between university 1 and the rest of the universities is clearly, unlikely to be due to chance ($\chi^2_8 > 40$; p < .001). Despite the apparent similarity of the average number of small cluster errors between university 1 and University 2; the proportion of students with zero errors was 43% in Univ. 1 and 65 % in Univ. 2, the 95% confidence interval for the difference lies between 8% and 36% so though real, the difference could be small.

The above analysis uses a simple dichotomy of the number of errors each student made. As stated earlier an attempt to calculate the probabilities using the actual number of errors is more complex. The analysis was done using the computer programme for generalised linear models allowing for the variation between students within one university by the simplest correction for extra binomial variation given in Generalised Linear Models[13].

This analysis showed a clear difference between the sexes that was unlikely to be due to chance ($\chi^2_1 > 10$; p < .001) but that there was no evidence that the sex difference was different in each university. The only difference obtained by this more detailed analysis was to show up the sex difference, which is fairly clear in the means. By looking at Table 34 (Appendix 4), we find that average rates between

the male and female means are roughly twice for the small clusters (i.e. male respondents made twice the amount of error than their female counterparts); while for the larger clusters the figures are much more erratic, i.e. they show considerable variation between male and female subjects. This does not mean that the male respondents were better than the female respondents as far as the larger clusters are concerned. By looking at the second group of figures (for the larger clusters) female performances were better throughout, except for University 2 (Morocco), where the male students were slightly better. These figures were not as consistent as for the smaller clusters. For example, the mean number of errors for Iraq was 25.125 (males) vs. 17.667 for the females; while it was 2.068 for the males vs. 2.080 for the females in Morocco.

It can also be demonstrated by repeating the first analysis with cutoff points of 2 or less errors for small clusters and 5 or less errors for large clusters.

The difference between universities is clearly not due to chance. The difference between the sexes, however, would need a more sophisticated analysis than I have been able to present, to rule out possible chance effect on the apparent superiority of women.

In summary, the results of the experiment seem to give support to the predictions made earlier, i.e. the three null hypotheses set up at the beginning of this chapter (p. 176) have been disconfirmed by the results:

(1) There is a difference between universities in the performance of their students.

(2) There is a difference in performance between male and female students.

(3) There is a difference in the types of clusters which are subject to epenthesis.

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8. RECOMMENDATIONS AND CONCLUSIONS

The aim of the experiment carried out in this thesis was to investigate whether the problem which Iraqis, in particular, and Arabs, in general, are faced with when pronouncing English consonant clusters can be attributed to the phonotatic constraints on the Arab speakers' phonological systems.

It must be concluded from what has preceded that Arabic and English show considerable variation in the phonotactic constraints which apply to each language. In other words, Arabic and English

> "differ greatly in the range of the syllable structure
> patterns they make use of"   (Odisho, 1979, p. 205),

i.e. Arabic and English differ phonotactically.   Because of this difference, we saw the interference

> "when English assumes the status of the target language
> for native speakers of Arabic" (Odisho, 1979, p. 205).

The discussion in Chapter Seven attempted to relate experimental findings to the problem of epenthesis. It was established that most of the errors made by Arabic native speakers can be attributed to native-language phonological processes interfering in the teaching of the foreign language, in this case -English-. The results of the experiment seem to give support to these predictions. The results also showed considerable variation between subjects which cannot be attributed to phonetic constraints, as in the case of the Moroccan group. The fact that Moroccans did better on heavy clusters than on final 2 consonant clusters, cannot be explained in terms of the phonotactic-constraints criterion applied here. The results here do not match and are unexpected and therefore very interesting. They are interesting because they seem to suggest that English orthography is more of a problem to the Moroccans than for the

other groups. The experiment was also an attempt to asses the standard of English teaching in the Arab world.

Having stressed the fact that most of the errors in consonant cluster production can be attributed to the phonotactic constraints on the native speakers' (Arabic native speakers) phonological systems, one must turn to the main task which is to improve the teaching of the foreign language.

1. The factor of ignorance must not be ruled out in this discussion. I feel that most teachers, themselves, are ignorant of the fact that to split consonant clusters and sequences by means of an epethetic vowel is an error. This can be exemplified best by the pronunciation of a vary famous street with most Iraqis, namely 'Oxford Street'. Very rarely have I heard this pronounced correctly. Most prefer to call it ['ɒkɪsferd sɪt,riːt]. This does not even rule out those who have lived in the U.K. for several years.

Therefore, if teachers are made aware of their ignorance regarding pronunciations of three on more consonant clusters and sequences, I am sure this would help a great deal in correcting their pronunciations.

2. It must be mentioned that English spelling is not very helpful to the foreign learner. Best examples are from past tense and past participles of verbs. Because Arabic is pronounced as it is written, it is difficult to explain to an Arabic-speaking student why 'helped' is pronounced [helpt]. Yet, the student must be taught how to prounounce this correctly.

3. Odisho (1979, p. 209) writes:

> "The placement of the vowel before the first element of
> the two-element clusters and before the second element
> of the three-element clusters, which is absolutely valid
> for all the syllable-initial clusters of English, indicates
> sameness in the placement of the vowel with the medial

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clusters. Worded differently, there is one underlying rule which governs the assigning of the place of the vowel in both the initial and the medial clusters: the vowel is placed after the second element of the cluster from the right".

From the results achieved here, we have seen that this is not applicable in all cases. In other words, and contrary to what Odisho has postulated above, some students did split the clusters differently. Thus his suggestion that the students should be

"trained to master the correct production of the two-element clusters then much of the difficulty in producing the three-element and the four-element clusters in all positions would possibly be avoided. In other words, much of the teacher's efforts would then be geared towards enabling the students to master clusters of two elements".

This is questionable. How do you group the three-element clusters? Would it be C_1 + C_2 or C_2 + C_3? Again, we saw that from the results achieved, 2-element clusters were rarely problematic, i.e. they were pronounced without difficulty. I do not see any benefit from training the students with that aspect which does not cause any problems. I feel that 3 and 4 element clusters must be tackled as a whole. Students should be trained to pronounce /str../, /spl../, /skl../, etc., as a unit.

4. A course in phonology, to include phonotactics, should be added to the syllabus in all universities in Iraq. Till now, courses in general phonetics are taught. They include reading and writing of the IPA, stress, intonation etc. No phonology is taught to undergraduates. This being the case, generalizations from other contexts in L_2 are bound to occur.

For example, the 'ed' in 'education' is pronounced as [ed] ; while the 'ed' in 'helped' is pronounced as [t]. Such phonological

differences are difficult for a foreign learner to differentiate, especially if that learner has a limited knowledge of the phonology of L2.

The above (i.e. paragraphs 1-4) points towards means of predicting sources of error. It should, however, be pointed out that native speakers' phonological systems should not in themselves be necessarily thought of as the only explanation for, or justification of, errors in the foreign language concerned. Thus, awareness of native language constraints would, among other things, help learners avoid errors as those observed and documented in this thesis.

5. Special courses should be administered throughout the land to teachers of English. We have had such courses previously. To the best of my knowledge, IDELTI (the Institute for the Department of English Language Teaching in Iraq) which was established in 1971 to identify Iraqis English language needs, has set up courses for secondary school teachers of English which include, among others, English pronunciation courses. These include topics such as intonation and stress. They do not include the phonotactics of English, for example, which I believe they should in order to make teachers aware of their faults. These phonetic sessions need to be geared to serve the actual needs of the practising teacher.

6. Primary school teachers must not be forgotten in this discussion as the majority of them lack initial training, apart from short-in-service courses (Al-Chalabi, 1975). Because of their inadequacy to communicate in English, their pupils pick up their faulty English, which is usually difficult to remedy in later years. There should be a one-one correlation between theoretical and practical training.

7. Funds must be invested, to promote the better training of professional teachers of English who have themselves already undergone concentrated theoretical programmes in this field. Students and teachers should be given the chance to spend at least one term at a British University, as was done for a couple of years

at the University of Basrah. These visitors should undergo special training in pronunciation. Although such financial implications will be hard to meet as Iraq is rapidly picking up its economy after eight years of war, I am sure most teachers will welcome to self-finance a compulsory short course in English in an English speaking country (most probably Britain) during the summer vacations.

8. Research into foreign language learning errors should be encouraged.

9. Updating the language laboratories with specific types for the recognition and production of the difficult clusters and sequences under investigation. Professional readings should be encouraged in these laboratories and students should hear their own reading and their errors pointed out to them by the teachers.

10. I cannot rule out the importance of social clubs in foreign language teaching. As tourism has not been encouraged in Iraq as yet, Iraqis have had little contact with English-speaking people. Although many Iraqis do come to Britain, their main interest is shopping. They never or very rarely attend cinemas or theatres. They usually come in groups and prefer to keep to themselves. Thus, if social clubs are introduced in which games are encouraged and films are shown or even excerpts from plays are acted - all in English of course - these would, undoubtedly, help the teachers and students to imporve their command of English.

In conclusion, this thesis has been concerned with the problem Arabic native speakers are faced with when confronting English consonant clusters. The research has shown that the cause of these problems lies mainly with the phonotactic constraints on the native speakers' phonological systems. Other possible sources of error have also been identified. They include English orthography, unawareness of the phonology of the target language, as well as bad pedagogy.

1.

/ḍ/: A voiced dental plosive occurs in the colloquial speech of some Christians in Iraq which is allophonic with /ð/.

2.

The term 'English' refers to RP in this thesis.

3.

Speakers of English usually add a vowel to pronounce a consonant cluster beginning with /ŋ/. Thus /ŋ'kɒmɔ:/ becomes /əŋ'kəʊməʊ/.

4.

/ʒ/ occurs initially in a few foreign borrowings, e.g. gigolo, Zhivago.

5.

"'Pause Form' is a grammatical term particular to Arabic. It indicates the omission of the final inflectional endings: the -u, -i. and -a and the -un and -in. The only exception is -an, which becomes -aa rather than dropping entirely. In addition, -atun, -atin, and -atan become -ah in pause form" (Al-Ani and May, 1979, p. 124).

6.

It was during the first years of the British Administration, after the First World War, that English was introduced in Iraq. At first, English was taught as a second language starting from the first year of primary education. This was changed later on and teaching English was reduced by 4 years and made into a foreign language.

7.

The schooling system followed in Iraq consists of three stages: primary, intermediate and secondary. The primary stage consists of class I-VI (ages 6-12); the intermediate stage consists of class I-III (ages 12-15); and the secondary stage consists of class I-III (ages 16-18) also.

8.

To be distinguished from another college in the University, namely the College of Education, where there is another independent department of English.

9.

As above, to be distinguished from the College of Arts, University of Baghdad.

10.

Since 1972 the College of Arts has been following a Course system. After a period of a minimum four to a maximum six academic years, students graudate with a B.A. in their specialised subjects. There are four departments, namely: Arabic, English, History, and Geography. "The aim of the (English) Department is to prepare students culturally, technically and professionally to specialise in one of the foreign languages (English at present) by mastering various language skills of English, by studying all the aspects and the various approaches to its literature, and by developing their ability to appreciate the aesthetic aspects of these literary works and to analyse and criticise them" (University of Basrah Prospectus, 1980, p. 46, parenthesis mine). During this time, students should collect credit hours in accordance with the programme set for them in order to graduate.

11.

Students in the College of Arts, University of Rabat, graduate with a B.A. after following a four-year specialised subject course.

12.

I would like to point out here that the English laboratory in the English Department, College of Arts, University of Basrah was easy for me to operate. The reason is that I taught in the Department for three years previously and had used the lab there during two courses in 'Conversation'.

13.

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APPENDIX 1

TABLES 1-2

INITIAL 2 CONSONANT CLUSTERS IN IA

	p	b	t	d	ṭ	k	g	q	ʔ	tʃ	dʒ	f	θ	ð	ð̠	s	z	ṣ	ʃ	χ	ɣ	ħ	ʕ	h	m	n	l	ɫ	j	ɾ	w
p	x	x	x													x	x								x	x	x		x		
b		x	x	x	x	x	x			x	x			x		x	x	x	x	x	x				x	x	x		x	x	
t	x	x	x			x	x	x	x							x			x	x	x	x	x	x	x	x	x		x	x	x
d		x	x								x						x			x			x	x	x	x	x	x		x	x
ṭ		x		x						x		x						x	x				x		x	x	x		x	x
k		x	x		x						x					x			x			x	x	x		x	x
g		x	x			x						x				x			x			x	x	x		x	x	x
q		x	x				x									x						x	x	x		x
ʔ		x	x					x														x	x	x		x
tʃ		x	x					x			x					x			x			x	x		x
dʒ		x								x					x			x	x	x	x	x		x		x
f		x	x				x		x	x	x				x		x	x	x		x	x	x		x	x
θ		x								x								x	x		x
ð		x						x		x							x	x		x
ð̠		x						x		x				x		x		x	x		x
s		x	x		x									x		x	x		x	x	x		x	x	x
z		x													x		x	x	x	x	x		x
s̠		x	x	x	x					x			x	x	x	x		x	x		x
ʃ		x	x	x	x	x				x			x	x		x	x		x		x
χ		x	x						x		x		x	x		x	x	x		x	x
ɣ		x	x	x	x									x		x		x	x	x		x
ħ		x	x	x	x			x	x			x	x		x		x	x	x		x	x	x
ʕ		x	x			x	x					x	x		x		x	x	x		x	x
h		x	x	x					x			x		x		x	x	x	x		x
m		x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
n		x	x	x	x		x	x	x	x	x	x	x	x	x		x	x	x	x	x		x
l	x	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x	x	x	x	x	x		x
ɫ																															
j	x	x	x	x	x	x		x		x	x	x	x		x	x		x	x	x	x	x		x	x	x		x	x
ɾ	x	x	x	x	x	x	x	x		x	x	x		x	x		x	x		x	x	x	x	x	x		x	x	x
w	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x		x	x	x	x		x	x	x

TABLE 1

209

FINAL 2 CONSONANT CLUSTERS IN IA

	p	b	t	d	ṭ	k	g	q	ʔ	tʃ	dʒ	f	θ	ð	ð̣	s	z	ṣ	ʃ	χ	ɣ	ḥ	ʕ	h	m	n	l	ɫ	j	ɾ	w
p																														x	
b		x																							x	x	x				
t			x										x	x		x			x	x		x			x					x	
d				x										x											x				x	x	
ṭ					x																										
k						x										x															
g							x																		x						
q								x																						x	
ʔ																															
tʃ										x															x						
dʒ											x														x					x	
f												x														x				x	
θ													x															x			
ð														x																	
ð̣															x														x			
s	x			x		x						x				x			x						x				x	x	
z												x					x								x	x			x		
ṣ																		x							x	x					
ʃ																			x												
χ																				x											
ɣ																					x										
ḥ				x																		x									
ʕ																							x								
h																															
m																									x	x					
n																										x	x				
l																											x	x			
ɫ																												x	x		
j																													x	x	
ɾ																														x	
w																															

TABLE 2

APPENDIX 2

TABLE 3

IDENTITY	SUBJECTS M/F	UNIV.	M2	F2	I3	F3	M3+4	F4
001	2	1	00	01	05	03	07	02
002	1	1	00	01	19	07	08	02
003	2	1	00	00	03	01	04	00
004	1	1	00	03	06	08	03	00
005	1	1	00	00	20	03	08	00
006	2	1	00	01	10	05	10	01
007	2	1	00	01	16	04	06	00
008	1	1	00	00	06	03	03	00
009	2	1	00	00	21	05	08	02
010	2	1	00	00	15	06	06	01
011	1	1	00	02	08	03	04	01
012	1	1	00	00	12	07	05	01
013	1	1	00	02	18	04	06	00
014	1	1	00	01	02	02	04	00
015	2	1	00	00	00	00	01	01
016	2	1	00	02	04	08	09	01
017	1	1	01	04	19	13	11	02
018	2	1	00	00	20	09	11	02
019	2	1	00	01	12	02	04	01
020	2	1	00	00	06	07	03	02
021	2	1	00	00	06	03	07	01
022	2	1	00	00	15	05	09	02
023	2	1	00	00	10	03	06	01
024	1	1	00	01	09	05	07	01
025	1	1	00	01	09	03	06	01
026	2	1	00	00	04	02	05	01
027	2	1	00	01	20	05	09	00
028	2	1	00	00	03	04	04	01
029	1	1	00	01	19	07	09	01
030	1	1	00	03	18	07	09	02
031	2	1	00	00	02	04	04	01
032	1	1	00	00	21	09	13	01
033	1	1	00	00	12	05	09	01
034	1	1	00	00	11	04	03	01
035	1	1	00	02	19	08	09	01
036	2	1	00	00	03	03	01	00
037	2	1	00	00	01	02	00	00
038	1	1	00	03	22	14	14	03
039	2	1	00	00	00	00	00	00
040	2	1	00	00	01	03	03	01
041	1	1	00	00	09	04	03	00
042	1	1	00	00	21	10	12	02
043	2	1	00	02	05	07	07	01
044	1	1	00	14	05	17	06	02
045	2	1	01	01	04	06	08	03
046	2	1	01	00	01	05	04	02
047	2	1	00	01	11	00	04	01
048	2	1	00	02	07	00	04	01
049	2	1	00	00	07	07	06	01
050	1	1	00	00	08	05	05	01
051	2	1	00	00	00	02	03	01
052	2	1	00	00	16	03	03	02

053	2	1	00	00	04	05	03	02
054	2	1	00	01	08	02	05	01
055	2	1	00	00	05	04	03	00
056	2	1	00	00	19	06	04	00
057	2	1	00	02	03	06	01	02
058	2	1	01	00	06	09	07	01
059	2	1	00	01	18	05	05	01
060	2	1	00	02	06	07	03	01
061	1	1	00	04	19	09	11	02
062	2	1	00	01	06	04	05	01
063	2	1	00	02	03	02	01	00
064	1	1	01	01	07	07	05	01
065	2	1	00	01	05	06	03	01
066	2	1	00	02	06	07	07	02
067	1	1	01	03	20	09	05	02
068	1	1	00	02	00	07	07	00
069	1	1	00	00	11	03	03	01
070	2	1	00	02	03	06	02	01
071	2	1	00	02	12	02	03	03
072	2	1	00	02	16	14	06	02
073	1	1	00	00	21	02	09	01
074	1	1	00	01	05	05	06	00
075	1	1	00	00	17	04	08	01
076	1	1	01	03	15	07	08	01
077	1	1	00	00	19	02	07	00
078	1	1	00	01	02	04	05	01
079	2	1	00	02	12	05	10	01
080	2	1	00	01	17	04	07	01
081	1	1	00	01	11	05	07	02
082	2	1	00	02	06	03	03	03
083	1	1	00	00	06	00	02	01
084	2	1	00	01	02	05	05	00
085	2	1	01	00	01	02	06	00
086	1	1	00	02	12	04	12	01
087	2	1	00	01	14	06	05	03
088	2	1	00	00	02	06	05	01
089	1	1	00	01	10	05	05	00
090	1	1	00	02	00	01	01	00
091	2	1	00	00	04	04	06	01
092	1	1	00	00	01	00	00	00
093	2	1	00	00	01	01	01	00
094	2	1	00	02	03	04	07	02
095	2	1	00	00	02	03	02	00
096	2	1	00	00	13	03	03	01
097	2	1	01	00	04	07	05	01
098	2	1	00	02	03	04	03	00
099	1	1	00	00	10	03	05	01
100	2	1	00	01	09	00	08	00
01	1	2	00	00	00	00	00	00
02	1	2	00	00	00	00	00	00
03	1	2	00	00	00	02	00	01
04	2	2	01	00	00	00	00	00
05	2	2	00	00	00	00	01	00
06	1	2	00	06	00	03	02	01
07	1	2	00	01	00	00	01	00

08	2	2		00	00	00	02	02	00
09	2	2		00	01	01	01	01	01
10	1	2		00	00	00	00	00	00
11	2	2		00	00	00	02	00	01
12	2	2		00	00	00	01	00	01
13	2	2		00	00	00	02	00	01
14	2	2		00	00	01	00	01	00
15	2	2		00	00	00	00	00	00
16	1	2		00	04	00	05	02	01
17	1	2		00	00	00	01	00	00
18	2	2		00	00	00	00	01	00
19	2	2		00	00	00	00	00	00
20	1	2		00	00	00	00	00	00
21	1	2		00	00	00	00	00	00
22	2	2		00	06	00	07	02	01
23	2	2		00	00	00	04	00	00
24	1	2		00	02	00	00	01	00
25	1	2		00	05	00	04	00	02
26	2	2		00	06	01	04	00	02
27	1	2		00	00	00	00	00	00
28	2	2		00	00	00	00	00	01
29	2	2		00	00	00	00	00	00
30	1	2		00	03	00	01	00	00
31	1	2		00	00	01	00	01	00
32	1	2		00	02	00	00	00	01
33	1	2		00	00	01	00	00	00
34	1	2		00	00	00	01	00	00
35	2	2		00	01	01	00	00	00
36	2	2		00	00	00	00	00	00
37	2	2		00	00	01	00	00	00
38	2	2		00	00	00	00	00	00
39	2	2		00	00	00	03	00	00
40	2	2		00	00	01	01	00	00
41	1	2		00	00	01	00	00	00
42	1	2		00	00	00	00	00	00
43	1	2		00	06	01	03	00	01
44	1	2		00	00	00	00	00	00
45	1	2		00	02	00	01	00	01
46	2	2		00	00	00	00	01	01
47	2	2		00	00	00	00	00	00
48	1	2		00	06	01	05	01	01
49	2	2		00	00	00	00	01	01
50	1	2		00	00	00	01	01	01
51	2	2		00	00	00	00	00	00
52	1	2		00	00	00	00	00	00
53	2	2		00	00	00	01	00	00
54	2	2		00	00	00	00	00	00
55	2	2		00	00	00	00	00	00
56	1	2		00	00	00	03	00	01
57	1	2		00	00	00	01	00	01
58	1	2		00	00	00	00	00	00
59	1	2		00	00	00	02	00	00
60	2	2		00	02	00	01	01	00
61	1	2		00	01	00	00	00	00
62	1	2		00	00	01	01	00	00
63	1	2		00	00	00	00	00	00

64	2	2	00	00	00	00	01	00
65	2	2	00	01	00	01	00	00
66	2	2	00	00	00	03	01	01
67	2	2	00	02	00	02	00	02
68	2	2	00	00	00	00	00	00
69	2	2	00	00	00	00	01	00
70	2	2	00	00	00	00	00	00
71	2	2	01	00	00	00	00	00
72	2	2	00	02	00	03	00	00
73	2	2	00	00	00	00	00	00
74	2	2	00	00	01	01	00	00
75	1	2	00	00	00	00	00	00
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79	2	2	00	06	00	05	00	01
80	2	2	00	00	00	01	00	00
81	1	2	00	00	00	00	00	00
82	1	2	00	04	00	00	00	01
83	1	2	00	05	00	02	01	01
84	2	2	00	01	00	02	00	00
85	1	2	01	09	00	05	00	01
86	1	2	00	02	00	00	01	00
87	1	2	00	05	01	03	00	01
88	2	2	00	06	01	01	01	00
89	2	2	00	03	00	00	01	01
90	2	2	00	07	00	06	00	01
91	2	2	00	00	00	00	01	00
92	2	2	00	00	01	03	00	00
93	1	2	00	00	00	00	01	01
94	1	2	01	09	01	06	02	02
01	2	3	00	00	00	00	00	00
02	2	3	00	00	00	01	00	00
03	2	3	00	01	00	03	01	01
04	2	3	00	00	00	02	01	00
05	2	3	00	00	00	00	00	00
06	2	3	00	00	00	01	01	01
07	1	3	00	00	00	01	00	00
08	2	3	00	00	00	00	00	00
09	2	3	00	00	00	00	01	00
10	2	3	00	00	00	00	00	00
11	1	3	00	00	01	01	01	00
12	2	3	00	00	00	02	01	00
13	2	3	01	00	00	01	00	01
14	2	3	00	00	00	00	00	00
15	2	3	00	00	01	02	00	00
16	1	3	00	00	00	00	01	00
17	1	3	00	00	00	01	00	00
18	1	3	00	00	00	02	02	00
19	2	3	00	00	00	02	01	01
20	1	3	00	00	01	01	00	00
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22	2	3	00	00	01	00	00	00
23	1	3	00	00	00	02	00	01
24	1	3	00	00	00	00	00	00

25	2	3	00	00	00	00	00	00
26	1	3	00	00	01	00	00	00
27	2	3	00	00	00	02	02	00
28	2	3	00	00	01	02	01	00
29	1	3	00	03	02	09	01	01
30	2	3	00	00	00	00	01	00
31	2	3	00	00	00	03	01	00
32	2	3	00	00	00	01	01	01
33	2	3	01	00	00	00	00	00
34	2	3	00	00	00	00	00	00
35	2	3	00	00	00	00	01	00
36	2	3	00	00	00	02	00	00
37	2	3	00	00	00	00	01	00
38	2	3	00	00	00	00	00	00
39	2	3	00	00	00	03	00	00
40	2	3	00	00	00	00	00	00
41	1	3	00	00	00	02	02	00
42	2	3	00	00	00	00	01	00
43	2	3	00	00	00	02	01	01
44	2	3	00	00	01	01	01	00
45	1	3	01	00	01	03	00	00
46	2	3	00	00	00	02	01	01
47	2	3	00	00	00	03	01	00
48	2	3	00	00	00	00	01	00
49	1	3	00	00	00	02	01	00
50	1	3	00	00	00	02	00	00
51	1	3	00	00	01	00	01	00
52	2	3	01	00	00	01	01	00
53	2	3	00	00	00	00	00	00
54	2	3	00	00	01	01	01	00
55	2	3	00	00	00	03	00	00
56	2	3	00	00	00	00	01	00
57	2	3	00	00	00	00	00	00
58	2	3	00	00	00	00	00	00
59	2	3	00	00	00	02	00	00
60	2	3	00	00	00	04	00	00
61	2	3	00	00	00	01	01	00
62	1	3	01	00	00	00	01	00
63	1	3	00	00	00	02	04	03
64	1	3	00	00	01	05	03	00
65	1	3	00	00	01	02	03	00
66	1	3	00	00	00	01	01	00
67	1	3	00	00	00	00	00	00
68	1	3	00	00	00	00	02	00
69	1	3	00	00	00	00	00	00
70	1	3	00	00	00	02	01	00
71	2	3	00	00	00	00	00	00
72	2	3	00	00	00	01	01	00
73	2	3	00	00	01	02	02	00
74	2	3	00	00	00	03	01	01
75	2	3	00	00	00	00	01	01
76	2	3	00	00	00	00	00	00
001	2	4	00	00	00	00	01	01
002	1	4	00	00	01	04	00	00
003	1	4	00	01	00	00	01	00

004	1	4	00	00	01	03	02	01
005	1	4	00	00	00	01	01	00
006	1	4	00	06	01	10	01	02
007	1	4	00	00	00	06	04	02
008	1	4	00	00	01	00	00	00
009	1	4	00	00	00	02	01	00
010	1	4	01	00	01	01	03	01
011	1	4	00	00	01	00	01	00
012	1	4	00	02	01	04	02	02
013	1	4	00	00	00	02	00	00
014	1	4	00	00	11	04	03	00
015	1	4	00	00	00	03	02	00
016	1	4	00	01	00	04	02	02
017	1	4	00	00	01	03	00	00
018	1	4	00	02	12	06	03	03
019	1	4	00	02	00	07	02	01
020	1	4	00	00	00	03	01	02
021	2	4	00	00	00	04	01	00
022	1	4	00	00	00	06	00	02
023	1	4	00	00	01	00	00	00
024	1	4	00	01	00	02	00	00
025	1	4	00	00	00	00	00	00
026	1	4	00	00	00	01	00	00
027	1	4	00	00	03	05	05	00
028	1	4	02	02	05	07	01	01
029	2	4	00	00	00	01	00	00
030	1	4	00	00	00	02	01	01
031	2	4	01	01	00	03	03	01
032	2	4	00	03	01	07	03	02
033	1	4	00	02	03	05	00	02
034	1	4	00	00	00	01	00	00
035	1	4	00	03	02	02	00	00
036	2	4	00	00	01	02	02	00
037	2	4	00	00	00	03	01	00
038	2	4	00	00	00	02	00	00
039	2	4	00	00	01	01	00	01
040	2	4	00	00	00	04	01	02
041	2	4	00	01	00	04	00	01
042	2	4	00	00	00	02	00	00
043	2	4	00	00	03	01	02	01
044	2	4	00	00	00	02	00	01
045	2	4	00	00	00	02	00	00
046	2	4	00	00	00	00	00	00
047	2	4	00	00	04	03	02	00
048	2	4	00	00	00	01	01	00
049	2	4	00	00	01	00	00	00
050	2	4	00	00	00	03	00	00
051	2	4	00	00	00	02	01	00
052	2	4	00	00	00	00	00	00
053	2	4	00	00	00	05	00	00
054	2	4	00	02	00	04	05	02
055	2	4	00	02	02	05	01	01
056	2	4	00	00	00	03	00	00
057	2	4	00	00	00	00	00	00
058	2	4	01	02	00	04	02	00
059	2	4	00	00	00	00	00	00

060	2	4		00	00	00	05	02	00
01	2	5		00	00	02	00	00	00
02	2	5		00	00	00	00	00	00
03	2	5		00	00	00	01	00	00
04	2	5		00	00	00	04	02	01
05	2	5		00	00	00	05	00	00
06	2	5		00	00	00	02	01	00
07	1	5		00	01	00	05	01	00
08	2	5		00	00	00	00	00	01
09	1	5		00	00	00	10	00	01
10	1	5		00	00	00	09	00	01
11	1	5		00	00	00	03	00	00
12	1	5		00	00	00	09	00	01
13	2	5		00	01	00	03	00	02
14	2	5		00	00	01	00	00	01
15	2	5		00	00	01	00	00	01
16	1	5		00	01	00	09	01	02
17	2	5		00	01	02	03	02	01
18	1	5		00	00	00	08	00	00
19	1	5		00	00	00	07	00	01
20	2	5		00	00	00	02	00	00
21	2	5		00	00	00	01	00	00
22	2	5		00	00	00	00	00	00
23	1	5		00	00	00	02	00	01
24	2	5		00	00	00	01	00	00
25	2	5		00	00	00	01	00	00
26	1	5		00	00	00	06	01	01
27	2	5		00	01	01	01	00	00
28	2	5		00	00	00	01	00	00
29	2	5		00	00	00	00	00	00
30	2	5		00	00	00	00	00	00
31	2	5		00	00	00	03	00	01
32	2	5		00	00	00	02	01	01
33	2	5		00	00	00	00	00	00
34	2	5		00	00	00	02	00	00
35	2	5		00	00	00	01	00	00
36	2	5		00	00	01	06	02	01
37	2	5		00	00	00	02	00	01
38	2	5		00	00	00	01	00	00
39	2	5		00	00	00	01	00	00
40	2	5		00	00	01	06	03	01

APPENDIX 3

TABLES 4-33

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
benches	/'bentʃɪz/	1	1		
departmental	/dɪpaːt'mentl/	1			
Richmond	/'rɪtʃmənd/	3			
cosmetics	/kɒs'metɪks/	1			

Table 4

FINAL 2 CONSONANT CLUSTERS (F2) IRAQ

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
crowds (1)	/kraʊdz/	1			
crowds (2) CVC VCC	/kraʊdz/	1			
daffodils	/'dæfodɪls/	1			
distressed	/dɪs'trest/				
dived (1)	/daɪvd/	21	20		
dived (2)	/daɪvd/	15	15		
increased	/ɪn'kriːst/				
preferred	/prɪ'fɜːd/				
refused	/rɪf'juːzd/	1	1		
screamed	/skriːmd/				
seemed (1)	/siːmd/				
seemed (2)	/siːmd/				
sights	/saɪts/	1			
stripped	/strɪpt/	4	5		
walked	/wɔːkt/	5			

Table 5

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
Sclerosis	/sklə'rəʊsɪs/				3
CVCC		25	30		
CCVC		9	12		
VCCC			1		
screamed	/skri:md/	23	16		
splashing	/'splæʃɪŋ/				
CVCC		30	23		
CCVC			2		
spleen	/spli:n/				1
CVCC		22	11		
CCVC		2	3		
splendid	/'splendɪd/	26	30	2	
splendour	/'splendə(r)/				
CVCC		28	26		
CCVC			1		
sprays	/spreɪz/	26	29		
spread	/spred/	29	20		
spree	/spri:/			7	16
CVCC		16	16		
CCVC		1	1		
Spring	/sprɪŋ/	33	51		
Square	/skwɛə/	30	30		1
squash	/skwɒʃ/	26	18		3
squatted	/'skwɒtəd/	30	26	1	3
straight	/streɪt/	13	7		
Strand	/strænd/	8	1		1
strawberries	/'strɔ:bri:z/	11	8	1	3
streets	/stri:ts/	10	8		
strength	/streŋθ/	17	19		1
strike	/straɪk/	16	11		
stripped	/strɪpt/	21	16		
struck	/strʌk/	14	11		1

students	/'stju:dnts/		
CVCC		2	3
CCVC			1

Table 6

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
abstracts	/'æbstrækts/			6	10
CVCC		1	1		
CCVC			1		
addicts	/'ædɪkts/			4	5
CVCC		7	4		
CCVC		2	4		
adults	/ə'dʌlts/			1	4
CVCC		5	12		
CCVC		1	2		
against	/ə'genst/	19	10		1
amidst	/ə'mɪdst/	28	40	6	13
amongst	/ə'mʌŋst/	26	30		
bulbs	/bʌlbz/				
CVCC			1		
CCVC		3	12		
costs	/cɒsts/	1	3		
desks	/desks/				
CVCC			1		
CCVC		2	4		
doubled	/dʌbld/	2			
films	/fɪlmz/				
CVCC		7	1		
CCVC		1			
gasped	/ga:spt/			2	3
CVCC			3		
CCVC		14	6		
indulged	/ɪn'dʌldʒd/				
CVCC		5	15		
CCVC		9	7		
kilts	/kɪlts/				
CVCC		2	2		
CCVC			2		
midst	/mɪdst/	30	46		
risked	/rɪskt/				
CVCC		3	2		
CCVC		12	6		

Word	Transcription			
tourists	/'tʊərɪsts/			
CVCC			1	
CCVC		2	3	
trebled	/trebld/	3	1	
twelfth	/twelfθ/	1	1	1
winced	/wɪnst/			
CVCC		2	1	
CCVC		10	1	
whilst	/waɪlst/			
CVCC		20	19	
CCVC			3	
yields	/yi:ldz/	3	5	

Table 7

225

MEDIAL 3 AND 4 ABUTTING CONSONANTS (M3 + 4) IRAQ

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
abstracts	/'æbstrækts/				
CVCCC		9	10		
CCVCC		10	13		
CCCVC			1		
children (1)	/'tʃɪldrən/	29	39		
children (2)	/'tʃɪldrən/	29	33		1
coldness	/'kəʊldnəs/	6	3		
crispness	/'krɪspnəs/				
CVCC			2		
CCVC		20	28		
displays	/dɪs'pleɪz/	19	27		
distressed	/dɪs'trest/	5	2		
expensive	/ɪks'pensɪv/	11	13		
ice-creams	/'aɪskri:ms/				
increased	/ɪn'kri:st/	22	16		
instincts	/'ɪnstɪŋkts/				
CVCC		13	8		
CCVC		3	6		
Kingston	/'kɪŋstən/	17	11	4	
Oxford	/'ɒksfəd/	11	2		
Shakespeare's	/ʃeɪks'pɪəz/	32	46	2	1
temptation	/temp'teɪʃn/			1	
CVCC		1			
CCVC		11	17		

Table 8

FINAL 4 CONSONANT CLUSTERS (F4) IRAQ

				GROSS ERRORS	
		MALES	FEMALES	MALES	FEMALES
glimpsed	/glɪmpst/				
CCVCC		7	14		
CCCVC			1		
CVCCC			1		
instincts	/'ɪnstɪŋkts/				
CCVCC		2	2		
CCCVC		2	4		
students	/'stju:dnts/				1
waltzed	/wɔ:ltst/				
CCVCC		25	40		
CVCCC			3		

Table 9

227

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
benches	/'bentʃɪz/				
departmental	/dɪpɑːt'mentl/	2	2		
Richmond	/'rɪtʃmənd/				
cosmetics	/kɒs'metɪks/				

Table 10

228

FINAL 2 CONSONANT CLUSTERS (F2) RABAT

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
crowds (1)	/kraʊdz/				
crowds (2) CVC VCC	/kraʊdz/				
daffodils	/'dæfodɪls/				
distressed	/dɪs'trest/	4	3		
dived (1)	/daɪvd/	9	7		
dived (2)	/daɪvd/	8	6		
increased	/ɪn'kriːst/	5	1		
preferred	/prɪ'fɜːd/				
refused	/rɪf'juːzd/	4	1		
screamed	/skriːmd/	10	3		
seemed (1)	/siːmd/	9	4		
seemed (2)	/siːmd/	9	5		
sights	/saɪts/				
stripped	/strɪpt/	10	9		
walked	/wɔːkt/	5	7		

Table 11

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
Sclerosis CVCC CCVC VCCC	/sklə'rəʊsɪs/	7	8	7	6
screamed	/skri:md/				
splashing CVCC CCVC	/'splæʃɪŋ/				
spleen CVCC CCVC	/spli:n/				
splendid	/'splendɪd/				
splendour CVCC CCVC	/'splendə(r)/				
sprays	/spreɪz/				
spread	/spred/				
spree CVCC CCVC	/spri:/				
Spring	/sprɪŋ/				
Square	/skwɛə/				
squash	/skwɒʃ/				
squatted	/'skwɒtəd/				
straight	/streɪt/				
Strand	/strænd/				
strawberries	/'strɔ:bri:z/				
streets	/stri:ts/				
strength	/streŋθ/				
strike	/straɪk/				
stripped	/strɪpt/				
struck	/strʌk/				

students   /'stju:dnts/
CVCC
CCVC

_____

Table 12

	MALES	FEMALES	GROSS ERRORS MALES	FEMALES
abstracts /'æbstrækts/ CVCC CCVC				
addicts /'ædɪkts/ CVCC CCVC				
adults /ə'dʌlts/ CVCC CCVC				
against /ə'genst/				
amidst /ə'mɪdst/	3	9		
amongst /ə'mʌŋst/	2	3		
bulbs /bʌlbz/ CVCC CCVC				
costs /cɒsts/				
desks desks/ CVCC CCVC				
doubled /dʌbld/		2		
films /fɪlmz/ CVCC CCVC				
gasped /ga:spt/ CVCC CCVC	6	2		
indulged /ɪn'dʌldʒd/ CVCC CCVC	11	10		
kilts /kɪlts/ CVCC CCVC				
midst /mɪdst/	3	7		
risked /rɪskt/ CVCC CCVC	11	11		

tourists CVCC CCVC	/'tʊərɪsts/				
trebled	/trebld/	2	2		
twelfth	/twelfθ/				
winced CVCC CCVC	/wɪnst/	11	8		
whilst CVCC CCVC	/waɪlst/	1	1		
yields	/yiːldz/			2	

Table 13

			MALES	FEMALES	GROSS ERRORS	
					MALES	FEMALES
abstracts CVCC CCVCC CCCVC	/'æbstrækts/					
children (1)	/'tʃɪldrən/					
children (2)	/'tʃɪldrən/					
coldness	/'kəʊldnəs/			'		
crispness CCVC CVCC	/'krɪspnəs/		5	11	3	5
displays	/dɪs'pleɪz/			1		
distressed	/dɪs'trest/					
expensive	/ɪks'pensɪv/					
ice-creams	/'aɪskri:ms/					
increased	/ɪn'kri:st/					
instincts CCVC CVCC	/'ɪnstɪŋkts/					
Kingston	/'kɪŋstən/					
Oxford	/'ɒksfəd/					
Shakespeare's	/ʃeɪks'pɪəz/		9	7		
temptation CCVC CVCC	/tem'pteɪʃn/					

Table 14

234

		MALES	FEMALES	GROSS ERRORS	
				MALES	FEMALES
glimpsed CCVCC CCCVC CVCCV	/glɪmpst/	2	3		
instincts CCVCC CCCVC	/'ɪnstɪŋkts/				
students	/'stjuːdnts/				
waltzed CCVCC CVCCC	/wɔːltst/	18	14		

Table 15

235

MEDIAL 2 ABUTTING CONSONANTS (M2) JORDAN

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
benches	/'bentʃɪz/		1		
departmental	/dɪpaːt'mentl/	1	2		
Richmond	/'rɪtʃmənd/				
cosmetics	/kɒs'metɪks/				

Table 16

236

FINAL 2 CONSONANT CLUSTERS (F2) JORDAN

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
crowds (1)	/kraʊdz/				
crowds (2) CVC VCC	/kraʊdz/				
daffodils	/'dæfodɪls/				
distressed	/dɪs'trest/				
dived (1)	/daɪvd/	2	1		
dived (2)	/daɪvd/	1			
increased	/ɪn'kri:st/				
preferred	/prɪ'fɜ:d/				
refused	/rɪf'ju:zd/				
screamed	/skri:md/				
seemed (1)	/si:md/	1			
seemed (2)	/si:md/				
sights	/saɪts/				
stripped	/strɪpt/				
walked	/wɔ:kt/	1			

Table 17

237

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
Sclerosis CVCC CCVC VCCC	/sklə'rəʊsɪs/	8	6		
screamed	/skri:md/				
splashing CVCC CCVC	/'splæʃɪŋ/				
spleen CVCC CCVC	/spli:n/				
splendid	/'splendɪd/				
splendour CVCC CCVC	/'splendə(r)/				
sprays	/spreɪz/				
spread	/spred/				
spree CVCC CCVC	/spri:/				
Spring	/sprɪŋ/	1			
Square	/skwɛə/				
squash	/skwɒʃ/				
squatted	/'skwɒtəd/				
straight	/streɪt/				
Strand	/strænd/				
strawberries	/'strɔ:bri:z/				
streets	/stri:ts/				
strength	/streŋθ/				
strike	/straɪk/				
stripped	/strɪpt/				
struck	/strʌk/				

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students   /'stju:dnts/
CVCC
CCVC

Table 18

students   /'stju:dnts/
CVCC
CCVC

FINAL 3 CONSONANT CLUSTERS (F3)   JORDAN

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
abstracts CVCC CCVC	/'æbstrækts/				
addicts CVCC CCVC	/'ædɪkts/				
adults CVCC CCVC	/ə'dʌlts/				
against	/ə'genst/				
amidst	/ə'mɪdst/	10	16	5	5
amongst	/ə'mʌŋst/	5	10		
bulbs CVCC CCVC	/bʌlbz/				
costs	/cɒsts/				
desks CVCC CCVC	desks/	1			
doubled	/dʌbld/				
films CVCC CCVC	/fɪlmz/	3			
gasped CVCC CCVC	/ga:spt/	1			
indulged CVCC CCVC	/ɪn'dʌldʒd/	1	1		
kilts CVCC CCVC	/kɪlts/				
midst	/mɪdst/	9	22		
risked CVCC CCVC	/rɪskt/	2	1		

tourists CVCC CCVC	/'tuərɪsts/		
trebled	/trebld/		
twelfth	/twelfθ/		
winced CVCC CCVC	/wɪnst/	1	
whilst CVCC CCVC	/waɪlst/	2	3
yields	/yiːldz/		

Table 19

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
abstracts CVCC CCVCC CCCVC	/'æbstrækts/	2			
children (1)	/'tʃɪldrən/				
children (2)	/'tʃɪldrən/				
coldness	/'kəʊldnəs/		1		
crispness CCVC CVCC	/'krɪspnəs/	4	6	2	4
displays	/dɪs'pleɪz/		1		
distressed	/dɪs'trest/				
expensive	/ɪks'pensɪv/				
ice-creams	/'aɪskri:ms/	1			
increased	/ɪn'kri:st/				
instincts CCVC CVCC	/'ɪnstɪŋkts/	1			
Kingston	/'kɪŋstən/	1	1		
Oxford	/'ɒksfəd/				
Shakespeare's	/ʃeɪks'pɪəz/	10	20		
temptation CCVC CVCC	/temp'teɪʃn/	3			

Table 20

| | | | | GROSS ERRORS | |
		MALES	FEMALES	MALES	FEMALES
glimpsed CCVCC CCCVC CVCCV	/glɪmpst/	1			
instincts CCVCC CCCVC	/'ɪnstɪŋkts/	1			
students	/'stju:dnts/				
waltzed CCVCC CVCCC	/wɔ:ltst/	3	9		

Table 21

243

MEDIAL 2 ABUTTING CONSONANTS (M2) KUWAIT

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
benches	/'bentʃɪz/	1			
departmental	/dɪpɑːt'mentl/	2	2		
Richmond	/'rɪtʃmənd/				
cosmetics	/kɒs'metɪks/				

Table 22

FINAL 2 CONSONANT CLUSTERS (F2) KUWAIT

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
crowds (1)	/kraʊdz/	4	1		
crowds (2) CVC VCC	/kraʊdz/				
daffodils	/'dæfodɪls/				
distressed	/dɪs'trest/				
dived (1)	/daɪvd/	4	3		
dived (2)	/daɪvd/	5	5		
increased	/ɪn'kri:st/				
preferred	/prɪ'fɜ:d/	3	10		
refused	/rɪf'ju:zd/				
screamed	/skri:md/				
seemed (1)	/si:md/	1			
seemed (2)	/si:md/				
sights	/saɪts/				
stripped	/strɪpt/				
walked	/wɔ:kt/				

Table 23

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INITIAL 3 CONSONANT CLUSTERS (I3) KUWAIT

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
Sclerosis CVCC CCVC VCCC	/sklə'rəusɪs/	7	2	3	
screamed	/skri:md/	1	1		
splashing CVCC CCVC	/'splæʃɪŋ/	3	1		
spleen CVCC CCVC	/spli:n/	3			
splendid	/'splendɪd/	1	1		
splendour CVCC CCVC	/'splendə(r)/	4	1		
sprays	/spreɪz/	2			
spread	/spred/	4			
spree CVCC CCVC	/spri:/	2			
Spring	/sprɪŋ/	9	4		
Square	/skwɛə/	3	1		
squash	/skwɒʃ/	2			
squatted	/'skwɒtəd/	2	2		
straight	/streɪt/				
Strand	/strænd/				
strawberries	/'strɔ:bri:z/				
streets	/stri:ts/				
strength	/streŋθ/	1			
strike	/straɪk/				
stripped	/strɪpt/	7	2		
struck	/strʌk/	1			

students   /'stju:dnts/
CVCC
CCVC

_____

Table 24

students   /'stju:dnts/
CVCC
CCVC

FINAL 3 CONSONANT CLUSTERS (F3)   KUWAIT

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
abstracts CVCC CCVC	/'æbstrækts/				
addicts CVCC CCVC	/'ædɪkts/	5	1		
adults CVCC CCVC	/ə'dʌlts/				
against	/ə'genst/	6	7		
amidst	/ə'mɪdst/	18	20		
amongst	/ə'mʌŋst/	8	14		
bulbs CVCC CCVC	/bʌlbz/	2			
costs	/cɒsts/	2			
desks CVCC CCVC	desks/	1			
doubled	/dʌbld/	2	2		
films CVCC CCVC	/fɪlmz/				
gasped CVCC CCVC	/gaːspt/	5	1		
indulged CVCC CCVC	/ɪn'dʌldʒd/	5	2		
kilts CVCC CCVC	/kɪlts/				
midst	/mɪdst/	15	18		
risked CVCC CCVC	/rɪskt/	5	1		

tourists CVCC CCVC	/ˈtʊərɪsts/		1
trebled	/trebld/	2	
twelfth	/twelfθ/		
winced CVCC CCVC	/wɪnst/	7	2
whilst CVCC CCVC	/waɪlst/	8	4
yields	/yiːldz/		

Table 25

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| | | MALES | FEMALES | GROSS ERRORS | |
				MALES	FEMALES
abstracts /'æbstrækts/ CVCC CCVCC CCCVC		7	7		
children (1) /'tʃɪldrən/					
children (2) /'tʃɪldrən/					
coldness /'kəʊldnəs/		1	1		
crispness /'krɪspnəs/ CCVC CVCC		3	5		
displays /dɪs'pleɪz/		5	1		
distressed /dɪs'trest/		1			
expensive /ɪks'pensɪv/					
ice-creams /'aɪskri:ms/		1	3		
increased /ɪn'kri:st/		3	1		
instincts /'ɪnstɪŋkts/ CCVC CVCC		5			
Kingston /'kɪŋstən/		5	2		
Oxford /'ɒksfəd/					
Shakespeare's /ʃeɪks'pɪəz/		9	6		
temptation /temp'teɪʃn/ CCVC CVCC		3	1		

Table 26

				GROSS ERRORS	
		MALES	FEMALES	MALES	FEMALES
glimpsed CCVCC CCCVC CVCCV	/glɪmpst/	9	2		
instincts CCVCC CCCVC	/'ɪnstɪŋkts/	2	3		
students	/'stju:dnts/				
waltzed CCVCC CVCCC	/wɔ:ltst/	16	9		

Table 27

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		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
benches	/'bentʃɪz/				
departmental	/dɪpaːt'mentl/				
Richmond	/'rɪtʃmənd/				
cosmetics	/kɒs'metɪks/				

Table 28

FINAL 2 CONSONANT CLUSTERS (F2) CAIRO

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
crowds (1)	/kraʊdz/				
crowds (2) CVC VCC	/kraʊdz/				
daffodils	/'dæfodɪls/				
distressed	/dɪs'trest/				
dived (1)	/daɪvd/	2	3		
dived (2)	/daɪvd/				
increased	/ɪn'kriːst/				
preferred	/prɪ'fɜːd/				
refused	/rɪf'juːzd/				
screamed	/skriːmd/				
seemed (1)	/siːmd/				
seemed (2)	/siːmd/				
sights	/saɪts/				
stripped	/strɪpt/				
walked	/wɔːkt/				

Table 29

	MALES	FEMALES	GROSS ERRORS MALES	FEMALES

Sclerosis /sklə'rəusɪs/
CVCC
CCVC
VCCC
                    6

---

screamed /skri:md/

---

splashing /'splæʃɪŋ/
CVCC
CCVC

---

spleen /spli:n/
CVCC
CCVC
                    3

---

splendid /'splendɪd/

---

splendour /'splendə(r)/
CVCC
CCVC

---

sprays /spreɪz/

---

spread /spred/

---

spree /spri:/
CVCC
CCVC

Spring /sprɪŋ/

Square /skwɛə/

---

squash /skwɒʃ/

---

squatted /'skwɒtəd/

---

straight /streɪt/

Strand /strænd/

---

strawberries /'strɔ:bri:z/

---

streets /stri:ts/

---

strength /streŋθ/

---

strike /straɪk/

---

stripped /strɪpt/

---

struck /strʌk/

---

students   /'stju:dnts/
CVCC
CCVC

Table 30

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
abstracts CVCC CCVC	/'æbstrækts/				
addicts CVCC CCVC	/'ædɪkts/	2			
adults CVCC CCVC	/ə'dʌlts/				
against	/ə'genst/	8	3		
amidst	/ə'mɪdst/	6	9		
amongst	/ə'mʌŋst/	4	3		
bulbs CVCC CCVC	/bʌlbz/				
costs	/cʊsts/				
desks CVCC CCVC	desks/				
doubled	/dʌbld/				
films CVCC CCVC	/fɪlmz/				
gasped CVCC CCVC	/gaːspt/	4	3		
indulged CVCC CCVC	/ɪn'dʌldʒd/	10	3		
kilts CVCC CCVC	/kɪlts/		10		
midst	/mɪdst/	10	12		
risked CVCC CCVC	/rɪskt/	8			

tourists CVCC CCVC	/'tʊərɪsts/		
trebled	/trebld/		
twelfth	/twelfθ/	2	
winced CVCC CCVC	/wɪnst/	8	
whilst CVCC CCVC	/waɪlst/	6	6
yields	/yiːldz/		

Table 31

		MALES	FEMALES	GROSS ERRORS MALES	FEMALES
abstracts CVCC CCVCC CCCVC	/'æbstrækts/	2	3		
children (1)	/'tʃɪldrən/				
children (2)	/'tʃɪldrən/				
coldness	/'kəʊldnəs/				
crispness CCVC CVCC	/'krɪspnəs/		6		
displays	/dɪs'pleɪz/				
distressed	/dɪs'trest/				
expensive	/ɪks'pensɪv/				
ice-creams	/'aɪskri:ms/				
increased	/ɪn'kri:st/				
instincts CCVC CVCC	/'ɪnstɪŋkts/		3		
Kingston	/'kɪŋstən/				
Oxford	/'ɒksfəd/				
Shakespeare's	/ʃeɪks'pɪəz/				
temptation CCVC CVCC	/temp'teɪʃn/				

Table 32

		MALES	FEMALES	GROSS ERRORS MALES	GROSS ERRORS FEMALES
glimpsed CCVCC CCCVC CVCCV	/glɪmpst/	2			
instincts CCVCC CCCVC	/'ɪnstɪŋkts/				
students	/'stju:dnts/				
waltzed CCVCC CVCCC	/wɔːltst/	6	12		

Table 33

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APPENDIX 4

TABLES 34-35

Rows: SEX : Male   1
          Female 2

Columns   : Universities:

Iraq 1   Rabat 2   Jordan 3   Kuwait 4   Cairo 5

	1	2	3	4	5	ALL
1	1.6000	1.6818	0.2083	0.8333	0.2000	1.1486
	2.4786	2.7175	0.6580	1.44.4	0.4216	2.1551
2	0.8000	0.9400	0.0769	0.4333	0.1000	0.5180
	0.8193	1.8996	0.2691	0.9353	0.3051	1.1204
A	1.1200	1.2872	0.1184	0.6333	0.1250	0.7703
L	1.7249	2.3354	0.4310	1.2208	0.3349	1.6425
L						

The first row above represents the mean number of errors for small clusters.

The second row above represents the standard deviation of the number of errors for small clusters.

	1	2	3	4	5	ALL
1	25.125	2.068	3.167	6.635	7.900	9.797
	12.111	2.654	3.199	5.928	3.107	11.890
2	17.667	2.080	1.865	4.233	2.700	6.617
	9.105	2.212	1.657	3.370	2.926	8.511
A	20.650	2.074	2.276	5.433	4.000	7.889
L	10.985	2.415	2.319	4.931	3.714	10.106
L						

The first row represents the mean number of errors for large clusters.

The second row represents the standard deviation of the number of errors for large clusters.

Table 34

	1	2	3	4	5	ALL
1	0.4000	0.6136	0.8750	0.6333	0.8000	0.6149
	0.2250	0.0455	0.0833	0.1333	0.2000	0.1284
	0.1750	0.0909	0.0000	0.1333	0.0000	0.1014
	0.2000	0.2500	0.0417	0.1000	0.0000	0.1554
2	0.4500	0.6800	0.9231	0.8000	0.9000	0.7207
	0.3000	0.1400	0.0769	0.0333	0.1000	0.1486
	0.2500	0.0600	0.0000	0.1000	0.0000	0.0946
	0.0000	0.1200	0.0000	0.0667	0.0000	0.0360
A	0.4300	0.6489	0.9070	0.7167	0.8750	0.6784
L	0.2700	0.0957	0.0789	0.0833	0.1250	0.1405
L	0.2200	0.0745	0.0000	0.1167	0.0000	0.0973
	0.0800	0.1809	0.0132	0.0833	0.0000	0.0838

CELL CONTENTS:
(Small Cluster):

Row 1 : Proportion in range 0   To   0
Row 2: Proportion in range 1.00 To   1.00
Row 3: Proportion in range 2.00 To   2.00
Row 4: Proportion in range 3.00 To 99.00

	1	2	3	4	5	ALL
1	0.0000	0.3636	0.1250	0.0333	0.0000	0.1351
	0.0250	0.2273	0.2083	0.1667	0.0000	0.1419
	0.0250	0.1364	0.2083	0.1333	0.0000	0.1081
	0.9500	0.2727	0.4583	0.6667	1.0000	0.6149
2	0.0167	0.2800	0.3077	0.1333	0.1667	0.1802
	0.0000	0.2200	0.1731	0.0667	0.3000	0.1396
	0.0167	0.1800	0.1346	0.1667	0.2000	0.1261
	0.9667	0.3200	0.3846	0.6333	0.3333	0.5541
A	0.0100	0.3191	0.2500	0.0833	0.1250	0.1622
L	0.0100	0.2234	0.1842	0.1167	0.2250	0.1405
L	0.0200	0.1596	0.1579	0.1500	0.1500	0.1189
	0.9600	0.2979	0.4079	0.6500	0.5000	0.5784

CELL CONTENTS;
(Large Clusters):

Row 1 Proportion in range 0   To   0
Row 2 Proportion in range 1.00 To   1.00
Row 3 Proportion in range 2.00 To   2.00
Row 4 Proportion in range   3.00 To 99.00

To exemplify the above:
University 4 (Kuwait), Sex 1 (Male):
63.3% had 0 error
13.3% had 1 error
13.39% had 2 errors
10%   had 3 or more errors.

Table 35