

SIBAWAYH THE PHONOLOGIST
A CRITICAL STUDY OF THE PHONETIC AND PHONOLOGICAL
THEORY OF SIBAWAYH AS PRESENTED IN HIS TREATISE
AL KITĀB

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M.A.

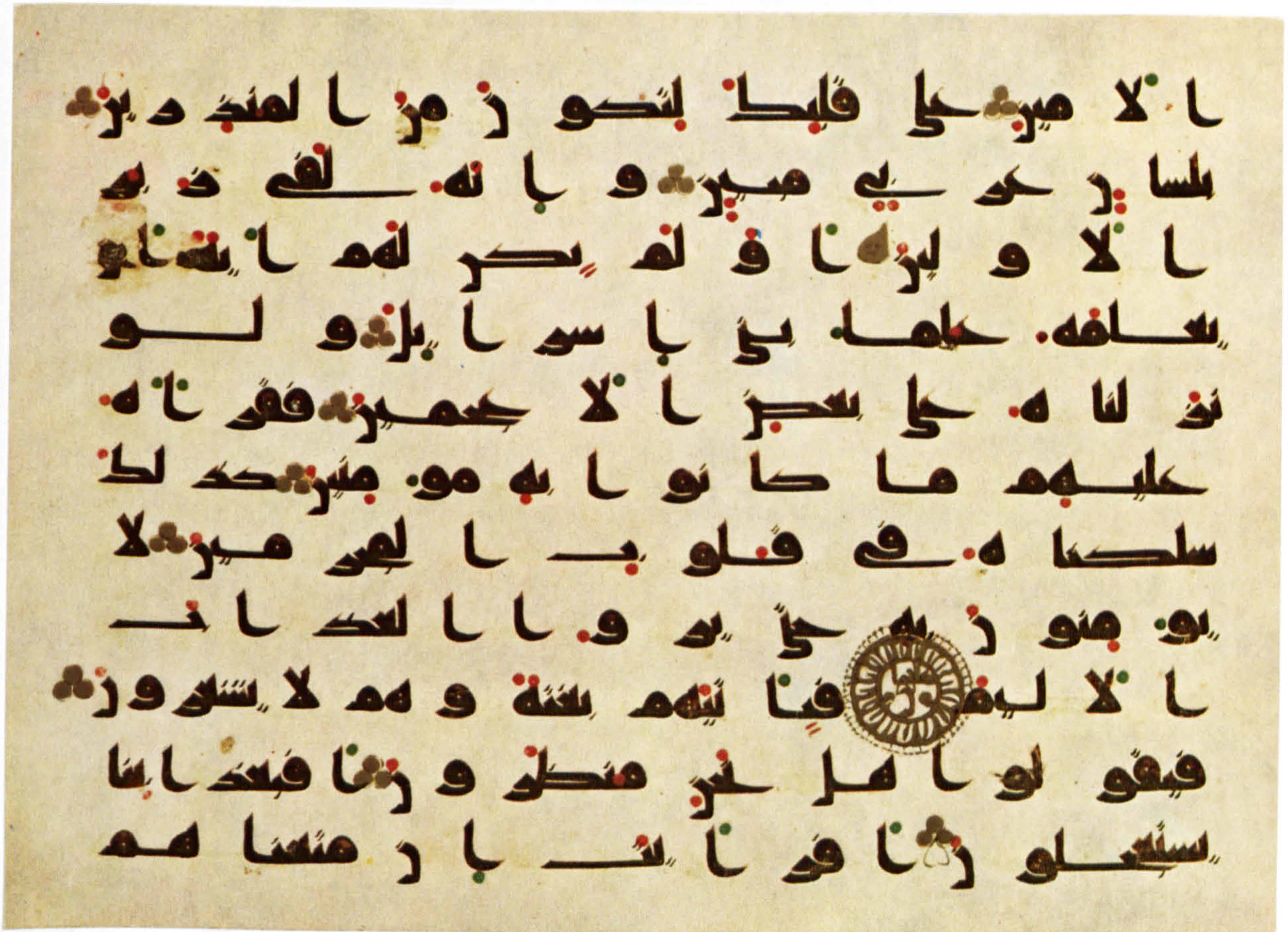
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بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ



A verse of the Qur'an written in c. 10th century A.D. This sample of Arabic orthography follows al-Du'ali's method of writing the short vowels of Arabic. British Library, Or.ms.1397 f.15 b.

DEDICATION

This work is dedicated to the memory of Sibawayh; whose contribution to Arabic linguistics has never been equalled.

CONTENTS

Acknowledgement	ix
Abstract	x
Key to symbols used in transliteration & transcription	xi
Introduction	xiii
CHAPTER ONE: HISTORICAL PERSPECTIVE	
1.1	INTRODUCTION 1
1.2	EARLY MODERN ARABIC 1
1.3	THE BEGINNING OF ARABIC GRAMMAR 4
1.4	SIBAWAYH 6
1.4.1	The Man 6
1.4.2	The Scholar 8
1.5	THE BOOK 10
1.5.1	History 10
1.5.2	Scope and Aim 11
1.5.3	Style and Method 14
1.5.4	Prestige and Influence 16
CHAPTER TWO: THE LETTERS OF ARABIC I NUMBER, PLACES OF ARTICULATION AND STATUS	
2.1	INTRODUCTION 19
2.2	CONCEPT OF THE 'ḤARF' 19
2.3	THE ḤARF AS SPEECH SOUND 21
2.3.1	The Number of Letters 21
2.3.2	Names of the Letters 21
2.3.3	The Order of the Letters 25
2.3.4	Places of Articulation 28
2.3.5	Derived Letters 37
2.3.5.1	The 'Light Nūn' 37
2.3.5.2	The Hamzah Bayna Bayn 37
2.3.5.3	-The Alifs of Imālah and of Tafkhīm 37
2.3.5.4	The Shīn Similar to the Jīm 38
2.3.5.5	The Ṣād Similar to the Zāy 38
2.3.6	Unfavoured Derived Letters 38
2.3.6.1	The Kāf Between Jīm and Kāf 39
2.3.6.2	The Jīm Similar to Shīn 39

2.3.6.3	The Weak Dād	39
2.3.6.4	The Ṭā' Similar to Tā'	40
2.3.6.5	The Dhā' Similar to Thā'	40
2.3.6.6	The Bā' Similar to Fā'	40
2.4	THE ḤARF AS SYLLABLE	40
2.4.1	Early Analysis of Syllabic Structure	40
2.4.2	Constraints on Syllabic Structure	42
2.4.3	Sibawayh's Analysis of the Syllable	44
2.4.4	Structural Forms	46
2.4.4.1	Monoliteral Forms	46
2.4.4.2	Biliteral Forms	47
2.4.4.3	Triliteral Forms	47
2.4.4.4	Quadriliteral Forms	48
2.4.4.5	Quintiliteral Forms	48
2.5	LINGUISTIC UNITS HIERARCHY	49
2.5.1	Root Forms of Arabic	49
2.5.2	Strength of Forms	51

CHAPTER THREE: THE LETTERS OF ARABIC II
PHONETIC FEATURES

3.1	INTRODUCTION	54
3.2	CONSONANT VERSUS VOWEL	54
3.2.1	Phonetic Properties of Vowels	56
3.2.1.1	- Jahr	56
3.2.1.2	- Līn	57
3.2.1.3	- Madd	58
3.2.1.4	- Short Vowels in Pause	61
3.2.1.5	Places of Articulation of Vowels	62
3.2.2	Phonological Function of Vowels	63
3.3	- MAHMŪS VERSUS MAJHŪR	66
3.3.1	- Definition of Majhūr and Mahmūs	67
3.3.2	Classification of Segments into Majhūr and Mahmūs	69
3.3.2.1	The Qāf	69
3.3.2.2	The Ṭa'	71
3.3.2.3	The Hamzah	71
3.4	SHADĪD VERSUS RIKHW	72
3.4.1	The Qāf	74
3.4.1.1	The Early Qāf /G/	74

3.4.1.2	q	74
3.4.1.3	g	75
3.4.1.4	j	75
3.4.1.5	k	75
3.4.1.6	č	76
3.4.1.7	ʔ	76
3.4.1.8	ʃ	76
3.4.2	The Kāf /k/	77
3.4.3	The Jīm /j/	78
3.4.3.1	j	79
3.4.3.2	g	80
3.4.3.3	ž	80
3.4.3.4	y	81
3.4.3.5	dy	81
3.4.3.6	gy	82
3.4.4	The Dād /ǧ/	82
3.4.4.1	ǧ	85
3.4.4.2	d	85
3.4.4.3	The 'Weak' Dād of Sibawayh	85
3.4.4.4	Explanation	85
3.4.5	The Ṭā' /ḍ/	86
3.4.6	The 'Ayn /ç/	89
3.4.7	The Lām /l/	90
3.4.8	The Rā' /r/	92
3.4.9	The Nasals Nūn /n/ and Mīm /m/	93
3.5	- MUTBAQ VERSUS MUNFATIḤ	94
3.5.1	- Definition and Description	94
3.5.2	- Velarized or Pharyngealized	96
3.5.3	- Musta'liyah	96
3.6	- MUSHRABAH and QALQALAH	97
3.6.1	Description of Qalqalah	97
3.6.2	Plain Mushrabah	99
3.6.3	Pausing on Voiceless Consonants	100
3.7	TAFASHSHĪ	101
3.8	SUMMARY	102

CHAPTER FOUR: THE CONSONANTS IN CONTEXT

4.1	INTRODUCTION	104
4.2	ASSIMILATORY PROCESSES	104
4.2.1	Idghām	104
4.2.2	Ibdāl	106
4.2.3	Ikhfā'	107
4.3	IDGHĀM IN IDENTICAL SEGMENTS	107
4.3.1	C ₁ VC ₁	108
4.3.2	C ₁ V#C ₁	109
4.3.3	- u: w - & - i: y -	111
4.3.4	The Hamzah	111
4.4	IDGHĀM IN SEGMENTS OF ADJACENT OUTLETS	112
4.4.1	The Hamzah	112
4.4.2	V̄ + C	112
4.4.3	The Semi-Vowels	112
4.4.4	The Four Consonants Mīm, Fā', Rā' and Shīn	113
4.4.4.1	/b/ & /m/	113
4.4.4.2	/f/ & /b/	114
4.4.4.3	/r/ + /l, n/	114
4.4.4.4	/š/ + /j/	115
4.4.5	Back Consonants	116
4.4.5.1	/h/ + /ħ/	116
4.4.5.2	/h/ + /ç/	116
4.4.5.3	/ç/ + /ħ/	118
4.4.5.4	/X/ + /ʃ/	118
4.4.5.5	/G/ + /k/	119
4.4.6	The Nūn /n/	119
4.4.6.1	/n/ + /ʔ, h, ħ, ç/	119
4.4.6.2	/n/ + /X, ʃ/	120
4.4.6.3	/n/ + /l, r, w, y/	120
4.4.6.4	/n/ + /m/	121
4.4.6.5	/n/ + /b/	122
4.4.6.6	/n/ + Medial Consonants	122
4.4.6.7	Phonetic Values of the Assimilative Nūn	123
4.4.7	The Lām /l/	124
4.4.7.1	The Definitive Lām	124
4.4.7.2	The non-Definitive Lām	125
4.4.7.3	The Radical Lām	126

4.5	IDGHĀM IN APICAL CONSONANTS	126
4.5.1	The Alveolar Plosives	127
4.5.1.1	/ḍ/ + / d, t /	127
4.5.1.2	/ d, t / + /ḍ/	129
4.5.1.3	/d/ + /t/	129
4.5.2	The Alveolar Sibilants / ṣ, s, z /	130
4.5.3	The Dental Fricatives / ḥ, ḥ, θ /	131
4.5.4	Combinations of Dissimilar Apical Consonants	131
4.5.4.1	Alveolar Plosive + Sibilant	131
4.5.4.2	Dental Fricative + Sibilant	134
4.5.4.3	Dental Fricative + Alveolar Plosive	135
4.5.5	The Ḍād	135
4.5.5.1	/ḍ/ + / ḥ, ḥ, θ / ; / ḍ, d, t /	135
4.5.5.2	/ḍ/ + Sibilant	136
4.5.5.3	- ḍḍ - → - lḍ -	137
4.5.6	The Shīn	137
4.5.6.1	/š/ + / ḥ, ḥ, θ / ; / ḍ, d, t /	137
4.5.6.2	/ - šd - /	138
4.5.7	The Jīm /j/	138
4.6	REMOTE PARTIAL ASSIMILATION	139
4.6.1	/s/ + /G/	139
4.6.2	/s/ + / X, ʃ /	140
4.6.3	/s/ + Muṭbaq Consonant	140
4.6.4	/s/ → /t/ in the Form / sids /	140
4.7	SUMMARY	141

CHAPTER FIVE: THE HAMZAH IN CONTEXT

5.1	INTRODUCTION	144
5.2	THE INTERVOCALIC HAMZAH	146
5.2.1	A Hamzah Between Two Short Vowels	146
5.2.1.1	- a?V -	146
5.2.1.2	- u?V -	148
5.2.1.3	- i?V -	148
5.2.1.4	Sibawayh's Account	148
5.2.2	A Hamzah Preceded by a Long Vowel	149
5.2.2.1	- a: ? V -	149
5.2.2.2	- u: ? V - & - i: ? V -	150
5.2.2.3	Explanations	150
5.2.2.4	- Ṫ ? Ṫ -	152

5.3	A HAMZAH CONTIGUOUS WITH A CONSONANT	152
5.3.1	Preconsonantal Hamzah	152
5.3.2	Postconsonantal Hamzah	153
5.3.3	Special Cases	154
5.4	TWO NEIGHBOURING HAMZAHS	155
5.4.1	Two Hamzahs Across Word Boundaries	155
5.4.1.1	- ?V# ? -	155
5.4.1.2	The Interrogative Hamzah	156
5.4.1.3	- ?# ? -	157
5.4.2	Two Hamzahs Within the Word	158
5.5	SUMMARY	158
	CHAPTER SIX: THE VOWELS IN CONTEXT	
6.1	INTRODUCTION	160
6.2	- IMĀLAH	160
6.2.1	In The Neighbourhood of Yā' and Kasrah	163
6.2.1.1	In The Neighbourhood of Kasrah	163
6.2.1.2	In The Neighbourhood of the Yā'	165
6.2.1.3	In The Neighbourhood of the Semi-Vowel Yā'	166
6.2.1.4	Separated by CVC	167
6.2.2	Influence of Underlying Structure	167
6.2.2.1	Underlying Yā'	168
6.2.2.2	Underlying Wāw	168
6.2.2.3	Underlying Medial Yā' or Wāw in Verb Forms	168
6.2.3	- Imālah in the neighbourhood of Musta'liyah	169
6.2.3.1	- Ĉ a: -	170
6.2.3.2	- a: Ĉ i -	171
6.2.3.3	- a: # Ĉ -	171
6.2.3.4	- a: C V Ĉ -	171
6.2.3.5	Influence of a Remote Ĉ	172
6.2.3.5.1	Ĉ i C a: C	172
6.2.3.5.2	Ĉ i C C a: C	172
6.2.3.5.3	C i Ĉ C a: C	173
6.2.4	Influence of the Rā' on Imālah	174
6.2.4.1	- r a: -	175
6.2.4.2	- a: r i - ; - a: r i: -	175
6.2.4.3	- a r i	177
6.2.4.4	- a: r r i -	177
6.2.4.5	- a: C i r V -	178

6.2.5	Imālah of Velar Vowels	178
6.2.6	Non-Analogous Imālah	179
6.3	- TAFKHĪM	180
6.4	VOWEL HARMONY	182
6.4.1	V.H. In Imperative Verb Forms	182
6.4.2	V.H. In Other Forms	183
6.4.3	In The Personal Pronoun /hu/	184
6.5	SUMMARY	185
	CHAPTER SEVEN: CONCLUSION: A GENERAL ASSESSMENT	
7.1	THE SOUND SYSTEM OF ARABIC	187
7.1.1	The Vowels	187
7.1.2	The Consonants	188
7.2	STRUCTURAL UNITS OF ARABIC	189
7.2.1	- Mutaharrik and Sākin	189
7.2.2	Syllabic Structure	190
7.2.2.1	Free Syllables	190
7.2.2.2	Contextual Syllables	190
7.3	PHONOLOGICAL ELEMENTS HIERARCHY	191
7.3.1	Sibawayh's View of 'Strength'	191
7.3.2	A Proposed Scale of Strength Hierarchy	193
7.3.2.1	Sound Changes	193
7.3.2.2	Assimilation	195
7.3.2.3	Elision	196
7.3.2.4	Summary	197
7.4	PSYCHOLINGUISTICS	198
7.5	SOCIOLINGUISTICS	201
	APPENDIX	204
	REFERENCES AND WORKS CONSULTED	213

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ABSTRACT

This work is a study of some aspects of Sibawayh's treatise on Arabic '*Al-Kitāb*'. It focuses on his phonetic and phonological theory and presents a critical assessment of his description of the sound system of Arabic and his views on the phonological processes that operate on the segments in different contexts.

The first chapter familiarizes the reader with the historical background of Arabic linguistic studies and the cultural context of Sibawayh's masterwork in language and its place in the history of Arabic linguistics.

His phonetic descriptions of the sound system of Arabic are discussed in Chapters Two and Three. In Chapter Two the concept of *Ḥarf* as a unit in the phonological system of Arabic is closely examined; together with the places of articulation of the segments. Chapter Three reviews Sibawayh's observations on the phonetic properties of the segments and presents a description of the historical changes in these properties as attested in modern Arabic.

The next three chapters examine and comment on Sibawayh's investigation of the assimilatory processes among the segments in different contexts and the changes in their phonetic properties as an outcome of these processes. Chapter Four deals with the consonants in various contexts; for this Sibawayh uses the term '*Al-Idghām*'. The glottal stop Hamzah, as an exception, will be dealt with separately in Chapter Five. Chapter Six deals with the vowels of Arabic in context. The process of '*Imālah*' occupies the major part of this chapter; *Tafkhīm* and vowel harmony occupy the rest of it.

Chapter Seven is a concluding assessment of Sibawayh's views in phonetics and phonology. The author's own views and comments on the topics discussed in this work will be presented. He will try to reinterpret Sibawayh's ideas in the light of modern theories in language to establish a link between traditional Arabic studies in language and modern linguistics.

KEY TO SYMBOLS USED IN TRANSLITERATION AND TRANSCRIPTION

Consonants

<u>(a)</u>	<u>(b)</u>	<u>(c)</u>	<u>(d) *</u>
ء	'	ʔ	glottal stop
		ɦ	voiced glottal fricative
هـ	h	h	voiceless glottal fricative
ح	ħ	ħ	voiceless pharyngeal fricative
ع	ʕ	ʕ	voiced pharyngeal fricative
خ	kh	X	voiceless uvular fricative
غ	gh	ɣ	voiced uvular fricative
ق	q	Q	voiced uvular stop
		q	voiceless uvular stop
كـ	k	k	voiceless velar stop
		č	voiceless palatal affricate
ج	j	j	voiced palatal affricate
		g	voiced velar stop
		ž	voiced palatal fricative
ي	y	y	voiced palatal semi-vowel
ش	sh	š	voiceless palatal fricative
ل	l	l	voiced alveolar lateral
		ɮ	voiced emphatic alveolar lateral
ر	r	r	voiced alveolar trill
		ɾ	voiced alveolar tap
ن	n	n	voiced alveolar nasal (cf. 4.4.6.7, p.123)
ض	ɖ	ɖ	voiced velarized lateral fricative (cf.3.4.4, p.83)
ط	ɗ	ɗ	voiced velarized alveolar stop
		t̤	voiceless velarized alveolar stop
د	d	d	voiced alveolar stop
ت	t	t	voiceless alveolar stop
ص	ɣ	ɣ	voiceless velarized alveolar fricative
س	s	s	voiceless alveolar fricative
ز	z	z	voiced alveolar fricative

* (a) Arabic letters; (b) Transliteration symbols;
(c) Transcription symbols; (d) Phonetic values.

<u>(a)</u>	<u>(b)</u>	<u>(c)</u>	<u>(d)</u>
ظ	dh	ð	voiced velarized interdental fricative
ذ	dh	ð	voiced interdental fricative
ث	th	θ	voiceless interdental fricative
ف	f	f	voiceless labio-dental fricative
م	m	m	voiced bilabial nasal
ب	b	b	voiced bilabial stop
و	w	w	voiced bilabial semi-vowel

Vowels

ا	a	a	short open
		e	short front half open
		o	short back half open rounded
آ	ā	a:	long open
		e:	long front half open
		o:	long back half open rounded
و	u	u	short close back rounded
		ʊ	short close central rounded
ؤ	ū	u:	long close back rounded
		ʊ:	long close central rounded
ي	i	i	short close front
		i:	long close front
ى	ī	ə	short central
		ʌ	short vowel
		Ṫ	long vowel

INTRODUCTION

To produce a thesis on Arabic linguistics is to deal with a subject that emerged as the very first field of knowledge tackled by the Arabs in the history of Islamic culture. From the outset this discipline aimed at serving the cultural needs of the new religion in the early years of the seventh century A.D. It occupied a prestigious position in society because it was intended to help Muslims read and understand their holy book the Qur'ān,

The history of this discipline was subject to various ebbs and flows. In its early days it flourished and grew quite quickly in comparison with other fields of knowledge. It is generally agreed that it reached its peak in the period of al-Khalīl al-Farāhīdī and his brilliant disciple Sibawayh, the latter rightly distinguished as the doyen of Arabic linguistics. Although the discipline continued to gain momentum during the four or five centuries to follow not much was added to what Sibawayh produced in his Book. Indeed some aspects of grammar, such as phonetics, did not witness any significant development after Sibawayh. However, within the span of five centuries, and under the impetus of his thorough treatment of every aspect of grammar and his revolutionary method of description, no fewer than fifty treatises were written to explain his work or comment on his views. From that time up to the nineteenth century no progress was made.

In the nineteenth century A.D. interest in the culture of the East attracted the attention of many Occidental scholars; and the Orientalist movement found itself busy with the rediscovery of the heritage of the world of Islām in science and arts. In the field of linguistics this movement concerned itself with the study of Classical Arabic. Many text books on language and literature were investigated, edited and published. Sibawayh's Book was published in the late part of the nineteenth century. Early in the twentieth century the German scholar Schaade (1911) published the first study made in Europe of the phonetic observations of Sibawayh. A few other scholars investigated some parts of the Book but it is still underinvestigated and it certainly deserves a better share of the attention paid to traditional works of Arabic linguistics.

On the other hand the interest of modern linguistics in Arabic followed another course. As a result of the importance given to the spoken form of language numerous works have been written about regional variants of colloquial Arabic, both by Arab and non-Arab students of linguistics. Some of the latter, concentrating on peculiarities of single dialects and having less than adequate acquaintance with Arabic, treated these dialects as if they were separate languages in their own right. The result was that some of their conclusions were mistaken, misplaced or even irrelevant. Similarly those modern Arab linguists who were trained in the west followed modern methods in language studies and showed the same interest in spoken varieties of Arabic. This is not meant to discredit their valuable work; but, with the exception of a few, they found little time to pay sufficient attention to traditional Arabic and Islamic studies in language.

In the east, meanwhile, a great number of scholars of Arabic who were well trained in Arabic traditional grammatical studies and spared no effort in this field looked on modern linguistics with some suspicion. Many of them believed that what had been achieved by the traditionalists was the optimum and some even considered any research work in the colloquial forms harmful and illegitimate.

The issue at hand is to establish new ground and create an interest in the revival of the contribution made by the early Arab grammarians to the discipline. These grammarians followed a method by which they covered thoroughly every aspect of the discipline; many of their ideas are still relevant enough to form a foundation for modern Arabic linguistics. Following modern methodology the value of this aspect of Islamic heritage should be made known to those working in the fast developing science of language.

The present study is a preliminary attempt in this direction, trying to present Sibawayh as a pioneering linguist whose theories prefigured many views of modern linguistics by some thirteen centuries. His interest in spoken forms of language could be presented as an example to be followed in modern research work on the present day linguistic situation of the Arab world.

CHAPTER ONE

HISTORICAL PERSPECTIVE

1.1 INTRODUCTION

Sibawayh presented his theories in Phonetics and Phonology in his famous treatise on Arabic known as *al-Kitāb* written in the eighth century A.D. To arrive at a fruitful appreciation of this work of linguistics and its place among the linguistic thinking of the Arabs, it might be useful to present an account of the historical and cultural background of The Book. This chapter will try to trace the early attempts in grammatical studies of the Arabs and the influence they had on Sibawayh as a linguist and on his remarkable achievement in linguistics.

1.2 EARLY MODERN ARABIC

Arabic is the language of the Arabs, an old nation who appeared in the Arabian peninsula, totalling now some 160 million people inhabiting a wide stretch of land from Arabia across the whole of North Africa. This language enjoys a considerable cultural heritage, being the language of the *Qur'ān*, the holy book of some 1200 million muslims. During the middle ages it was once the vehicle of science and knowledge.

Arabic linguistics started as early as the first century of Islām, in the seventh century A.D. The works of the early Arab linguists drew the attention of a number of orientalists in the nineteenth century. Among those orientalists were DeSacy, Fleischer, Freitag, Black, Fück, Schaade and others. Their investigations were mainly text editing and philological studies. It is only during the last four or five decades that modern linguistics started to show an interest in Arabic linguistics. Modern theories in linguistics have triggered an accelerating movement in investigating the linguistic theories of the early Arab grammarians. But still, comparatively little has been done so far.

Modern literary Arabic, or *Fuṣḥā Arabic*, can be traced to the 1st century before *Hejrah* (the sixth century A.D.). At that time different Arab tribes spoke a number of local dialects of Arabic that showed certain differences in phonology, structure and idiom (cf. Bakalla, 1975), but as basically regional variants of one and the same language. A more or less standard dialect, however, had developed and came to be used by poets and orators. This common form of Arabic was all important for the economic and cultural life of the people. Annual fairs used to be held

in Mecca during the pilgrimage seasons. At a place called *Souq Ukādh* poets and orators used to take part in competitions in which poems and speeches were delivered in that common dialect which became to be recognized by all as the High standard form of Arabic. The value of the occasion must have depended a great deal on that common variant of the language, which acquired the prestige of being worthy of the literary tradition embodied in poetry, so highly valued by the Arabs that a poet was the mouthpiece of his tribe and the symbol of its pride and prestige.

The importance of this form of Arabic is shown by the practice followed by the elite families who used to send their young to live for a number of years among certain Bedouin tribes in the heart of the desert in order to acquire the dialect of these tribes which they must have believed to be the 'pure' form of the language. The Prophet *Muhammad* himself, when a child, spent a number of years with a tribe called *Banī Sa'd* who lived in a region to the north of Mecca. It must have been believed by town dwellers that their own dialect was subject to some impurities, caused perhaps by contact with foreigners and some different Arabic dialects. The above mentioned practice might be an indication of the existence of Lower forms of Arabic among urbanized Arabs, used perhaps for less prestigious purposes in everyday life. Other evidence of the possible existence of these Low forms could be traced in the Book of Sibawayh. In many places of the Book he makes repeated references to various dialectal forms describing them as 'bad, good, acceptable or unacceptable', and ascribing them to different local communities or regions. In the chapter where he enumerates the speech sounds of Arabic he describes a number of them to be unfavoured letters (*al-Kitāb*, vol.4, p.432)*. He states that these speech sounds occur less frequently in the speech of whose Arabic is acceptable, nor are they favoured in Qur'anic recitation or poetry (*ibid.*).

It is not easy to determine how much these forms of Arabic were different from each other. As far as this work is concerned it falls outside the limits of its scope. Furthermore no record is left of the L forms which can help to compare them with the H form. The L forms were considered unworthy of rendering in writing, hence not having any

* Henceforth further references to *al-Kitāb* will be made by mentioning only the volume number and the page number.

record of them. Most probably the differences between the H and the L forms were less than those between modern spoken varieties of Arabic and the written form. On the other hand we cannot rule out the possibility that the H form was used as the first language spoken by some of the Arabs, especially the Bedouins. In the absence of formal education the H form of Arabic could only have been acquired through the most natural way of language acquisition, by exposure to it during childhood.

Broadly speaking it could be said that there were two major dialectal groups of Arabic at the time of early Islām. In the western part of Arabia, *al-Ḥijāz*, Arabic dialects shared common linguistic features and came to be known as the Arabic of Ḥijāz. One main local variant of this dialectal group is the dialect of *Quraysh*, the tribe of the prophet who inhabited Mecca. The Qur'ān is described as having been revealed to the prophet in the dialect of Ḥijāz, mainly in that of Quraysh. Consequently it came to be recognized by all Muslims as the most prestigious form of Arabic. Modern written Arabic is modelled on that dialect.

The other dialectal group is represented by variants of Arabic that used to be spoken in the eastern part of Arabia, the Arabian Gulf area and Southern Iraq. A group of tribes, broadly known as *Tamīm*, spoke a number of linguistically similar local dialects of Arabic. In his *Book* Sibawayh makes frequent references to these two major groups of dialects.

Arabic has undergone very little structural changes in its written form. It could be said that this form has continued for at least fifteen centuries. On the spoken level a number of local dialects have developed. Arabic speaking people left the peninsula and settled in new regions, from Mesopotamia to Andalusia. While these linguistically definable local dialects continued to develop naturally the written form made very little attempt to adjust to the spoken form (Bakalla, 1975). Minor differences could be traced between the original varieties of the written form, however. These are mainly on the prosodic level when the language is being orally produced, and partly in the realization of a limited number of phonemes.

On the whole, different varieties of the spoken form of Arabic dialects are showing tendencies to move towards the written form at different linguistic levels, mainly in the choice of lexical items. This could be attributed to the influence of education, the rapid disappearance of illiteracy and the effect of mass media.

1.3 THE BEGINNING OF ARABIC GRAMMAR

No work on the grammar of Arabic is known to have existed until the emergence of Islām early in the seventh century A.D. The Arabs spoke their language, said their poetry in it and understood their holy book the Qur'ān without any formal education. It was simply the H form of their first language.

1.3.1 The picture changed fairly quickly after Islām. Islām was Arabic in language but international in scope. As early as the days of the Prophet himself many non-Arabic speakers became Muslims. Mistakes in reading the Qur'ān were only too likely to be made by those people, as well as by some Arabs too (Anbāry a, p.244). Arabic acquired a new higher prestige for all Muslims. Five times a day they say their prayers in Arabic, the teachings of their new faith are recorded in it in the Qur'ān and the other teachings of their Prophet and his disciples, and it embodied the values of the faith.

The leaders of the new faith were worried about these mistakes, for some of them led to the reversing of the meaning of some of the verses of the Qur'ān. But no measures were taken towards formal teaching of the language. One typical such mistake which involves a Qur'ānic verse is read like this:

" Inna Llāha barī'un mina l mushrikīna wa rasūluhu "

(God and his messenger denounce the infidels)

It is related that during the reign of the second Khalīfah Umar one man read this verse pronouncing the last word as "*wa rasūlihi*" which rendered the meaning of the verse (God denounces the infidels and his messenger) (Aspahānī, vol.12, p.299).

Up to that time Arabic script used a number of characters, many of them stand for more than one speech sound. Short vowels had no symbols or characters. The present system of adding dots above or under the characters was not yet introduced. Arab readers must have depended on their intuition as native speakers of the language and their knowledge of the context to be able to read the script without mistakes. A very old copy of the Qur'ān is on display in the British Museum, believed to be written in the eighth century A.D., displays such characteristics. Dots are used with only a limited number of characters and there are no symbols for short vowels (No. Or 2165, ff-67v68r).

1.3.2 In the year 36 A.H. the fourth Khalīfah *The Imām 'Alī*, was in Basrah where he discussed with *'Abū al 'Aswad al Du'ali* (d.688 A.D.), one of his men whom he had appointed as the judge of Basrah, problems of misreading the Qur'ān. He is quoted as having told al-Du'ali that he was finding plenty of mistakes in the Arabic of the people in Basrah and that he thought something must be done about it (*Aspahānī* , *ibid.*; *Ibn al-Anbārī*, p.13; *al-Quftī*. vol.1, p.4).

It is also related that shortly after this encounter, the Imām *Alī* handed out to al-Du'ali four sheets which contained some description of Arabic, part of which saying " *al kalāmu kulluhu 'ismun wa fi'lun wa ḥarfun* " (all parts of speech are noun, verb and particle) (*Aspahānī*, vol.12, p.226; *al-Quftī*, *ibid.*). Al-Du'ali is described to have expounded on those notes and showed it to the Imām *Alī* who admired it and told him to carry on " *mā 'aḥsana ḥādha l naḥwa lladhī naḥawta* ". It is believed that the discipline acquired its name *naḥw* from that incident.

Few years after the death of the Imām in 40 A.H. al-Du'ali was approached by the new governor of Basrah, *Ziyād 'ibn 'Abīh*, proposing to him to write something about Arabic, evidently to teach the Muslims how to read the Qur'ān accurately. Al-Du'ali declined the offer at first, then consented later and asked to be provided with a number of scribes to work with him (*Sīrāfi*, p.12; *Ibn al- Nadīm*, p.59).

The first thing done by this scholar was to invent symbols to stand for short vowels in the script. He is quoted to instruct the scribe to watch him reading the Qur'ān and put down dots with the characters according to the shape of his mouth:

" If you find me opening my mouth with the letter put a dot above the letter; if I round my mouth put a dot in front of the letter; and if I break my mouth put a dot under the letter. If I follow the letter by nasality put two dots on the letter. "

By that, graphic symbols for the short vowels of Arabic and the tanwīn came to be used for the first time. One copy of the Qur'ān in possession of the British Library in London shows these marks in red ink against the black ink of the script (No. Or. MS. 1397, f.15b), (see p.i, above). Thus the first work of Arabic grammar was an attempt at describing the structure of the language and an accurate realization of the phonetic values of the short vowels.

1.3.3 It is not known how much else has been done by al-Du'ali on the grammar of Arabic, but he triggered an increasing interest in the discipline that produced great scholars like Farāhīdī, Sibawayh, Ibn Jinnī and scores of others. One student of al-Du'ali, Naṣr al-Laythī (d.89 A.H.) is credited with completing what al-Du'ali had started. He added small dots to the characters which made every one of them stand for just one speech sound. Later on Eesa bnu 'Umar (d.149 A.H.) is said to have written two books about the grammar of Arabic (*Al-Ikmāl and Al-Jāmi'*). No copy of any one of those two books could be found now. And then there is Farāhīdī (d.c.170 A.H.) who was the teacher of Sibawayh and had the greatest influence on him, as will be explained later. Farāhīdī is credited with the book '*kitāb al Ayn*' the first great lexicon of Arabic.

1.4 SIBAWAYH

1.4.1 The Man

He is 'Amru bnu 'Uthmān bnu Qanbar, his Kuniah is *Abū Bishr* and his Laqab is *Sibawayh*.*

He is of Persian stock, as indicated by the name of his grandfather Qanbar. But his first name and that of his father are Arabic which is an indication that they have accepted Islām early, perhaps first by his grandfather. This seems to be agreed upon to have taken place after Islām reached Western Persia in the first century of Hejrah (*Sīrāfī*, p.48). His Laqab Sibawayh became very famous during his life and more famous after his death up to the present day. No one before him is known to have been called by that name. Its form indicates that it is Persian. Its real meaning is still a matter of discussion. At the 'Sibawayh Conference' held by the Pahlavi University in Shiraz in 1974, Dr. Abd Al Mahdi Yadegari of the Tehran University argued that the name Sibawayh is a nickname which means '*Tuffāḥ Allāh*', that is (The man with the exquisite beauty whose cheeks resemble God's most beautiful apple), (K.I.H Seman, pp.xiv-xv, in Bakalla, 1975).

* A Kuniah is calling a person by a name that begins with (father of) followed by the name of his eldest son or daughter, or any other name, as a sign of respect. A Laqab is a name word that denotes some quality a person is described to possess.

Some ancient scholars suggested that the first part of his name 'sib' means (apple) and the second part 'wayh' means (scent) (Qufti, vol.2, p.360; Zubaydī, pp.73-74). He was born in Southern Persia, either in a small town called 'al-Bayḍā' or in Ahwaz (Azharī, vol.1 p.19). There is no agreed upon account of the year he was born. The year of his death is also not exactly known. In all probability he died in c.180 A.H. (796 A.D.) at the age of about forty five (Harūn, 1966, p.18). The Kufian grammarian *al-Kisā'ī* (d.183 A.H.) is known to have read Sibawayh's Book after his death. His master Farāhīdī, after whose death Sibawayh is known to have composed his Book, died in c.170 A.H. If that is to be accepted the year of his birth would be c.135 A.H. (750 A.D.) (Abu al-Ṭayyib, p.74; Sīrāfī, p.51). The place of his death is also not agreed upon. Some claim it is in Ahwaz, others say it is in Shiraz. Both places are in South Persia. According to two scholars (Zubaydī, pp.70-73 and Ḥamawī, vol.14:116) his grave is in Shiraz on which an epitaph of three lines of verse was written, believed to be by a poet called *Sulaymān ibn Yazīd al-'Adwī* (Harūn, 1966, p.19).

While he was young his family emigrated to Baṣrah where he grew up. Baṣrah, a town in Southern Iraq, was famous for its scholarly movement. It was customary at that time for non-Arab muslims to emigrate to Arab Muslim centres. The quest for knowledge of the Qurān and the new faith was a symbol of prestige and social ambition. The young boy found himself in the new environment where the pursuit of Islamic knowledge and education greatly depended on mastering Arabic, the language of the new religion. All the opportunities for knowledge were available to him and he went on wholeheartedly to acquire it.

His first tutor was *Ḥamād ibn Salāmah ibn Dīnār al-Baṣrī* from whom he learnt 'The Tradition'.* It is during this part of his life that Sibawayh decided to study Arabic. His tutor Ḥamād relates that Sibawayh, among others, was writing some sayings of the Prophet and made a mistake in writing the long vowel Alif. His tutor corrected him in a way which must have embarrassed him. When the session was over Sibawayh broke the pen and said:

" I am not going to write anything until I master Arabic"

* This term means the sayings of the Prophet Muḥammad 'Ḥadīth', which are not part of the Qur'ān.

The pride of this young man must have been deeply hurt, fortunately for Arabic linguistics, since it provided the great motivation which produced a master scholar and a masterpiece of linguistic work. Following those incidents he kept the company of his great master Farāhīdī, where he excelled (Sīrāfī, p.43; Zubaydī, p.66).

He was described by his contemporaries as a man of virtue, modesty and great appetite for knowledge. Al-Quftī described him as 'very receptive'. Farāhīdī was said to have been very fond of him. Whenever Sibawayh called on his master he welcomed him by a phrase he was never heard to say to any one else:

"...*Marḥaban bi zā'irin lā yumall...*" (Zubaydī, p.68).

(Welcome to a visitor one can never be bored with).

He must have kept the company of his master Farāhīdī most of his life as a scholar. Farāhīdī died in c.170 A.H. (786 A.D.) and Sibawayh could only have lived some ten years after that. It is during this period that he wrote his Book. Because of this strong relation between the two scholars, adding to it the distinctive character of Sibawayh, Farāhīdī felt a great attachment to his student and did not deny him any chance for knowledge (ibid.).

In appearance he was described as a very handsome person, clean and elegant with a nice looking face. He is not known to have married at all. Very little is mentioned about his personal life. His scholarly fame was the most noticeable aspect of his history.

1.4.2 The Scholar

Nothing is said about when in his life had he started at his career as a linguist. There is no doubt about Ḥamād al-Baṣrī being one of his early tutors, and this man died in 167 A.H., when Sibawayh must have been around thirty. But one of his colleagues, Ibn 'Ayshah, mentioned that they used to meet with Sibawayh in the mosque in Baṣrah and he used to be a nice looking youth who sought all fields of knowledge, and excelled in grammar in spite of his early age (Zubaydī, p.67; Quftī, vol.2, p.352). So he must have started quite early in his life.

Sibawayh was influenced by a number of scholars. He quoted many of them in his Book, frequented seminars with some of them, but was most influenced by Farāhīdī, to whom he was totally attached. The place that Farāhīdī enjoys in Arabic linguistics is undisputed. He was dedicated to knowledge and lived in poverty. Sibawayh found in him

master and friend. After the death of Farāhīdī Sibawayh must have felt the need to record what he had learnt from his master. One of his colleagues, 'Ali Ibn Naṣr Ibn 'Ali, as quoted by his son Naṣr, said that after the death of Farāhīdī, Sibawayh proposed to him to cooperate in revivng the knowledge of Farāhīdī (Zubaydī pp.77-78) .

During that period it was possible for a famous scholar like Sibawayh to make a good living by teaching the Qur'ān, Arabic and other fields of knowledge related to them. But it seems that for some reason he preferred to write the Book, rather than teach. It is possible that his pronunciation of Arabic was not quite native like. It is thought that he spoke Persian too, or had some knowledge of it (Naṣif, 1953, pp.83-85). If it is true that he was born in Persia, then it is only too likely that his pronunciation of Arabic would be influenced by Persian. Al-Zubaydī (p.67) quotes al-Farrā' to have described Sibawayh's pronunciation as not quite eloquent, *La yufṣih*.

Only three grammarians are mentioned to have been tutored by him. They are:

(a) Al-Akhfash, died in 207 A.H. (822 A.D.) or in 220 A.H.

(Rabin, 1951, p.56).

(b) Quṭrub, Abu Muḥammad al-Baṣrī, died in 206 A.H. (821 A.D.)

(c) Al-Nāshī', who is very little known.

During his lifetime two schools of linguistics began to emerge in Iraq, the school of Baṣrah with which he was identified and that of Kūfah whose most prominent scholar was al-Kisā'ī. The Kufians were more at home in the court of the Abbāsīd Empire in the second century of Hijrah. It is believed that his ambition for prestige, added to his financial difficulties, tempted him to go to Baghdad the Capital. The khalifah there was Harūn al-Rashīd. Sibawayh asked the first minister Yaḥyā al-Barmakī to arrange a meeting between him and al-Kisā'ī, the arch-grammarians of the Kufians. In this encounter Sibawayh lost the debate in what came to be known as the Zanbūriyah question (Zubaydī, pp.70-73; Ḥamawī, vol.14, p.119; Zajjājī. pp.8-10).

There is a general sentiment that it was a rigged plot, planned by al-Kisā'ī and his followers to discredit Sibawayh and the Baṣrian grammarians. Although the first minister gave him ten thousand dirhams the disappointment was too great for Sibawayh. He decided to leave Iraq for good and emigrated to Ahwāz in Persia.

It is related that on his way to Ahwāz he stopped in Basrah and met with his student al-Akhfash and told him what happened. Then he

continued his journey and settled in Ahwāz where he died a few years later (al-Baghdādī, vol.12, p.198).

The high prestige and fame he enjoyed as a scholar must have created a mixture of feelings among his contemporaries. His masters, colleagues and students loved and revered him. Others met him with jealousy and rivalry. He was accused of being unable to pronounce Arabic as well as his grammar suggests. One of those abused him for being a Persian. But on the whole he was met with awe more than with rivalry. According to Islām all muslims are equal, Arabs and non-Arabs. This is very appropriately put by the Prophet Muḥammad:

"Laysat al 'Arabiyatu minkum bi 'ummin 'aw 'abin, 'innahā llisān."
(Arabism is neither a mother to you nor a father; it is the culture)

1.4 THE BOOK

1.4.1 History

It is certain that Sibawayh composed his Book after the death of his master Farāhīdī in c.170 A.H. He is also quoted to have proposed to one of his colleagues to cooperate in reviving the knowledge of Farāhīdī (see 1.4.2 above). The first copy of the manuscript that Sibawayh wrote appeared in the possession of his student al-Akhfash shortly after his death. Many people at the time knew about the Book being composed by Sibawayh but only al-Akhfash had the chance to witness the actual process of composing it. Al-Riyāshi quoted him to say:

" Whenever Sibawayh finished a part of his Book he showed it to me..." (Abu al-Ṭayyib, p.69; Quftī. vol.2, p.350).

Nothing could be found about the specific year in which the Book was written, but it seems certain that it was finished between 170 and 180 A.H., (786-796 A.D.). Al-Kisā'ī, who died in 183 A.H., is said to have come down from Kūfah to Baṣrah to read the Book. Sibawayh is thought to have died between 180 and 182 A.H. (796-798 A.D.)

When the Book first appeared in the possession of al-Akhfash after the death of Sibawayh it had no title. So the people simply called it '*Al-Kitāb*' (The Book). It is still known by this title.

The people in Baṣrah at that time used to say " He read the Book " and it would be understood that it would be that of Sibawayh. They even called it ' the Qur'ān of grammar ', which shows how much they valued it.

There is no doubt that Sibawayh based his treatise on the knowledge of Farāhīdī. He refers to him very frequently. On the other hand no-where in the Book do we find any reference to previous books of Grammar. Only two such books are mentioned to have been written before his time, attributed to 'Eesa Ibn 'Umar, (see 1.3.3 above). The honesty of Sibawayh cannot be doubted for he quoted numerous other scholars like Yūnis, *al-Akhfash al-Akbar*, *al-Aṣma'ī* and others. He was modest enough to consult one of his students, al-Akhfash, about parts of his Book. No doubt he must have benefited from the efforts of some of his predecessors, mostly from Farāhīdī, but his unique style and the wide scope of the Book makes it difficult to claim any participation in composing it.

How much there is in the Book that belongs to Farāhīdī is not easy to determine. The two scholars had "...*equally profound but fundamentally different approach to language.*" (Carter, 1972, pp.485-496). Judging from his book *al-'Ayn* Farāhīdī put the emphasis largely on the composition of words and the establishment of word boundaries, while Sibawayh was basically interested in words as components of sentences (ibid.). No matter how much has he borrowed from his master he deserves to be credited with conceiving the unified system of the grammar of Arabic.

1.5.2 Scope and Aim

The scope of the Book and its aim are shown by its size and the area covered by its numerous sections. In its original manuscript it was described to contain one thousand pages in his own handwriting. One of his tutors, Yūnis, (d.182 A.H.) was told that Sibawayh had composed a book of grammar of one thousand pages. He asked to see the book to examine it and is said to have approved of its originality (Sīrāfī, p.48).

As mentioned above the Book had no title, nor any preface or epilogue. It is customary for a treatise written in Arabic on different fields of knowledge to begin with a few paragraphs praising God and the Prophet followed by reference to the identity of the author. At the end of the work the date and place of its completion are usually mentioned. But the Book had nothing of that. It simply starts with a section aimed at defining 'speech in Arabic':

" *Hādha bābu ma lkalimu fī l'Arabiyyah* ".

Similarly the last section is terminated just as abruptly. Either he had no time to do just that or, being one of the earliest books, it had no such precedents. According to the edition adopted for this investigation, the Book comprises 555 sections. A section or chapter is called *bāb* by Sibawayh, literally meaning 'door or gate' and idiomatically meaning 'side, section or chapter'. Each section had a title, defining the subject matter, which ranged in size from just three words for some, '*hādha bābu lhmaz*', to a paragraph-like sentence. In one instance I counted 115 words in a title of one of the sections. The size of the section also varied from four lines up to seventeen pages.

The majority of the Book deals with the structure of Arabic '*naḥw waṣarf*', which occupies the larger part of the Book. He also deals elaborately with other aspects of linguistics like Phonetics and Phonology. Phonology, Morphology and Phonetics are mainly covered in the latter part of the Book. Although there seems to be clear division of the subject matter investigated, there are frequent references and discussions of various areas in different parts. But nevertheless there are clear indications that he had a certain plan in his mind when he wrote the Book. When a point that concerns Phonetics appears while he is discussing Syntax or Morphology, he will discuss it very briefly and add that it will be fully covered later on in its own section.

The material he uses in his investigation is mainly drawn from the Qur'ān, poetry (one thousand and fifty lines of verse are cited by him as examples to the grammatical rules) and numerous Arabic utterances from different dialects of Arabic of his time. He also seems to draw upon the informal style of standard Arabic, especially in his phonetic investigation, not failing to mention dialectal variants of linguistic forms. This indicates the cultural background of the Book where the language of the Qur'ān and Arabic poetry were considered as the most acceptable model of Arabic.

He makes frequent references to other scholars, quoting some, and referring to others to substantiate what he theorizes. On the other hand he does not mention the names of some of the poets whose lines of verse he cites as examples. It is said that he abstained from saying to whom some lines belong; either they were attributed to more than one poet or they were anonymous or faked (al-Baghdādī, vol.1, p.178). He seems to be willing to avoid inconsistency and irrelevance in this respect. From his extensive coverage of the grammar of Arabic, he seems

to be aiming at a complete description of the language. His Book was described to be so complete as to be in need of no other book for comprehending it (Harūn, 1966, p.5). One old scholar, *al-Jayānī al-Andalusī* (d.417 A.H., 1008 A.D.) described the Book to be one of the three most comprehensive books ever written, the other two being the book of Ptolemy on Astronomy and Aristotle's on Logic (Ḥamawī, vol. 14, p.117).

As far as this work is concerned Sibawayh seems to have covered all possible aspects of phonetic description he can conceive of. Realizing the various phonetic processes operating on the phonemes in different phonetic environments he allots the last part of the Book to this discussion. He systematically describes the phonetic properties of all the possible segments, preparing the ground for the investigation of what happens to these segments in context, then he proceeds to deal with the phonetic investigation in an exhaustive and detailed manner, describing the phonetic operations on the segments, following the order of their places of articulation starting from the larynx in an ascending order to the lips. The present work is mainly concerned with the phonetic and phonological parts of the Book, so I cannot claim an equally wide knowledge of every part of it.

As a book of grammar it is a structural analysis of the language in a descriptive manner which attempts to analyse utterances according to their function. For him syntax is mainly a description of the function of two elements, one is the operator and the other is the operated upon, or the operation itself. The first chapter describes speech as containing noun *'ism*, verb *fi'l* and particle *ḥarf* which is neither noun nor verb. The main relation is basically between the noun and the verb. He describes the verb as a speech element derived from the noun and which describes its act (vol.1, p.12).

This system of binary classification predominates in his linguistic analysis. He analyses the equational sentence into subject *mubtada'* and predicate *ḵhabar*; operator *fā'il* and operated upon *maf'ūl*. Michael Carter (1973, pp.146ff) compares Sibawayh's method of reducing an utterance to binary units to modern Immediate Constituent Analysis. This notion will be further discussed in due course when investigating his phonetic descriptions.

To quote R.S.Wells (1947, p.81) the Book is so comprehensive as attempting an exhaustive analysis of "... *all those utterances known to occur...*". Finally the following quotation is cited by the editor in his introduction to the latest edition of the Book:

" The investigators of Arabic and those conversant in it have examined the examples and lexical items cited by Sibawayh and found out that he left out nothing except three words of the language, viz 'hundali', durdāqis and shamansīr', " (Harūn, 1966, p.7).

1.5.3 Style and Method

The first impression the reader gets from reading the Book is the unique style of its language. It is brief, at times obscure and in need of explanation. Its language makes heavy demand on the reader. Even al-Akhfash, a student of Sibawayh and the first one to teach on the Book could not claim full comprehension of its idiom. He is quoted as describing one of the expressions of Sibawayh as so difficult that:

" I have been enquiring about this since the day I was born ". Al-Mubarrad, one of his contemporaries, used to tell anybody who would want to read the Book under him:

" Have you ever attempted to sail the ocean ? " (Suyūṭī, p.366). Perhaps this implies that the Book is like the ocean, difficult to sail yet full of precious rewards to those who dare fathom its depth.

The brief and concise style of the language of the Book suggests that it was not written for the layman. More likely it is meant to be read by scholars. Reading it for the first time does not reveal much to any reader. It requires repeated readings to fully grasp the actual full meaning of its expressions. Once the reader comes to grips with the language it will become a great source of joy and the reader's appetite will be whetted for more of the jewels.

This peculiar style of Sibawayh has led many scholars to misinterpret his words. This is especially the case if the language of the Book is looked upon from a modern point of view. The Book is still very much underinvestigated, although a number of orientologists have attempted such studies. Perhaps this unique feature of its language has led to some misinterpretations. The German orientalist Schaade suggested that Sibawayh used the term *Ḥarf* (letter) to mean a consonant. Consequently he considered /a:/, /u:/ & /i:/ as 'Konsonanten' (Schaade, 1911, pp.28-29).

In another place the same author writes that Sibawayh had never attained to a clear differentiation between the air stream in itself and the sounds or noises caused by it (op.cit., p.6). This misunderstanding could be answered by referring to two expressions made by Sibawayh: 'the air of the sound' and 'the breath' on the one hand, and 'the sound of the chest' on the other (cf. Saaran, 1951, p.192).

If the contemporaries of Sibawayh had found the Book difficult we should not be surprised to find some of the modern scholars misinterpreting some of its expressions. Giving it sufficient time and effort to fathom its depth, with due consideration for the time of its composition the Book is a work of utmost coherence and consistency. Besides that, Sibawayh seems a man of solid facts who had little appetite or aptitude for rhetoric. He appears to have full belief in what he knows and says. He does not show that he feels in need of elaboration in explaining his ideas in a pedagogical manner. Probably he believed his facts needed no justification. He was not known to be a poet, which may demand an aptitude for argument and flexible handling of the language. He was known to have been the loser in debates with some of his contemporaries. According to Zubaydī (p.185), Sibawayh lost a debate with *al-Asma'ī*, which was witnessed by Yūnis who described the incident like this:

" Sibawayh was right, but the other one won the debate by his power of argumentation. "

The other debate he lost was that decisive one he had with *al-Kisā'ī* in Baghdad, after which he left Iraq for good. It was so detrimental to his life because it prompted him to take that decision; he was so dismayed with the circumstances that he lived for only a short time after that.

It is not unusual to find some men of knowledge so convinced in what they know that they feel little need to justify it or advocate its cause. Solid facts should defend and justify themselves.

The method adopted by Sibawayh in the presentation of his material is rather simple and systematic. The title of a section is like an introduction to the problem to be discussed. Then he presents the rule followed by citing examples to illustrate the operation of the rule. Then he follows that by explaining the grammatical reasons, mentions other variants to the rule and expresses his opinion about which version conforms to analogical judgement, which version is more current, less current, or least current. He seems to be aware of the

sociolinguistic implications of having more than one variant to a linguistic form. Whenever there is more than one acceptable variant to a form he does not hesitate to arrange them in hierarchical order according to the degree of their acceptability. The most acceptable variant to him is that which agrees with the language of the Qur'ān, or conforms to the dialect of Ḥijāz. These facts can only point to the influence of the cultural background of the period in which the Book was written. Without adequate appreciation of this factor the Book cannot be given its due merit.

The linguistic terminology used by Sibawayh is still widely used in modern books of Arabic grammar. How much of it can be attributed to him is difficult to determine. We have no access to the few grammatical works that preceded him. The very long titles he gives to some of the chapters suggest that linguistic terminology had not taken a stable form in his days. The influence of Farāhīdī on his terminology cannot be denied, but Sibawayh has tackled many more levels of grammar than those found in Farāhīdī's *Kitāb al-'Ayn*.

Consequently the majority of the vast amount of linguistic terminology can be attributed to him until the contrary is proven. In due course I shall attempt to find out which of the terms are his, which are not, whenever the data permits.

1.5.4 Prestige and Influence

Soon after it was known that Sibawayh had composed a very large treatise on Arabic it became the topic of the day among the grammarians. His Kūfian adversary al-Kisā'ī came all the way from Baghdad to Kūfah to read it. It was received with great admiration from his friends and students, and envy from his adversaries. The great scholar *al-Jāhidh* described it as:

"...No book of grammar like it was ever written by anybody."
(Ibn Khallakān, vol.3, p.133). He even considered it a gift suitable enough for kings (Encyclopedia of Islām, vol.iv, p.367). It was so much appreciated that people had only to call it *al-Kitāb* without having to say 'of Sibawayh'. Al-Māzinī held it so high in esteem that he said :

" Any one who wants to write a book of grammar after Sibawayh should shy off." (Ibn al-Nadīm, p.77).

The great influence of the Book on Linguistic thinking of the Arab scholars can be judged from the effects it had on subsequent

linguistic thinking. It set the pace so that all other books after it were either explanatory works on it, commentaries or followed basically the same line. Some grammarians just repeated Sibawayh's words verbatim. It is enough to mention that the notable linguist Ibn Jinnī, two centuries later, could only substantiate what Sibawayh had done. The explanation given by Sibawayh to the 'majhūr' and 'mahmūs' sounds (cf. 3.3 below) was repeated word by word by Ibn-Jinni in his famous book *Sirr Šinā'at al-I'rāb*.

Students of linguistics used to come to Iraq from places as far away as Andalusia just to study the Book.

The linguistic classes and categories by which he described Arabic are still living today in modern books of Grammar. None of the late grammarians could challenge his standard of description. His own approach was purely descriptive. He was mainly concerned with the spoken language and treated the written language as if it were a phonemic transcription of the spoken. Citing examples from the spoken language was always presented by him in this manner:

"...like your saying...or... if you say..." etc.

His extensive investigation of the phonetic processes operating on the letters in context and the subsequent changes in their phonetic properties clearly suggest that his main preoccupation was with the spoken word. Unfortunately his successors could not avoid falling in the pit of prescriptivism, except perhaps Ibn Jinnī. Alas this regrettable trend still prevails in modern works of Grammar. Probably the tendency is inherent in linguistic studies. A book of Grammar that is intended to be a description of a language at a certain stage and place, might soon be regarded by the people as instructions on the way to speak, and a normative trend is set.

The Book attracted tremendous attention from scores of linguists after Sibawayh. During 550 years there were over 51 explanatory works on the Book, interpreting it, reviewing it or commenting on it (Harūn, 1966, pp.36-41). One of the most valued explanatory works on it is that of al-Sīrāfī. It appears on the margin of the edition of the Book printed in Cairo in 1316 A.H. known as the Boulāq edition, and as footnotes in the latest edition of Abdul Salām Muḥammad Harūn which is adopted for this investigation, (four volumes, 1966-1968) and to which references will be made hereafter. Another equally important explanatory work is that of al-Rummānī, (d.384 A.H.).

In modern times the Book has drawn the attention of the orientalist movement since the second part of the nineteenth century. The French orientalist Hartuig Derenbourg edited the first modern edition (the Paris edition, 1881). Another edition was printed in Calcutta in 1887. A third edition of the Book was printed in Boulāq, Cairo, in 1889-1900. The most recent edition is that of A.S.M. Harūn mentioned above. There has been only one translation of the Book into another language. Professor Gustaf Jahn translated it into German, using the Derenbourg edition, while it was in the process of being published. This translation appeared in five volumes in 1895-1900.

Not only scholars were fascinated by the Book during and after Sibawayh's time. Even laymen appeared to have been in admiration of what he had done. Yāqūt al-Ḥamawī (vol.16, p.123) tells the following anecdote:

A man in Baṣrah asked a fishmonger about the price of a fish. The fishmonger answered: *bi dirhamān*. The man laughed because the correct answer should have been *bi dirhamayn*. The monger, offended, retorted sharply: you are a fool. I heard Sibawayh say *Thamanuhā dirhamān*, (its price is two dirhams).

What Sibawayh and his Book are worth can never be exaggerated. He had done for Arabic linguistics something that has never been surpassed by anybody.

For Arabic linguistics Sibawayh is the grammarian par excellence, and his Book is the Qur'ān of Grammar.

CHAPTER TWO

THE LETTERS OF ARABIC I

NUMBER, PLACES OF ARTICULATION AND STATUS

2.1 INTRODUCTION

In this chapter some light will be thrown on Sibawayh's concept of the 'letter' as discussed in his Book and as other scholars looked at it. More emphasis will be placed on the concept of the letter as it pertains to Phonetics, first as it is used to mean a speech sound, then as a syllable.

2.2 THE CONCEPT OF 'ḤARF'

In the opening paragraph of the section in which he discusses assimilation Sibawayh enumerates the 'Letters of Arabic' :

" Ḥādḥā bābu 'adadi ḥurūfi l'arabiyah "

(This is the section on the number of the Arabic letters) (vol.4:431). The term *Ḥarf* is used here to mean 'speech sound', as will be shown later. Before discussing the implications of this term as a speech sound I feel it is necessary to briefly survey what other concepts are covered by this term in the Book.

The immediate impression one gets when coming across this term is that it is one element in the Alphabet of a language, and which has three attributes, 'nomen', 'figura' and 'potesta' (cf. Abercrombie, 1949, pp.59 ff.). Throughout the Book very little mention is made of the figura of the letters. On the other hand, the way Sibawayh investigates the letters, as an introduction to the investigation of assimilation, indicates that he was more concerned with the 'potestas' of the letter. As mentioned above the section on assimilation starts with a paragraph that says:

" This is the section on the number of the letters of Arabic, their places of articulation, the Maḥmūs and Majḥūr (pairs), the nature of the Maḥmūs and the Majḥūr..." (ibid.).

After enumerating all the possible speech sounds of Arabic, the discussion ends by the following statement:

" ...and these letters which I had come to enumerate are forty-two in number, (including) their good ones and bad ones, the origin of all being the twenty-nine (original) letters, and they can only be realized orally..." (op.cit., p.432).

This can be taken as an indication that Sibawayh was more concerned with the spoken aspect of the 'letters'.

The second concept of 'letter' discussed in the Book is 'syllable'. In Arabic, a letter is described as 'sākin' if it is not followed by a short vowel, and 'mutaḥarrrik' if followed by a short vowel. A short vowel is grammatically termed in Arabic as 'ḥarakah' (movement). Therefore a letter followed by a short vowel is described as (moved, or moving), in other words, as CV. There might seem to be some inconsistency in those definitions because the long vowels / a:, i:, u: / are each considered a Ḥarf. This problem will be discussed later on in this chapter (see 2.4 below).

These two concepts of 'letter', as a speech sound and as a syllable will be the main topic of this chapter. Meanwhile other concepts of 'letter' will be briefly discussed below.

The third concept of Ḥarf used in the Book is 'particle'. All the prepositions are called 'ḥurūf' (pl.). In fact all constructs in Arabic which are neither noun nor verb are covered by the term Ḥarf. The very first sentence of the Book reads:

" Speech is noun, verb and particle that denotes a meaning which is neither noun nor verb." (vol.1, p.12).

The fourth concept of Ḥarf used by Sibawayh is 'word'. This usage appears in many places of the Book. Discussing the necessity of combining vowels and consonants together in a construct of Arabic, he states:

"...no Ḥarf can occur without them or parts of them (i.e long and short vowels) " (vol.3, p.544).

Numerous other examples could be found in the Book using Ḥarf to mean 'word', (vol.4, pp.166, 301, 403, etc.).

In the section where he discusses the *Hamzah*, (glottal stop), he uses the two terms *Ḥarf* and *Kalimah* both to mean 'word'. This inconsistency creates problems for the reader initially. He needs repeated readings to differentiate between where Ḥarf means 'word' and where it means 'letter'. Only through proper understanding of the context could one arrive at the exact meaning of each.

There are other meanings to the term Ḥarf. In modern Arabic it is commonly used to mean the written symbol of any of the units of the Alphabet. This sense of the term seems to be preferred by students of modern linguistics in contrast with 'speech sound' and 'phoneme'.

Sibawayh does not preoccupy himself with this sense of the term. If he ever touches upon the notion it is by implication (vol.4, pp.184-185).

Finally the term Ḥarf was also used by the Arabs to mean Dialect or a variant of speech. The Qur'ān was described as to have been revealed in seven *Aḥruf*. The prophet Muḥammad is quoted to have said that (Ibn Mandhūr). (The plural of Ḥarf is 'Aḥruf' or 'Ḥurūf').

2.3 THE ḤARF AS SPEECH SOUND

No formal definition of the Ḥarf as a speech sound could be found in the Book. Sibawayh's concept of the characteristics of this entity can only be inferred from his description of the phonetic properties of the letters. Two centuries later, Ibn Jinnī produces the following definition of Ḥarf as a speech sound:

" The Ṣawt (sound) is a phenomenon that accompanies the Nafas (breath) as long as it continues, till it encounters an obstruction in the pharynx, mouth or lips, which impedes its flow and continuity. Wherever such an obstruction occurs, a Ḥarf is realized. Letters have different properties according to the different obstructions (they encounter)." (Ibn Jinnī, a, p.2).

2.3.1 The Number of Letters

Sibawayh begins by enumerating the twenty-nine letters which he considers as the 'original letters' (vol.4, p.431). There is a correspondence between the number of these letters as speech sounds and their number as characters in the Alphabet. There are two versions of the Arabic Alphabet. An old version mainly used in certain religiously oriented local schools which are mainly concerned in teaching Qur'ānic recitation and few other subjects related to religion. This version of the Alphabet has twenty-nine characters. The version used in formal education in modern schools comprises twenty-eight characters. The difference between the two versions is that the former has separate characters for each of the long vowel /a:/ and the glottal stop /ʔ/. The first character 'Alif' representing the glottal stop Hamzah, and the one before the last, called 'Lā', represents the long vowel /a:/. Sibawayh enumerates the letters, referring to them by their nomen, starting with the Hamzah and ending with Wāw.(ibid.).

2.3.2 Names of the Letters

The following matrix shows the twenty-nine 'original' letters of

Arabic, listed in the order followed by Sibawayh. The interesting feature in the names of the letters is the correspondence between the name of each letter and its phonetic value. The first consonant in each name indicates the sound of the letter it refers to. The only exception is the Hamzah which refers to the glottal stop and the Alif.

<u>No.</u>	<u>Name</u>	<u>Phonetic value*</u>	<u>Arabic form</u>
1	Hamzah / hamzah /	ʔ	ء
2	Alif / ʔalif /	a:	ا
3	Hā' / ha:ʔ /	h	هـ
4	Ayn / ʔayn /	ʕ	ع
5	Ḥā' / ḥa:ʔ /	ħ	ح
6	Ghayn / ʕayn /	ɣ	غ
7	Khā' / xa:ʔ /	x	خ
8	Qāf / qa:f /	g *	ق
9	Kāf / ka:f /	k	ك
10	Ḍād / ḍa:d /	ḍ *	ض
11	Jīm / ji:m /	j	ج
12	Shīn / ši:n /	š	ش
13	Yā' / ya:ʔ /	y & i:	ي
14	Lām / ˈla:m /	l	ل
15	Rā' / ra:ʔ /	r	ر
16	Nūn / nu:n /	n	ن
17	Ṭā' / ṭa:ʔ /	ṭ *	ط
18	Dāl / da:l /	d	د
19	Tā' / ta:ʔ /	t	ت
20	Ṣād / ʕa:d /	ʕ	ص
21	Zāy / za:y /	z	ز
22	Sīn / si:n /	s	س
23	Ḍhā' / ḍa:ʔ /	ḍ	ض
24	Dhāl / ḍa:l /	ḍ	ض
25	Thā' / θa:ʔ /	θ	ث
26	Fā' / fa:ʔ /	f	ف
27	Bā' / ba:ʔ /	b	ب
28	Mīm / mi:m /	m	م
29	Wāw / wa:w /	w & u:	و

* The phonetic values of the letters in this matrix, especially the asterisked ones are based on their phonetic properties as described by Sibawayh.

The editor of the edition of the Book adopted for this work mentions that in two other editions he found Qāf mentioned before Kāf, while he ordered them in the opposite order (vol.4, footnote 2, p.431). I am inclined to believe that the right order is to have Qāf before Kāf, as is supported by the order followed by Sibawayh in describing the places of articulation (see 2.3.4 below).

It is noticed that, as mentioned above, the names of the letters as cited by Sibawayh are in correspondence with the phonetic values of the letters, except in two cases, the Hamzah and the Alif. The first starts with /h/ which does not represent the sound of the glottal stop, while the Alif does just that but it is used to stand for the long vowel /a:/. The following explanation might clear this contradiction. One literal meaning of the term *Hamz* is 'a strong gesture'. The sound of the glottal stop requires more muscular effort in its articulation. Sibawayh describes the articulation of the Hamzah to be:

"...like a spasm in the chest which needs some effort to produce...for it is like belching..." (vol.3, p.548).

It can be considered, therefore, that the term Hamzah describes the articulatory gesture by which the sound is produced, not the phonetic value of the letter. Ibn Jinnī, on the other hand, describes the two attributes of the Alif by saying:

"The Alif, which is the first (unit) in the Alphabet is the graphic symbol of the Hamzah." (Ibn Jinnī, b, p.46).

This opinion of Ibn Jinnī, two centuries after Sibawayh, reflects the difficulties encountered in this complicated problem of Arabic orthography. The Hamzah is written in different ways according to its position within the word. In some copies of the Qur'ān, written in the second century A.H., the character of Alif stands mostly for the glottal stop and sometimes for the long open vowel. In some cases this long vowel is not represented by any graphic symbol. To avoid confusion, an attempt was made by Naṣr Ibn 'Āṣim al-Laythī, later in the first century A.H., to give separate names and symbols for those two letters. The first name Alif was used for the glottal stop, for it begins with that sound. For the long open vowel he gave the name Lā. Because this long vowel does not have a semi-vowel correlate, like the /u:/ and /w/ both called Wāw, and the /i:/ and /y/ called Yā', it could have no name the first sound of which begins with /a:/. Arabic does not allow a vowel in initial position in an utterance. Therefore

the name *Lā* was chosen for this letter, indicating its phonetic value by its second segment /a:/. The first segment /l/ is used as a convenient initial segment in the form. The long vowel /a:/ is still not represented by a separate character in many words of modern written Arabic, as in *hādḥā* هذا (this) & *Ibrāhīm* إبراهيم (Abraham).

This might explain using the name Hamzah by Sibawayh to refer to the glottal stop. But using the name Alif to refer to the long open vowel does not point to the phonetic value of this letter. He seems to be influenced by the name of the character which, in writing, is used to present the two entities. Having called the consonant Hamzah he was left with the name Alif which he used for the vowel. Ibn Ya'īsh describes the relation between the two entities as:

"The first potestas of Alif is Hamzah, which is only called Alif because it is represented in the form of Alif... they pronounce them differently, while they have identical Figura"

(Ibn Ya'īsh, vol.3, pp.1461-1462).

Al-Sirāfī, in an explanatory note on Sibawayh, states that the Hamzah has been named Alif because it is given the figura of the Alif, mainly because the Hamzah has no character of its own and it is represented by that of other letters, (i.e. by Alif, Wāw and Yā'), (vol.1, p.13).

Farāhīdī appears to have realized the confusion caused by having one character to represent two phonetic entities, i.e. the Alif standing for two speech sounds [a:] and [ʔ]. He is credited with inventing a new graphic symbol for the Hamzah which he added to the inventory of Arabic orthography, making the number of the characters twenty nine. The symbol he invented is taken from the character of the letter Ayn (ع). He believed that the two speech sounds Ayn and Hamzah were articulated at the same place. Hence his ordering of the Arabic letters which begins with the Ayn conceiving of its place of articulation to be at the beginning of the vocal tract. Accepting these facts he derived the graphic symbol of the Hamzah from that of the Ayn. He took the upper part of the character of Ayn and used it for Hamzah which gave us the character (ء) (Ibn Durustawayh, p.56).

Unfortunately this innovation did not quite solve the problem. The new graphic symbol did not become a full fledged character. It still needs to be supported by another character in writing. When the Hamzah is followed by the short vowel /a/ it is superimposed on the Alif (أ), if followed by /i/ it is put on top of the Yā' (ي),

and if it is followed by /u/ it appears on top of the Wāw (و̣).

2.3.3 The Order of the Letters

The order in which Sibawayh arranges the letters is basically that of Farāhīdī. This system of ordering is based on the places of articulation of the letters, beginning in an ascending order from the far end of the vocal tract ending at its front end, the lips. This method of ordering the letters was not known before Farāhīdī so he deserves to be credited with introducing it.

Before Farāhīdī the system of ordering the twenty-eight letters of the Alphabet adopted by the Arabs was based on the Semitic Alphabetical system which consisted of twenty-two letters all of them consonants. The Arabs added six more letters to these twenty-two, to account for :

"...the finer shades of sounds in writing..." (Wright, 1890:41). This Alphabetical system was arranged in forms of words, each one made of three or four elements, apparently aiming at a mnemonic way of helping the learners to memorize them. The order in which the letters are arranged is basically common in the Semitic languages, whose basic twenty two letters are (ʔ b j d, h w z, ḥ ṭ y, k l m n, s ḡ f ṣ, q r ṣ̣ t). The Arabs added six more letters which are peculiar to Arabic, viz (θ x ǝ, ǧ ǧ ʕ) which makes a total of twenty-eight. It can be noticed that there are no characters for the vowels in these Alphabetical systems, notably the first one ʔ standing for the glottal stop, not the long vowel /a:/. The group of words which are made to contain these letters in the order described above are: 'ABJaD HuWaZ ḤuṬY KaLaMuN Sa'FaṢ QaRaṢaT THaKHidH ḌaḌHiGH; (the capitals stand for the letters). The phonetic values of these letters are ʔ b j d h w z ḥ ṭ y k l m n s ḡ f ṣ q r ṣ̣ t θ x ǝ ǧ ǧ ʕ respectively.

It could be noticed that this Alphabetical system, especially the smaller Semitic set of twenty-two letters, has a remarkable affinity with the Roman Alphabet. However, the scope of the present work has little spare room for investigating this relation.

During the first century of Islām and for pedagogical purposes the sequence of the letters in the Alphabet was very much altered, bringing letters of similar graphic symbols into juxtaposition, beginning, after the Alif, with the larger groups of similar symbols (of three) then the smaller groups (of two) then the dissimilar ones.

This is believed to be the work of Naṣr al-Laythī, a student of al-Du'ali (Makhzūmī, 1980, P.C.). This system is followed now in formal education and its order is as follows:

ʔ أ , b ب , t ت , θ ث , j ج , ḥ ح , x خ ,
d د , ḏ ذ , r ر , z ز , s س , š ش , ṣ ص ,
ḡ ض , ṭ ط , ḏ ظ , ʕ ع , k ك , f ف , q ق ,
k ك , l ل , m م , n ن , h ه , w/u: و , a: لا ,
y/i: ي .

It can be noticed that in this ordering system the first twenty-six units are the pure consonants of Arabic and the last three are for the three long vowels, two of them standing for the two semi-vowels too. Besides this system there is a slightly different one which comprises only twenty-eight units, missing the one before the last, leaving the first unit Alif to stand for the glottal stop and the long vowel /a:/ .

As mentioned above the order in which Sibawayh arranges the letters is basically the same as that of Farāhīdī, but not quite identical with it. The main feature of both ordering systems is to order the letters in the same sequence their places of articulation occur in the vocal tract, following an ascending order.

For the two scholars the first part of the vocal tract is the *Ḥalq*, which includes the larynx and the pharynx, up to the velum. Farāhīdī (vol.1, pp.57-58) arranges the letters as follows:

ʕ, ḥ, ḥ, X, ʔ, G, k, j, š, ḡ, ṣ, s, z, ḏ, d, t, ḏ, ḏ, θ,
r, l, n, f, b, m, a:, w/u:, y/i:, ʔ .

Sibawayh's arrangement is in the following sequence:

ʔ, a:, h, ʕ, ḥ, ʔ, X, G, k, ḡ, j, š, y/i:, l, r, n, ḏ, d,
t, ṣ, z, s, ḏ, ḏ, θ, f, b, m, w/u: (vol.4, p.431).

The first difference between the two ordering systems is that for Farāhīdī the first letter is /ʕ/ which he believed to be articulated at the farthest end of the vocal tract, followed by /h/ and /ḥ/. For Sibawayh the farthest place of articulation is that of the /ʔ/, to be followed by those of the /a:/, /h/ then /ḥ/. According to modern linguistics Sibawayh is quite accurate in his order, placing the glottal stop at the far end of the vocal tract. Farāhīdī seems to have misplaced this letter if what comes in Kitāb al Ayn is truly his ideas.*

* The book Kitāb al-Ayn, attributed to Farāhīdī, appeared ninety

According to Kitāb al-Ayn, the place of articulation of the Hamzah is described as follows:

"...The Hamzah is in the air, for it has no place of articulation ..." (sic).

No one of the two scholars seems to have known about the anatomy of the larynx. Medical science at their time could not help them. There is no reference in the works of either to the nature or the function of the larynx or the vocal folds. But Sibawayh is definitely more accurate than his master in placing this consonant.

The second letter in the order of Sibawayh is the long vowel /a:/ which he describes as having the same place of articulation of /?/. This point will be discussed in more detail in the next section (see 2.3.4 below). However, it is evident that Sibawayh is more accurate in placing the vowels and semi-vowels than Farāhīdī, as will be shown below.

Farāhīdī states that the three letters Alif, Wāw and Yā' have the same 'area' of articulation:

"...*lahā ḥayyizun wāhidun ...*" (ibid.).

He does not seem to have a clear idea about where to place them and he contradicts himself in this respect. (see 2.3.4 below). On the other hand Sibawayh is clearly in a better position in placing the vowels and semi-vowels. He places the Yā' next to the Shīn and the Wāw next to the Mīm (ibid.).

It still remains to be said that, despite the partial defects of Farāhīdī's ordering system, he deserves to be claimed as the first linguist to base his system on a phonetic basis, following the places of articulation as they occur in the vocal tract. His faithful student Sibawayh could only follow him, adopting this scientific method,

that
years after/of Sibawayh, in the possession of *al-Layth* who claimed it to belong to Farāhīdī. A long debate has been going on, especially in this century, about the real author of this book. However, there seems to be a general agreement among most scholars that the main ideas are those of Farāhīdī. But there is a possibility that some late grammarians or copyists have changed or misrepresented parts of it. The reasons behind these doubts are finding some contradictions and faulty views which led some later scholars, like Ibn Jinnī, to criticise the book for its mistakes (Ibn Jinnī, b, pp.50-51).

improving on it by producing his own much more accurate ordering sequence. This novel method of ordering the letters was adopted by all the grammarians who succeeded Farāhīdī and Sibawayh, mainly that of the latter to predominate (cf. Ibn Jinnī, Sakkākī, Ibn Ya'īsh and others). Ibn Jinnī follows Sibawayh almost exactly, except for the Dād which he places between /y/ and /l/ (Ibn Jinnī, a, p.50). This system of ordering the letters according to their places of articulation strongly suggests that Farāhīdī, Sibawayh and the others were aware of the egressive nature of the pulmonic airstream. In a number of places Sibawayh mentions that during speech the air comes out of the chest, and refers to a place of articulation as *Mukhraj* (outlet). There are no references to an ingressive airstream in the Book.

2.3.4 Places of Articulation

The method followed by Sibawayh in ordering the letters according to their places of articulation shows the way he understood the structure of the vocal tract. He uses the term *Mukhraj* to mean a place of articulation. In all probability, he was the first Arab linguist to use this term. Farāhīdī uses the term *Mudraj* (place of movement), and *Ḥayyiz* (space), (ibid.). This conclusion was arrived at because this method of description had not been attempted before Farāhīdī.

Sibawayh embarks on describing the places of articulation of the letters of Arabic by stating:

"...Arabic letters have sixteen outlets..." (vol.4, p.433).

He describes the first three of these sixteen places as occurring in the area he terms *Ḥalq*; which could be presumed to include the larynx, pharynx up to the velum, as will be seen below. He subdivides this part of the vocal tract into three sub-divisions. The farthest part is where he places the three letters / ʔ, h, a: /, in the middle part he places the two letters / ɟ & ħ / and in the nearer part the two letters / ʕ & x / are said to be produced. Farāhīdī uses the same term *Ḥalq* to refer to the same part of the vocal tract, but does not subdivide it into smaller areas; and describes it as the area of articulation of the four letters / ɟ, ħ, x, ʕ /. Sibawayh, therefore, presents a more specific description of the places of articulation in this part of the vocal tract. Furthermore he places the glottal stop in its proper place. It is noticed that Sibawayh places the long vowel /a:/ in the same place of the glottal stop. I prefer to postpone the

discussion of this question to a later part of this section, when the places of articulation of vowels are investigated.

The two fricatives /X & ʁ/ are located by both Farāhīdī and Sibawayh in the zone they termed Ḥalq, more specifically by the latter in the nearer part of Ḥalq. It cannot be ascertained whether the velum was considered as a part of Halq, overlapped with it, or bordered on it. Ibn Jinnī, (op.cit., p.52) locates these two fricatives in a place above that of the /ç & ħ/, overlapping with the rear end of the mouth cavity. Therefore it cannot be determined whether Sibawayh had a clear definition of this part of the vocal tract, comparable with the modern one, but it should be said that he was more specific in placing the letters within this area.

Following the 'outlets' located in the pharynx Sibawayh goes on to describe places of articulation in that part of the vocal tract where two articulators are involved in producing the letters. Starting at the velum he locates the Qāf /G/ at:

"...from the farthest end of the tongue and the part of the mouth roof above it..." (vol.4, p.433).

Then he places the Kāf /k/ in a place which he locates just in front of the Qaf:

"...from a place slightly lower than (i.e short of) the place of the Qāf on the tongue and the part of the mouth roof above it..." (ibid.).

Farāhīdī places these two plosives in the *Lahāt*, a term that covers the soft palate and the uvula. He mentions nothing about the part of the tongue involved in their articulation. Sibawayh arrives at more specific description of the places of these two consonants and the two articulators involved in their production. More than that he assigns a separate place for each one of them.

The next place he mentions is that where he locates three letters Jīm /j/, Shīn /š/ and Yā' /y/. He describes this place as being:

"...between the middle part of the tongue and the middle part of the roof of the mouth..." (ibid.).

Sibawayh elaborates more in describing the outlet of the Shīn. On page 466 he mentions that the Shīn is elongated *Mustatīlah*. On page 479 he repeats this view and adds that its outlet extends forward till it touches the upper incisors, to be released through the gap between them.

He does not specify any particular order of the respective places of these three letters, but he puts them in the same sequence that he follows in ordering the Alphabet (see 2.3.3 above). Here again he does not fail to mention the two kinds of articulators, the passive and the active. Farāhīdī mentions a place he calls *Shajr* of the mouth (hard palate) as the place of /j, š, ǧ/.

The next place of articulation he describes is that of the controversial Dād /ǧ/. Sibawayh's description of the outlet of this consonant is to be found in more than one place in his Book and presented as follows:

a. "...between the front part of the edge of the tongue and the molars next to it...) (ibid.).

He does not specify which side of the edge of the tongue is involved, but in an earlier paragraph he states that it could be articulated on the right side of the tongue as well as on the left side (op.cit.:432).

b. "...it is from the fore end of the edge of the tongue..." (op.cit., p.458).

c. "...it neighbours the outlet of the Lām, yet it occurs lower than it, so that it touches the roots of the lower molars..." (op.cit., p.465).

d. "...its outlet is extended as far (forward) as the incisors..." (op.cit., p.466).

We find Sibawayh more specific than Farāhīdī in describing the outlet of this consonant. His detailed description might be taken as an indication of the peculiar manner and relative difficulty in articulating it, which might well be the reason behind the phonetic changes it underwent in the course of time (cf. 3.4.4).

For the place of articulation of the Lām he offers a very finely detailed description:

"...The outlet of the Lām occurs between the edge of the tongue from its nearer part till its tip, and the part of the mouth roof next to it which is just above the bicuspid, the canine, the lateral incisors and the incisor" (op.cit.;433)*

* Part of these lines were missing from page 433 of the edition used for this investigation. This certainly seems to be a mechanical error in printing the page. I found the missing lines of the text in an earlier edition of the Book (Calcutta edition, 1887, pp.1067-68).

The above description of the place of the Lām is repeated verbatim by Ibn Jinnī (op.cit., p.52). It seems so complete and accurate that nothing could be added to it. Other later scholars could only offer basically the same description (Zamakhshary and Ibn Ya'īsh). Farāhīdī names only one place for the three letters /r, l, n/, which he terms *Dhalaq al-Liṣān* (the apex of the tongue), (op.cit. P.58).

Sibawayh moves on to the place of articulation of the Nūn /n/. He describes it as follows:

"...(from a place) at the front part of the side edges of the tongue and its tip, with that part of the roof of the mouth opposite to it which occurs above the incisors, is the outlet of the Nūn ..." (ibid.).

Then he describes the Rā' as having the same outlet as the Nūn except:

"...it is slightly moved towards the plate of the tongue because it is inclined towards the Lām..." (ibid.).

On page 452 he repeats the same view.

Sibawayh does not specify in which way the Rā' is 'inclined' towards the Lām. He uses the term *Munḥarif* to describe the manner of articulation of the lateral Lām, which is equivalent to 'diverted', (cf.3.4.7 below). It is probable that he is implying some phonetic similarity between /l/ and /r/, but he does not elaborate on that. Neither did any of his successors. Ibn Jinnī, once more, repeats the description of the place of the Rā' word by word as Sibawayh (ibid.).

The next place of articulation described by Sibawayh is that of the three letters /ḍ, ḍ, ṭ/:

"...between the tip of the tongue and the roots of the incisors..." (ibid.).

Farāhīdī calls these three letters *Niṭ'iyah* (prepalatal). Ibn Jinnī once more repeats Sibawayh's words.

The place of articulation of the three sibilants Zāy, Sīn & Ṣād, /z, s, ṣ/ is described as being:

"...between the tip of the tongue and the upper part of the incisors..." (ibid.).

On page 463 he makes a distinction between the outlet of these consonants and that of the three plosives /ḍ, ḍ, ṭ/. He remarks that the sibilants are produced at a point slightly lower than that of the three plosives, and are released from the gap between the incisors.

Ibn Jinnī adds nothing to this. Farāhīdī calls them *'Asaliyyah* naming

their places as *'asalat al-lisān* which he defines as 'the pointed end of the tip of the tongue' (ibid.).

The next place of articulation he mentions in which the tongue is involved is that of the three interdentalals /ð, ð, θ/, which is described by Sibawayh as:

"...between the tip of the tongue and the tips of the (upper and lower) incisors..."

Ibn Jinnī keeps repeating Sibawayh's words faithfully, while Farāhīdī calls them *Lathawiyyah*, after their outlet *Laththah*, (gum of the teeth, or alveolar ridge).

The place of the Fā' in turn is described by Sibawayh as:

"...the inner side of the lower lip against the upper incisors..."

The place of the three labials Bā', Mīm and Wāw is described as:

"...from between the lips..."

Finally he designates the nasal cavity *Khayshūm* to be the place of articulation of what he calls 'The light Nūn' (ibid.). As expected Ibn Jinnī repeats Sibawayh verbatim. On the other hand their predecessor Farāhīdī describes the three letters /f, b, m/ as 'labials'. *Shafawiyyah*. Sibawayh calls the light Nūn he mentioned above *al-Nūn al-Khafīfah*, (a term that is also used by Ibn Jinnī.). This kind of Nūn is included by Sibawayh among the 'derived acceptable letters' which will be discussed in the next section of this chapter. Farāhīdī mentions nothing about the place of this Nūn.

It is noticed that Sibawayh presents a detailed and accurate description of the places of articulation but does not give names to the letters following these places. Within the limits of the mouth cavity he mentions the two articulators involved in the operation, the active and the passive ones. This differentiation between the two kinds of articulators cannot be applied to that part of the vocal tract which lies below the velum, thus Sibawayh could only name the places. He places the two uvular fricatives /X & ʁ/ within the Ḥalq (pharynx) presumably because they are articulated in the border area between the mouth cavity and the pharynx.

On the other hand Farāhīdī names the letters according to their places of articulation, like Ḥalqiyyah, Shajriyyah and so on, without giving any description of the articulators. He just mentions them as palces. Besides that he seems inconsistent in choosing the kind of

articulator following which to name the letters. Sometimes he uses a name of a part of an active articulator, the tongue, as in *Asaliyyah* and *Dhalaqiyyah*, at other times he uses the name of a passive articulator, as in *Niṭ'iyah* and *Lathawaiyyah*. This alternation between passive and active articulators does not make it clear whether he was trying to describe places or manner of articulation. In either case he seems far less specific and consistent than his dutiful student. In one particular case *Farāhīdī* seems undecided and inconsistent about where to place the vowels and the Hamzah. In one place four letters (the 'illah letters) are described by him as *Ajwaf* letters, which he explains as being produced in the *Jawf* (the chest cavity), and having no places of articulation anywhere in the vocal tract (sic), (*Farāhīdī*, vol.1, p.57). Then he goes on to describe them as *Hāwīyah* (airy), a term derived from *Hawā'* (air), and says that they cannot be located in any place except the chest. Shortly after that, trying to locate groups of letters along the vocal tract, he states:

"...Alif, Wāw and Yā' are in one area, and the Hamzah has no area to belong to..." (op.cit., p.58).

Then he comes back to say again:

"...the Yā', Wāw, Alif and Hamzah are 'Hāwīyah' in one area..." (ibid.).

On the other hand, deriving a graphic symbol for the Hamzah from that of the Ayn is described as an indication that he believed these two letters to be homorganic (*Ibn Durustawayh*, p.56). Therefore it is justified to doubt the originality of some of the material in the available version of *Kitab al-Ayn*.

Sibawayh seems much more consistent and sure of himself in placing the vowels. His way of describing their places implies that the *Wāw* is a 'bilabial' and the *Yā'* is 'lamino-palatal'. This description of his is clearly impressionistic. On the other hand he does not seem to specify whether the *Wāw* and the *Yā'* are meant to cover the long vowels /u: & i:/, the semi-vowels /w & y/ or both. Either way his description of the respective places of articulation is accurate enough and does not repeat what is claimed to be his master's words. Therefore he deserves to be credited with this originality. The short vowels are dealt with in the same view. As shall be pointed to later, they are considered as 'parts' of the letters and not fully fledged ones. It can be safely presumed then that he conceives of

them to be articulated in the same places of their longer counterparts. There is one important matter to be discussed which is why Sibawayh places the long vowel /a:/ at the same place as the Hamzah , (vol.4, p.433).

No doubt consonants are easier to locate than vowels. Their places of articulation are more tangible than those of the vowels. A consonant is realized by a closure or a stricture of the vocal tract, while a vowel is realized by a relatively limited modification of the tract, when the articulators assume an 'open approximation' (Abercrombie, 1967, p.57). Modern linguistics is lucky to find at its disposal all the discoveries of modern technology, Radiography gave linguistics one possible method for determining the shape of the vocal tract during the articulation of the vowels, and all speech sounds for that matter. Thus it had become possible to produce a convenient and accurate description of the places of articulation of the vowels in any language, based on the location of the highest point of the tongue when a vowel is produced. Without using modern X-ray systems it would be extremely difficult to find out these facts.

At the end of the eighth century A.D., Sibawayh was only allowed to present an impressionistic description of the places of articulation. His description of the places of the consonants leaves extremely little to be desired. For the vowels, he places the palatal vowel accurately enough, and describes the velar vowel as a rounded bilabial, missing only the role of the tongue in its pronunciation:

"...You round your lips for the Wāw and raise your tongue against the palate for the Yā'..." (op.cit., p.436).

He describes the three vowels as having a wider 'outlets' than all the letters, the widest of all being that of the Alif (ibid.).

In another place he appears to be well aware of the vertical opposition between the vowels. He refers to the Wāw and Yā' as 'elevated' (high) and the Alif as 'lowered' (op.cit., p.101). Therefore the Alif for him is 'low'. But how low is it?

Deprived of modern means like Radiography, he could only conceive of the /a:/ as being 'just low', ultimately concluding that, because the airstream flows most freely along the vocal tract, and the highest point on the hump of the tongue not high enough to be assessed by pure sensation, the Alif is produced at the 'lower' end of the vocal tract, the glottis. Assuming that the short vowels are only parts of the

long vowels, no reference is made to their places of articulation (op. cit., p.242).

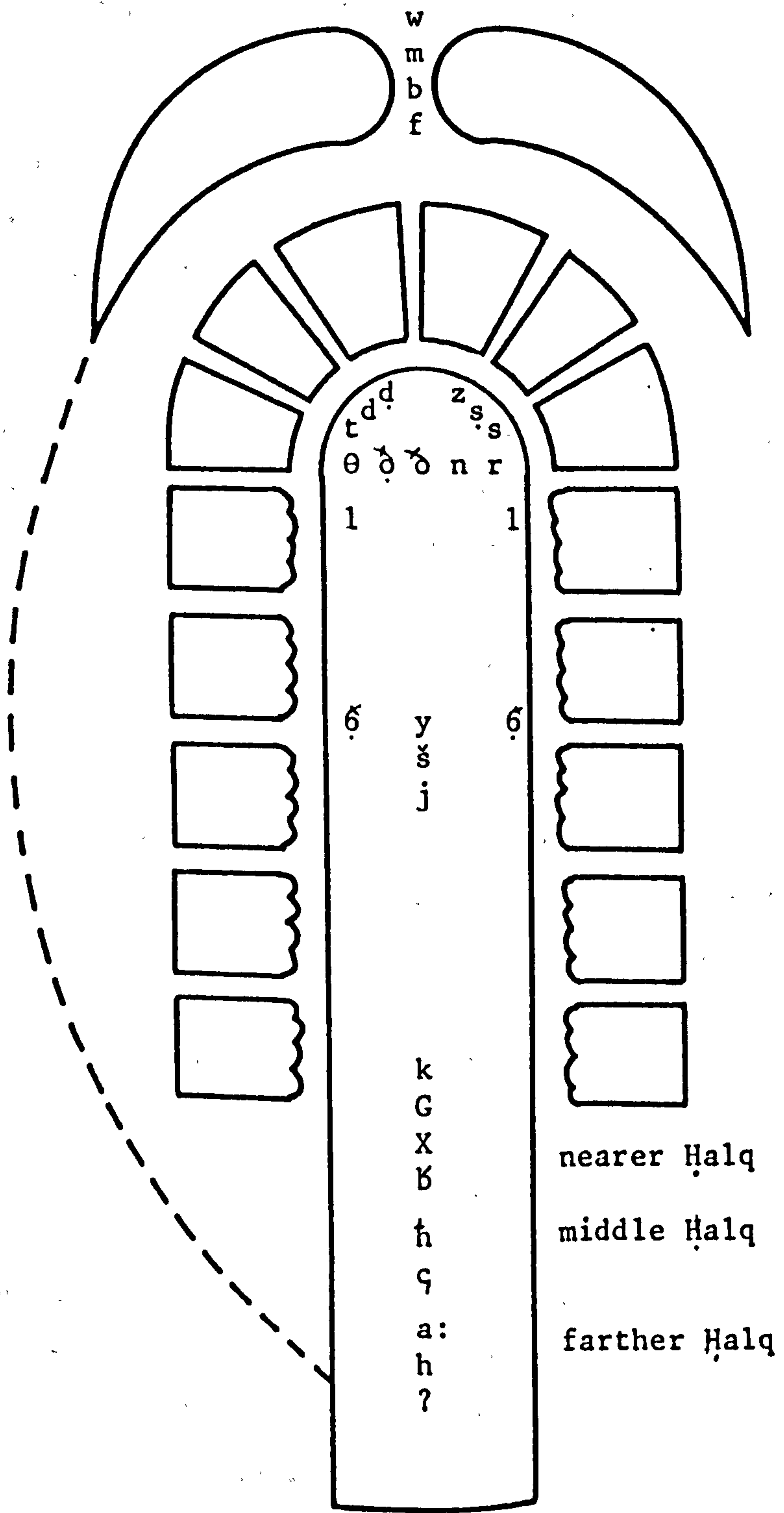
I feel it necessary to mention that the aim of comparing Sibawayh's description of the places of articulation with those of Farāhīdī and Ibn Jinnī is to present a more comprehensive picture of the phonetic ideas of the Arabs at that time, choosing one who was his tutor and his main influence, and another who succeeded him and was influenced by him. There are many more other scholars who were concerned with Phonetics. There was Ibn Ya'īsh (553-643 A.H.), al-Zamakhshary (467-538 A.H.), al-Sakkākī (d.626 A.H.) and al-Jazari (d.833 A.H.), to name but few.

The following is a diagrammatical representation of places of articulation located on a somewhat simplified and to a certain degree surrealistic plan view of the vocal tract as perceived by al-Sakkākī. Probably this is the first of its kind in Arabic linguistic literature. The influence of Sibawayh is clearly demonstrated by these examples.

" *Ṣūratu Makḥāriji l Ḥurūfi* "

(A picture of the outlets of the letters)

The nasal cavity, outlet of al-Ghummah.



From al-Sakkāki, (1317 A.H.), *Mafātīḥu l 'Ulūm.*

2.3.5 Derived Letters

Besides the above mentioned twenty-nine letters, Sibawayh mentions six more letters which he terms *Furū'* (branches, derivations) of the 'original twenty-nine ones (vol.4, p.432). He describes the status of these speech sounds as:

"...they occur frequently in speech, and are accepted and favoured in Qur'anic recitation and in poetry..." (ibid.).

These six letters are:

- (a) The 'light Nūn' .
- (b) The Hāmzah *Bayna bayn*.
- (c) The 'strongly inclined' Alif of *Imālah*.
- (d) The Shīn which is similar to the Jīm.
- (e) The Ṣād which is similar to the Zāy.
- (f) The Alif of *Tafkhīm*.

He does not elaborate on the phonetic properties of these letters, but cites examples of some of them, as will be shown below. However the following is a brief account of the phonetic properties of these six letters based on some references as indicated. There will be more discussion of their phonetic properties in subsequent chapters below .

2.3.5.1 The Light Nūn

The 'light Nūn' is the only one of the six derived letters to which Sibawayh assigns a place of articulation, which is the 'nasal cavity' (op.cit., p.433). The light Nūn is the nasal consonant which in certain environments becomes homorganic with the consonant that immediately follows it. There will be a detailed discussion of the phonetic properties of this consonant in Chapter Four below.

2.3.5.2 The Hamzah *Bayna bayn*

Sibawayh makes a brief mention of a variant of the Hamzah which he considers one of the derived letters. In an earlier part of his Book he presents a detailed investigation of the Hamzah in context discussing all the phonetic changes it undergoes (vol.3, pp.541 ff.). There will be a detailed discussion of this topic in Chapter Five.

2.3.5.3 The Alifs of *Imālah* and of *Tafkhīm*

Similarly, two kinds of derived Alif are mentioned by him. The first is the Alif of *Imālah*, the other is the Alif of *Tafkhīm*. The first Alif above gets a detailed investigation in Volume Four of the Book (pp.117 ff). It is described as having a place of articulation slightly raised towards the close front vowel /i:/ .

Sibawayh offers a brief description of the Alif of Tafkhīm and remarks that the Arabs of Ḥijāz produce it in the words Ḥayāt (life) Ṣalāt (prayers) and Zakāt (religious tax). This variant of the Alif is slightly backed and raised towards the close back vowel /u:/, having the phonetic value [o:]. These allophonic variants of Alif will be discussed in Chapter Six below.

2.3.5.4 The Shīn Similar to the Jīm

The next derived letter is a Shīn which Sibawayh describes to 'sound' like a Jīm. Once more no details are given in which way this Shīn sounds like Jīm. It is probable that what he means is that it is 'similar to' rather than 'identical with' the other letter. This similarity and the reasons behind it are referred to by him in the section where he investigates assimilation of the consonants, (see Chapter Four). Ibn Jinnī offers a brief account of the place of articulation of this derived letter:

"...It is the Shīn whose outlet occupies less 'expanse' and retracts back slightly towards the Jīm..." (Ibn Jinnī, a:56).

2.3.5.5 The Ṣād Similar to the Zāy

The last derived letter mentioned by him is the Ṣād which 'sounds like' the Zāy. Once again nothing is mentioned about its phonetic properties, most probably because it will be dealt with when investigating assimilation. But Ibn Jinnī offers a detailed description of this derived letter. In short, what he says is that this voiceless letter acquires some voicing quality when it precedes a voiced consonant (ibid.).

2.3.6 Unfavoured Derived Letters

In a short paragraph Sibawayh enumerates seven more letters which he classifies as 'unfavoured derived'. He describes them as:

"...infrequent in the language of those whose Arabic is acceptable, neither are they favoured in reciting the Qur'ān or in reading poetry..." (vol.4, p.432).

These letters, he says, are:

- (a) The Kāf which is 'between' the Jīm and the Kāf.
- (b) The Jīm which is 'similar' to the Shīn.
- (c) The 'weak Dād.
- (d) The Ṣād which is 'similar' to the Sīn.
- (e) The Ṭā' which is 'similar' to the Tā'.
- (f) The Bā' which is 'similar' to the Fā'.
- (g) The Dhā' which is 'similar' to the Thā'.

He does not give any explanation or cite examples to illustrate in which way the derived letters are 'similar' to the original ones, or the other way round. Most probably he is influenced by the high prestige the high form of the language enjoys and refrains from elaborating on the phonetic properties of these derived letters, believing them unworthy of it. What might support this hypothesis is his description of the 'original' letters as 'good' and the unfavoured derived letters as 'bad' (ibid.). On the other hand he does not hesitate to describe the phonetic properties of some of these 'bad' letters when the investigation of assimilation makes it necessary (See Chapter Four).

Ibn Jinnī adopts the same approach and enumerates eight 'unacceptable derived letters', similar to those of Sibawayh. He gives just as little description and adds:

"...they hardly occur except in a language which is weak, vulgar and unacceptable..." (op.cit., p.51).

Fortunately, ample description of these letters could be found in some explanatory works on the Book and in other works of some later grammarians. Nothing about this matter is mentioned by Farāhīdī.

2.3.6.1 The Kāf Between Jīm and Kāf

Ibn Durayd (vol.1, p.5) describes it as peculiar to the dialect of the Yemen. It is probable that this letter is the voiced counterpart of /k/, i.e. [g], which is how it is pronounced in parts of the Yemen now, as well as in Cairene Arabic and in some other places, as a variety of Jīm (Saaran, 1951, p.94).

2.3.6.2 The Jīm Similar to Shīn

This allophonic variant of /j/ is pronounced when it is immediately followed by the voiceless plosive /t/.

e.g.(a): /Xarajtu/ → [Xaraštu] (I went out)

The other possibility is when /j/ is immediately followed by /d/.

e.g.(b): /'ʔajdar/ — [ʔaždar] (more worthy)

Saaran describes this derived Jīm as *Afshā*, or 'more expansive'(ibid.).

2.3.6.3 The Weak Dād

The original version of this consonant must have been unique and difficult to pronounce. Ibn Ya'īsh(vol.1, p.1463) talks about the status of this consonant and its derived form:

"...The weak Dād occurs in the dialect of people who find

it too difficult to produce the original one, so they pronounce it sometimes as Dhā'..." (i.e. ḏ).

This is exactly how this consonant is pronounced now in Iraq and many other parts of Arabia. In some urban areas of Western Arabia, East Mediterranean and North Africa, it is realized as a velarized Dāl.

2.3.6.4 The Ṭā' Similar to the Tā'

This variant of the Ṭā' seems to be a devoiced /d/, or even a pure /t/. In almost all variants of Arabic of the present time this consonant is pronounced as [t̥]. Ibn Ya'īsh says that it is produced by foreigners to Arabic (ibid.), but he does not describe the manner in which it was done.

2.3.6.5 The Dhā' Similar to the Thā'

This is most likely to be a devoiced /ḏ/. Saaran believes the same, (op.cit., p.99). In the modern Arabic dialect of Iraq people say [θnaqaš] for /'ʔiθna'qašar/, (twelve). Although the variant [θ̥] is not a modification of /ḏ/, I would presume this sound to be similar to the derived one in discussion.

2.3.6.6 The Bā' Similar to the Fā'

This variant of /b/ could either be [p] or [v]. Sīrāfī states that it is either [v] or [p] (cf. Saaran, 1951, p.100). Zamakhsharī (vol.2, p.1461) and Ibn Ya'īsh (vol.2, pp.1463-4) both describe it as [p]. Sibawayh (vol.4, p.303), discussing Arabic borrowing from Persian, states that where a Persian form has /p/ the Arabs pronounce it as [f] or [b].

e.g.: Persian /pirind/ → Arabic /firind/ or /birind/ (sword).

There could be many reasons for the occurrence of these seven 'unfavoured and unacceptable' letters. Some of them could be dialectal variants, some appear as a result of difficulties in pronunciation and others as an outcome of assimilation in certain phonetic environments. The last reason will be accounted for in Chapter Four.

2.4 THE HARF AS SYLLABLE

In this section an attempt will be made to discuss the concept of 'letter' as a syllable and the place it occupies in Sibawayh's study of the structure of Arabic.

2.4.1 Early Analysis of the Syllabic Structure

The early Arab grammarians, in their attempt to study the structure of speech, adopted an approach which is partially different from

the modern concept of the syllabic system. Their approach was probably influenced by the structure of Arabic which, as one of the Semitic languages, gives more prominence to the consonants because they carry the basic semantic content of the linguistic unit. This is reflected by the writing systems used by these languages, all of them syllabic. Short vowels, and even long vowels sometimes, are either not written or represented by symbols superimposed on the consonant to stand for the vowel that follows it. In fact most of writing systems invented by man have been syllabic. The Greeks were the first to invent a system of writing based on segments of the syllable (Abercrombie, 1967, p.38).

The method of analysis adopted by the Arab grammarians has led some modern researchers to conclude that the concept of the syllable was unknown to them (Schaade, 1911, p.9). This cannot be more untrue. For Sibawayh, on whose work Schaade was commenting, as well as for other Arab grammarians, it is to be found in their classification of the 'Harf' as a structural unit, occurring in one of two states, *Sākin* and *Mutaḥarrik*. In this work, the term 'Static' will be used as a cover term for a consonant not followed by a short vowel, equivalent to Arabic 'Sākin', and the term 'Dynamic' as a cover term for a consonant followed by a short vowel, Arabic 'Mutaḥarrik'.*

The two terms 'Sākin' and 'Mutaḥarrik' are given different English names by some modern scholars. Saaran calls a Sākin letter 'quiescent' (1951, pp.18-19). Bakalla, (1970, p.328) uses the two terms 'asyllabic' and 'unvowelled' for Sākin and calls a Mutaḥarrik 'syllabic' or 'vowelled'. For want of terms that are more relevant and have a fewer side effects I have elected to add to the jumble and, borrowing from Physics, propose to call a Sākin 'static' and a Mutaḥarrik 'dynamic'.

The syllable is the metric unit in Arabic poetry. Farāhīdī is credited with discovering and systematizing the metric system of Arabic verse, using the syllable as the unit of the fifteen metric patterns he systematized. For this purpose he classified syllabic structures into three categories:

* The term *Mutaḥarrik* is derived from *Ḥarakah* (movement), and *Sākin* from *Sukūn* (no movement). A short vowel is called a *Ḥarakah* in Arabic grammar terminology and is considered as part of a long vowel.

- (a) *Sabab*: a cover term for a biliteral form, subdivided in turn into two subdivisions:
- i. *Khafīf* (light): monosyllabic CVC or C \bar{V}
 - ii. *Thaqīl* (heavy): bisyllabic CVCV
- (b) *Watad*: a cover term for a trilateral form, also subdivided into two subdivisions:
- i. *Majmū'* (collected): bisyllabic CVCVC or CVC \bar{V}
 - ii. *Mafrūq* (separated): bisyllabic CVCCV or C \bar{V} CV
- (c) *Fāṣilah*: cover term for a quadrilateral or a quintilateral form, again subdivided into two subtypes:
- i. *Ṣughrā* (small): trisyllabic CVCVCVC or CVCVC \bar{V}
 - ii. *Kubrā* (large): quadrisyllabic CVCVCVCVC or CVCVCVC \bar{V}
- (cf. Saaran, 1951).

2.4.2 Constraints on Syllabic Structure

Before going any further in the investigation of the syllable in Arabic as looked upon by Sibawayh it is appropriate to mention a number of constraints on the syllabic structure of Arabic. These constraints are concluded from statements of Sibawayh in different parts of the Book.

- (a) No utterance in Arabic begins with a static letter, i.e. *C, *CC, *CCV, * \bar{V} C or * \bar{V} V (vol.3, p.321; vol.4, p.144; etc.).
- (b) Following rule (a), no cluster of two consonants can occur in initial position (vol.2, p.263; vol.3, p.321; vol.4, pp.192, 348, 399; etc.).
- (c) Accordingly, a cluster of two consonants can only occur medially or finally. When it occurs medially each consonant belongs to a different syllable. When it occurs finally it is only in pause. e.g.(a) *maktab* CVCCVC (bureau). When the cluster occurs finally the second consonant originally belongs to a syllable whose inflexional short vowel was elided in pause. e.g.(b) *ḥarfū jarr* minus *jarr* → *ḥarf*

The elision of the final short vowel /u/ has led to changes in the syllabic structure of the form: CVCCV to CVCC. In other words no two contiguous static letters can belong to the same syllable in connected speech except in pause.

This operation is an outcome of a phonological rule of Arabic which elides the final short vowel in pause (vol.4, p.168).

(d) Finally no utterance in Arabic can have a vowel initially, i.e. *VC or *VC̄ (op.cit., p.156).

2.4.2.1 Rule (d) above brings out a problem. It has been mentioned that the three long vowels /a:, u:, i:/ are considered as 'Ḥurūf' and their three short counterparts /a, u, i/ as parts of these long vowels (op.cit., p.242), (cf. Ibn Jinnī, a, p.19).

If this view is to be accepted, can a long vowel be followed by a short vowel (i.e. V̄V)? Realizing this impossibility and to cater for their consideration of the long vowel as Ḥarf the early Arab grammarians established a rule which says that long vowels could only occur in speech as static letters, i.e. could not be followed by a short vowel (vol.4, pp.156, 193, 197; Ibn Jinnī, a, p.13; Sīrāfī, footnote 3, The Book, vol.1, p.13).

Yet this does not quite solve the problem. Arabic structure can have the syllable CVC̄ in pause, when the final short vowel is deleted. If we accept classifying V̄ as a Sākin letter we will be left with three Sākīns, as in /māka:n/ (CVCVC̄), which is not allowed in Arabic. Therefore the theory of considering a long vowel as Sākin is in need of rigorous testing and revision.

Although the two semi-vowels /y & w/ are given the same names as the two long vowels /i: & u:/ respectively, viz Yā' and Wāw, there is ample evidence that Sibawayh is well aware of the differences in the phonetic properties of the two categories. The three long vowels are said to occur only as Sākin, never to be followed by a short vowel. If they are followed by a short vowel, he states, they will cease to be (pure) vowels and become semi-consonants:

"...they would hate to 'move' the Alif (i.e. render it Mutaharrīk). If it is 'moved' it will become Yā' or Wāw..." (op.cit., vol.4, p.156).

"...If the Alif is moved it will become something other than Alif..." (op.cit., vol.3, p.548).

"...If the Yā' (i.e. /i:/) is moved it will cease to be a vowel and will become a semi-consonant..." (op.cit., vol.4, pp.184, 193, 197).

It is very remarkable that Sibawayh, twelve centuries ago, describes the Yā' /y/ and the Wāw /w/ as *Shubhi ghayri lmu'tal* which literally means 'semi-consonant' in every sense of the word. No one before him had come out with this still very modern and phonetically accurate term.

2.4.2.2 Another couple of syllabic structures which raises a problem are the sequences $C\bar{V}$ and $C\bar{V}CVC$, which occur very frequently in Arabic.

e.g.(a): $C\bar{V}$: /ma:/ (which, what) & /la:/ (no, not, none).

e.g.(b): $C\bar{V}CVC$: /'Xa:lid/, /'sa:kin/, /'wa:ħid/ (one).

Both of these syllabic structures are in contradiction with rule (b) above. Considering \bar{V} as a static letter the structure $C\bar{V}$ has two statics and $C\bar{V}CVC$ has three successive statics, in both cases in initial position. Confronted with this contradiction the early Arab grammarians presumed the occurrence of a hypothetical homorganic short vowel preceding every long vowel. This misconception continued for a long time. Some contemporaries still believe in it, but under the influence of modern linguistics it has been refuted by some modern Arab linguists (cf. Shāhīn, 1980, p.35).

2.4.3 Sibawayh's Analysis of the Syllable

Sibawayh opens the chapter where he analyses speech by stating the following fundamental rule:

"...The minimum structure a 'Kalimah' (word) could be made of is one Ḥarf..." (vol:4, p.216).

The term Ḥarf could have one of three meanings, viz 'speech sound', 'syllable' or 'word', as far as this section is concerned. It cannot be taken to mean 'word' because this meaning is expressed in the same sentence by the term 'Kalimah'. Neither can it be taken to mean 'speech sound'. An isolated speech sound cannot occur in Arabic, neither as a consonant nor as a vowel. Such an utterance does not conform with the constraints that govern the structure of Arabic*. Therefore it can only be taken to mean a syllable, as the minimal structure possible. The following statement of Sibawayh confirms this conclusion:

"...A Sākin cannot be produced alone as a speech sound. If you try to, you render it Mutaḥarrrik" (op.cit., p.177).

Accordingly it seems clear that Sibawayh has arrived at realizing that the minimum possible utterance in the structure of Arabic is CV.

* An utterance composed of just one consonant *C cannot occur in Arabic. Rule (a)(cf.2.4.2 above) states that no utterance can have a static letter initially. Neither can a vowel occur initially, so it cannot occur as an isolate. Moreover no isolated segment could have any meaning.

2.4.3.1 The concept of Ḥarf as syllable, which is the minimum possible utterance in Arabic, is characteristic of all Semitic languages, where a Ḥarf refers to a consonant, much more than it refers to vowel. There could be more than one possible reason for this. The number of consonants in all Semitic languages is considerably more than that of vowels. Arabic has an alphabetical system of twenty-six consonants and two semi-vowels, compared with six vowels only. Secondly all writing systems of the Semitic languages are syllabic and not alphabetical, although this^{is} a reflection of the language structure and not the other way round (cf. Abercrombie, 1967, p.168, note 6). This might partly be a consequence of adopting the Sumerian cuneiform system of writing (the first ever syllabic writing system invented by man, in the south of Iraq, in c.3500 B.C.) by the Babylonians, the Assyrians and other civilizations.

Thirdly, perhaps not finally, the consonants in Semitic languages carry the main semantic content of the utterance and vowels are used in combination with them to modify this content. Arabic is a good example of this. The three root consonants /k, t, b/ convey meanings related to writing:

- e.g. /'kataba/ (he wrote)
 /'kataba:/ (they wrote, dual)
 /'katabu:/ (they wrote, pl.)
 /'kutiba/ (it was written)
 /'ka:taba/ (he corresponded with in writing)
 /ki:ta:b/ (book)
 /ki:ta:bah/ (writing)

2.4.3.2 Sibawayh does not explicitly analyse the Ḥarf, as a syllable into its two basic elements of consonant and vowel. Neither does he focus his argument on the function of each element in the syllable. But there are ample indications and explicit references in his Book to indicate that he realizes these divisions and functions. Quoting his tutor Farāhīdī, he states that the three short vowels are:

"...Zawā'id (added elements) attached to a letter to arrive at the possibility of uttering it..." (op.cit., pp.241-242).

In another place he shows a sound realization of the structure of an utterance and the two basic elements of its construction. Describing the function of vowels in an utterance he states:

"...No construct can occur without them (long vowels) or

parts of them (short vowels), their parts being the Ḥarakāt"

Is not this what modern linguistics says about the basic elements of the syllable and their function in it? The two basic elements are identified and the central role played by the vowel recognized and pointed to:

"...Analysis of the syllable yields segments of the syllable. These segments fall naturally into two classes, vowels and consonants." (Abercrombie, 1967, pp.38-39).

"... The most widespread, and probably the most primitive syllable is the construction CV. Many languages have only this type of syllable." (Brosnahan & Malmberg, 1970, p.210).

2.4.4 Structural Forms

According to the argument presented in this chapter the Ḥarf is regarded as the 'unit' of the structure of Arabic, in both its states, as dynamic (CV) and as static (C), (and \bar{V} for the sake of argument). Sibawayh bases his analysis of the structure of Arabic on this concept. As will be seen below, using the letter in this sense, a 'root' form in Arabic can be trilateral, quadrilateral or quintilateral. Such basic forms are called *Mujarrad* (bare, not added to, not expanded). If a root form loses one or more of its segments it is called *Maḥdhūf* (reduced, elided). Similarly if one or more segments are added to a root form it is called *Mazīd* (expanded, increased) (vol.4, p.230).

Sibawayh presents a systematic survey of all these forms, citing examples and referring to what parts of speech could occur in these forms.

2.4.4.1 Monoliteral Forms

A monoliteral form, he states, could only occur as CV, which is the minimum possible utterance in Arabic (op.cit., pp.216 ff.). A form in *C is not allowed by rule (a) and *VC does not agree with rule (d)(cf.2.4.2 above). The form $C\bar{V}$ on the other hand is considered by him biliteral. This monosyllabic structure occurs mainly as particle, usually affixed to root forms as prepositions, conjunctions, pronoun markers or others.

- e.g.(a): / lizayd / (to Zayd)
e.g.(b): / sayaktubu / (he will write)
e.g.(c): / bi.bayti / (in the house)

Verbs do not basically occur in this form except in certain cases.

If the root form *Maṣḍar* has two semi-vowels, the imperative form of the verb will be monoliteral.

e.g.(f): /waḡy / (awareness) → / ḡi / (be aware of)(ibid.).
(The imperative form of a verb is always 'reduced' in Arabic.)
Nouns do not occur in a monoliteral form, he states (ibid.)

2.4.4.2 Biliteral Forms

A biliteral form can be a particle, a verb or a noun. The possible syllabic structures of these forms are C \bar{V} , CVC or CVCV. Particles occur in this form more than they do in a monoliteral form.

- e.g.(a): C \bar{V} / ma: / (which, what)
e.g.(b): CVC / hal / (an interrogation particle)
e.g.(c): CVCV / maḡa / (with)

Verbs in the imperative occur in this structure too, which is an indication that one of the three radicals in the underlying root form is a semi-vowel.

- e.g.(d): CVC / nam / (sleep, v.) derived from the form /nawm/.

A limited number of nouns also occur in this structure.

- e.g.(e): CVC / yad / (hand) in pause, or CVCV /'yadu/ in connected speech, like /'yadu 'zayd/ (the hand of Zayd)

2.4.4.3 Triliteral Forms

A triliteral form is the most common and frequent structure in the language, states Sibawayh, in which all parts of speech can occur (vol.4, p.229). These triliteral forms can have one of the following syllabic structures: CVCVCV, CVCVC, CVCCV, CVCC, CVC \bar{V} and C \bar{V} CV. He goes on citing examples of these forms in lexicon-like manner, covering most of the particles that have this structure, and adding nouns and verbs in subsequent chapters. The following are few of the particles he cites:

- e.g.(a): CVCVCV / 'qibala / (towards)
(b): CVCVC / '?iḏan / (therefore)
(c): CVCCV / 'ḥasbu / (only)
(d): CVCC / ḥasb / (only), in pause
(e): CVC \bar{V} / 'siwa: / (except)
(f): C \bar{V} CV / 'du:na / (less than, short of)

Noun forms occur in some of these structures:

- e.g.(g): CVCVC / 'jabal / (mountain), in pause
(h): CVCVCV / 'jabalu si:'na:? / (mount Sinai)
(i): CVCC / kalb / (dog), in pause

The trilateral verb form, with no particles affixed to it, can have one of the structures CVCVCV and C̄VCV in connected speech, or C̄VC and CVCVC in pause:

- e.g.(k): CVCVCV / 'kasaba / & CVCVC / 'kasab / (he gained)
 (l): C̄VCV / 'sa:ra / & C̄VC / sa:r / (he walked)

2.4.4.4 Quadrilateral Forms

These forms are less frequent in the language. They occur mainly as particles, less as verbs and in a limited number of nouns. There are six syllabic structures in which this form can occur: C̄VCVC, CVC̄VC, CVCC̄V, CVCCVCV, CVC̄VCV and CVCCVC.

Some of these structures are found in particles:

- e.g.(a): C̄VCVC / 'la:kin / (but)
 (b): CVC̄VC / ?ama:m / (in front of), in pause
 (c): CVC̄VCV / ?ama:ma bayti: / (in front of my house)
 (d): CVCC̄V / 'kalla: / (no!)

Verbs are less frequent as quadrilaterals:

- e.g.(e): CVCCVCV / 'daħraja / (he rolled)

Nouns occur only in two of these structures:

- e.g.(f): CVCCVC / 'Xinjar / (dagger), in pause
 (g): CVCCVCV / 'Xinjaru 'zaydin / =, in connected speech

2.4.4.5 Quintiliteral Forms

These forms are the least frequent in the language, he states (op.cit., p.230). This structure, he adds, is the maximum number of letters a root form can have in Arabic. Only few nouns or particles have this structure, yet no verbs at all. Quintiliterals can have only two kinds of syllabic structures: C̄VCVCCV and CVCVCCVC:

- e.g.(a): C̄VCVCCV / la:'kinna / (but), in its strong form
 (b): CVCVCCVC / sa'farjal / (quinces)

This form becomes CVCVCCVCV in connected speech:

- (c): / sa'farjalu baħda:d /

2.4.4.6 The discussion above is a brief survey of the possible syllabic structures in Arabic in which different linguistic units can occur in their 'bare' root forms, or in 'reduced' versions of these forms. However many forms accept expansion up to a certain limit. A trilateral form can be expanded to have up to seven 'letters', a case described by Sibawayh as : "...the maximum of effort..."(ibid.). The example he cites is: / 'ʔiʃhi:ba:b / (CVCC̄VC̄VC). Another example from modern Arabic is / 'ʔistiħma:l / (usage), (CVCCVCC̄VC̄VC) derived from / 'qamala /.

A quadrilateral form, he adds, can also be expanded to have up to seven 'letters', as in /'ʔiħrin'ja:m /, CVCCVCCVC̄ (getting stuck) derived from the quadrilateral form /ħarjama /.

A quintilateral form, he concludes, can be expanded to have six 'letters' only. The example he cites is /'ʔaħrafu:d / (!!!)(vol.4:230).

2.5 LINGUISTIC UNITS HIERARCHY

The method followed by Sibawayh in his attempt to analyse speech structure of Arabic suggests that he is trying to formulate a hierarchical order in which he arranges the linguistic units in respect of their structure. This order can be seen to work at two levels. Firstly according to the number of structural units a word is composed of in its root form and the effect this number has on the frequency of each kind of form in the language. Secondly according to what he calls 'the strength' of words which seems to imply, as one of possible implications, the potential ability of forms to yield derived forms and, perhaps, to convey full meaning in a sentence without requiring other parts of speech to complete the meaning. It is a feature of Arabic to form a complete sentence using nouns only.

e.g. / ʔaħu:ka 'zaydun / (Zayd is your brother)

2.5.1 Root Forms of Arabic

The starting point where he sets out to outline the structural formation of Arabic linguistic units is where he limits the number of root forms in Arabic to three, basing this hypothesis on considering the 'letter' as the structural unit, (see 2.4.4 above). The following brief statement expresses his theory about the structure of root forms:

"...Speech (constructs) either occur in three letters, four letters or five letters, nothing more nothing less..."
(vol.4, p.230).

The term 'speech' can only be taken to mean 'root forms' in their 'bare' structure, without reduction or expansion. A few sentences later, he adds the following statement which appears to confirm this interpretation:

"...what has less than three letters is Maħdhuf and what has more than five is Mazid..." (ibid.).

Among these three root forms, in their 'bare' state, the triliteral occupies the highest place in the hierarchical order regarding frequency in the language, no matter what part of speech it is.

"...What occurs in three letters makes up the major part of the lexicon, in all kinds of nouns, verbs and others..."

(op.cit., p.229).

The least frequent form of the three is the quintiliteral:

"...wa lkhamsatu 'aqallu lthalāthati fi lkalāmi." (op.cit., p.230).

Sibawayh assigns to the trilateral the highest status in the language, on account of being the most numerous root form. He seems to believe that the reason behind this high frequency is that the trilateral form is the 'first' in speech, which I interpret to mean the 'earliest' form the language had.

"...Because it is the first, it became so well established in speech..." (op.cit., pp.229-230).

Having established the trilateral form as the most powerful in speech, he does not hesitate to declare that the smallest number of letters a root form can be composed of is three.

"...Three is the least number (of letters) in speech..."

(op.cit., pp.218-219).

Consequently, he concludes that eliding one or two letters from a trilateral form makes it less powerful.

"...Fewer forms in the language occur in one letter, because they find it unfair to elide two letters from the smallest number of letters in speech..." (ibid.).

Similarly, when a monoliteral or a biliteral form is expanded to a trilateral form, he adds, it becomes more powerful by assuming the status of the trilateral (ibid.).

A verb in a monoliteral form (the imperative of a limited number of verbs) is considered 'weak', he says, and it only occurs because its root form has two semi-vowels (ibid.). Only in this state, he explains, does a verb occur in a monoliteral form. Otherwise it will regain its multiliteral form.

"...and if you change its case, you reinstate what you have elided..." (ibid.).

A verb in the imperative in a biliteral form is 'less weak' than one in a monoliteral form, as in / kul / (eat), the perfect of which is / 'akala / derived from / ?akl / (eating). Yet, he adds, some of the Arabs 'complete the form' and say / 'u?kul / for the imperative. Biliteral nouns too become stronger, he states, if the number of the letters is made three. Some speakers say / kadw / for / kad / (ibid.).

He seem to believe that the number of letters in a root form is the main factor that decides the amount of space it occupies in the lexicon. The quintiliteral is the least frequent, he explains:

"...because its root structure had attained the maximum possible number of letters, thus was found most heavy..."
(op.cit., p.230).

2.5.2 Strength of Forms

The other level at which the hierarchical system envisaged by Sibawayh, is the 'strength' assigned to linguistic units, based on what parts of speech they are. He assigns to the noun the highest place in the power hierarchy. The verb comes next and the particle last. He uses the term *Quwwah* (strength) but does not explain what he means by it; yet, he says that the noun is the strongest because it was the 'first' in the language (op.cit., pp.218, 220, 229, 230). Describing the noun as the first in the language can be interpreted either as being the earliest part of speech to appear in the language, or being the basic root form which, through derivation, can generate other parts of speech like verbs, adjectives and others; probably meaning both matters. At this stage Sibawayh seems to be formulating his theory of the language, which considers the noun as the 'source' form *Maşdar*. What may support this conclusion is to be found in the first chapter of his Book. In the third sentence of this opening chapter he defines the verb as:

'...forms derived from utterances (which are descriptions) of the acts of nouns...'
(vol.1, p.12).

By 'utterances of the acts of nouns' he means 'source forms' for which he cites examples like *ḍarb*, (hitting), *ḥamd* (thanking), and *qatl* (killing) (ibid.). Having asserted this status of the noun he adds:

"...The noun has a strength no other part of speech has..."
Consequently Sibawayh considers the noun to enjoy a 'most established' place in the language (op.cit., pp.220, 229, 230). He even considers other parts of speech 'strong' when they occur in a triliteral form, assuming the structure of the noun (ibid.).

Following this hypothesis he asserts that any biliteral form gains more strength when it is made triliteral by adding one letter

to its structure. He cites some extreme examples to illustrate this hypothesis. If a particle form is to be used as a proper noun its structure is made stronger by geminating its final segment to make it triliteral.

e.g.(a): / fi: / (in) → / fiyy /

(b): / law / (if) → / laww / (op.cit., p.218).

(c): / ?i: / (yes) → / ?iyy / (vol.3, p.323).

Accordingly Sibawayh expects fewer nouns to occur in a biliteral form:

"...It is unfair to the noun to reduce its structure to less than the minimum number of letters, rendering it like a particle..." (vol.4, p.218).

The argument presented above strongly suggests that Sibawayh is not far away from striking at the deep level of the structure of the language, if he is not already there, stopping short of explicitly defining it. The evidence is abundant. In one of the earliest chapters of his Book he explains very briefly what structural changes may take place within linguistic forms as they occur in speech:

"...They would reduce a form, although its 'origin' in the language is something else. They would substitute, elide or convert something into something else..." (vol.1, pp.24-25).

He uses the term *Aşl* (origin) which could be interpreted as the 'root form' which underlies an elided, reduced or expanded surface form. In another place he states:

"...no noun...counts less than three letters, although they would elide some of the letters which originally belong to it, then reinstate them in the plural form or the diminutive form..." (vol.3, p.322).

e.g.(d): / dam / (blood) → / dumay / , in the deminutive.

This phenomenon of structural reduction is more prevalent in verb derivations. When a triliteral root form has one or more semi-vowels, verbs derived from it will have less than three consonants:

e.g.(e): / nawm / (sleep, n.) → / 'na:ma / (he slept)

(f): / kawm / (being) → / 'ka:na / (he was)

(g): / sayr / (walking) → / 'sa:ra / (he walked)

Sibawayh appears to be convinced that language continuously undergoing structural changes under various influences. He professes this belief by saying that speakers would change their utterances; eliding, reducing or substituting segments or lexical items (vol.1, pp.24-25).

These changes could affect the phonetic properties of segments , the phonological system or the syntactical structure, as a result of assimilation, vowel harmony or the desire for easier pronunciation. I counted some 52 instances throughout the Book by which he states that a form is reduced or a segment elided, or even a lexical item dropped because the utterance: "*...occurs more frequently in their speech*". He seems to be aware of the factors of redundancy, economy of effort and the inclination for easier pronunciation which operate to bring about structural changes in speech.

In the subsequent chapters of this work these changes will be investigated, especially those pertaining to phonetics, pointing to the reasons behind them whenever possible.

CHAPTER THREE

THE LETTERS OF ARABIC II

PHONETIC PROPERTIES

3.1 INTRODUCTION

This chapter will attempt to investigate the phonetic properties of Arabic letters as presented by Sibawayh. The investigation will focus on the phonetic features of the segments and the possible oppositions between these features according to the way he looked at them.

Sibawayh opens the discussion with the following introductory sentence:

"...This section is about the number of letters of Arabic, their outlets, the voiceless and the voiced, the nature of the voiced and the voiceless, and their differences..."

(vol.4, p.431).

The number of the letters and their places of articulation were discussed in Chapter Two of this study. The other phonetic properties, to which he refers by the term 'differences', will be investigated in this chapter. In his brief but comprehensive investigation Sibawayh deals with the phonetic properties according to different criteria. The consonants are mainly described on articulatory criteria, occasionally on auditory criteria. The vowels are basically described on the same criteria as well as their duration and phonological function.

3.2 CONSONANT VERSUS VOWEL

Sibawayh treats the consonant-vowel opposition at two levels. The first level is concerned with the phonetic properties of the segments and the second describes their phonological function in the structure of the language.

For phonetic description he uses the term *Līn* and *Madd*, equivalent to 'softness and prolongation' (vol.4, p.176) to describe the pure vowels; the two glides 'Yā' and 'Wāw' are classified *Līn* letters (op. cit., p.435). The latter two sounds are described as becoming *Shubbi Ghayri Imu'tal*, equivalent to 'semi-consonant', (cf. Crystal, 1980, p.82), in case one of them occurs before a short vowel. The pure consonants of Arabic are not explicitly described by him as *Sahīh*. He uses this term in a phonological sense (see below). This term, however, could be used as a cover term to classify all the segments which are [- *Līn*.] (cf. 3.8). The long vowel Alif is termed '*Hāwī*' to

imply the most open state of the vocal tract in its production. The term *Ṣaḥīḥ* is attributed to Farāḥīdī who uses it to refer to twenty-five consonants of Arabic.* The term *Līn* is also found in Farāḥīdī's book, calling the Alif '*Layyīnah*' (soft), but the term *Madd* is not used by him in this respect. Therefore it is probable that Sibawayh was the first grammarian to use the expression *Madd & Līn* to refer to the vowels phonetically. Succeeding scholars adopted these terms and used them for the same purpose (Ibn Jinnī, b, vol.1, p.71; al-Zamakhsharī, pp.395-396; etc.).**

Sibawayh does not give the three short vowels of Arabic the same status he gives their long counterparts. Although he presents adequate phonetic description of these short vowels, he does not consider them 'full' letters but 'parts' of the long vowels (cf. 2.4.3.2 above).

Then he goes on to establish the genetic relationship between the short vowels and their long vowel counterparts:

"...The *Faṭḥah* (a) is from the *Alif*, the *Kasrah* (i) from the *Yā'* and the *Dammah* (u) from the *Wāw*..." (vol.4, p.242).

It is clear that he considers the main difference between short and long vowels to be in quantity. Ibn Jinnī (op.cit., p.30) calls the short vowels '*Aṣwāt Nāqīṣah*' (incomplete sounds) and he mentions that some other scholars call them 'the little letters'. It is probable that this attitude is influenced by the Alphabetical system of Arabic which does not include characters for the short vowels. The concept of the short vowels being parts of the long vowels leads to the conclusion that for Sibawayh the short vowels are phonetically similar to the long ones except in duration.

On the phonological level Sibawayh uses the opposition *Ṣaḥīḥ* vs. '*Illah*'. In this respect the term *Ṣaḥīḥ* has another connotation, equivalent to 'strong' in opposition to the term '*Illah*' which might be interpreted as equivalent to 'weak' (cf. 3.2.2 below).

* Farāḥīdī excludes the glottal stop *Hamzah* from the list of *Ṣaḥīḥ* letters, considering it one of the '*Illah*' letters (cf. 2.3 above).

** Other terms have appeared in the works of some modern linguists. Anis (1961, p.27) use the term *Sakīn* for a consonant, which is not a felicitous choice because it is more commonly used to refer to a consonant not followed by a short vowel (cf. 2.4 above) and he calls the vowels *Layyin* letters. Makhzūmī (1966, p.9) terms a vowel *Ṣā'it* or *Mu'tal* and terms a consonant *Ṣāmit*, *Sakīn* or *Ṣaḥīḥ*.

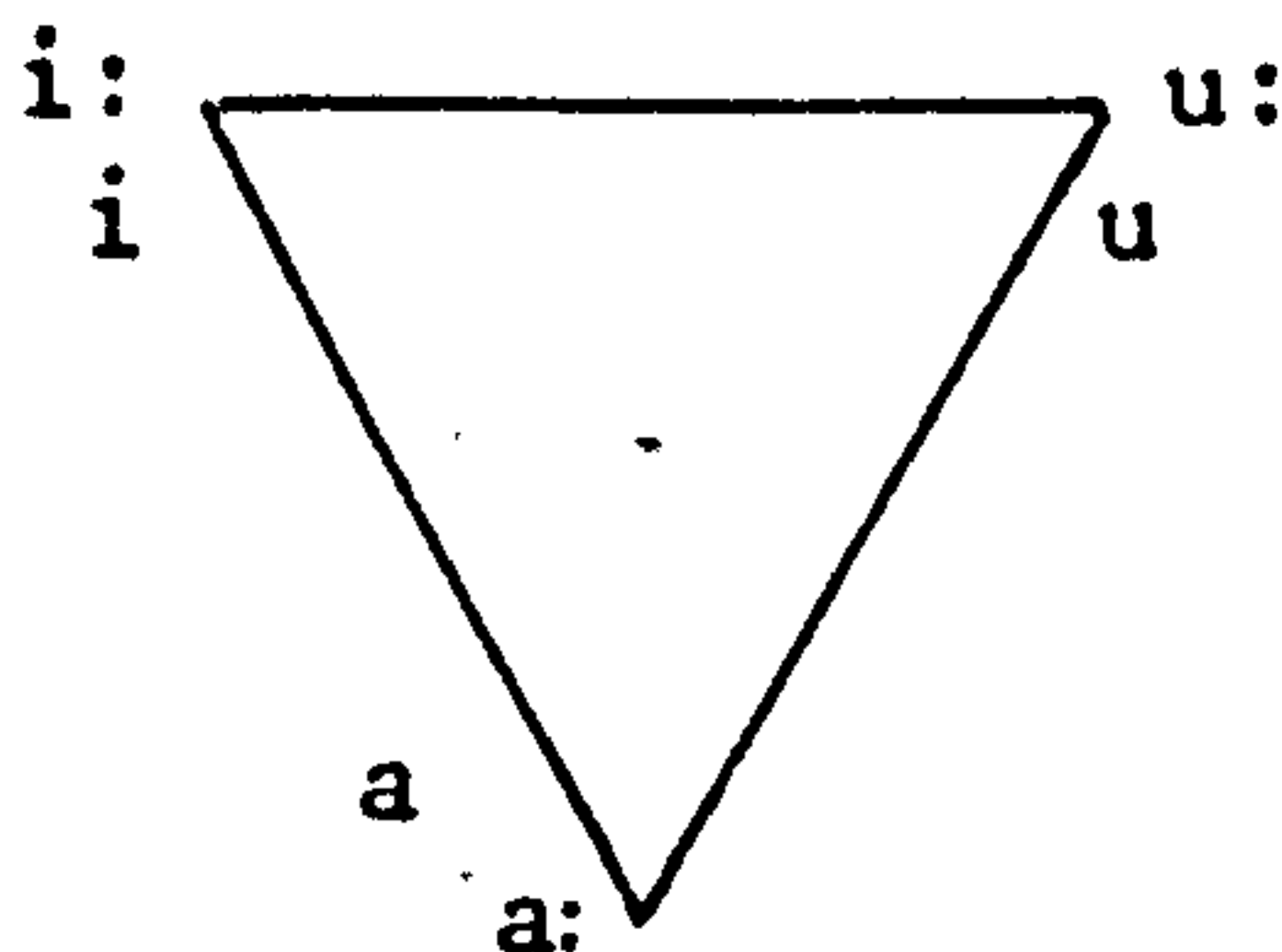
Although these terms first appeared in the Book of Sibawayh, they are attributed to his master Farāhīdī who, describing the Yā', the Wāw, the Alif and the Hamzah, states:

"... these letters are called *Ḥuruf al-'Illah...*" (vol.1, p.59).

On the structural level Sibawayh uses the opposition *Ṣaḥīḥ* vs. *Mu'tal* to refer to the elements of a construct in Arabic. The term *Mu'tal* (having the property of weakness) refers to a construct, one of the radical elements of which is a long vowel, a semi-vowel or a Hamzah. On the other hand when none of these elements is found in a construct it is called *Ṣaḥīḥ*, or '*Ghayru l Mu'tal*', (not weak).

3.2.1 Phonetic Properties of the Vowels

Arabic has a simple triangular vowel system, the most basic vowel system any language can have (Schane, 1973, p.10). There are three main areas for vowel production, front, back and low. In each area two vowels are produced, a long one and a short one.



Although *Fuṣḥā* Arabic recognizes only three long vowels and three short vowels, most of them can have allophonic variants which occur in different phonetic environments (cf. Chapter Six).

In one sentence Sibawayh sums up most of the phonetic properties of the long vowels, the Wāw, the Yā' and the Alif:

"...these letters are *Ghayru Mahmūsāt* (not whispered), and are letters of *Madd & Līn*; their exits are wide open for the air of the sound; no other letter has an exit more open than theirs, nor a more prolonged sound..." (op.cit., p.176).

It can be inferred that, defining the short vowels as parts of the long vowels, the cover term *Madd & Līn* can be used to describe all the vowels of Arabic phonetically. The above quotation very clearly indicates the way Sibawayh understands the phonetic properties of the vowels.

3.2.1.1 Jahr

The first phonetic feature of the vowels mentioned by Sibawayh in

the quotation above is that pertaining to voicing, describing the vowels to be 'not whispered', which is his own way of saying 'voiced'. In this respect he classifies the segments into 'Mahmūs' and 'Majhūr'. The next section of this chapter (3.3 below) will attempt to discuss his view of this feature in detail. However it should be mentioned here that the term Mahmūs, literally meaning 'whispered', should not be confused with the technical meaning of this term as used in modern linguistics implying a state of narrowed glottis (Abercrombie, 1967, p.69).

3.2.1.2 Līn

The term Leen is equivalent to 'softness'. Vowels are usually articulated with open approximation of the articulators involving no contact and producing no or little audible friction. This fact, together with the fact that the tongue movements involved in vowel production are subtle and very minute, makes it more relevant to base vowel description on auditory judgement of sound relationships, together with some articulatory information (Gimson, 1962, p.35). Using the term 'softness' implies that Sibawayh is aware of the auditory characteristics of the vowels, in contrast with the consonants. According to him all the vowels are 'static' in the sense that they cannot be followed by a short vowel. The Wāw and the Yā' in their pure vowel state are described as Līn letters. If they are followed by a short vowel (i.e. made dynamic) in Sibawayh's terms, they cease to be Līn letters; in other words, their auditory phonetic properties will change (becoming consonantal) (vol.4, p.197). Sibawayh does not explain the reason lying behind this phonetic change in the auditory characteristics of the segments. The modification in the shape of the vocal tract that produces this change is implied in his description of the vowels based on articulatory terms, which will be discussed in the next sub-section. This phonetic change can be explained suitably enough in terms of the phonological rules that operate on the syllabic structure of Arabic. Sibawayh states that a long vowel becomes consonantal if followed by a short vowel, i.e. $\bar{V} + V \rightarrow CV$, because the combination $*\bar{V}V$ is not possible in Arabic. The long vowel Alif, having no semi-vowel correlate, can only occur as a pure vowel. If it is followed by a short vowel, it will change into either Wāw or Yā' as a semi-vowel (vol.3, p.548 ; vol.4, p.156). The examples to be cited for this change are found in the chapter where he discusses

the making of the singular intodual *Muthannā* in nouns where the Alif is in final position (vol.3, pp.386 ff.).

e.g.(a): /'fata: / (a youth) → / fatāya:n /

(b): /'qaṣa: / (a stick) → / qaṣāwa:n /

He explains that in these examples the Alif stands for an underlying Yā' and Wāw respectively. To change a sigular noun into a dual the particle /— a:n / is suffixed to the form, if it is in the nominative. In this case there will be two neighbouring Alifs, which is not permissible in Arabic. Sibawayh explains that, to avoid this situation, the first Alif (which he considers as static) must be made dynamic; but that too is not possible (op.cit., p.356). Because of this, he adds, the Alif is changed into its underlying form, Yā' or Wāw in the above mentioned two examples.

3.2.1.3 Madd

The term Madd is used by Sibawayh to describe the vowels in terms of their duration. In contrast with the consonants he explains that the sounds of vowels can be prolonged:

"...more than the sound of any other letter..." (vol.4, p.176). And he adds that when the sound finds enough space in its outlet, it continues till *"...the breath gets exhausted at the glottis"* (ibid.). He seems to realize that when the pulmonic air is completely consumed by the egressive airstream as a result of extending the duration of a long vowel the sound will be terminated. Sibawayh uses this exaggerated prolongation of the long vowel as an example to emphasize the differences in pausing on consonants in comparison with pausing on long vowels. He states that, unlike consonants, when pausing on long vowels: *"...you do not close on them by lips, tongue or pharynx..."*. The expression 'close on them' can be understood to mean performing a constriction in the vocal tract to achieve a cessation of the sound at the end of the utterance. It might be mentioned that Arab speakers prefer to end an utterance with a consonant (Makhzūmī, 1966, pp.16-17).

In terms of relative duration the vowels are classified into two categories, long vowels and short vowels, each one of the three long vowels having a short vowel counterpart. Sibawayh states that all the short vowels are 'from' the long vowels (vol.4, p.335). Ibn Jinnī says the same (b, p.19) and adds that if a short vowel is saturated (i.e. further prolonged) it will become a long vowel (op.cit.,p.27).

Like the three long vowels Alif /a:/, Wāw /u:/ and Yā' /i:/ the

short vowels are given the names *Fathāh* /a/, *Ḍammah* /u/ and *Kasrah*/i/. The phonetic value of these short vowels was realized by the Arab grammarians as early as the beginning of Arabic grammatical studies (see 1.3.2 above). The above mentioned names of the short vowels have a close relationship with their phonetic properties. *Fathāh* means an 'opening' or a 'gap' signifying the wide open shape of the vocal tract during its articulation. *Kasrah* means 'break', describing the tongue action of 'breaking' the buccal cavity into two parts, and *Ḍammah*, which means 'bringing together', describes the rounding of the lips.

As mentioned above, Sibawayh considers that the only opposition between long vowels and short vowels is that of quantity. In actual fact this is not quite the case. The long vowel /a:/ is not quite a prolonged /a/. In the minimal pair /'kataba / and /'ka:taba / the pair of vowels /a/ and /a:/ are different in quality as well as in quantity. The short vowel is slightly more fronted and less open than the long vowel. Sibawayh, and all the other Arab grammarians for that matter, pay no attention to these differences. One possible explanation of this attitude is that the only phonemic contrast between the short and the long vowel lies in quantity. On the other hand all the vowels in Arabic are subject to phonetic changes under the influence of neighbouring consonants, the place of stress or because of both factors.

The same remark about the quality difference applies to the pair of vowels /i/ and /i:/ and the pair /u/ and /u:/. The short front vowel /i/ is less close than its long counterpart /i:/ and the short back vowel /u/ too is less close than the long vowel /u:/. The following minimal pairs illustrate the phonemic contrast between the short and the long vowels:

- e.g.(a): /'jamal / (camel) vs. / jama:l / (beauty)
 (b): /'qutila / (was killed): /'qu:tila / (was fought against)
 (c): / masa:kin / (houses): / masa:ki:n / (poor people)

There are cases in which the duration of the vowels is contextually governed, where a long vowel is reduced to a short vowel. When a long vowel occurs finally in a word its duration is influenced by the status of the initial consonant of the following word. If that consonant is static, as in the case of the definite *Lām*, the duration of the preceding vowel is reduced and is phonetically realized as a short vowel. No changes in the meaning result from this operation.

e.g.(d): / 'jara: 'waladun / (a boy ran)
 vs. / 'jara: i'waladu / → ['jara l'waladu] (the boy ran)
 (e): / 'Xuđi: ki'ta:ban / (take a book, f.sing.)
 vs. / Xuđi: lkita:ba / → ['Xuđi lkita:ba]
 (f): / 'Xuđu: ki'ta:ban / (take a book, m.pl.)
 vs. / 'Xuđu: lkita:ba / → ['Xuđu lkita:ba]

Sibawayh comes up with an unfelicitous interpretation of this process. Believing in the existence of a short vowel intervening between a consonant and a following long vowel he suggests that in such examples the long vowel is deleted leaving the (presumed) short vowel as it is. His explanation is based on his considering the long vowel a Sakīn letter (static). Consequently, he concludes that, because it is not permissible for two static consonants to occur side by side, the long vowel is deleted (vol.4, pp.156-157). Besides that he realizes that this operation does not affect the semantic content of the utterance and asserts that speakers elided the long vowel because:

"...they did not fear any change in meaning..." (ibid.).

Sibawayh, as well as all the Arab grammarians after him, have put themselves in an awkward contradictory position. The short vowel is described by them to be similar to the long vowel except in quantity (see 3.2.1.2 above). If a long vowel functions as a static letter why should not a vowel have the same function? Incidentally, this assumedly deleted long vowel is kept in the orthography, a fact that further complicates the situation and refutes the explanation offered by Sibawayh and the others. It is likely that this misconception is a result of the influence of the orthography which led them to believe that all the segments can occur either Sakīn or Mutaharrik except the three long vowels which, because they cannot be followed by a short vowel, can only occur as Sakīn (op.cit., p.193).

Shortening the long vowels in the three examples (d, e, f) above is in fact an outcome of the constraint on the types of syllable that can occur medially in Arabic. The definite Lām, prefixed to a noun, is realized as the final segment in the preceding syllable. In this case that syllable will have the form CVC̄. As this type of syllable does not occur medially it is reduced to — CVC —, i.e. CVCV̄ CCVCVCV → CVCVC CVCVCV (cf. e.g.(d) above).

Another change in the duration of vowels takes place when a long vowel is immediately followed by a glottal stop or a geminate consonant in connected speech. In these cases the long vowel is realized with

extra length. Sibawayh says nothing about this phenomenon. Ibn Jinnī (b, vol.1, p.20) describes it while discussing the distinction between the short and the long vowels. In modern Arabic these extra long vowels are only realized in Qur'ānic recitation when they occur in the above mentioned context.

e.g.(g): / yaša:ʔu / (he wishes)
 (h): / 'ša:bbah / (a young girl)

3.2.1.4 Short Vowels in Pause

Sibawayh recognizes certain variations in the duration of short vowels when they occur finally in the utterance. He explains that in this context speakers realize these final short vowels in four ways:

- (a) *Takhfīf* by which the short vowel is completely elided.
- (b) *'Ishmām* which only applies in realizing the Dammah /u/ where no sound is produced but the lips are rounded. He explains that this way of realizing this vowel:

"...is meant for the sight, not a sound for the ears."

(vol.4, p.171).

He states that this gesture is meant to inform the listener (who must be looking too) that the elided vowel was a Dammah, and adds that this manner of realizing a short vowel only suits the Dammah, not the other two short vowels. He quotes Farāhīdī and Yūnis to support him in this view (op.cit., p.172).

(c) *Rawm* by which the short vowel is given a very short duration. This term literally means 'intending', and Sibawayh comments that speakers wanted to differentiate between deleting a final short vowel in pause and doing that because of grammatical case. This way they would act as if they only 'intended' to realize the vowel.

(d) *Taḍ'īf* by which the short vowel is deleted but the consonant is geminated "for emphasis" (op.cit., p.168).

Then he presents a system of graphic symbols used in each one of these cases. For case (a) a small Khā' character is used, for case (b) a dot, for case (c) a dash and a small Shīn character is used for (d). Sīrāfī (footnote (1) in p.169) explains that the Khā' in case (a) means *Khafīf* and the Shīn in case (d) means *Shadīd* (geminate). Using a dot for case (b) and a dash for case (c), he adds, means that the vowel in (c) is relatively longer than that in (b), just as the dash is larger than the dot.

3.2.1.5 Places of Articulation of Vowels

The outlets of the vowels are impressionistically described by Sibawayh. He states that:

"...their outlets are wide for the air of the sound; and none of the (other) letters has wider outlets than theirs..." (op.cit., pp.176 & 436).

Because of the absence of suitable means this early Arab grammarian could only rely on kinesthetic sensations to offer any coherent system of vowel description. Perhaps this is the main reason that led him to conclude that the place of articulation of the Alif (and presumably its short counterpart the Fathah) is at the far end of the vocal tract. On the other hand he did not fail to notice the wider shape of the vocal tract during vowel articulation in comparison with consonant articulation. Furthermore he concludes that because of their open outlets they are most 'intangible' (ibid.). This conclusion is similar to what is suggested by modern linguistics.

"...Vowel segments ... are thus less tangible than consonants..." (Abercrombie, 1967, p.55 also cf. Gimson, 1962, pp.39-40).

Among the three long vowels, the Alif is ascribed the 'most open' outlet, next the Yā' and thirdly the Wāw. Accordingly he suggests that the wider the outlet of the vowel the more 'intangible' it is.

In addition to the shape of the vocal tract in vowel articulation the tongue position is only mentioned in discussing the production of the Yā'. For the Wāw he mentions the rounding of the lips.

'...You may round your lips in the Wāw and raise your tongue towards the palate in the Yā'..." (vol.4, p.436).

While he describes these three long vowels as 'letters of softness and prolongation' (vol.4, p.176), he calls the Wāw and Yā' only 'soft' and calls the Alif 'Hāwī' (airy) (op.cit., p.435), borrowing from Farāhīdī who uses this term to describe the long vowels and the glottal stop (Farāhīdī, vol.1, p.57). I am inclined to believe that this alternation in using the terms is not a symptom of inconsistency but rather an attempt to elaborate in describing the vowels as well as adopting his master's terminology in describing one of the long vowels, the Alif and repeating the same description of the outlet of the vowels (see 2.3.4 above).

For the purpose of convenience, and according to the above-mentioned description of the vowels of Arabic, I find it suitable enough to offer the following terms for these vowels :

- (a) The Alif: the long pharyngeal vowel a:
- (b) The Fathah: the short pharyngeal vowel a
- (c) The Yā': the long palatal vowel i:
- (d) The Kasrah: the short palatal vowel i
- (e) The Wāw: the long velar vowel u:
- (f) The Ḍammah: the short velar vowel u

	pharyngeal	velar	palatal
long	a:	u:	i:
short	a	u	i

3.2.2 Phonological Function of Vowels

Besides describing the vowels phonetically Sibawayh presents another kind of description based on the phonological function of the vowels of Arabic. For this purpose he uses the opposition 'Ṣaḥīḥ' and 'ʿillah'.

Literally the term 'illah means 'physical defect' or 'reason' in some contexts. Sibawayh uses it metaphorically to imply 'weakness' or 'phonetic changeability', which he seems to consider as a sign of weakness in the structure of a linguistic unit. Sibawayh has certainly borrowed it from Farāhīdī.

The two terms Ṣaḥīḥ and Mu'tal are also used to describe word structures. A construct is 'Mu'tal' if one of its radical elements is an 'illah' letter, otherwise it is a Ṣaḥīḥ construct (op.cit., p.242). The same description is found in Farāhīdī's 'Kitab al-'Ayn' (vol.1,p.59).

It seems evident that Sibawayh is aware of the distinction between Phonetics and Phonology. To describe the phonetic properties of the vowels he calls them letters of 'Madd and Lān' (softness and prolongation), and he calls them 'illah' letters to describe the way they behave within the structure of Arabic. As will be discussed below the four 'illah letters are subject to replacement, reduction or elision.

in certain phonetic environments or under certain phonological rules (Makhzūmi, 1966, p.10). This susceptibility to such a range of changeability has led Sibawayh to look at the 'Illah letters as the 'weak' elements in word structure and consequently to consider the consonants as the 'strong' elements, considering them Ṣaḥīḥ letters which, in this context, could have a meaning equivalent to 'complete'. The following examples show some of the situations in which the 'Illah letters are changeable. They are only illustrative of some of the changes these letters are subject to:

i. Changing the Wāw into Yā' Alif or Hamzah:

e.g.(a): / waqd / (a promise)

*/ miwqa:d / → / mi:qa:d / (a promised event)

(b): / qawl / (a saying)

*/ 'qawula / → / 'qa:la / (he said)

(c): / šaqw / (misery)

*/ šaqa:w / → / šaqa:? / (condition of misery)

ii. Changing the Yā' into Alif, Wāw or Hamzah:

(d): / šahra:? / (a desert)

*/ šaha:ri: / → / šaha:ra: / (deserts)

(e): / yusr / (prosperity)

*/ 'muysir / → / 'mu:sir / (prosperous)

(f): / saqy / (watering)

*/ siqa:y / → / siqa:? / (share of water)

iii. Changing the Alif into Wāw or Yā':

(g): / 'qa:tala / (he fought against)

*/ qua:tila / → / 'qu:tila / (he was fought against)

(h): / 'muslima:n / (two muslims) in the nominative.

→ / 'muslimayn / in the dative or accusative.

iv. The Hamzah is subject to change in a large number of situations.

This will be thoroughly investigated in Chapter Five below.

In certain situations the four 'Illah letters are subject to reduction or elision. What Sibawayh considers as elision *Ḥadhf* is in many cases a reduction of a long vowel into a short vowel. The examples (d, e & f) mentioned in (3.2.1.3) above and similar ones are cited by him to explain what he considers as elision. He seems to consider elision as the case of maximum weakness in the four 'Illah letters. To begin with he considers a letter 'weak' if it is static and 'strong' if it is dynamic (vol.3, p.544). When one of the 'Illah letters occurs as

static (the Alif considered as 'ever static') he terms it 'dead' to emphasize what he considers to be the maximum state of weakness (vol. 4, p.197). Explaining the reason for eliding the Alif in certain cases he states:

"...they dared elide the Alif because it is 'dead', (and) does not accept any short vowel after it..." (op.cit., vol.3, pp.356 & 423).

He also describes the Wāw , when it is static, as 'dead' (op.cit., p.360), and says the same about the Yā' (op.cit., p.356).

On the same basis he considers a letter as 'alive' when it is dynamic (ibid).

Sibawayh recognizes, furthermore, another criterion for assessing the 'weakness' or 'strength' of the 'Illah letters. Two of them, the Wāw and the Yā' are described as possessing varying degrees of strength , on basis of their place within the structure of a word. When one of them occurs in final position it is 'most Mu'tal and weakest'. The farther away from the final position of the word it occurs the stronger it is:

"...when they occur in final position they are weakest... when in medial position they are stronger...and when in initial position they are strongest..." (op.cit., vol.4, p.381).

To sum up this argument Sibawayh seems to realize that the probability of change among the four 'Illah letters is governed by a number of criteria. The Alif is most susceptible to change, i.e. it is the weakest of the four, because it cannot occur as dynamic, like the other three. Therefore the Yā' and the Wāw are relatively stronger because they can be followed by a short vowel in their semi-consonant status. On the other hand when a Wāw or Yā' occur initially in a construct they are strongest; they become less strong when in final position. Ibn Jinnī supports Sibawayh and states that the Yā' and the Wāw become stronger when they are made dynamic (Ibn Jinnī, b, vol.1, p.22). On this account the Alif cannot occur initially because it can only occur as a pure vowel.

Sibawayh states that basically a letter in Arabic is dynamic. He seems to imply that the underlying form of Arabic structure is a number of syllables of the type CV. He uses the term 'Aṣl' to refer to underlying linguistic forms.

"...wa laysa l 'aṣlu l 'iskān..." (op.cit., p.410).

If this argument is accepted a static letter can only occur in a final position in a syllable, i.e. CVC. A dynamic letter can stand on its own because it is CV, hence it is considered strong. Consequently a static letter can only occur as part of a syllable, hence its weakness. So far it can only be speculatively claimed that this is what Sibawayh had in mind when he assigned different degrees of strength to the 'Illah letters, based on the above mentioned criteria.

3.3 MAHMŪS VERSUS MAJHŪR

Sibawayh classifies the speech sounds of Arabic into two categories *Mahmūs* and *Majhūr*. Initially this classification (3.3.2 below), might lead the reader to hastily identify this binary system with the modern two classes of voiceless and voiced respectively. As a matter of fact almost a complete correspondence could be found between *Mahmūs* and voiceless on the one hand and *Majhūr* and voiced on the other (cf. 3.3.2.3 below). However, closely examining Sibawayh's view of these two classes a different concept seems to emerge.

The two terms *Mahmūs* and *Majhūr* appeared for the first time in Arabic linguistics in al-Kitāb of Sibawayh. No mention of them is to be found in Kitāb al-'Ayn of Farāhīdī. It is not certain whether Sibawayh had borrowed them from his tutor or coined them himself. What seems almost certain is that he was the first grammarian to use them in this sense.

Literally '*Mahmūs*' means 'whispered, hushed' and '*Majhūr*' means 'loudly and clearly uttered'. These two terms of Sibawayh became the subject of discussion in old and modern linguistics. Arab grammarians who succeeded him adopted the same concept and added nothing. They just repeated his definitions verbatim, with limited attempt to interpret them, and followed his classification as it is (Ibn Jinnī, b, vol.1, p.69; Zamakhsharī, p.395 and Ibn Ya'īsh, vol.10, p.128; etc.). In modern linguistics different interpretations were made of them by a number of scholars. Fleisch (1949) identified them with 'voiceless' and 'voiced'; Cantineau (1946) considered them equivalent to 'non-pressed and voiceless' versus 'pressed and voiced'; Garbell (1958) suggested for them 'breathed' and 'non-breathed' and Blanc (1967) offered 'muffled' and 'sonorous' respectively.

3.3.1 Definition of Mahmūs and Majhūr

The definitions offered by Sibawayh for these two categories do not seem to be without ambiguity. Succeeding grammarians of Arabic added nothing to them and some modern linguists repeatedly attempted to explain what he meant. He defines the Majhūr as follows:

"...The Majhūr is a letter fully supported in its place and the flow of breath is impeded until the support is completed and the sound flows on..." (vol.4, p.434).

And he offers the following definition for the Mahmūs:

"...a letter weakly supported in its place and the breath is allowed to flow with it..." (ibid.).

(a) The term 'support' seems to be a key word in these two definitions which I took as equivalent to the Arabic term *'I'timād* used by Sibawayh. He states that the action *'I'timād* is strongly performed in the production of the Majhūr and weakly performed in the Mahmūs. There are no clear indications that he used it to specifically imply some action taking place in the glottis or in the vocal folds during the production of the Majhūr, or its absence in the Mahmūs. In fact there is an indication that the action he is referring to might be taking place somewhere else. In the same page he remarks that the two nasals Nūn and Mīm are 'supported' in the mouth and the nasal cavity 'al-Khayāshīm'. This remark suggests that Sibawayh might be referring to the articulatory action by means of which a segment acquires its phonetic properties. On the other hand it might preclude any relation between the action he is referring to and the source of 'voicing' in the vocal tract.

(b) Another matter of interest is that Sibawayh's definitions contain references to different degrees of intensity in producing the two categories of sound. Mahmūs is described as being 'weakly' performed and the Majhūr 'fully' performed. Meinhof (1920/21, pp.93-94) identified them with 'lenis' and 'fortis' respectively (cf. Cantineau, 1946). These interpretations are made on relating Sibawayh's terms to articulatory criteria while his seem to be mainly based on auditory-impressionistic criteria.

(c) A third matter to be noticed in Sibawayh's definitions is the reference to the presence of *Nafas* (breath) in the Mahmūs sound and its absence in the Majhūr sound. The reference to the presence or absence of breath might be taken as an indication of Sibawayh's awareness of the difference between the two kinds of airflow involved in

the production of the two kinds of sounds. In the *Mahmūs* he describes the airflow to flow freely while he refers to some impedance to this flow in the *Majhūr*. The only matter missing from Sibawayh's definitions is some reference to the actual cause of these differences in the two kinds of airflow. This is one fact on which I based my conclusion that his descriptions are impressionistically made. Although he seems to have recognized the effect of the action of the vocal folds on the auditory properties of the two types of sound it is not certain how much he knew of their physiology. The first reference to the phenomenon of voice ever to be made by an Arab scholar is to be found in the works of the great scientist and philosopher *Ibn Sīnā* (Avicenna) about three centuries after Sibawayh. *Ibn Sīnā* described the voicing phenomenon in speech sounds by reference to certain vibrations that occur with the spirants *z*, *ḏ* & *ḡ* which are absent in *ṣ*, *s* & *ṯ* (Blanc, 1967; Semaan, 1963). *Ibn Sīnā* had considerable training in anatomy and natural sciences, unlike Sibawayh who could not be expected to know the anatomy of the glottis at that early stage of Islamic renaissance.

(d) The absence in Sibawayh's definitions (of *Mahmūs* and *Majhūr*) of any explicit reference to what might be considered the equivalent of the phenomenon of 'voicing' does not necessarily imply that it was totally unknown to him. There are references in *al-Kitāb* which indicate that he distinguishes between two contrasting phonetic characteristics that accompany the production of speech sounds. He states that a *Majhūr* sound is characterized by *Ṣawt al-Ṣadr* (sound of the chest) and *Mahmūs* by *Ṣawt al-Famm* (sound of the mouth). These statements are made in the course of investigating the manner of pausing on consonants. In pause, he explains, *Majhūr* segments are accompanied by a *Ṣuwayt* (short sound) while *Mahmūs* segments are accompanied by 'breath', perceived as puffing:

"...because they are produced with the sound of the mouth..."
(vol.4, pp.174-175).

Blanc (1967) reports a statement attributed to Sibawayh by *Sīrāfī*, not to be found in *al-Kitāb*, presented and analysed by Fleisch (1958). Sibawayh is reported to state that:

"...What distinguishes the Majhūrah from the Mahmūrah is that you cannot pronounce the Majhūrah clearly unless it includes noise from the chest (i.e. voice)...the sound coming out of

the chest and flowing in the throat...As for the Mahmūsah their sound comes from their points of articulation and that is what brings out the sound...their I'timād is not like that of the Majhūrah, and so the sound is brought out of the mouth weakly..."

(e) Attempting to explain the distinction between the two classes of sound Sibawayh suggested a method by which to examine the difference between them. In the Mahmūs case, he remarks, it is possible to produce a sequence of Mahmūs segments in repetition with a free flow of breath. If the same thing is attempted with a Majhūr segment it will not be possible unless each segment is followed by a vowel sound (vol. 4, p.434). In other words it is possible to whisper a Mahmūs sound but not a Majhūr sound.

It might be possible to conclude that Sibawayh's distinction between the two categories of sounds is based on his realization that a Majhūr sound carries a physical property caused by an action that takes place at the throat, earlier than its place of articulation. A Mahmūs sound, on the other hand, is devoid of this property and all its physical properties are initiated at its place of articulation.

3.3.2 Classification of the Segments into Mahmūs and Majhūr

To Sibawayh, therefore, Arabic letters are either Majhūr or Mahmūs. No third category is recognized by him. He states that the Majhūr letters are nineteen:

/ ʔ, a:, ʕ, ʔ, ʕ, j, y (& i:), ʕ, l, n, r, d, d,
z, ʕ, ʕ, b, m, w (& u:) /

The Mahmūs letters are ten:

/ h, ħ, x, k, š, š, t, s, θ, f /

All the letters listed as Mahmūs are classified 'voiceless' in modern linguistics and we have no problem there. In the list of Majhūr letters all are classified 'voiced' except three letters, the glottal stop Hamzah /ʔ/ which is not a voiced sound by virtue of its nature; and the Qāf /G/ and Ṭā' /ḏ/ which are realized as voiceless /q/ and /t/ respectively in modern Arabic.

3.3.2.1 The Qāf

The Qāf is classified by Sibawayh a Majhūr sound. According to his description of its place and manner of articulation it is a uvular plosive. When accompanied by voicing its phonetic value will

be G . The present phonetic value of this sound, as realized in modern Fuṣḥā Arabic and in some dialectal variants is a voiceless uvular plosive q .

It might be easy to jump to conclusions and decide that Sibawayh made a mistake in assessing the voice feature of this sound, especially when it is realized a voiceless [q] in Qur'ānic recitation, which is considered as the optimum of Arabic articulation. This should not be the case as there are more reasons to believe that a sound change is more likely to have taken place, as the following observations seem to suggest.

The Qāf is realized in different ways in a number of colloquial Arabic varieties. In most parts of the Arabian Peninsula and Iraq, in the Sūdān and upper Egypt it is realized as a voiced velar plosive [g]. In some towns of Iraq, like Mosul and Tikrit, as well as in the communal dialect of the Christians of Baghdad, it appears as a voiceless uvular plosive [q] , similar to that of modern Fuṣḥā Arabic. In some parts of southern rural Iraq it is a voiced affricate [j] . In the urban dialects of Lebanon and Syria and in Cairene Arabic it is realized a glottal stop [ʔ] . In Baghdadi colloquial Arabic sometimes it alternates between [q] , [g] and [j]. (The sound changes of the Qāf will be investigated in more detail in 3.4.1 below).

The hypothetical old Qāf /G/, having no voiceless homorganic counterpart, aligned its voicing feature along one of possible two directions towards achieving pattern congruity. It either moved forward to become [g], homorganic with its voiceless velar plosive neighbour the Kāf /k/, forming a voiced/voiceless pair, or lost its voice feature to become similar to the Kāf but retained its place of articulation next to it, achieving another form of pattern congruity.

	uvular	velar
voiced	G →	g
voiceless	↓ q	k

This shows a tendency towards reducing the number of contrasts in distinctive features to the minimum possible among neighbouring phonemes in the pattern.

If this argument is accepted there is every reason to believe that the original phonetic value of the Qāf is [G] and the present voiceless variant [q] of Fuṣḥā Arabic is a subsequent outcome of sound change. Accordingly, Sibawayh's description of the Qāf as Majhūr, is to be accepted as correct.

3.3.2.2 The Ṭā'

Like the Qāf the Ṭā' /ḍ/ too seems to have undergone a change in its voice feature. Sibawayh describes it as a Majhūr letter, while it is realized as a Mahmūs plosive ṭ in modern Fuṣḥā Arabic and colloquial variants. There are strong indications that Sibawayh is right in classifying this letter as a Majhūr, and the present voiceless realization is a result of sound change. Anis (1961, p.50) quotes Ibn al-Jazary (in the fourteenth century A.D.) to the effect that the Egyptians and some North African Arabs pronounce the Dād /ḍ/ as [ḍ] and concludes that the present Dād of Egypt is similar to the old Ṭā' (i.e. [ḍ]). He suggests that the development is a result of the Dād taking the place of the Ṭā' in the pattern of Arabic phonemes, which led to the devoicing of the original /ḍ/ into [ṭ] (perhaps to acquire some distinction from the newcomer!). This conclusion could be plausible enough in the Egyptian Arabic pattern of phonemes. But it does not explain the presence of a devoiced Ṭā' [ṭ] in the eastern variants of Arabic, where the Dād /ḍ/ merged with the /ḏ/. It neither took the place of the /ḍ/ as it did in Egyptian Arabic, nor did it devoice the /ḏ/ to acquire some distinction, as Anis might have wanted to suggest.

Saaran (op.cit) agrees that the modern Arabic voiceless [ṭ] is a modification of older voiced /ḍ/ and, quoting Glacer (1885) and Schaade (1911, pp.13-14) suggests that a voiced Ṭā' is still heard in the dialect of San'ā' in the Yemen. Irene Garbell (1958, pp.312-313) refers to the existence of a voiced variant in (some) modern dialects of the Arabian peninsula, and suggests that if these dialects are to be taken as a witness this sound is fully voiced between voiced sounds and partly voiced in other positions. Therefore Sibawayh is again correct in classifying this letter as Majhūr.

3.3.2.3 The Hamzah

The Hamzah /ʔ/ is also classified by Sibawayh a Majhūr letter. If Majhūr is to be taken as equivalent to voiced the classification will be incorrect. But there seems to be more to it than that, if his

concept of Majhūr is closely examined. According to the description of this feature discussed early in the present section the flow of the airstream is impeded during the articulation of the letter. This is the basic criterion on which Sibawayh bases his view of this feature. It is common knowledge that in the articulation of the glottal stop the vocal folds are tightly brought together to block the flow of the pulmonic airstream, then are abruptly released to let the compressed air rush out to produce the plosive sound of the Hamzah. On this basis alone Sibawayh is right to consider this letter Majhūr. All the other Majhūr letters experience some impedance of the airstream, when the vocal folds are alternately brought together and blown apart to achieve the vibration that:

"...produces the buzzing noise technically known as voice."
(Abercrombie, 1967, p.26).

The peculiarity of the glottal stop is that the closure is made by the vocal folds themselves and the release stage of the segment is performed by the abrupt release of the closure by opening the folds wide apart. This action does not produce voice, hence not classifying the Hamzah 'voiced'. Neither can it be classified 'voiceless' by virtue of the closure of the glottis by the folds. This peculiar feature of the glottal stop has led modern phoneticians to consider it neither voiced nor voiceless, but to term it 'unvoiced'.

To sum up, Sibawayh's description of this feature and his classification of the letters of Arabic based on it are quite plausible. Consequently it can be concluded that his term Mahmūs is equivalent to 'voiceless' and Majhūr to both 'voiced' and 'unvoiced'.

3.4 SHADĪD VERSUS RIKHW

According to manner of articulation Sibawayh classifies the letters of Arabic into two main categories: *Shadīd and Rikhw*. The literal meaning of Shadīd is 'hard, strong or tight'. The third term 'tight' could be the nearest equivalent that suits Sibawayh's phonetic description of the manner of articulation of this class of sounds. On the same basis the term Rikhw, whose literal meaning is 'loose', is a suitable choice as a counterpart of 'tight' to describe the manner of articulation of the fricatives. He defines Shadīd to be a letter:

"...the sound of which is prevented from flowing on..."
(vol.4, pp.434-435).

The definition of Shadīd presented above accurately describes the compression and holding stages of plosives. Sibawayh says nothing about the release stage. It is probable that he considers the release stage of plosives as part of the sound that follows it in connected speech, which could either be a vowel or a consonant. In some cases the five voiced plosives of Arabic, when not followed by a vowel in pause, are released with a brief short sound (cf. 3.6 below).

The other class of sound, the Rikhw, is defined by him as:

"...a letter with which the sound flows on..." (ibid.).

Sibawayh adopts a binary system in his classification of letters in terms of manner of articulation. All the consonants (except the Ayn /q/) are classified either Shadīd or Rikhw. The two semi-vowels /y & w/ are not included in this classification.

The Shadīd consonants include the eight stops /ʔ, G, k, j, ḍ, d, t, b/, the two nasals /m, n/, the lateral /l/ and the trill /r/. The eight stops are described by him as 'Shadīd' with complete blocking of the air flow. The other four consonants are also considered Shadīd except that the air flow is not blocked in their production. His definition of the class Shadīd presented above does not quite match his classification of the sounds.*

The list of consonants classified by him as Rikhw include the fricatives /f, ḫ, ḍ, θ, z, ṣ, s, š, ḡ, x, ʕ, ḥ, h/.

The only consonant which he describes as both Shadīd and Rikhw is the Ayn /q/, terming it 'between Shadīd and Rikhw'.

It seems that the criterion according to which Sibawayh bases his description of the opposition Shadīd versus Rikhw is whether the articulators come into full contact with each other (performing a closure or not), which is an articulatory feature shared by the Shadīd consonants, or come close to each other in a constrictive type of approximation.

The phonetic description of some of the consonants in terms of their manner and place of articulation, as presented by Sibawayh, does not quite agree with their phonetic values as they are realized in modern Arabic, both in the Fuṣḥā variant and in the different regional dialects of colloquial Arabic. A careful study of the present phonetic state of these consonants might lead us to understand the possible

* There is some parallelism between Sibawayh's feature Shadīd and Fant's suggested feature 'mid-closure' (1971) which considers stops, affricates, laterals, trills and nasals [+] for this feature.

course of sound change followed by them. On the following pages Sibawayh's description of the manner of articulation of these consonants will be studied in comparison with their present state, together with the Ayn, the Lām, The Rā' and the two nasals Nūn and Mīm.

3.4.1 The Qāf

Sibawayh describes this consonant as a voiced post-velar or uvular plosive with the phonetic value G. In modern Arabic this consonant is realized in so many different forms that makes it worthwhile investigating the phonetic characteristics of its different variants. This consonant has either changed its place of articulation, alternated between voiced and voiceless or experienced both changes at the same time. On the other hand it has maintained its Shadīd feature in almost all its variants. The observed dialectal variants of the Qāf are: [q, g, j, k, č, ʔ, b]

3.4.1.1 The Early Qāf /G/

Rabin (1951, pp.125-126) believes that the Qāf of early Qur'ānic recitation *Tajwīd* was a voiced uvular plosive [G] and, quoting Vollers (1892, p.138), he adds that it was witnessed in present day Bedouin colloquials of central Yemen. In fact this^{is} the Qāf described by Sibawayh who considers the Ḥijāzi dialect of Arabic as the best model even though he recognizes the legitimacy of other regional dialects. Anīs (1961, p.67) claims that the original Qāf was similar to that voiced consonant heard among some Arab tribes in the Sūdān, for which he gives the phonetic value [ḡ]. He assumes that it was more retracted and more elevated than [g] (op.cit., p.88).

3.4.1.2 [q]

A voiceless variant of the Qāf [q] is the prevailing variant in modern literary Arabic all over the Arab World as well as in some urban dialects.

In the present day form of Qur'ānic recitation the Qāf is realized without voicing, although this form of Arabic is believed by many to have been faithfully transmitted through the generations with little or no change in the phonetic values of the sounds. Ibn Durayd (*al-Jamharah*, vol.1, p.5) mentions a Qāf in the East Arabian dialect of Tamīm as intermediate between [G] and [k] and describes it as *Ghalīdhah* (thick). Ibn Fāris (*al-Ṣāhibī*, p.5) agrees with that and calls it the Qāf *al-Ma'qūdah* (tied). This one is most probably the

voiceless variant [q] . Rabin concludes that the Aramaic voiceless [q] might have been a contributory factor in turning the eastern Qāf into a voiceless sound.

3.4.1.3 [g]

Another variant of the Qāf is a voiced velar [g] . While the variant [q] kept the place of articulation of the Qāf but lost its voicing, the [g] kept its voicing but moved forward to be homorganic with the Kāf . These changes show two different steps towards pattern congruity (cf. 3.3.2.1 above).

The [g] variant of the Qāf is witnessed in the colloquial Arabic of most of Iraq, in the Bedouin dialects almost everywhere, in rural Egypt Arabic and in some other places. Rabin (op.cit., p.126) believes that the Iraqi [g] was at some time deeply influenced by Bedouin dialects of Western-Arabia. This could be further evidence that the old Qāf of Hijāz was voiced. Avicenna (980-1037 A.D.) in his treatise *Risālah* (cf. Samaan, (trans.), 1963, pp.51-52) describes a 'light' Kāf slightly retracted in place and with weaker obstruction. Kaye (1972 , pp. 31 ff.) comments that Avicenna was referring to a voiced velar stop [g] .

It might be concluded that Avicenna was describing a post-velar Qāf still on its way forward towards homogeneity with the Kāf .

3.4.1.4 [j]

A voiced palatal affricate [j] is another dialectal variant of the Qāf. It is witnessed in some parts of rural Southern-Iraq as well as in limited number of lexical items in Baghdad. They say /jiri:b/ for */Gari:b/ (near) and /jaryah/ for */Garyah/ (village). In Baghdad there are /'qa:sim/ and /'ja:sim/, two proper nouns for the same older */'Ga:sim/. This word is pronounced /'gasim/ in parts of Libya.

This dialectal variant of the Qāf seems to have its roots in some older regional dialects of Arabia. Al-Tabrīzī (1030-1108 A.D.) mentions the Arab tribe *Azd Shanū'ah* pronouncing the Qāf as [j] (cf. Freytag, ed., 1838, p.244). Jayakar (1898, p.653) also reports the same among the coastal tribes of Omān. Rossi (1939, p.464) too cites few similar examples among the inhabitants of the city of Hodeidah in the Yemen and the countryside surrounding it. They say /'jaçada/ for */'Gaçada/ (he sat) and /'ja:diri/ for */'Ga:diri/ etc .

3.4.1.5 [k]

In a few lexical items of the Baghdadi colloquial the Qāf is

realized as [k] , as found in / 'ka:til/ (killer) for */ 'Ga:til/. This rare variant of the Qāf is not reported by other linguists in other Arab regions. Strangely enough this variant occurs in the dialects where the Qāf alternates between [g] , [q] and [j] , as in the following sentence:

*/ 'Ga:dir 'ka:na maGtu:lan 'Gabra 'Ga:sim /
 → ['qa:dir 'ča:n maktu:l 'gabul 'ja:sim]
 (Qādir has been killed before Jāsim).

3.4.1.6 [č]

The same item / 'ka:til/ in 3.4.1.5 above appears as / 'ča:til/ in some rural dialects of Iraq. This variant might be a result of the affrication of the Kāf, widely observed in the Bedouin dialects, extending the process to include affrication of the [k] variant of the Qāf. It can also be a devoiced derivation of the [j] which has developed from the Qāf (cf. 3.4.1.4 above).

3.4.1.7 [ʔ]

In Cairene Arabic and in the urban dialects of Syria and Lebanon the Qāf is realized as a glottal stop [ʔ] . Speakers produce [ʔalb] for */ Galb / (heart) and [ʔari:b] for */ Gāri:b / (near) etc.

This strange shift of the Qāf seems to defy the theory of pattern congruity, yet this dialectal variant shares the features Shadīd and Majhūr with the original Qāf.

3.4.1.8 [ʁ]

In some parts of Southern-Iraq and the Arabian Gulf region the Qāf appears as Ghayn, the voiced uvular fricative [ʁ] . Speakers produce [ʁaʃir] for / 'qaʃir / (palace) and [ʁa:yimmaʁa:m] for / 'qa:ʔimmaqa:m / (governor of a district). In this case it is not easy to determine whether this form is another reflex of the Qāf, because the two consonants Qāf and Ghayn replace each other in these regional dialects. The form / 'ʁada / is produced [ʁada] (lunch), and / qiʔa:r / becomes [ʁaʔa:r] (train). In some parts of the Sūdān only the Qāf is produced in the form [ʁ], [ʁa:nu:n] for / qa:nu:n /, while the Ghayn keeps its fricative form.

This variant of the Qāf maintains the place of articulation of the /G/ and its [+majhūr] feature, but is weakened into a spirant.

3.4.1.9 This number of dialectal variants of the Qāf indicates the following changes in the phonetic features of this consonant:

(a) In all its dialectal variants the Qāf remained a Shadīd consonant except where it appeared as [ʕ] .

(b) The Qāf alternated between retaining its [+majhūr] feature and losing it. In the [g, j, ?] variants it is [+majhūr] and it is [+mahmūs] in the [q, k, č] variants.

(c) The widest change took place in the place of articulation of this consonant. It either moved forward in the vocal tract towards the velum [g, k] and the palate [j, č] or retracted towards the glottis to appear as [ʔ] . The shift forward could be interpreted as a tendency towards pattern congruity to form a more symmetrical sound pattern. The /k/ phoneme has no voiced counterpart, hence the shift from /G/ [to g] . The Jīm too is without a voiceless counterpart which might have caused the shift of /G/ to [č] .

The shift backward does not seem to agree with the above presented interpretation. A tendency towards ease of articulation could be more satisfactory to explain this shift. It is likely that the old Qāf, in addition to its isolated position in the sound system, was relatively difficult to articulate. Perhaps the second fact is partly a result of the first fact. Speakers of Arabic, therefore, looked for easier realization of the Qāf. In its shift forwards the Qāf looked for a 'case vide' in the pattern (Sommerstein, 1977, p.255) . In its shift backward it looked for the next place where a stop can be realized and only found it in the glottis, hence the merging of the Qāf with the glottal Hamzah.

	palatal	velar	uvular	pharyngeal	glottal
Majhūr	j	← g	← *G	→	ʔ
Mahmūs	č	← k	↓ q		

3.4.2 The Kāf /k/

Unlike its neighbour the Qāf, the Kāf shows very limited tendency to change. In almost all varieties of modern Arabic it is still articulated in the same way as described by Sibawayh. He mentions only one variant which he defines as 'the Kāf between the Jīm and the Kāf',

probably a voiced variant of the Kāf (cf. 2.3.6.1 above), which he considers as unacceptable.

In present day Arabic there is a dialectal variant of the 'Kāf' witnessed in the dialects of Bedouin tribes who inhabit the Northern part of Arabia and had seemingly spread to the colloquial Arabic of central and Southern Iraq and the east coast of Arabia. This variant is realized a voiceless palatal affricate [č]. However not every Kāf in these colloquials is affricated. It is common in the Kāf which is a suffixed personal pronoun of the feminine second person:

e.g.(a): /'ha:ða: k'ta:bak / (this is your book, m.)
 vs. /'ha:ða: k'ta:bič / " f.

In some cases the Kāf alternates between [k] and [č] in words derived from the same root form.

e.g.(b): /'kubar / (he grew big)
 vs. /'čibi:r / (big)

The affrication of the Kāf in (a) above could be traced to an old dialectal practice called *Kashkashah* which was witnessed in the dialects of some tribes of Najd, *Rabi'ah* and *Tamim*. Following the common Arabic practice of deleting the final inflexional short vowel in pause, speakers wanted to distinguish between masculine and feminine personal pronouns in the singular, as in the following:

e.g.(c): /kita:buka / (m.) vs. /kita:buki / (f.), (your book)
 Deleting the final short vowel in both constructs will produce /kita:buk /. For the feminine speakers of these dialects produced: /kita:buš / or /kita:buč / (vol.4, pp.199-200; cf. Rabin, 1951).

In some cases [k] and [č] are in free variation:

e.g.(d): /ka:n / and /ča:n / (he was)

Presently realizing the Kaf as [k] is gradually becoming a feature of educated colloquial Arabic where [č] is also still witnessed.

3.4.3 The Jīm /j/

This consonant is described by Sibawayh as Majhūr, Shadīd and he places it in the middle part of the hard palate together with the Shīn and the Yā' (op.cit., p.433).

The Jīm is a consonant that shows a great deal of variation. Its most common variant is a voiced palatal affricate [j] which occurs in modern Fuṣḥā Arabic as well as in most colloquial forms. There are other dialectal variants witnessed in many regional dialects which have the phonetic values [g, ž, y, dy, gy].

The Fuṣḥā Jīm [j] seems to have its roots in the proto-semitic consonant system as [g], as is established by a set of correspondences

throughout the Semitic family (Ferguson, 1969, pp.114 ff.). Louis Gray (1934, p.31) presents a comparison between the Arabic Jīm which has the phonetic value [j] and a number of Semitic Languages, Akkadian, Hebrew, Aramaic and Ethiopian where this consonant has the value [g] .

3.4.3.1 [j]

The variant of the Jīm recognized in Fuṣṣḥā Arabic and accepted in Qur'ānic recitation is the voiced palatal affricate [j] . Sibawayh and all his successors agree about this form of Jīm. Although he places it in the palate with the Shīn and Yā' it is possible that its exact place is slightly more back, because he orders it before these two palatals.

There are two phonological characteristics observed in the Jīm . Firstly it is considered as one of the *Qalqalah* letters Qāf, Ṭā', Bā', Jīm and Dāl, all of which are voiced plosives (cf. 3.6 below). The affrication observed in the modern Jīm might have developed as a result of a partial shift from Shadīd towards Rikhw. The Syrian variant of the Jīm, a fricative [ž] , might support this view, completing this shift. Chalabi (1980, pp.152-154) does not rule out the possibility that the Jīm has developed some affrication in an attempt to keep its voicing feature, moving against the general trend of shift from voicing to voicelessness.

Secondly it is classified one of the *Qamarī* letters as opposed to the *Shamsī* letters.*

*The definite particle in Arabic is Lām (l) prefixed to nouns. The phonetic realization of this Lām is conditioned by the initial consonant of the noun it is prefixed to. Thirteen consonants of Arabic fully assimilate the definite Lām, viz / n, r, d, t, ḍ (ṭ), s, z, ṣ, ḏ, ḏ̣, ḥ, ḡ, š /, all of which are [+ coronal] . The other twelve consonants and the two semi-vowels do not assimilate this Lām. e.g. /'walad / (boy) : /'ja:ʔa l'walad/ → idem (the boy came)
/ 'rajul / (man) : / 'ja:ʔa l'rajul/ → ['ja:ʔa r'rajul]

The first thirteen letters are termed *Shamsī* (sun) letters, and the other fourteen are termed *Qamarī* (moon) letters. The two terms *Shamsī* and *Qamarī* used to cover this dichotomy are a felicitous choice. The initial consonant of *Shamsī* [š] is [+ coronal] and that of *Qamarī* [q] is [- coronal] .

All the Shamsī letters are [+ coronal] and the present palatal Jīm, by virtue of its place of articulation, functions as Shamsī too. According to traditional grammar of Arabic the Jīm should be pronounced as Qamarī, although this palatal affricate is realized as Shamsī by all speakers who are not trained to intentionally produce it as Qamarī, as is usually done by Qur'ānic reciters and radio announcers (E. Odisho, 1978). This might suggest that the present palatal Jīm is a reflex of an underlying post-palatal or velar */g/. Ferguson assumes that the proto-Semitic voiced velar stop:

"...appeared in classical Arabic as a voiced palatal stop."(ibid.) In some parts of the Sūdān it appears as a post-palatal stop. In Iraq, most of Arabia, the upper Nile and some parts of North Africa the Jīm is realized as a voiced palatal affricate, often functioning as a counterpart to a new voiceless [č] sound which comes in part from the affrication of the Kāf.

3.4.3.2 [g]

In Cairene Arabic both colloquial and literary, the Jīm is realized as a velar plosive [g]. The same is witnessed on the Southern coast of Arabia. In Moroccan Arabic it occurs as [g] as well as [ž](Kaye, 1972, pp.31-72).

Sibawayh considers this variant of the Jīm as one of the derived unacceptable letters (cf. 2.3.6.1 above). Although he calls it a Kāf between a Jīm and a Kāf, I believe it to be a reflex of an underlying Jīm. Ibn Ya'īsh (vol.10, p.127) claims it to be confined to Yemen and to lower classes of Baghdad in the 14th century A.D. This observation about the vernacular of Baghdad six centuries ago is not reported by other scholars, neither does it have any trace in any of the present day communal dialects of Baghdad.

Although the Jīm of modern Egyptian Arabic is [g] Egyptian reciters of the Qur'ān realize it as [j].

It is noticed that this variant of the Jīm has the same phonetic value as one of the variants of the Qāf (cf. 3.4.1.3 above) and that this might be a cause of confusion. The actual situation is not quite so. Whenever the Qāf is voiced (i.e. [g]) the Jīm is an affricate [j].

3.4.3.3 [ž]

Another development of the Jīm is a voiced palatal fricative [ž]. Ferguson (1969, pp.114 ff.) suggests that this modern reflex of

classical Arabic Jīm functions as the voiced counterpart of the voiceless Shīn [š]. The Fuṣṣḥā Arabic /'jamal/ is realized as /'zamal/ in Morocco, and both variants are in free variation in Algeria (Kaye, 1972, pp.31-72). This fricative variant of the Jīm is also witnessed in the lower Euphrates regions in Southern Iraq.

Sibawayh considers this sound one of the derived unacceptable letters, calling it the Jīm which is similar to the Shīn (op.cit., p. 432). In his investigation of assimilation (cf. Chapter Four below) he describes this sound as an allophone of the Jīm which appears when followed by [d], /'ʔajdar/ → ['ʔaždar]. Besides that he describes a similar sound as a voiced development of the Shīn, and which he considers as an acceptable derived letter (cf. 2.3.5.4 above). Anis (1961, p.65) concludes that the Arabic Jīm has three phonetic values, a pure Shadīd [g] variant, as attested in Cairene Arabic, a pure Rikhw [ž] variant of Syrian and north African Arabic, and a Jīm in between the first two, which is the affricate of Fuṣṣḥā Arabic.

3.4.3.4 [y]

In some parts of the lower Euphrates, in Baṣrah and in most parts of the east coast of Arabia the Jīm is realized as [y]. Speakers in these regions say [diya:yah] for /dāja:jah/ (hen) and ['wa:yid] for /'wa:jid/ (much). This variant occurs in the colloquials of these regions but is not recognized in the literary form. I was informed by an Algerian linguist (Farīd Aīt SiSelmi, p.c., 1982) that this variant of the Jīm is also witnessed in the colloquial of some Arab tribes in the Algerian Ṣahara. The same variant is reported in the upper Nile regions of Egypt.

This variant of the Jīm has been reported in the Arabic of Tamīm in a limited number of lexical items (cf. Azharī, vol.13, p.275) as in /'šayarah/ or /'šiyarah/ for /'šajarah/ (tree), (Abul-Ṭayyib, vol.1, p.146).

3.4.3.5 [dy]

A variant of the Jīm with the phonetic value [dy] is witnessed in the Arabic of Khartūm and some rural parts of the Sūdān. Kaye (1972, p.38) reports its occurrence in Najd and the town of Madiṅḥ in Ḥijāz. This sound is thought to be a direct development of proto-Semitic */g/ (cf. Martinet, quoted by Garbell, 1958, pp.307-308) which in turn led to the common [j] variant of the Jīm.

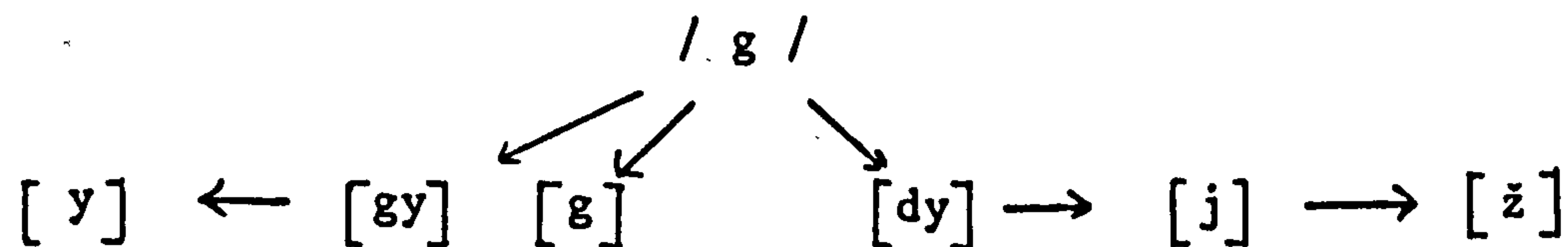
3.4.3.6 [gy]

Finally another local variant of the Jīm with the phonetic value [gy] is reported by Kaye (ibid.) in Omān, but it is not witnessed elsewhere.

3.4.3.7 The relatively large number of the dialectal variants of the Jīm in all forms of Arabic is an indication of the instability of this consonant. Ibn al-Jazari (*al-Nashr*, vol.1, p.217) advises to take great care in realizing the Jīm, because it might be produced from a different place of articulation, get affricated and become similar to the Shīn, as done by many people in greater Syria, or be mixed with the Kāf, as in many parts of the Yemen. Although the most common form of the Jīm is the palatal affricate [j] there is ample evidence of the strong link between its different dialectal variants and a hypothetical underlying form /g/ related to the proto-Semitic sound system. In the colloquial Arabic of some Bedouin tribes it is realized a Qamarī, no doubt with some effort but suggesting some consciousness of an underlying Jīm which is [- coronal], as opposed to the [+ coronal] feature of the [j] form.

The Jīm has undergone phonetic changes in both its place and manner of articulation, but it did not change its [+ voiced] feature in any of its dialectal variants.

If a diagrammatical pattern of the phonetic changes of the Jīm is to be constructed the following is one possibility.



The above suggested diagram is not claimed to be conclusive. It would certainly be beneficial if any critique, confirming or refuting some or all of the suggested steps of the changes, could be offered by students of Arabic linguistics.

3.4.4 The Ḍād / Ḍ /

The consonant Ḍād seems to be peculiar to Arabic which is called by many scholars '*Lughatu l Ḍād*' (the language of the Ḍād) because of the non-existence of this sound in other languages. On account of the particularly special manner of articulation of this consonant non-native speakers of Arabic found it rather difficult to produce. Even native speakers of Arabic found some difficulty in producing the

prescribed Ḍād, and many of them produced it differently (op.cit., p. 219). Fleisch (1949) remarks that the Arabs prided themselves on their unique articulation of the Ḍād. Bergstrasser (1929, p.10) believes that the old sound of the Ḍād is a strange one and cannot be found in any other language.

Sibawayh assigns the following phonetic characteristics to the Ḍād:

(a) He places the outlet of the Ḍād:

"...between the front part of the side edge of the tongue and the molars next to it..." (vol.4, p.433).

This description is repeated by all his successors. Either side of the tongue can be used to realize the Ḍād, he adds (ibid.). Five centuries later Sakākī produces a plan view diagram that shows the Ḍād placed along both sides of the tongue body (cf. 2.3.4 above).

Sibawayh further explains that the sound of the Ḍād finds its way out through the molars (op.cit., p.174) and mentions some kind of similarity in this respect between the Ḍād and the lateral Lām (op.cit., p.483). But he remarks that no other letter is completely homorganic with the Ḍād (op.cit., p.436). Because of this peculiarity I propose the new symbol Ḍ̣ to represent the phonetic value of Ḍād. *

*For want of a symbol to represent the phonetic value of this consonant I devised the symbol Ḍ̣. Because the old sound of the Ḍād cannot be ascertained I did not find it advisable to use any of the present IPA symbols. The reason for this particular choice is the number of phonetic features it shares with the Dhā' ḏ (both are voiced velarized fricatives), differing only in place of articulation. By reversing the shape of the symbol of the Dhā' ḏ I tried to imply the partial phonetic similarity between the two consonants.

Fück (1951, p.89), emphasizing the lateral feature of the manner of articulation of the Ḍād, decided to use the symbol λ for this consonant. I find this choice not very successful, because its phonetic value, according to the IPA chart, is 'velarized palatal non-fricative approximant lateral' which does not match that of the Ḍād. Even the name 'Ḍād' written by me with initial 'Ḍ' is not satisfactory enough to reflect the phonetic value of this consonant. It is just a convenient method to choose a distinguishable name for this letter.

(b) For manner of articulation he describes the Ḍād as Majhūr (op.cit., p.434) Rikhw(p.435), Muṭbaq (p.436) (cf. 3.4 below).

Accordingly the Ḍād is a 'voiced velarized lateral fricative' Farāhīdī only mentions its place of articulation 'Shajriyah' (i.e. palatal) (vol.1, p.58). Grammarians who succeeded Sibawayh just repeated what he said.

Cantineau (1966, pp.86-87) suggests that the old sound of the Ḍād was a mixture of [ḏ] and [l]. Bergstrasser (1929, p.10) remarks that Arabic speakers of Hadramout produce a form of Ḍād close to the old one and it sounds like a velarized Lām. He also says that the Arabs of Andalusia seem to have produced such a sound.

This change could be traced in some Spanish lexical items borrowed from Arabic. The combination [-ld-] is traced to the Arabic Ḍād. The Spanish word 'Alcalde' is related to the Arabic word 'al-Qādī' / ʔalqa:ḏi: / (judge). Sibawayh refers to the feature of laterality being shared between the Lām and the Ḍād. Some Arabs, he says, substitute the /ḏ/ by a /l/, trying to avoid a cluster of two velarized consonants (op.cit., p.483).

e.g. / ʔiḏḏajaqa / → / ʔilḏajaqa / (he prostrated himself)

Besides that he assigns to this consonant two more properties that pertain to its manner of articulation. It is 'elongated' like the Shīn, he states (op.cit., p.466). Secondly, he adds, it is released through the molars (op.cit., p.174).

The difficulty of the Ḍād was recognized by a large number of Arab grammarians. It must have been a real cause of concern, for over thirty treatises were written on the difference between the Ḍād and the Ḍhā' (Abdul Tawwāb, 1971, pp.23-35). Their main concern was how to distinguish one from the other in constructs. This concern is a clear indication that the Ḍād showed a tendency to merge with the Ḍhā' and that speakers of Arabic found some difficulties in this area. Sibawayh describes this tendency of the Ḍād by stating:

"...it overlaps and merges with the outlets of other letters..." (op.cit., p.432).

The old Ḍād, as described by the early grammarians of Arabic, is rarely found in any form of modern Arabic. Its present realization is either identical with the Ḍhā' /ḏ/ or it is produced a velarized Ḍāl.

However, some traces of the old Ḍād are found in the way followed by some Qur'ānic reciters in producing this sound. I was informed by a citizen of the Northern part of the Yemen that there are two manners

in producing the Ḍād in the Yemen, a 'popular' one by which the Ḍād is produced [ḏ] and a 'formal' one as in Qur'ānic recitations. The way he described the latter manner shows the tongue pressing against the right side cheek, which could be a reminiscence of the lateral feature of the old Ḍād.

3.4.4.1 [ḏ]

In Iraq and most of the Arabian peninsula the Ḍād is realized as a [ḏ], similar to the Ḍhā'. Speakers in these regions do not distinguish between these two consonants in speech, but they are taught to differentiate between them in writing. The main phonetic contrast between the two consonants is in place of articulation, which are close to each other. This limited contrast might explain the shift of the Ḍād towards the Ḍhā' in the Arabic of these regions.

3.4.4.2 [ḍ]

In parts of Western Arabia, in greater Syria, Egypt and most of urban North Africa the Ḍād is realized as a velarized Ḍāl [ḍ].

Sibawayh describes the old Ṭā' (ط) as having the same phonetic features of this variant of the Ḍād. He considers this consonant as the velarized counterpart of the Ḍāl (vol.4, p.436). Al-Jazarī reports that Egyptians and some North African speakers realize the Ḍād like the Ṭā' (i.e. [ḍ]).

3.4.4.3 The 'Weak' Ḍād of Sibawayh

Sibawayh describes an unacceptable variant of the Ḍād which he calls 'the weak Ḍād' (cf. 2.3.6.3). He does not mention any phonetic property of this variant, nor does he specify whether it was one of the above-mentioned variants. The only thing he says is that it merges with other letters. Ibn Ya'īsh (vol.10, p.127) tries to define the phonetic value of this weak Ḍād, realized either as [ḍ] or [ḏ] by speakers who found difficulties in producing the prescribed one. It seems that as early as the first century of Islām some speakers confused the /ḏ/ with the /ḍ/ (Suyūṭī, vol.1, pp.562-563).

3.4.4.4 Explanation

No satisfactory explanation was offered by the early grammarians to account for this shift in the sound of the Ḍād. Sibawayh observes the possibility of such a shift and comments on the peculiar manner of articulation of the Ḍād, which leads to what he describes as partial merging with neighbouring consonants (op.cit., p.432). None of his successors did anything more than report the change in the sound of

the Ḍād and comment on its difficult nature. The following explanation is an attempt to account for these changes in the phonetic value of this consonant.

Arabic is distinguished by possessing a group of velarized consonants peculiar to its sound system, the Ḍād /ḍ/, the Ṣād /ṣ/, the Ṭā' /ṭ/ and the Ḍhā' /ḍh/. Except the Ḍād each one of these consonants has two non-velarized homorganic correlates. The Ḍād, having none of these, occupies an isolated position in the pattern, which is most likely to be the main reason that caused it to merge with either the Ḍhā' /ḍh/ or with the Ṭā' /ṭ/. Sibawayh recognizes this isolated position of the Ḍād and remarks that:

"...without velarization the Ṭā' will become Dāl, the Ṣād Sīn and the Ḍhā' Dhāl; and the Ḍād will be out of the speech (system) because it has no homorganic other letter" (op.cit., p.436).

The tendency towards pattern congruity is a natural phenomenon in human languages. The human brain seems to prefer a more symmetrical pattern of the sound system in which there is a smaller number of contrasts between neighbouring sounds. Probably this makes life easier for the memory (Sommerstein, 1977, pp.255-256). It is observed by modern linguistics that when two sounds are hard for the hearer to distinguish they either merge or one of them acquires a new feature which makes the distinction easier to perceive (op.cit., p.111). The case of the sound shift in the Ḍād is a typical example of the application of this hypothesis. In one direction it merged with the Ḍhā' in the second it changed from a fricative into a plosive [ḍ].

+ velarized	ḍ ← ḍ*	→ ḍ	ṣ
- velarized	ḍ	d	z
	ḍ	t	s

3.4.5 The Ṭā' /ṭ/

The last consonant whose present phonetic value is not the same as described by Sibawayh is the Ṭā'. According to him it is a voiced velarized alveolar plosive /ṭ/. In almost all varieties of modern Arabic it is realized as a voiceless [t̤]. Probably this is that

unacceptable derived letter mentioned by Sibawayh as the Ṭā' which is similar to the Tā' (cf. 2.3.6.5 above). This observation suggests that this voiceless variant of the Ṭā' dates to Sibawayh's time and seems to have gained currency in most of the dialectal variants of Arabic. Ibn Ya'īsh (op.cit., p.127) reports another variant which occurs in the Arabic spoken by Persians who are not used to the articulation of velarized consonants. They say [ʔa:lib] for /'da:lib /. Perhaps he might have wanted to refer to a devoiced ḍ realized as /'ṭa:lib /, which is in fact similar to modern Arabic Ṭā' (i.e. [ṭ]). Cantineau quotes Glacer (1885, p.94) who reports a Ṭā' realized: "...as a velarized Dāl ..." in the dialect of the Yemen (cf. Rossi, 1939, p.236). However, this consonant has the phonetic value [ṭ] in most variants of modern Arabic. As in other cases of sound change, no explanation was offered by the early grammarians to account for this shift.

The same theory of pattern congruity adopted to explain sound changes discussed above could be applied in this case as well. Within the sound system of modern Arabic there are three sets of homorganic consonants, one of each set is a velarized consonant. These sets are:

- (a) / ḏ, ḏ̣, ḏ̣̣ /
- (b) / ṭ, d, t /
- (c) / ṣ, z, s /

The Dād is the only velarized consonant that has no other non-velarized homorganic correlate. In the 'Eastern variant' of modern Arabic it merges with the /ḏ̣̣̣/ and in the 'Western variant' it appears as [ḏ̣̣̣] (cf. 3.4.4. above) adding a fourth member to set (b) above. In the eastern variant of modern Arabic the correspondence between these consonants is illustrated in the following pattern:

+ velarized	+ voiced	ḏ̣̣̣		
	- voiced		ṭ	ṣ
- velarized	+ voiced	ḏ̣̣̣	d	z
	- voiced	ḏ̣̣̣	t	s

There is full correspondence between the consonants of the three sets which are [- velarized] . Among the [+ velarized] consonants there is partial correspondence in the pattern where the /ð/ stands alone in the pattern, leaving the /t̤/ and /s̤/ to occupy corresponding positions. There is a position for a potential */θ/ left vacant in the pattern. In Baghdadi colloquial Arabic this speech sound occurs in a very limited number of words / θnaqaš / (twelve) and / θmunṭaqaš / (eighteen), but this speech sound is really an allophone of the /θ/ which acquired some velarization or retraction under the influence of the Ayn /ç/.

In the western variant of modern Arabic the correspondence between these consonants takes a slightly different form.

+ velarized	+ voiced	ð̤	d̤	
	- voiced		t̤	s̤
- velarized	+ voiced	ð	d	z
	- voiced	θ	t	s

There is more symmetry in the pattern of the [+ velarized] consonants, the /ð̤/ with the /d̤/; and the /t̤/ with the /s̤/.

Among the group of four plosive consonants a certain symmetrical correspondence can be detected. There are two sub-sets, one of them [+ velarized] and the other [- velarized] as illustrated below.

	+ voiced	- voiced
+ velarized	d̤	t̤
- velarized	d	t

The sound pattern of the Western variant of modern Arabic looks more congruous and symmetrical and, within this group of consonants, does not leave a consonant in an isolated position, while in the pattern of Eastern modern Arabic the /ð̤/ occupies a partially isolated

position. If this consonant will shift towards any other consonant in the future attempting to reduce the number of phonetic contrasts in the sound system is difficult to foresee.

3.4.6 The Ayn /q/

This consonant is the only one described by Sibawayh to be 'between Shadīd and Rikhw' (vol. 4, p.435).

In all varieties of modern Arabic the Ayn is realized as a voiced pharyngeal approximant. In certain environments, as in pause, this consonant seems to appear as a stop. Sibawayh might have realized this fact and chose to avoid classifying the Ayn as either Shadīd or Rikhw. To explain the reason for this point of view he states:

"...you hesitate about it because of its similarity with the Ḥā' /ħ/..." (ibid.).

The IPA chart classifies the /q/ as a voiced pharyngeal fricative, a voiced counterpart of /ħ/. There seems to be some agreement between Sibawayh and the IPA chart. Bakalla (1970, p.318) disagrees with the IPA chart and tends to accept the idea of Dr. H. Paddock, who told him that the Ayn bore the same relationship to cardinal vowel No.5 of the IPA, as the /y/ to cardinal vowel No. 1 and the /w/ to No.8. El-Menoufy (1963) considers the Ayn a semi-vowel, produced with 'little or no friction'. On the other hand Al-Ani, in his acoustical and physiological investigation of Arabic, tends to consider it a stop:

"After a thorough acoustical analysis, the author has found that the most common allophone of the /q/ is actually a voiceless stop and not a voiced fricative" (Al-Ani, 1970, p.62).

In fact he seems rather hesitant about its actual phonetic value. Examining the data from different Arab informants he claims to find it alternating between a stop and a fricative.

"The most common allophone of the /q/ for all the Iraqi informants is a voiceless stop. With informants from other Arab countries it seems to vary. For the most part...(it) seems to be a fricative except for Kuwait and Saudi Arabia where it seems similar to the Iraqi /q/ (1970a, p.91).

However, he decides to leave the subject open for further work and states in his (1970) work:

"This, of course, is not completely conclusive as there is much room for further research both on the acoustic and physiological levels."

The weak point in AlAni's statements is his classification of the Ayn as a 'pharyngeal stop', which contradicts his findings above.

I was radio-photographed at the speech therapy section in the Middlesex hospital in London (1982) while articulating the consonant /q/. In pausing on this sound and holding it the picture showed no closure above the glottis but only a marginal narrowing of the pharynx accompanied by a glottal closure. Obviously, releasing this closure produces a glottal plosive not accompanied by voicing. Perhaps this is what led Al-Ani to conclude that this consonant is a voiceless stop.

Articulating the Ayn intervocalically in the word /'naqam / (yes) the radio picture only showed the above-mentioned marginal narrowing in the pharynx.

The real phonetic value of the Ayn, therefore, seems to depend on the phonetic environment in which it occurs, and Sibawayh was right to classify the Ayn as between Shadīd and Rikhw. He seems to have been aware of its two different phonetic values. When it is followed by vowel it is 'similar' to a Rikhw, when not followed by a vowel, like in a syllable final, it is a stop. This peculiar characteristic of the Ayn presents certain difficulties in analysing its phonetic value. A geminate Ayn, as in / yunaq̣qim / (makes smooth) occurs as two distinctly different segments. The first one is a stop and the second is a fricative. Initially such an arrangement gives the impression of having an affricate consonant except for the fact that each one of the two segments belongs to a separate syllable which rules out the possibility of this 'complex segment' being classified as an affricate. The other pharyngeal consonant Ḥā' /ħ/ does not present such a problem. A geminate Ḥā' appears as combination of two fricatives / yuṣaḥḥiḥ / (he corrects, rectifies). The Ayn, therefore, is [+ Shadīd + Rikhw], which supports Sibawayh's theory about it.

3.4.7 The Lām /l/

Sibawayh terms the lateral consonant Lām *Munḥarif* the literal meaning of which is 'diverted'*. He also classifies it as one of the Shadīd consonants (vol.4, p.435).

* M.H. Saanan (1951, p.239) chooses the term 'swerving' as equivalent to 'Munḥarif' .

To explain what he means by 'Munḥarīf' he states first that the tongue 'moves aside with the sound'. Probably he wanted to say that the airstream (which he considers to be the medium that carries the sound) is diverted sideways from the central line of the tongue body. His following remark lends evidence to this conclusion:

"...for the sound is not produced from the place of the Lām, but from the two sides of the tongue apex..." (ibid.).

The 'place of the Lām' is obviously meant to be the point of contact of the two articulators in producing it.

The other property assigned to the Lām is 'Shadīd'. As mentioned before, it means that the articulators are in full contact with each other during the articulation of a Shadīd. To distinguish the Lām as Shadīd from the plosives he remarks that it is a Shadīd letter:

"...with which the sound continues to flow, and is not (fully) obstructed like in (the case of) the (pure) Shadīd...for you can continue the sound if you wished..." (ibid.).

This remark is Sibawayh's own way of defining the feature 'continuant' of this lateral liquid consonant.

Following this remark he immediately adds that this 'continuant' is not similar to the fricatives:

"...because the tongue apex does not 'keep away' from the place of the Lām...".

Sibawayh is so meticulous in pointing out the articulatory features which distinguish the Lām. On the one hand, he groups it with the Shadīds, yet takes enough care not to confuse it with the plosives. On the other hand he makes a clear distinction between it and the fricatives. Realizing that both the Lām and the fricatives are [+continuant] he felt the need to avoid confusing the two classes.

Being very concisely described, the Lām is assigned the following phonetic properties by Sibawayh: Shadīd, Munḥarīf and continuant.

The most common form of the Lām in Arabic is the clear [l]. In certain phonetic context it appears as a dark [ɫ]. In the neighbourhood of velarized or back consonants it is realized as dark in some dialects.

e.g.(a): /tal/ (hill) vs. /Xaɫ/ (vinegar)

(b): /sala:m/ (peace) vs. /šaʔa:t/ (prayers)

In the proper noun /ʔalla:h/ (God), if the Lām is preceded by the palatal short vowel /i/ it is produced as clear [l] /lilla:hi/ (for God); when the preceding short vowel is the velar /u/ or the

pharyngeal /a/ the Lām is produced as dark [ɣ], /'ʔismuʔta:hi / (name of God) and / waʔta:hi / (by God). However there is wide dialectal variation in this respect and both types of Lām can appear in the same dialect with full phonemic contrast, as in the following minimal pair in Baghdadi Arabic:

e.g.(c): /'Xa:li: / (empty) vs. /'Xa:ʔi: / (my uncle)

Sibawayh mentions nothing about the distinction between the two Lāms, perhaps because there is no phonemic contrast between the two in Fuṣṣḥā Arabic (cf. Ferguson, 1956, b, pp.616-630).

3.4.8 The Rā' /r/

Sibawayh terms the trill consonant /r/ 'Mukarrar' which literally means repeated. He classifies it as Shadīd "...with which the sound flows on" (ibid.). The term Mukarrar describes the manner of articulation of this consonant, when the tongue tip repeatedly taps on the alveolar ridge.

Sibawayh seems to believe that the sound of the Rā' is produced at the moment when the tongue loses its contact with the alveolum. He states that:

"...if it was not repeated the sound would not flow on..."(ibid.) It is evident that holding the Rā', i.e. keeping on its production, can only be achieved by maintaining the repeated tapping. Holding the contact between the articulators blocks the sound and produces no Rā'.

On account of the very brief contact of the articulators which takes place in each tap Sibawayh classifies the Rā' as Shadīd. Furthermore he refers to a resemblance between the Rā' as Shadīd and the fricatives. Repeating the tapping action obviously means that the tongue tip alternates between contacting the alveolum and not contacting it. When not contacting it,^a gap is naturally made between the two articulators. On this basis Sibawayh refers to the resemblance between the Rā' and the fricatives.

"...it keeps a gap for the sound like a Rikhw..." (ibid.).

This remark further explains his other remark that, without this repetition, the sound would not flow.

One remark of Sibawayh seems vague and difficult to understand. He states that the Rā' is 'diverted towards the Lām'. Describing the Lām as 'diverted' was understood to refer to diverting the airstream from the central line of the tongue body to its sides. This does not happen in the case of the Rā'. So it cannot be assumed that Sibawayh

was describing the same phenomenon. Probably he might be referring to the brief moment of contact between the tongue and the alveolum during which he seems to believe the airstream to escape laterally.

The term Mukarrar implies a trill type of Rā' which is the common form in Arabic. However a 'tap' kind of Rā' is witnessed in modern Arabic when this consonant is followed by a vowel. The Rā' in / jisr / (bridge) and / 'yarmi: / (he throws) is a trill, while in / 'rama: / (he threw) and / 'ʔara: / (I see) it is a tap. Sibawayh makes no reference to the tap kind of the Rā'.

In certain phonetic environments the Rā' develops a certain degree of 'Tafkhīm'. This development, somehow similar to 'darkening' the Lām, takes place when the Rā' occurs in the neighbourhood of the 'high' consonants 'Hurūf al-'Isti'lā' (cf. 3.5.3 below) viz / ʃ, ʒ, ɟ, d, q, x, ɣ / as well as the two short vowels Fathāh /a/ and Dammah /u/. Elsewhere it is a 'clear' Rā'. Sibawayh denies any [+ high] feature in the Rā' (vol.4, p.137).

However, this variation in the phonetic properties of the Rā' has no phonemic value, neither is it witnessed in all the variants of modern Arabic. It is described as a feature of Qur'ānic recitation, inherited from earlier rules of this method of Arabic pronunciation (Pretzl, 1934, p.326).

3.4.9 The Nasals Nūn /n/ and Mīm /m/

These two consonants are described by Sibawayh as 'Ghunnah' (nasal sound). He classifies them as 'continuous' Shadīd letters:

"...with the sound flowing out of the nose..."

Describing the Nūn he states:

"...you produce it from your nose while the tongue holds the contact with the place of the letter...; if you close your nose the sound would not flow..." (vol.4, p.435).

Then he adds that the same applies for the Mīm.

Once again he bases his classification of the two nasals as Shadīd on account of the full contact between the articulators in producing them. Sibawayh mentions the tongue in referring to the closure of the oral cavity in realizing the Nūn. If the tongue is replaced by the 'two lips' the description will fit the articulation of the Mīm. That is why he did not bother to offer a separate description for the Mīm.

In his discussion of the number of the letters of Arabic Sibawayh mentions two Nūns, the 'original' Nūn and its derived variant the

'light Nūn' (cf.2.3.5.1 above). In discussing the manner of articulation of the Nūn he does not specify which one is meant; probably both are meant.

3.4.10 Sibawayh adopts a binary classification in describing the manner of articulating the consonants of Arabic, based on articulatory criteria. A Shadīd consonant involves a full contact of the articulators, whether it is a stop or a continuant. A Rikhw consonant involves a close approximation of the articulators. If a consonant displays both features, (The 'Ayn) he does not assign it to a third category, but classifies it 'between' the two categories of the dichotomy.

3.5 MUṬBAQ VERSUS MUNFATIḤ

The sounds of Arabic of Sibawayh's time contained four velarized consonants, viz /ḍ, ḏ, ḏ̣, ḥ/. He terms these four consonants *Muṭbaq* in opposition to the term *Munfatih* which he uses as a cover term for all the other consonants of Arabic.

Sibawayh justifies this binary classification by attributing an articulatory feature to the *Muṭbaq* consonants which is absent in the *Munfatih*. He calls this phonetic feature '*Iṭbāq*' and he describes it as follows:

"...In these four letters, if you apply your tongue in their place, it will close on from their (primary) places up to that part of the tongue opposite the velum, towards which you raise the tongue. Applying the tongue this way the sound will be enclosed between the tongue and velum (on one side) and the places of the letters (on the other side)..." (vol.4, p.436).

3.5.1 Definition and Description

In general terms the literal meaning of the two opposing terms *Muṭbaq* and *Munfatih* is 'closed' and 'open' respectively. Students of Arabic linguistics have used a number of terms as equivalents to *Muṭbaq*. Cantineau (1946) considers this feature within the concept of 'Emphase' and calls the consonants under discussion 'Emphatique'. Saaran (1951, pp.257 ff.) chooses the term 'Lidded' which I feel suggests an upside down conception of the tongue action. Bakalla (1970, p.318) uses the same term as well as the term 'Covered'. On my part I believe that the term 'Enclosed' is a better choice as equivalent to *Muṭbaq* on the assumption that it fits Sibawayh's description of the articulation of these four consonants.

It can be impressionistically felt that in articulating these consonants the tongue creates a resonating enclosure which causes the production of that special timbre which characterizes the Muṭbaq consonants. This conclusion is supported by radiophotography.

It seems almost certain that Sibawayh was the first grammarian to use the two terms Muṭbaq and Munfatiḥ in describing this phonetic feature. Farāhīdī uses the term Muṭbaq to describe the Mīm only, by which he refers to closing the lips, which is a completely different matter (Al-Ayn, vol.1, p.58). All the succeeding grammarians of Arabic adopted Sibawayh's description and terminology.

As an articulatory feature modern linguistics associates this feature either with pharyngealization or with velarization; at times with both. Al-'Ani (1970, p.44) claims it to be pharyngealization rather than velarization, basing his conclusions on acoustical and physiological examinations and experiments. Abercrombie (1967, p.63) claims the same although his comments were only meant for the allophonic variant of the Lām occurring as dark [ɫ] in the word 'Allah', without specifying the phonetic environment which causes this darkening of the Lām. Crystal (1980, p.373) defines this feature as 'velarization'.

However, the term 'Emphatic' is more commonly used as a broad cover term to classify the four Muṭbaq consonants as well as the whole range of 'Mufaxxama' consonants (Jakobson, 1957, pp.159-171). The class feature 'Tafkhīm' involves the three uvulars /q, ɣ, ʁ/, and the allophonic forms of the labial /b/, the two nasals /m, n/ and the 'Emphatic' Lām (cf. Ferguson, 1956 b, pp.446-452).

X-ray films were made of me during the articulation of the minimal pair / ti:n / (figs) and / ɬi:n / (clay) for the purpose of investigating the role played by the tongue root and the pharynx in producing the Muṭbaq consonants. The results show that the difference in the tongue positions in the two cases is a raising of the rear part of the tongue dorsum towards the extremity of the velum in articulating the Muṭbaq /ɬ/ as well as a concomitant marginal retraction of the tongue root towards the back wall of the upper pharynx. A similar result was arrived at by Marçais (1948), which revealed by radiography the same situation. Commenting on this, Jakobson (ibid.) concludes that the characteristic articulatory feature of all the Emphatic phonemes is the contraction of the upper pharynx. Therefore it seems evident that velarization is almost always accompanied by a certain degree of pharyngealization.

Sibawayh's description of 'Iṭbāq as raising the rear part of the tongue towards the vélum seems to agree with the conclusion of modern linguistics. On the other hand nothing is found in his work to suggest that he conceived of any role played by the pharynx in articulating these consonants.

3.5.2 Velarized or Pharyngealized !

Compared with a velar, a velarized consonant is characterized by 'multiple articulation' of which velarization is the secondary one. Sibawayh recognizes this multiple articulation of the Muṭbaq:

"...and these four (consonants) have two places on the tongue..." (ibid.).

The notion of a 'primary' and 'secondary' articulation does not appear explicitly in his description, but he seems well aware of the distinction between the two. He remarks that without 'Iṭbāq' the Ḍād will disappear from the sound system of Arabic (cf. 3.4.4.4 above).

The peculiar case of the Ḍād indicates that velarization is an integral part of its articulation manner and not a 'travail accessoire' (Cantineau, 1946). This is indicated by finding no 'Munfatih' counterpart to the Ḍād of Sibawayh's time.

3.5.3 Musta'liyah

Sibawayh recognizes another phonetic feature, related to Iṭbāq, which he terms 'Musta'liyah' (elevated, raised). This feature involves seven consonants, the four Muṭbaqs and the three uvulars /G, ʕ, X/. He briefly describes this feature in the section where he investigates 'Imālah' (which is an assimilatory process of raising and fronting the pharyngeal vowels /a, a:/ in certain context, cf. Chapter Six). These seven consonants, he observes, play a part in preventing Imālah, and attributes this influence to the fact that they are: *"...elevated towards the velum..."* (vol.4, p.129).

Farāhīdī says nothing about this class of Arabic letters. Ibn Jinnī (b), p.71) presents the same description and explanation of Sibawayh, and adds that four of them are Muṭbaq as well as Musta'liyah. He seems to consider it as a distinctive feature for he terms all the other consonants 'Munkhafidah' in opposition to the seven Musta'liyah. In other words the Musta'liyah consonants could be given the phonetic feature [+ high] and the Munkhafidah [- high].

3.6 MUSHRABAH AND QALQALAH

A phonological rule in Arabic is to pause on a Sākīn letter. In his investigation of this feature of Arabic phonology Sibawayh observes a certain articulatory phenomenon in pause. Deleting the final short vowel at the end of an utterance leaves a Sākīn consonant to be paused on in most cases. In fewer cases pause is made on one of the three long vowels, which are considered by Sibawayh and other grammarians of Arabic as Sākīn. Pausing on a consonant is realized in different manners, according to the phonetic properties of the consonant paused on. The Majhūr consonants are characterized by a certain articulatory feature when pausing on them in opposition to the Mahmūs consonants.

Sibawayh terms all the Majhūr consonants 'Mushrabah', a technical term he uses to refer to this class of consonants only in dealing with the manner of producing them in pause. He does not offer another term to refer to the Mahmūs consonants in this context.

This classification of the consonants of Arabic in a certain context is evidently phonologically based. Sibawayh discusses this aspect in the course of investigating the manner of pausing in Arabic, while he investigates the major part of the phonetic properties of the consonants in another part of his Book.

Literally the term Mushrabah means an item acquiring a quality of another item. Sibawayh was the first grammarian to use this term in this sense. He does not explain the reason for choosing this term or what he means by it. The fact that only the Majhūr consonants are classified Mushrabah in this context might lead to the conclusion that this feature, although phonologically based, is mainly related to the voicing quality of the consonants. Bakalla (1970, p.339) interprets this feature as fully realizing a speech sound when it occurs in final position and chooses the terms 'enriched, saturated and fully realized' as equivalents to Mushrabah.

3.6.1 Description of Qalqalah

Sibawayh describes the Mushrabah letters as follows:

"...Some of the letters are Mushrabah, pressed out of their places, so that when you pause (on them) a small sound is produced from the mouth and the tongue releases the contact with its place,... These are the Qalqalah letters.. the Qāf, the Jīm, the Ṭā', the Dāl and the Bā',... on which you cannot pause except with the small sound..." (vol.4, p.174).

It is clear that Sibawayh is dealing with the release phase of producing plosive consonants which he describes as 'pressed out'. The 'small sound' produced when pausing on the plosives concerned is termed by him 'Ṣuwayt' (a diminutive form of Ṣawt). This small sound is, as attested, a brief vowel sound, similar to the English Schwa. He enumerates five plosives which are the Majhūr ones of the eight plosives of Arabic. Therefore only the Majhūr plosive consonants are classified as 'Qalqalah' letters making them a sub-class of the Mushrabah.

The term Qalqalah denotes 'displacing, unresting' a consonant, somehow audibly, when not followed by a vowel, by following it by a brief vowel sound; a 'Ṣuwayt' in Sibawayh's own words. Saaran, (1951, pp.261-263) chooses the term 'Crackling' as equivalent to Qalqalah which, I feel, bears no relation with the articulation of these five consonants in this context. Probably he chose this term on the basis of finding a couple of Kāf sounds in it, to reflect the two Qāfs of 'Qalqalah'.

This articulatory feature is strictly adhered to in Qur'ānic recitation, at times with some exaggeration, to which Jalāl al-Ḥanafī is strongly opposed (1983, p.c.). Modern pronunciation of Fuṣṣḥā Arabic, on the other hand, does not follow this rule in general. Furthermore Sibawayh limits the application of this rule to pausing on these five consonants. Many of modern reciters of the Qur'ān extend this rule to these consonants when they occur medially before a consonant. Sibawayh offers a brief explanation of Qalqalah:

"...You cannot pause except with the small sound, because of the intensity of pressing them (i.e. audibly releasing them)..." (ibid.).

The actual realization of Qalqalah does not seem to be uniform. Sibawayh remarks that some Arabs produce a stronger sound after the consonant in Qalqalah.

"...as if they would like to produce a Ḥarakah..." (ibid.).

In all probability the brief vowel of Qalqalah is produced to keep the [+ voiced] feature of the five Majhūr plosives of Qalqalah. Voiced plosives are likely to be devoiced when in final position. Besides that, the closure phase of a plosive in final position may be maintained, the release being achieved by a gentle, delayed and relatively inaudible opening of the oral closure (Gimson, 1970, :156). Producing a brief vowel after a final voiced plosive tends to keep

the vocal folds vibrating and retains the [+ voiced] feature of the Qaqalah consonants. Gairdner (1925, pp.248-249) supports this conclusion and comments that :

"...Old Arabs were careful not to unvoice the Bā' when final, giving a half vowel to ensure voicing..." (op.cit., p.16).

Saaran (ibid.), following Howell, observes that this 'additional' sound heard when the stops are released 'is not breathed'. He does not specify which of the stops are involved.

Therefore it seems plausible to conclude that Qalqalah is a measure taken to avoid devoicing Majhūr plosives in pause, aiming at a 'fuller' realization of Fuṣḥā Arabic.

e.g.(a):	/ 'yasriGu /	vs.	/ 'yasriGə /	(he steals)
(b):	/ 'yašrabu /	vs.	/ 'yašrabə /	(he drinks)
(c):	/ 'yajidu /	vs.	/ 'yajidə /	(he finds)
(d):	/ 'yarbiḍu /	vs.	/ 'yarbiḍə /	(he ties)
(e):	/ 'yaliju /	vs.	/ 'yalijə /	(he enters)

3.6.2 Plain Mushrabah

Another sub-class of Mushrabah letters involves four voiced consonants, viz /z, ḏ, ḏ̣, ḏ̣̣/. Sibawayh remarks that in pause:

"...(something) similar to a puff is produced, and they are not pressed out like the first ones..." (ibid.).

It is noticed that he describes the release of these four fricatives as 'similar' to a puff *"...naḥwu lnaḥkhi..."*, and not quite a puff. In discussing pause on the voiceless consonants he describes their release as a 'puff' (cf. 3.6.3 below). He deals with this difference by saying that these consonants are produced with the 'sound of the chest' where the airstream finds an escape through the incisors, as a result of which *"...you hear something similar to a puff..."*.

To allow for the difference in release manner between the Ḍād and the other three fricatives he remarks:

"...and the Ḍād finds its escape through the molars." (cf. 3.4.4)

Shortly afterwards, and very briefly, he explains that the Rā' is similar to the Ḍād *"...wa lRā'u naḥwu lḌādi..."* (op.cit., p.175). He does not specify in which respect he finds them similar. The only similarity between them, as far as pausing on them is concerned, is that neither is released through the incisors, besides being both Majhūrs. These two similarities do not offer a satisfactory explanation of Sibawayh's remark. Pausing on the Rā' in Arabic produces a

trill type of consonant. Articulation-wise there are more differences between the Rā' and the Dād than there are similarities. The Dād is distinguished by being Muṭbaq, Rikhw and (partly) Munḥarif. The Rā' is Shadīd and Mukarrar. Sibawayh's remark is so brief and unexplained that no satisfactory conclusion can be made.

A third sub-class of Mushrabah comprises a group of six consonants, viz /l, m, n, ɟ, ʕ, ʔ/. Sibawayh remarks that in pausing on one of these six consonants nothing is heard. The explanation he offers is that neither are they pressed out (i.e. exploded) 'like the Qāf', nor does the airstream find an escape through the teeth, as in the case of the four.

He attributes this phenomenon to the particular manner of articulation of these six consonants. The Lām and the Nūn, he explains, are placed higher up than the incisors so they find no escape through them. The Mīm, he adds, is realized with close lips (which precludes any escape through the mouth). The same thing applies for the three back consonants the Ayn, the Ghayn and the Hamzah, he concludes. No puff of air can be produced in articulating them (ibid.).

3.6.3 Pausing on Voiceless Consonants

Pausing on Mahmūs consonant, Sibawayh observes, is always accompanied by a puff of air 'nafkh'. The main distinction between pausing on the voiced and on the voiceless consonants as observed by Sibawayh is producing a puff of air with the voiceless and what could be considered a 'quasi' puff with the voiced. His explanation of the difference is centred on the difference between those two types of sound. He explains:

"...you pause on all of them with a puff, because they are produced with the breath, not with the sound of the chest."

(ibid.). (cf. 3.3.1 above).

As in the case of the Majhūr consonants, the sound produced in pausing on a Mahmūs was realized in different levels. He comments that some Arabs produce a stronger puff.

In the course of this part of his study Sibawayh mentions that breath is heard like blown air. Comparing breath with a puff of air, which accompanies all the Mahmūs consonants in pause, is an indication that he understood the auditory properties of voiceless sounds. This articulatory feature is phonologically based. He restricts its occurrence to pause. According to him it does not occur in connected speech.

3.7 TAFASHSHĪ

In a few places in the Book Sibawayh mentions a quality he terms 'TafashshĪ' which he attributes to a certain class of consonants. He refers to this quality in the course of his investigation of *Idghām*. He claims that segments that possess this quality or a substantial degree of it enjoy more phonological strength than other segments that do not possess it.

The consonants which he considers to possess this quality are the trill *Rā'*, the *shĪn* and the four velarized consonants *Ṣād*, *Ḍād*, *Ṭā'* and *Ḍhā'*. No explanation is offered by Sibawayh of the phonetic characteristics of this quality. The literal meaning of *TafashhĪ* is roughly equivalent to 'expansiveness, spread'.

Sibawayh describes the *Rā'* as possessing this quality in its [r] trill form. He states that it is realized in this manner:

"...when it occurs (in a combination) with another consonant."

(vol.4, p.448).

This implies a pre-consonantal *Rā'* (cf. 3.4.8 above). On the other hand the lateral *Lām* is described by him as not possessing this quality (ibid.). The other five *MutafashshĪ* consonants mentioned above are not restricted to any particular context in possessing this quality (op.cit., p.460). Furthermore he seems to consider *TafashhĪ* in segments a matter of degree rather than of presence or absence. He describes the [+mutbaq] *Ṣād* /ṣ/ to be more 'MutafashhĪ' than its [+munfatiḥ] counterpart *SĪn* /s/ (op.cit., p.478). The same is said about the relation between /ḍ/ and /θ/ (op.cit., p.481).

It might be assumed that the *ShĪn* and the four velarized consonants possess this quality on account of their manner of articulation. A relatively larger area of the tongue is involved in producing the *ShĪn*; and the four velarized consonants are described to have: "two places on the tongue" (cf. 3.5.2 above). The *Rā'* possesses none of these features. Considering that only the trill type of *Rā'* is described *MutafashshĪ* might imply that because of repeating the articulatory movements in its production it possesses a certain characteristics that makes it auditorily more conspicuous than the flap *Rā'*.

On these considerations it might be held that this quality is an auditory feature, especially when it is presumed to be a matter of degree. Sibawayh's description of a [+mutbaq] consonant as being more *MutafashshĪ* lends evidence to this conclusion.

"...wa lmutbaqu 'afshā fi lṣam'i..." (op.cit., p.460).

As it pertains to processes of assimilation he clearly considers a segment phonologically stronger if it possesses this quality, or more of it, than other segments involved in the process (cf. Chapter 4).

3.8 SUMMARY

Sibawayh ends the discussion of the phonetic properties of the segments with a statement which indicates that his purpose was to prepare the reader to understand what he was going to say about the phonetic changes the segments go through in different contexts, which he was going to discuss in the next sections of his Book (vol.4,p.436)

He seems to imply that unless the phonetic properties of the segments in isolation are made clear it would not be easy to account for the different aspects of assimilation that take place in connected speech. It can also be construed from that statement that he wanted to justify his efforts in describing the phonetic properties of the segments in isolation as a means of preparing the ground for the discussion of assimilation.

Furthermore, that statement briefly outlines the programme he was going to follow in the next six sections of his Book in the course of which assimilation was going to be investigated. The next three chapters of this study will have the task of studying this part of Sibawayh's Book and other parts that pertain to this study.

This effort of Sibawayh indicates the importance he gives to the spoken language, particularly when he pays adequate attention to contemporary dialectal variants of spoken Arabic. Naturally, phonetic changes brought about by assimilation can only be observed in the spoken language. The written form hardly indicates that sort of thing, unless purposefully designed diacritics are incorporated in the script as is the case in some Qur'ānic scripts.

Sibawayh, then, ends up his discussion of the phonetic properties of the segments by attempting to motivate the reader to look forward to reading more in the Book and prepares him to understand the assimilatory changes in the phonetic values of the segments in context.

CLASSIFICATORY MATRIX OF PHONETIC PROPERTIES OF ARABIC

LETTERS AS DESCRIBED BY SIBAWAYH

	ʔ	h	ç	ħ	ḅ	X	G	k	ġ	j	š	y	l	r	n	ḏ	d	t	ṣ	z	s	ṣ̣	ḏ̣	θ	f	b	m	w	a:	i:	u:
Ṣaḥīḥ	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-
Madd & Līn	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	
Majḥūr	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	+	+	
Mahmūs	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	
Shadīd	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	+	+	
Rikhw	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	
Muṭbaq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Munfatīḥ	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Musta'īlī	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	
Munkhafīḥ	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	

THE CONSONANTS IN CONTEXT

4.1 INTRODUCTION

This chapter will attempt to study the method followed by Sibawayh and his views in investigating the interaction between the consonants of Arabic and the adaptive changes they undergo in all possible contexts. This investigation occupies the last six chapters of his Book. He seems to have considered these six chapters a separate part of the Book; for which he uses the title '*Bāb al-Idghām*'.

In the first chapter of this part of the Book he offers his phonetic description of the speech sounds of Arabic and ends it with a summary of the plan he was going to follow in his investigation of the assimilatory processes that operate on the segments in context.

4.2 ASSIMILATORY PROCESSES

Sibawayh mentions three assimilatory processes that operate on the segments in context : *Idghām*, *Ibdāl* and *Ikhfā'*. In the following subsections I will attempt to explain the implication of these terms in preparation for investigating them as processes that lead to changes in the phonetic properties of the segments in different situations.

4.2.1 *Idghām*

The literal meaning of this term is fusing two elements together in one complex. Sibawayh uses this term in his Book in two senses, The first as a broad cover term for all kinds and degrees of assimilation in the consonants, as shown in using it as the title of the final part of his Book where assimilation in the consonants is covered. In the second sense he uses this term more specifically to refer to a process of assimilation by which one segment is fully assimilated by another and a geminate is produced. In some cases *Idghām* involves the elision of an intervening short vowel between two identical segments to bring them in contiguity and produce them as a geminate (vol.3:530).

e.g(a): */'radada / → /'radda / (he turned back)

Sibawayh attributes the elision of the short vowel in the above example to a phonological rule which avoids a sequence of identical elements to achieve some degree of ease of articulation (ibid.). In other cases where the two segments are dissimilar, and eliding the vowel makes them contiguous, one of them completely assimilates the other to produce a combination of two identical segments that can be produced as a geminate.

Farāhīdī is most probably the first Arab grammarian to use the term Idghām in this sense. He states that:

"...*gemination is an indication of Idghām ...*" (Al-Ayn, vol.1, p.50). Ibn Jinnī adopts Sibawayh's concept of Idghām. He uses the term in the same sense but shows more consistency in defining two subtypes of Idghām. He terms one type 'The lesser Idghām' to refer to all kinds and degrees of partial assimilation among the consonants and terms the other type 'The greater Idghām' to refer to complete assimilation between two neighbouring consonants to produce a geminate (Ibn Jinnī a, vol.2, pp.139-141).

In the great majority of cases of assimilation discussed by him Sibawayh defines Idghām as the fusion of two adjacent segments by complete assimilation of the first one by the second. He repeatedly states that the basic form of Idghām is fusing the first segment in the second to produce a geminate (vol.4, pp.104; 469; etc.). These statements show that he conceives of assimilation as being basically regressive. He does not explain why he considers the process to be basically so, but the way he looks at regressive assimilation can be interpreted through his concept of relative phonological strength of linguistic elements. This concept will receive more detailed discussion in the coming parts of this study, although the following discussion of the relative strength of Sakīn and Mutaharrik might help to interpret how Sibawayh conceives of Idghām.

It was shown in Chapter Two of this study that he classifies the letters into 'Mutaharrik' (i.e. CV) and 'Sakīn' (C) (cf. 2.3 above). He proposes a hypothesis that the underlying form in the structure of Arabic is a Mutaharrik (vol.4, p.116), not a Sakīn (op.cit., p.410). He seems to look at a Sakīn letter either as a Mutaharrik weakened by eliding its short vowel or as a bound morpheme that cannot occur in isolation. He states that a Sakīn is the weakest unit in the structure and describes it as a 'dead entity' (vol.3, p.544) which will become strong if rendered Mutaharrik (vol.4, p.336).

Applying this hypothesis to a CVC type of syllable, a consonant in syllable initial position must be considered stronger than a consonant in syllable final position. This conclusion is substantiated by findings in modern linguistics. Hooper (1976, p.199) reporting Theo Vennemann (1972 c, p.109; 1972 d, p.9) states that a great deal of phonological evidence indicated that syllable-initial position is universally stronger than syllable-final position. She also states:

"...Phonological processes show that syllable-initial position is the strongest position..." (ibid.).

The application of regressive assimilation in Arabic implies that each one of the consonants involved in Idghām belongs to a separate syllable and the outcome is a geminate which straddles syllable boundaries. This doubling of the two identical contiguous segments does not cancel syllable boundaries. Heffner states that in these cases:

"...A single stop or constriction...serves both to arrest one syllable and to release the next..." (1950, p.176).

He reports measurements done by Stetson to indicate that there is an arrest and a new chest pulse during the occlusion or constriction of these double consonants (cf. Stetson, 1928, pp.67-85).

According to the relative positional strength of the two consonants in the combination the stronger second segment will dominate the weaker first segment. Therefore the relative positional strength of an element determines the direction of assimilation in the combination, providing other inherent factors of strength in the segments do not operate to influence the outcome. These factors of inherent strength in the segments will play a significant role in determining the outcome of assimilatory processes, as will be indicated in the discussions to follow.

4.2.2 Ibdāl

The term *Ibdāl* is equivalent to 'replacement' of an element by another. Sibawayh uses this term in two contexts. The first context involves lexical items borrowed from other languages in which a foreign consonant is replaced by another one from the consonant inventory of Arabic, like replacing the p by b or f in the Persian word *pirind* (sword) realized in Arabic as *birind* or *firind* (vol.4, p.306). The second context concerns assimilation between neighbouring consonants, which involves assimilation of features by one of the segments. Sibawayh describes the assimilation by the alveolar nasal /n/ to the place of articulation of the labial /b/ when they occur contiguously as a replacement of the Nūn by the Mīm in the following example:

e.g. /'qanbar / → /'qambar / (amber).

In few cases he describes this phonetic process by the term '*Iqlāb*' equivalent to 'converting' a segment into another. This study will focus on Ibdāl as a phonetic process leading to feature changes in the segments involved in assimilation.

4.2.3 Ikhfā'

The literal meaning of this term is 'concealing'. Sibawayh uses it in two different contexts. In one sense it is used to describe a process of weakening a short vowel by reducing its duration to a limited extent, maintaining its syllabic value. This phonetic process is applied in two cases, either to keep the meter of verse, which is based on a syllabic system, or to avoid Idghām of two identical consonants separated by a short vowel across word boundaries, as in the phrase: / 'ʔismu 'mu:sa: / (the name of Moses), (vol.4, p.442).

Sibawayh describes this process as the 'concealment' of a Ḥarf (in the sense of Mutaharrik, i.e. CV), and consistently remarks that its status as a (CV) construct should be preserved. He does not attempt to determine the phonetic value of this reduced short vowel in Ikhfā'. It is probable that this weakening process produces a schwa-like short vowel.

The second sense in which Sibawayh uses the term Ikhfā' pertains to the alveolar nasal /n/ in certain phonetic environments. When this consonant occurs immediately before one of seventeen 'non-peripheral' consonants of Arabic it will assimilate to their places of articulation, becoming a homorganic nasal. In some cases it also partially assimilates to their manner of articulation, as in cases where it immediately precedes one of the three sibilants /ʃ, s, z/ and becomes an open alveolar nasal $\underset{u}{n}$ (cf. 4.3.4.6 below). Sibawayh calls this homorganic Nūn 'The light Nūn' or 'The concealed Nūn'.

Sibawayh follows a systematic order in his investigation of assimilation in consonants. He begins by discussing Idghām among identical neighbouring consonants. After that he investigates assimilation between non-identical consonants following the order their places of articulation have in the vocal tract, systematically similar to the ascending order he followed in his study of the places of articulation (cf. 2.3.3).

The present study will attempt to discuss Sibawayh's work basically in the same order. Whenever found necessary, topics relevant to the problems discussed in this Chapter which happen to be discussed in other parts of the Book will be referred to and discussed as needed.

4.3 IDGHĀM IN IDENTICAL SEGMENTS

The first cases of Idghām discussed by Sibawayh concern the fusion of two neighbouring identical consonants separated by a short

vowel. He explains that because the two consonants are homorganic:

"...speakers find it easier to execute only one action of the tongue to produce the two identical segments..."

(vol.3, p.530).

He does not elaborate on all the possible changes in the phonetic properties of the two segments involved in Idghām.

The geminate outcome of Idghām will not be a long consonant, because each segment involved belongs to a separate syllable. What happens is that the release stage of the first segment and the onset of the second cancel each other and the doubled consonants will have only one onset and one release for both components (cf. Heffner, 1950, p.176 & p.194).

Sibawayh remarks about some changes in the manner of articulation in the outcome. He states that the two segments will have one release stage:

"...so that they lift their tongues from the outlet only once..." (vol.4, p.442) & (vol.3, p.530).

He makes this remark in discussing Idghām of the two voiced alveolar stops /ḍ & d/, in whose articulation the tongue is the active articulator. When the tongue is not involved in the articulation he remarks that speakers prefer one articulatory action for both segments for ease of articulation (vol. 4, p.129).

4.3.1 — C₁VC₁—

When two identical consonants are separated by a short vowel Idghām will take place by eliding the intervening short vowel to bring the two consonants into contiguity to produce a geminate and realize Idghām.

e.g(a): */'radada / → /'radda / (he turned back)

Sibawayh remarks that if the second consonant is followed by a short vowel Arab speakers unanimously agree on Idghām and reports Farāhīdī to support him in this conclusion (vol.3, p.530).

If the final vowel is dropped, as happens in verb forms in the imperative, Idghām will lose one of its conditions which is that the second segment in the geminate is Mutaḥarrik, unless the cluster occurs in final position, as in pause. The imperative of the verb /'radda / (e.g. a, above) occurs in two forms: / rudd / in the eastern dialect of Tamīm and /'ʔurdud / or / — rdud / in the western dialect of Ḥijāz. Sibawayh explains that in the Ḥijāz the short vowel /u/ is dropped after the initial /r/ and reintroduced between the two segments of the

geminate and Idghām is 'undone' (the initial / ?u / combination is a linking device *Hamzatu l-waṣl* introduced to avoid the initial cluster / rd /, and dropped in connected speech).

There are cases where one of the two successive identical segments is not a radical element of the form. The modifier morpheme / ta /, for example, is infixed to verb forms to modify the meaning to denote reciprocal action, as in /'qatalu: / (they killed) modified into: /?iqtatalu: / (they fought each other).^{*} In such a case Idghām does not take place in the two adjacent units / — tata — /, because realizing Idghām implies the elision of the short vowel that intervenes between the two identical consonants which, in this case, will produce an unacceptable cluster of three consonants in */ ?iqttalu: /. Sibawayh explains that no Idghām is allowed in this context because the affixed / ta / morpheme is a syntactical element "*used for meaning*". It is only incidental, he comments, that this / ta / morpheme is followed by the other radical /t/ in the form above, which appears to invite the performance of Idghām. Any one of the other consonants could occur in the same position for that matter where no case of Idghām would arise (vol.4, p.443). Then he adds that if it was desired to weaken this form for ease of articulation the short vowel of the morpheme / ta / could be shortened by performing Ikhfā' to produce / ?iqtatalu: /, so that the syllabic structure of the form is maintained (ibid.).

4.3.2 — C₁V # C₁—

When two identical consonants separated by a short vowel occur across word boundaries the intervening short vowel is elided to bring the two consonants in contiguity and realize Idghām. This Idghām is only possible if the outcome geminate occurs intervocalically.

- e.g.(a): /'yadu da:'wu:da / → /'yad da:'wu:da / (David's hand)
 (b): / ?alma:lu 'laka / → / ?alma:l 'laka / (the property is yours)

* Inserting the modifier morpheme / ta / (*Tā' al-Ifti'āl*) immediately after the initial consonant of the verb form, according to the rule of applying this morpheme, will produce the form */ qatatalu: /. Because of the constraint on the number of successive CV syllables in Arabic the vowel of the initial syllable is elided and the form / qtatalu: / is produced. When this form occurs initially in the utterance, the linking Hamzah / ?i / is affixed to produce / ?iqtatalu: /.

Sibawayh comments that if a long vowel occurs at either side of the combination involved, Idghām is considered 'good', and it is 'best' when five identical syllables occur in succession in the two words, e.g.(c): / 'jaçala 'laka / → / 'jaçal 'laka / (he rendered for you) (op. cit., pp.437-438). In case the two identical consonants are not preceded by a vowel, the intervening short vowel could only be reduced if weakening is to be desired:

e.g.(d): / 'ʔismu'mu:sa: / → / 'ʔismə'mu:sa: /

Sibawayh comments that the more CV syllables occur in succession the 'better' the realization of Idghām becomes. He explains that such a sequence of syllables is a strain on the speaker, who prefers to break the monotony by eliding the short vowel of one of these syllables.

He seems to have arrived at a concept of the quantity system of Arabic by stating a phonological constraint on the number of successive identical elements in the utterance. He states that in a quintiliteral root form or in five consonant construct it is not possible to have a succession of five Mutaḥarrik letters. There must be a Sākin letter in the sequence, he adds, drawing evidence from Arabic verse in which structure it is not possible to have a sequence of five (CV) type syllables (ibid.).

The above mentioned observations made by Sibawayh might help to partly explain the reasons for the phonological rule of eliding the final vowel in pause and the less common practice of eliding the short vowel of the penultimate syllable in triliteral forms, as in producing / 'faXǝu / for / 'faXiǝu / (thigh). This elision might also point to the stress pattern of Arabic which deserves a detailed investigation.

The purpose of vowel reduction, vowel elision and Idghām in this context seems to be ^{to} realize a rhythm pattern by creating a contrast between Sākin and Mutaḥarrik elements.

"...Writers on the theory of music say that you cannot have melody without rhythm..." (Firth, 1948).

Sibawayh also states that, in e.g. (b) above, non-Idghām is also considered 'good' on the assumption that the long vowel preceding the two identical consonants is a Sākin (ibid.). He seems to have heard the two alternatives in the current language and is attempting to account for the case of non-Idghām. It is possible to presume that the long vowel provides sufficient contrast in the form to avoid monotony and achieve the required rhythm pattern in the utterance.

4.3.3 — u:w — & — i:y —

When one of the two long vowels Wāw /u:/ or Yā' /i:/ immediately precedes its semi-vowel counterpart no Idghām may take place, whether the combination occurs within the word or across word boundaries:

- e.g.(a): /'yaβzu:'wa:ʒid / → idem (he attacks Wāʒid)
 (b): /'Gu:wila / → idem (he was spoken to)
 (c): /'Ga:ḡi:'ya:sir / → idem (Yāsir's judge)

Sibawayh states that a long vowel and its semi-vowel counterpart are not identical segments but only 'similar', implying that they are phonetically non-identical. Idghām of two segments requires them to be identical in order to produce a geminate. Non-identical segments cannot produce a geminate. He explains that a long vowel is a sound of prolongation 'Madd', while a semi-vowel is not; and fusing these two non-identical segments leads to the loss of vocalicity of the pure vowel. Neither is it possible, he adds, to render the semi-vowel a pure vowel (op.cit., p.442). It is probable that in this context he is referring to the impossibility of replacing a semi-vowel by a pure vowel, because a pure vowel does not occur in syllable-initial position.

If the two contiguous segments are identical semi-vowels they will behave similar to consonants and Idghām can be realized:

- e.g.(d): /'ʔiXšay'ya:sir / (beware of Yāsir)
 (e): /'ʔiXšaw'wa:ʒid / (... Wāʒid)

4.3.4 The Hamzah

Sibawayh considers the glottal stop Hamzah a special case among the consonants as far as Idghām is concerned. Arab speakers show a tendency to weaken this consonant whenever possible. Sibawayh investigates the phonetic changes the Hamzah undergoes in a special section which will be the topic of discussion in Chapter Five of this study. Concerning Idghām he states that there would be no gemination of two contiguous glottal stops. If ease of articulation is to be sought speakers have other means, he says, such as weakening this consonant or eliding it. He seems to imply that geminating a Hamzah in Idghām makes it more strenuous to articulate, while the tendency should be to make it easier. He cites Farāhīdī and Yūnis to support him.

He also remarks that some Arabs do realize a geminate Hamzah, but he judges this practice to be 'bad Arabic' (op.cit., p.443).

4.4 IDGHĀM IN CONSONANTS OF ADJACENT OUTLETS

A complete section in the Book is devoted to the investigation of assimilation between two non-identical consonants that have the same or adjacent places of articulation. In the first part of that section he deals with segments that do not accept Idghām. In the second part he deals with segments that can neither assimilate nor be assimilated by other segments. Then he goes on to deal with segments that can assimilate another homorganic segment but cannot be assimilated by it. Finally he deals with segments among which assimilation may take place both ways.

4.4.1 The Hamzah

It has been explained in (4.3.4 above) that Sibawayh believes that two adjacent Hamzahs should not be geminated. He repeats a view of his concerning a Hamzah that occurs in contiguity with another consonant, stating that neither segment in such a combination can assimilate the other. He does not present any phonetic justification for this phenomenon except repeating his view that to make articulation easier a Hamzah can either be weakened or elided (cf. Chapter five).

4.4.2 $\bar{V} + C$

The long vowel Alif /a:/ does not accept Idghām with any other segment. Sibawayh states that there might be no Idghām between the Alif and the Hā' /h/ (believing them to be homorganic; cf. 2.2.4), nor with any other neighbouring consonant, just as two Alifs cannot undergo Idghām (op.cit., p.446). The last remark is irrelevant, because two long vowels never occur contiguously in Arabic.

The same rule applies for the other two long vowels Wāw /u:/ and Yā' /i:/. Sibawayh explains that long vowels possess the two phonetic properties, softness 'Leen' and length 'Madd' which cannot be introduced in consonants nor could be assimilated by them (ibid.). Therefore Idghām, which involves complete assimilation between two non-identical segments, or gemination of two identical ones, cannot be applied to a combination of a long vowel and a consonant.

4.4.3 The Semi-Vowels

Having discussed Idghām in long vowels Sibawayh goes on to discuss it in the two semi-vowels Wāw /w/ and Yā' /y/. He states that these two semi-vowels do not accept Idghām with any homorganic or neighbouring

consonant. He explains that the semi-vowels possess (some degree) of 'Madd' and 'Leen' which makes the two homorganic consonants the $\bar{J}\bar{i}\bar{m}$ /j/ (with the $\bar{Y}\bar{a}'$) and the $\bar{B}\bar{a}'$ /b/ (with the $\bar{W}\bar{a}\bar{w}$), and any other [-leen] [-madd] consonant, unable to assimilate a semi-vowel.

e.g.(a): / $\bar{b}\bar{u}\bar{l}\bar{a}:\bar{m}\bar{a}\bar{y}$ 'ja:bir / → idem (Jābir's two boys)

e.g.(b): / law 'malaka / → idem (would he possess)

Neither does any semi-vowel assimilate a preceding homorganic consonant when the two occur contiguously.

e.g.(c): / 'ʔaxrij 'ya:sir / → idem (make Yāsir get out)

e.g.(d): / kam 'wa:ħid / → idem (how many...)

Sibawayh attributes the non-occurrence of Idghām in the last two examples above to the fact that fusing a consonant into a semi-vowel implies introducing vocalicity into a pure consonant.

On the other hand if two identical semi-vowels occur contiguously they will be geminated by Idghām.

e.g.(e): / 'ʔixšay 'ya:sir / (beware of Yāsir, s.)

e.g.(f): / 'ʔixšaw 'wa:jid / (.. Wājid pl.)

He explains that two adjacent semi-vowels can be geminated in Idghām because they behave in a way similar to two consonants in the same context. Compared with the non-occurrence of Idghām between a consonant and a semi-vowel it seems that Sibawayh is implying that complete assimilation is not possible between two segments one of which is a consonant and the other is a vowel or semi-vowel. The alveolar nasal $\bar{N}\bar{u}\bar{n}$ seems to be an exception to this generalization. In some cases it is assimilated by a following semi-vowel (cf. 4.4.6.3). A semi-vowel too cannot be involved in Idghām with a pure long vowel.

4.4.4 The Four Consonants $\bar{M}\bar{i}\bar{m}$, $\bar{F}\bar{a}'$, $\bar{R}\bar{a}'$ & $\bar{S}\bar{h}\bar{i}\bar{n}$

Sibawayh recognizes four consonants that can assimilate a homorganic consonant, yet cannot be assimilated by it. These consonants are the $\bar{M}\bar{i}\bar{m}$ /m/, the $\bar{R}\bar{a}'$ /r/, the $\bar{F}\bar{a}'$ /f/ and the $\bar{S}\bar{h}\bar{i}\bar{n}$ /š/. He tries to mention the phonetic property or phonological rule that explains their strength in assimilating a homorganic consonant and resistance to be assimilated by it.

4.4.4.1 /b/ & /m/

When the two homorganic consonants $\bar{B}\bar{a}'$ and $\bar{M}\bar{i}\bar{m}$ occur contiguously in a combination the occurrence of Idghām depends on their order in the combination. When the nasal segment /m/ occurs first no assimilation takes place (cf. e.g.(a) below). If the order is reversed the

the non-nasal Bā' will assimilate to the Mīm acquiring its [+ nasal] feature which will convert it into a Mīm .

e.g.(a): /'ʔakrim 'bihi / → idem (praise be to him)

(b): /'ʔiṣḥab 'maṭar / → [ʔiṣḥam 'maṭar] (accompany M.)

The phonetic distinction between these two consonants is that the Mīm is [+ continuant + nasal] and the Bā' is [- continuant - nasal]. The factors that enable the Mīm to dominate the Bā' seems to be its inherent [+ nasal] feature and its positional strength because it occurs second in the combination. The feature [+ continuant] does not seem to play a part in this context. The Mīm does not dominate other [- continuant] consonants in similar contexts like /'mudmin / (an addict) and /'mukmil / (complementary). When there is a conflict between the two factors of strength nasality and positional strength the outcome seems to be neutralization of the two and no assimilation takes place, as in e.g.(a) above.

4.4.4.2 /f/ & /b/

When the two labials Fā'/f/ and Bā'/b/ occur contiguously in one combination the former completely assimilates the latter if the combination is /- bf -/

e.g.(a) /'ʔiṣḥab 'fawran / → [ʔiṣḥaf 'fawran] (go by that)

If the order is reversed no assimilation takes place.

e.g.(b) /'ʔiḥrif 'badran / → idem (know Badr)

Sibawayh attributes the ability of the Fā' to dominate the Bā' to the difference in their places of articulation. He explains that the Fā' is a labio-dental whose place of articulation is closer to the central area of the mouth cavity than that of the labial Bā', and states that basically Idghām is a function of the consonants of (the central part of) the mouth cavity:

"...because they make up the majority of the letters..."

(op. cit., p.448). In other places he explains that the nearer the segments are to the central part of the mouth cavity the greater is the probability for Idghām to take place among them and the higher is their ability to dominate other segments. This factor of strength will be discussed in more detail in the following section of this chapter.

4.4.4.3 /r/ + /l, n/

In the two combinations /- rl -/ and /- rn -/ the first segment Rā' is not assimilated by either of the second segments Lām or Nūn.

e.g.(a): / sir 'laylan / → idem (walk by night)

(b): / sir naha:ran / → idem (walk by day)

Sibawayh states that the trill consonant Rā' does not accept Idghām with any one of the other two consonants in this context. He attributes this strength of the Rā' to its trill 'Mukarrar' feature which : "...makes it more expansive..." in this environment (ibid.). It is not 'fair' he adds, for an 'expansive' consonant to be dominated by a consonant that does not possess this quality.

When the Rā' occurs second in the combination it will completely assimilate any of the other two consonants.

e.g.(c): / 'hal ra'ayta / → ['har ra'ayta] (did you see?)

(d): / 'man ra'ayta / → ['mar ra'ayta] (whom did you see)

Sibawayh makes a comparison between the phonetic features of the Rā' and the Lām to account for the occurrence of Idghām between them. He remarks that both consonants are [apical] continuant Shadīd, and the Rā' is partially lateral. The last remark further explains the meaning of the phonetic property 'Munḥarif' (cf. 3.4.7) to imply diverting the airstream towards the sides of the tongue. Describing it as partially lateral indicates that Sibawayh is referring to the passage of the airstream at the brief period during which the tongue comes into contact with the alveolar ridge every time it taps on it during the production of the trill [r] .

4.4.4.4 /š/ + /j/

The Shīn too does not accept assimilation by the homorganic Jīm in the combination /- šj -/. If their order in the combination is reversed the Shīn will assimilate the Jīm.

e.g.(a): / 'ʔašjaç / → idem (more courageous)

(b): / 'ʔaxrij 'šayʔan / → ['ʔaxriš 'šayʔan] (bring out something)

Sibawayh states that Idghām in (b) above took place because the Shīn dominated the Jīm. The Shīn, he explains, is a fricative whose place of articulation occupies an extended area and the property of Tafashshī it possesses (which might well be a result of the first characteristic above) has given it the strength to assimilate the preceding Jīm in the combination. In e.g.(a) above the Shīn does not seem strong enough to assimilate the Jīm, apparently opposed by the positional strength of the Jīm when it occurs second in the combination.

So far the discussion in this sub-section has focussed on segments

which cannot be assimilated by other segments of adjacent places of articulation.

4.4.5 Back Consonants

The next cases of assimilation investigated by Sibawayh involve segments of the same or adjacent places of articulation which can assimilate each other according to the context. The discussion commences with the glottal fricative $\text{Hā}'$. Its homorganic stop the Hamzah is not discussed, presumably because Sibawayh considers it not suited for Idghām (cf. 4.4.1 above).

4.4.5.1 /h/ + /ħ/

When these two consonants occur contiguously Idghām can only take place when the higher segment /ħ/ occurs second in the combination.

e.g.(a): / 'ʔimdaħ hila:l / → idem (praise Hilāl)

(b): / wa:jih ħaydar / → ['wa:jih 'ħaydar] (meet Ĥ.)

Sibawayh's explanation is that the higher consonant /ħ/ could assimilate the lower /h/ and not the other way round, because the outlet of the former is nearer to the central area of the vocal tract than that of the latter. He further comments that both segments are [+ mahmūs, + rikhw] possibly implying that the difference in their capacity to assimilate each other lies in their relative proximity to the central area of the vocal tract, rather than in their inherent strength. A phonetic factor seems also to operate on the probability of assimilation in this context. The constriction in the vocal tract in realizing the pharyngeal fricative /ħ/ is narrower than that of the glottal fricative /h/. Consequently holding a geminate /ħ/ will be easier than holding a geminate /h/ for the realization of Idghām. A geminate /h/ does occur in Arabic: / 'šahhada / (made to testify) but when there is a choice between geminating a /h/ or a /ħ/, the latter appears to be preferred.

4.4.5.2 /h/ + /ç/

When the glottal $\text{Hā}'$ /h/ and the pharyngeal Ayn /ç/ occur side by side in a combination both will change into a $\text{Ĥā}'$ /ħ/ and the outcome -ħħ- will be produced as a geminate to realize Idghām :

e.g.(a): / 'wa:jih 'çinabah / → ['wa:jih 'ħinabah] (meet 'Enabah)

(b): / 'maçhad / → ['maħħad] (institute)

(c): / 'maçahum / → ['maħħum] (with them)

The outcome of assimilation in the above examples is the same

geminate Ḥā', whatever is the order of the two segments in the combination.

Sibawayh's account of the adaptive changes in the two segments, goes as follows: When the order of the two segments is /- hç -/ the first segment /h/ is changed into [ḥ] by means of regressive assimilation of place of articulation, then the second segment too is changed into [ḥ] by progressive assimilation of voice feature, the outcome of the two changes being the sequence -ḥḥ-, produced as a geminate in Idghām. He explains that the Ayn could not assimilate the preceding Ḥā', as the rules of Idghām requires, to produce a geminate Ayn, because the Ayn is different from the Ḥā' in the two phonetic features of voicing and manner of articulation. He remarks that a voiceless consonant is easier to articulate than a voiced consonant, concluding that producing a geminate Ḥā' in speech is easier than producing a geminate Ayn [çç]. Regarding manner of articulation the Ayn is [+ shadīd, + rikhw] and the Ḥā' is [- shadīd + rikhw].

It has been explained in Chapter Three above that a geminate Ayn is realized by a glottal closure (cf. 3.3.6). Therefore it can be construed that this case of Idghām is realized to achieve ease of articulation. Sibawayh argues that the above mentioned contrast in phonetic features between the two segments weakens the ability of the Ayn to assimilate the Ḥā' (vol.4, p.450).

When the Ayn precedes the Ḥā' in the combination, the sequence -ḥḥ- is also produced. In this case the adaptive changes follow a different order from the one explained above. Sibawayh explains that firstly the Ayn changes into a Ḥā' by regressive assimilation of voice feature, secondly the Ḥā' becomes a Ḥā' [ḥ] by progressive assimilation of place of articulation (ibid.).

From Sibawayh's explanations of Idghām in the two cases above it can be concluded that he realizes that regressive assimilation is more expected to take place than progressive assimilation, whether it involves voice feature or place of articulation.

In e.g.(a) above the process of assimilation takes the following steps:

- hç → ḥḥ
- i. h → ḥ /- ç (by regressive assimilation of place of artic.)
 - ii. ç → ḥ / ḥ - (by progressive assimilation of voice feature)

In e.g.(b) above the following steps are followed:

çh → ħħ

- i. ç → ħ /— h (by regressive assimilation of voice feature)
- ii. h → ħ / ħ — (by progressive assimilation of place of articulation)

4.4.5.3 /ç/ + /ħ/

When the two homorganic consonants Ayn and Ĥā' occur contiguously in a combination, the voiceless Ĥā' will always assimilate the voiced Ayn, whatever their order in the combination is:

e.g.(a): /'ʔimdaħ 'çarafah / → ['ʔimdaħ 'ħarafah] (praise A.)

(b): /'ʔirjaç 'ħa:lan / → ['ʔirjah 'ħa:lan] (come back immediately)

Sibawayh explains that in (a) above the voiced Ayn cannot assimilate its homorganic voiceless counterpart Ĥā' on account of the difference in their voice feature (op. cit., p.451). He seems to imply that the inherent feature [-voiced] of the Ĥā' is phonologically stronger than the positional strength of the Ayn in this context.

4.4.5.4 /X/ + /ǧ/

When the two uvular fricatives Ghayn /ǧ/ and Khā' /X/ occur side by side in a combination regressive assimilation will take place in any order they occur together.

e.g.(a): /'ʔidmaǧ 'Xalaf / → ['ʔidmaX 'Xalaf]

(b): /'ʔislaX 'ǧanamak / → ['ʔislaǧ 'ǧanamak] (slaughter your sheep)

Sibawayh considers the opposition between these two consonants similar to that between the Ayn and the Ĥā' (cf. 4.4.5.3 above). The opposition in voicing is obvious but what oppositions in manner of articulation is he referring to? It is mentioned in Chapter Three above that he considered both consonants to be [+rikhw]. In this example he seems to describe them as having different values of this feature (ibid.). The outcome of assimilation he points to is also different in the case of the Khā' and the Ghayn from that of the Ĥā' and the Ayn. In the first pair of consonants assimilation operates regressively in all cases, while it operates differently in the case of the second pair. The voiced Ghayn /ǧ/ completely assimilates the voiceless Khā' as in e.g.(b) above, something the Ayn could not do with the Ĥā'. There is no apparent explanation for this inconsistency in Sibawayh's statements.

Besides that, he remarks that Idghām between the Khā' and the Ghayn is more probable because the two consonants are placed relatively nearer to the centre of the mouth cavity (ibid.).

4.4.5.5 /G/ + /k/

When the two adjacent stops /G/ and /k/ occur contiguously the second segment in the combination regressively assimilates the first segment, in any order they occur in the combination.

e.g.(a): /'ʔilħaG 'kaladah / → ['ʔilħak 'kaladah] (follow Kaladah)

(b): /'ʔamsik 'Gaḍanah / → ['ʔamsiG 'Gaḍanah] (catch Q.)

Sibawayh explains that these two consonants share the phonetic feature [+shadīd], have adjacent places of articulation and the tongue is involved in their articulation; implying that these factors increase the probability of Idghām in this context (op. cit., p.452).

He also remarks that Idghām in e.g.(b) above is less preferable than it is in (a), without offering any explanation (ibid.). The probable reason is that the uvular Qāf is placed farther away from the central area of the mouth cavity than the velar Kāf. According to Sibawayh, this factor weakens the ability of segments to influence other segments in assimilation. No reference is made by him to the opposition in voice feature between the two segments, possibly because it did not affect the outcome of assimilation.

4.4.6 The Nūn /n/

The alveolar nasal Nūn shows a noticeable propensity to adapt to other consonants when it occurs first with another in a combination. In all the combinations in which it occurs first its phonetic value changes, except when the second segment is one of the four pharyngeals /ʔ, ħ, ḥ, ʕ/, where no assimilation takes place.

4.4.6.1 /n/ + /ʔ; ħ, ḥ, ʕ/

In combination with one of the four pharyngeal consonants mentioned above the Nūn does not change its phonetic value. Sibawayh states that no Idghām takes place between the Nūn and any one of these four consonants because their places of articulation are far apart from that of the Nūn. Because of this, Idghām is precluded between a peripheral and a medial consonant (cf. Jakobson and Halle, 1956, p.31). He states that these pharyngeals:

"...do not have the strength to change the Nūn." (op.cit.:454-5).

- e.g.(a): / min 'ʔajli 'zaydin / → idem (for Zayd's sake)
 (b): / min 'huna: / → idem (from here)
 (c): / min 'ħa:tim / → idem (from Hatim)
 (d): / min 'çindika / → idem (from you)

4.4.6.2 /n/ + /X , ʕ/

In combination with one of the two uvular fricatives Khā' /X/ and Ghayn /ʕ/ the outcome alternates between Idghām and non-Idghām. This alternation seems to occur because the two uvulars are placed in the border area between the pharynx and the mouth cavity. Sibawayh describes their place of articulation as the 'upper pharynx' area (cf. 2.3.4) and attributes the alternation between Idghām and non-Idghām of a preceding Nūn to this factor. He states that these two behave in a way similar to that of the other pharyngeals, but reports that some Arabs treat them like a Qāf in Idghām (ibid.). When Idghām is realized the Nūn assimilates to the place of articulation of the Khā' and the Ghayn, changing its phonetic value to [N].

- e.g.(a): /'man ʕalabaka / → ['maN ʕalabaka] (who had beaten you)
 (b): /'munXul / → ['muNXul] (a sieve)

4.4.6.3 /n/ + /l, r, w, y/

When the Nūn precedes one of the liquid consonants Lām or Rā', or one of the semi-vowels Yā' or Wāw it will be completely assimilated by any one of these four:

- e.g.(a): /'man raʔayta / → ['mar raʔayta] (whom did you see)
 (b): / man 'laçiba / → [mal 'laçiba] (who played)
 (c): / man 'yakun / → [may 'yakun] (whom it might be)
 (d): / man 'wulida / → [maw 'wulida] (who was born)

Sibawayh explains that Idghām takes place between the Nūn and any one of the two liquids above because they have adjacent places of articulation. The Nūn and the Rā', he adds, share the feature Shadīd. He does not mention the same remark about the other liquid Lām but it can be presumed that the remark is equally applicable (op.cit., p.452).

To account for assimilating the Nūn by the Yā' in (c) above he explains that the place of articulation of the Yā' is the nearest one to that of the Rā' on the tongue and this proximity of the two places enabled the Yā' to assimilate the Nūn (op.cit., p.453). Similarly the other semi-vowel Wāw assimilates a preceding Nūn, as in (d) above. Sibawayh comments that the labial Wāw assimilated the Nūn because the

former is homorganic with the other nasal Mīm which had the strength to assimilate the Nūn (cf. 4.4.6.4 below). Then he describes the Wāw and the Yā' to be 'sisters', perhaps suggesting that both enjoy equal phonological strength to assimilate the Nūn (ibid.).

In all of the above four examples of assimilation nasalization of the outcome is optional. He states that the Idghām of the Nūn with any one of the four consonants discussed above can be realized with or without nasalization, for which he uses the term '*Ghunnah*'. Realizing Idghām with Ghunnah indicates a progressive assimilation of nasalization which results in the geminate outcome being [+ nasal]. It is noteworthy that Sibawayh distinguishes between a nasal sound and a nasalized one. He asserts that the outcome of the Idghām of the Nūn into one of the four consonants above with Ghunnah will not make it a nasal. It will keep its oral place of articulation, he explains, but the oral sound acquires the feature of nasalization:

"...*ṣawtu lfami 'ushriba ghunnatan...*" (op.cit., p.454).

All the examples of Idghām discussed above take place when the combinations occur across word boundaries. When they occur within word boundaries the Nūn will behave differently. When it precedes one of the two semi-vowels and it is a radical element of the construct no Idghām takes place as in /'munyah / (a dear wish) and /'ṣinwun / (equal to). Sibawayh explains that Idghām was avoided in these cases to avoid semantic ambiguity (op.cit., p.455). In case the Nūn is not a radical element of the construct but an affixed morpheme ambiguity is not likely to arise and Idghām may take place. Sibawayh quotes Farāhīdī as pronouncing [ʔiwajala] for /ʔinwajala / (ibid.).

The Nūn cannot immediately precede a Lām or a Rā' within word boundaries. Sibawayh states that the clusters */- nl -/ & */- nr -/ do not occur in Arabic. He explains that it is difficult to realize these two clusters because of the proximity of their places of articulation (op.cit., p.456).

The fact that these three consonants share the feature [+ voice, + continuant, + stop, + coronal] drastically reduces the contrast between them so that producing two of them in succession becomes difficult. This phenomenon seems to impose a structural constraint on these clusters based on articulatory criteria.

4.4.6.4 /n/ + /m/

In a combination of the two nasal consonants /n/ and /m/ the Nūn

behaves in two different manners. When the combination occurs across word boundaries the Mīm assimilates the preceding Nūn producing a geminate Mīm .

e.g.(a): /'man maçak / → ['mam maçak] (who is with you)

When the combination occurs within word boundaries no assimilation takes place.

e.g.(b): / sinma:r / → idem (a proper noun)

Sibawayh attributes Idghām in e.g.(a) above to the great similarity between the two consonants. He describes them to be distinct from all other sounds. This description indicates that he considers nasal consonants a phonetically natural class (op.cit., p.454).

To account for non-Idghām in e.g.(b) above he attributes it to the tendency to avoid semantic ambiguity. When the Nūn is a radical element in the construct its assimilation by the Mīm produces a double Mīm which might change the meaning. If the Nūn is an affix ambiguity would not be probable and Idghām becomes possible (op.cit., p.455).

e.g.(c): / ?inmaħa: / → [?immaħa:] (got deleted)

4.4.6.5. /n/ + /b/

When the Nūn immediately precedes the Bā' in a combination it will assimilate to the place of articulation of the latter, which, in Sibawayh's view, converts the Nūn into a Mīm: i.e. n → m /— b. This adaptive change takes place whether the combination occurs across word boundaries or within the word.

e.g.(a): /min 'baçdu / → [mim 'baçdu] (afterwords)

(b): /'çanbar / → [çambar] (Amber)

Sibawayh interprets this case of partial assimilation and the non-occurrence of Idghām as an outcome of the need to retain nasality in the utterance (op.cit., p.453).

It has been mentioned that Sibawayh does not assign a high phonological strength to the peripheral segments in dominating the medial segments. For the change in e.g.(b) above he states that no ambiguity is probable because the cluster */— mb —/ is not possible in Arabic (op.cit., p.456).

4.4.6.6 /n/ + Medial Consonants

The Nūn assimilates to the places of articulation of the medial consonants when it precedes one of them in a combination:

e.g.(a): / man 'ka:na / → [maŋ 'ka:na] (who was...)

- e.g.(b): / man 'sa:ra / → [maŋ 'sa:ra] (who walked)
 (c): / man 'ja:ʔa / → [maŋ 'ja:ʔa] (who came). etc.

Sibawayh terms this assimilatory Nūn 'the concealed Nūn' which he considers one of the 'derived acceptable letters' of Arabic (cf. 2.3.5.1). He describes these allophones of the Nūn as :

"... concealed letters released through the nasal cavity..." (op.cit., p.454). In this context he uses the term Idghām in its broad sense, equivalent to 'assimilation' to state that medial consonants are more subjected to assimilation. To account for the readiness of the Nūn to undergo adaptive changes with a large number of consonants in this context he explains that the nasal property of the Nūn is sufficient to indicate its status as a phoneme; and changes in its place of articulation within the limits of the mouth cavity would still indicate its value as an independent segment. For this reason, he adds, a homorganic Nūn provides economy of effort (ibid.).

4.4.6.7 Phonetic Values of the Assimilative Nūn

The following are the phonetic values of the conditioned allophones of the Nūn in different phonetic environments.

- n → idem /— ? h ħ ʕ
 n → N /— G ʃ X
 n → ŋ /— k
 n → ɲ /— š j
 n → ŋ /— ʃ *
 n → y /— y **
 n → w /— w **
 n → m /— b
 n → idem /— d ɗ t
 n → ŋ /— ʂ z s
 n → ŋ /— ʃ ʃ θ
 n → ŋ /— f
 n → r /— r **
 n → l /— l **

* I devised the phonetic symbol ŋ as a convenient symbol to stand for the phonetic value of the allophonic variant of the Nūn in this context. The reason is that the phonetic value of the Dād has also changed (cf. 3.4.4).

** When the nasal Nūn /n/ immediately precedes one of the segments /w, y, l, r/ nasalization of the phonetic outcome is optional.

4.4.7 The Lām /l/

The lateral consonant Lām's readiness to accept assimilation depends on its function in the structure of Arabic. This consonant functions as a definite article, as a preposition as well as occurring as a radical element in constructs.

4.4.7.1 The Definitive Lām

The definitive Lām is fully assimilated by any one of the following thirteen consonants when it occurs first in a combination with one of them /ð, ð, θ, ḍ, d, t, ʂ, s, z, r, n, ǧ, š/.

e.g.(a): /ʔal/ + /'rajul/ → [ʔarrajul] (The man)

Sibawayh states that Idghām is imperative if the definitive Lām precedes one of these thirteen consonants. He explains that Idghām always takes place in this context because of the high frequency of this particle in speech as well as the large number of phonetic features the Lām shares with these consonants. The Lām he states, is an apical consonant and eleven out of thirteen consonants which assimilate the Lām are apicals and the other two /ǧ & š/ have places of articulation that overlap with those of the first eleven consonants (op.cit., p.457).

The Lām and the other thirteen consonants are all [+ coronal] and the phonetic features they all share are shown in the following table:

	ð	ð	θ	ḍ	d	t	ʂ	s	z	r	n	ǧ	š	l
voiced	+	+	-	+	+	-	-	-	+	+	+	+	-	+
coronal	+	+	+	+	+	+	+	+	+	+	+	+	+	+
continuant	+	+	+	-	-	-	+	+	+	+	+	+	+	+

The above table indicates that the Lām shares the feature [+ coronal] with all the other thirteen consonants, shares the feature [+ voice] with eight of them and the feature [+ continuant] with ten of them. This comparison explains Sibawayh's statement:

"...the Lām agrees very much with these (thirteen) letters..."

(ibid.), (cf. 3.4.3.1).

The affricate Jīm /j/ is controversial in this context. The Grammar of Fuṣḥā Arabic classifies it as a Qamarī letter (cf. 3.4.3.1). The following phrase is composed to contain all and only the Qamarī

consonants " *'Ibghi ḥajjaka wa khaf 'aqīmahu* " (Seek your pilgrimage and beware of a faulty one.). The Jīm as pronounced in modern Fuṣḥā Arabic is a palatal affricate with the phonetic value [dʒ] which makes it [+ coronal]. Accordingly it should naturally function as a Shamsī consonant. Indeed it does function as a Shamsī consonant in modern Arabic, both Fuṣḥā and colloquial unless the speaker is trained to produce it as Qamarī, like Qur'ānic reciters and radio announcers, who in fact intentionally do so in the formal pronunciation of Arabic, but do not in informal occasions (Odisho, 1978).

These observations might suggest that the modern affricate [+ coronal] Jīm is a weakened fronted form of an earlier [- coronal] plosive, possibly similar to the Jīm attested in Cairene Arabic, in the South of the Yemen and some other places in the Arab World, whose phonetic value is [g], which is attested in some other Semitic languages.

4 .4.7.2 The non- Definitive Lām

A non-definitive Lām which occurs in final position in function words, as in the two particles / hal / and / bal / is assimilated by any of the thirteen Shamsī consonants discussed above if this Lām precedes one of them in a combination.

e.g.(a): / 'hal raʔayta / → ['har raʔayta] (did you see?)

Sibawayh states that with this group of consonants Idghām is not 'equally good' with each one of them. He seems to imply that they do not enjoy equal strength in assimilating the non-definitive Lām. From the explanation he offers for these cases of assimilation he seems to order these thirteen consonants in a scale of five levels according to their strength in assimilating this Lām in this context.

i. The trill Rā' is rated highest in this scale. He explains that the Rā' is the nearest to the Lām in place of articulation as well as most similar to it (in phonetic properties) which makes them like two homorganic consonants (ibid.). According to this great amount of similarity between the two, he states that Idghām is 'better' and more probable in this context.

ii. The six alveolar consonants /d, d, t, ṣ, s, z/ are rated next to the Rā' in the scale for assimilating the Lām. He explains that with this group of consonants Idghām is acceptable, yet less probable than it is with the Rā' (ibid.). To account for that he explains that the places of articulation of these consonants are not so close to

that of the Lām, neither do they possess any laterality (as compared with the Rā' which he describes as having some laterality, cf.3.4.8)

e.g. / hal 'ta:ba / → [hat 'ta:ba] (did he repent) etc.

iii. The three dentals / ḏ, ḥ, θ / are ranked third in this scale. He states that Idghām of the Lām with one of these three is 'admissible' yet not as 'good' as it is with the six consonants in (ii) above because their places of articulation are at the border of the region (of the apical consonants) in the articulation of which the tip of the tongue is involved. His implication seems to be that the Lām does not involve the tip of the tongue as much as these do.

iv. In the fourth rank he puts the two consonants Dād and Shīn. He explains that assimilation of the Lām by these two is 'admissible' but 'less probable', because their places of articulation are 'only' adjacent with that of the Lām (ibid.).

e.g. / hal 'šay?un / → [haš 'šay?un] (is anything...?)

v. At the lowest rank in this scale is the Nūn. Sibawayh describes Idghām of a Lām with a Nūn as the 'ugliest' case of all. He seems to consider the Nūn a weak consonant in this respect, on the evidence that it was assimilated by the Lām, the Wāw, the Rā' and the Mīm. Consequently, he suggests, the Lām enjoys higher phonological strength and that makes its assimilation by the Nūn in this context the least probable.

4.4.7.3 The Radical Lām

A Lām that occurs as radical element in constructs is not assimilated by a contiguous consonant, whether the combination occurs within a word or acrossword boundaries.

e.g (a): / kul 'tamran / → idem (eat some dates)

(b): / 'yalθim / → idem (he kisses)

Sibawayh does not refer to these cases, probably because of the non-occurrence of Idghām.

4.5 IDGHĀM IN APICAL CONSONANTS

A separate section in the Book is devoted to investigate assimilation among apical consonants of Arabic. Sibawayh defines this group of consonants as:

"...letters of the apex of the tongue and the incisors..."

This definition could be taken as equivalent to the modern terms 'apico-alveolar, lamino-alveolar and apico-dental' (cf. Abercrombie, 1967, p.67; and O'Connor, 1973, p.45). This group of consonants are:

/j, š, ʃ, ʒ, s, z, d, d, t, ð, ð, θ / . By the term 'Thanāyā' he covers the two places 'inter-dental' and 'alveolar' judging by his description of the inter-dental place as 'the tips of the incisors' (vol.4, p.464)., and the alveolar ridge as 'the roots of the incisors' (op.cit., p.463). Sibawayh mentions these two places on the passive articulators in order to distinguish between the places of the two consonants /ð/ and /d/ respectively (ibid.). His method of dealing with the data follows the order of the places of articulation of the consonants as well as their manner of articulation. Accordingly he begins with investigating assimilation in groups of similar homorganic consonants, each group at a time. After he covers intra-group cases he deals with inter-group assimilation until all probable cases are dealt with. In the first part of this section Sibawayh discusses cases of assimilation between neighbouring consonants across word boundaries and in the second part he deals with assimilation within words limits. For the purpose of economy and comparison the two kinds of environment will be dealt with at the same time in this study.

4.5.1 The Alveolar Plosives

The first group of consonants he deals with are the three plosives / d, d, t /. Idghām of two consonants of this group involves assimilation of relevant features to make the two contiguous segments identical in order to realize Idghām.

4.5.1.1 /d/ + / d, t /

In the combination /- ḍd -/ Idghām produces the geminate [ḍḍ] .
 e.g.(a): / 'ʔiḡbiḡ 'dalamah / → ['ʔiḡbiḡ 'ḍdalamah] (make sure of Dalamah)

The phonetic outcome of Idghām in this example is a velarized geminate [ḍḍ] . This might lead to conclude that the second segment in the combination assimilated to the [+ mutbaq] feature of the first segment. Sibawayh accounts for the process in another way. He explains that the second segment /d/ in the combination dominates the similar first segment /d/ to produce a geminate Dāl (i.e. [- dd -]). Since the first segment is velarized, he adds, the outcome is most likely to be realized with velarization. Speakers of Arabic, he comments, know that "... it is not fair..." to allow a non-velarized segment to dominate a velarized one because the latter is 'auditorily more expansive' than the former (vol.4, p.460).

His assumption that the second non-velarized segment influences

the preceding velarized one indicates that he regards assimilation to be basically and mostly regressive. His rules of Idghām state that a segment is fused in the immediately following one. Realizing the strength of the feature of velarization he seems to consider it another phase of the process. Indeed he suggests that some Arabs do realize the geminate outcome without velarization, i.e. [- dd -]. The way Sibawayh explains this case of Idghām clearly indicates that he is trying to envisage a kind of mental operation by which speakers, aware of the phonological rules of the language, follow two steps, by one they realize Idghām by regressive assimilation, and by the other realize the outcome with velarization through progressive assimilation under the influence of the relative phonological strength of the feature [+ mutbaq].

On the face of it producing the geminate [- ḍḍ -] out of the combination - ḍḍ - appears to be realized through one step of progressive assimilation of velarization. Sibawayh's concept of two steps of assimilation following the order of the rules he expresses might well be more relevant on account of the mental reality of phonological rules, the awareness of which he attributes to the native speakers of Arabic. According to these rules the first step to be taken is regressive assimilation. He does not explicitly interpret this process on mental basis. The evidence that might support my conclusions may be found in the way he orthographically represents the outcome of this process. This outcome is represented by the character of the second segment of the combination Dāl i.e. [dd], not by that of the first segment Ṭā', i.e. [ḍḍ]. This might suggest that Sibawayh conceives of the underlying form of the phonetic outcome in this process to be the Dāl (د), not the Ṭā' (ط), although it is produced with velarization. According to Sibawayh, therefore, the process might be considered to take the following possible steps:

ḍḍ → dd → ḍḍ .

The above suggested process does not seem to me too convincing. If this transformation follows the steps in the suggested order, then under what influence would the outcome realized with velarization, which was lost in the first step? It is quite possible that the two contiguous segments in the combination underwent reciprocal assimilation simultaneously. This interpretation might agree with Sibawayh's view which considers the outcome to be a geminate velarized Dāl, not a geminate Ṭā'. To interpret the process in another way it should be

presumed that the outcome is a geminate $\bar{T}a'$ produced by progressive assimilation of the $[+ \text{muṭbaq}]$ feature of the first segment of the combination.

This interpretation might also gain some plausibility from the outcome of the combination $/- \text{d}t -/$, produced as $[- \text{t}t -]$:

e.g.(b): $/ 'ʔunGuḍ 'tuʔaman / \rightarrow ['ʔunGuṭ 'tuʔaman]$ (ibid.).

Sibawayh offers the same explanation for this process as that he offered for the one in e.g.(a) above. Again his orthography supports this conclusion. He writes the outcome of e.g.(b) above with the character $\bar{T}a'$ (ت). The outcome geminate $[- \text{t}t -]$ seems to be produced by the following steps:

- i. $\text{d} \rightarrow \text{t} / - \text{t}$ i.e. $\text{d}t \rightarrow \text{t}t$
- ii. $\text{t} \rightarrow \text{t} / \text{t} -$ i.e. $\text{t}t \rightarrow \text{t}t$

To present a case in which this combination is phonetically produced without velarization Sibawayh cites the following example:

e.g.(c): $/ \text{ḥuḍtuhum} / \rightarrow [\text{ḥuttuhum}]$ (ibid.).

4.5.1.2 $/d, t/ + /ḍ/$

When the consonant $/d/$ occurs second in a combination with $/d/$ or $/t/$ it will completely assimilate them, producing the geminate $[- \text{d}ḍ -]$ in both cases.

e.g.(a): $/ 'ʔunGuḍ 'ḍa:liban / \rightarrow ['ʔunGuḍ 'ḍa:liban]$ (criticize $\bar{T}alib$)

e.g.(b): $/ 'ʔinḩat 'ḍa:liban / \rightarrow ['ʔinḩaḍ 'ḍa:liban]$

In the two examples above the feature $[+ \text{muṭbaq}]$ is regressively assimilated, and in e.g (b) the same happens to the feature $[+ \text{majhūr}]$.

$$\begin{bmatrix} - \text{muṭbaq} \\ - \text{majhūr} \end{bmatrix} \rightarrow \begin{bmatrix} + \text{muṭbaq} \\ + \text{majhūr} \end{bmatrix} / - \begin{bmatrix} + \text{muṭbaq} \\ + \text{majhūr} \end{bmatrix}$$

or: $\text{d} \rightarrow \text{ḍ} / - \text{ḍ}$ as in e.g.(a) above

$\text{t} \rightarrow \text{ḍ} / - \text{ḍ}$ as in (b)

Sibawayh explains that these are straight forward cases of Idghām in which "...no injustice is done to the feature 'Itḩbaq'..." (ibid.). Linguistic 'justice' for him seems to imply that a weaker feature must not be allowed to dominate a stronger one.

4.5.1.3 $/d/ + /t/$

If the two consonants $/d/$ and $/t/$ occur side by side the second segment in the combination will always assimilate the first one.

e.g.(a): $/ 'ʔuskut 'dawman / \rightarrow ['ʔuskud 'dawman]$ (keep silent)

(b): $/ \text{waḩadtuhu} / \rightarrow [\text{waḩattuhu}]$ (I promised him)

Sibawayh explains that these two consonants are similar in every feature except in voice which is regressively assimilated in both cases. He describes these two cases of Idghām as taking place according to the rules, saying that the two consonants involved are devoid of the three features Iṭbāq, Tafashshī and Takrīr (ibid.). This remark suggests that Sibawayh assigns to these three features sufficient phonological strength to reverse the basic direction of assimilation.

Most of the examples cited above (4.5.1.1 ; 2 ; 3) illustrate combinations of two alveolar plosives across word boundaries. Clusters of two of these consonants do not occur within word boundaries except when one of them is the consonant element of the pronominal morphemes /tu; ta; ti/ affixed to verb forms, as in e.g.(b) above.

4.5.2 The Alveolar Sibilants /ṣ, s, z /

Assimilation among the three sibilant consonants /ṣ, s, z/ follows the same pattern it does among the three stops discussed in (4.5.1) above. If one of the segments in the combination is the velarized Ṣād /ṣ/ the feature [+ muṭbaq] will be preserved in the outcome, either through regressive or progressive assimilation. Besides that regressive assimilation of voice feature also takes place:

- e.g.(a): / 'ʔifḥaṣ 'sa:lim / → [ʔifḥaṣ 'ʃa:lim] (test Sālim)
 (b): / 'ʔilmas 'ʃa:bir / → [ʔilmaṣ 'ʃa:bir] (touch Ṣābir)
 (c): / 'ʔifḥaṣ zayd / → [ʔifḥaṣ zayd] (test Zayd)
 (d): / 'ʔawjiz 'ʃa:bir / → [ʔawjiṣ 'ʃa:bir] (brief Ṣābir)

Sibawayh comments that in examples (a) and (c) above Idghām with velarization is optional. It is more likely to be with velarization, he states, than without. This comment is not made about the other two examples (b) and (d) above.

It is possible to conclude that Sibawayh might have been aware of two conflicting factors that determine the direction of assimilation, the positional strength of the non-velarized second segment of the combination and the strength of the [+ muṭbaq] feature of the velarized first segment. Apparently this conflict has led to alternations between retaining and losing velarization in the phonetic outcome.

When the two consonants /s/ and /z/ occur contiguously in a combination regressive assimilation will take place:

- e.g.(e): / 'ʔilmas 'zayd / → [ʔilmaz 'zayd] (touch Zayd)
 (f): / 'ʔawjiz 'sa:lim / → [ʔawjis 'sa:lim] (brief Sālim)

As in the case with the alveolar plosives no cluster of two sibilants occurs in Arabic.

4.5.3 The Dental Fricatives / ð, ð̣, θ /

Assimilation among these three fricatives / ð, ð̣, θ / also follows the same pattern it does among the previous two groups of consonants discussed in (4.5.1) and (4.5.2) above. Velarization is assimilated in both directions and the feature of voicing is regressively assimilated.

- e.g.(a): / 'iħfað 'ð̣a:lik / → ['iħfað̣ 'ð̣a:lik] (keep that)
 (b): / 'iħfað̣ 'θa:bit / → ['iħfaθ̣ 'θa:bit] (keep Thābit)
 (c): / Xuð̣ 'ð̣a:fir / → [Xuð̣̣ 'ð̣a:fir] (take Dhāfir)
 (d): / 'iħfaθ̣ 'ð̣a:fir / → ['iħfað̣̣ 'ð̣a:fir] (envoy D.)
 (e): / 'iħfaθ̣ 'ð̣a:lik / → ['iħfað̣̣ 'ð̣a:lik] (envoy that)
 (f): / Xuð̣ 'θa:bit / → [Xuθ̣ 'θa:bit] (take Thābit)

Sibawayh comments that Idghām among the three alveolar fricatives /s, s, z/ is more probable and 'better' than it is among the three dental fricatives /ð, ð̣, θ/ because the latter consonants are articulated in a place farther away from the centre of the mouth cavity than the former group of consonants, and the three sibilants possess 'more spirancy' than the other three fricatives (op.cit., p.462).

4.5.4 Combination of Dissimilar Apical Consonants

In combinations of two dissimilar consonants a sibilant displays a dominating influence on any consonant of the other two groups mentioned in the preceding subsections above. Assimilation between a dental fricative and an alveolar plosive takes place regressively.

4.5.4.1 Alveolar Plosive + Sibilant

In combinations of an alveolar plosive and a sibilant regressive assimilation takes place in manner of articulation and voicing.

- e.g.(a): / 'ja:ʔat zah'ra:ʔ / → ['ja:ʔaz zah'ra:ʔ] (Z. came)
 (b): / Gad 'samiqa / → [Gas 'samiqa] (he has heard)
 (c): / 'ʔuð̣buḍ 'zayd / → ['ʔuð̣̣buẓ 'zayd] (make sur of Z)
 (d): / 'ʔinçat 'ša:bir / → ['ʔinçaṣ 'ša:bir] (describe š)

Sibawayh explains that Idghām is realized in these examples because the two groups of consonants have adjacent places of articulation. He mentions nothing about assimilating velarization when one of the two segments is [+mutbaq]. It can be assumed that he considers Idghām to be realized with velarization on account of the

following evidence. In the combination /- tʂ -/ of e.g.(d) above he represents the outcome geminate by the character of the velarized Ṣād (ص), i.e. [- ʂʂ -]. The geminate [- ʒʒ -] in e.g.(c) above is represented by the character of the non-velarized Zāy (ج), presumably because there is no voiced velarized alveolar fricative phoneme in the Alphabetical system of Arabic by which to represent the assibilated allophone of the velarized /d/ or the velarized allophone of the /z/. It is also possible that the assimilation of velarization is optional because it is progressive; (cf. 4.5.2 & 4.5.3 above).

When a sibilant occurs first in a combination with one of the alveolar plosives no Idghām takes place. Sibawayh explains that the three sibilants are called 'Ḥurūfu lṣafīr' (whistling sounds). He uses the term 'Andā fī lṣam'i', equivalent to 'auditorily louder', in comparing the sibilants with the six other consonants above, which he considers 'quieter' (op.cit., pp.464-465).

The two opposed features 'louder' and 'quieter' adopted by Sibawayh seem to be parallel with the opposition 'strident' versus 'mellow' of Jakobson and Halle (1956, p.31), (cf. O'Connor, 1973, pp.206-207).

He seems to assign to the phonetic feature 'louder', attributed to the three sibilants, a higher rank in the hierarchy of phonological strength, based on their auditory characteristics. He makes a comparison between this property of the sibilants which enables them to resist assimilation by a mellow consonant, and that property of the Rā' 'Takrīr' which enables it to resist assimilation by the two dissimilar Shadīd segments Lām and Nūn (ibid.), (cf. 4.4.4.3 above).

When a sibilant segment precedes an alveolar plosive in a cluster partial progressive assimilation takes place:

e.g.(e): /'muṣṭabir / → [muṣṭabir] (behaving patiently)

Sibawayh explains that partial assimilation took place in this example because speakers realized that:

"...it is not allowed to let the Ṣād be assimilated by the Tā'..." (as should be the case in Idghām) (op.cit., p.467).

He goes on to explain that accordingly they replaced the non-velarized /t/ by a velarized [ḍ] which is more similar to the Ṣād. The similarity referred to by Sibawayh in this context pertains only to velarization. The produced sound [ḍ] is not similar to the Ṣād in voicing. It might well be that the produced sound is [ṭ], not [ḍ].

Another version of this example is cited by him, on which he

remarks that:

"...some speakers still wanted to perform *Idghām* in this context..." (ibid.). When the *Ṣād* 'refused' to be assimilated by the *Tā'*, he explains, speakers reversed the direction of assimilation and produced *muṣṣabir* "by converting the *Tā'* into *Ṣād*" (ibid.).

According to the orthographic representation of the example presented by Sibawayh this process seems to take the following steps:

/ muṣṭabir / → [muṣṭabir] → [muṣṣabir]

It is noticed that in the last transformation above the allophonic variant [ṣ] of the phoneme /t/ has undergone three adaptive changes, all of them by progressive assimilation to the preceding segment *Ṣād* in the form. It changed its place of articulation, spirantized and became velarized.

Similarly he cites another example in which the voiceless sibilant *Sīn* /s/ progressively assimilates the plosive *Tā'* /t/ in the cluster - st - (op.cit., p.468).

e.g.(f): / 'mustamiṣ / → ['mussamiṣ] (a listener)

In contrast with the above two examples no *Idghām* takes place if the two segments in the cluster are radical elements in the form. The weaker element resists to be completely assimilated by the stronger element even when the latter is [+ muṭbaq]. Not only that, but the stronger element may assimilate a feature of the weaker element by regressive assimilation, as in the following example:

e.g.(g): / maṣḍar / → ['maṣḍar] (source)

In this respect, it could be concluded that being a radical element in a construct makes a segment phonologically stronger than an affixed segment in that construct.

Then he reports that a pure *Zāy* is attested in a variant of this form being produced by some Arabs whom he describes as *Faṣīḥ* speakers, who produce the above example (g) as ['mazdar]. To illustrate his point he orthographically represents this allophonic variant of the *Ṣād* by the character of the *Zāy* (ج), which indicates a regressive assimilation of voicing (op.cit., p.478).

In the explanation he offers for the processes in the presented above examples Sibawayh tries to account for the outcome on basis of mental knowledge on the part of speakers of the phonological rules of their language according to which the acceptable phonetic forms are produced (cf. 7.4.1 below).

4.5.4.2 Dental Fricative + Sibilant

In combinations of a dental fricative followed by a sibilant the preceding segment is completely assimilated by the following one.

e.g.(a): / 'ʔibqaθ 'salamah / → ['ʔibqas 'salamah] (envoy S.)

(b): / 'ʔihfað 'salamah / → ['ʔihfaṣ 'salamah] (keep S.)

(c): / Xuð 'sa:bir / → [Xuṣ 'sa:bir] (take S.)

(d): / 'ʔihfað 'zaydan / → ['ʔihfaz 'zayd] (keep Z.)

Sibawayh briefly explains that the consonants of these two groups are articulated in the same '*Ḥayyiz*' (area) in adjacent places of articulation. He refers to them as 'sisters', probably implying that both classes are fricatives and almost homorganic consonants which makes assimilation more probable (op.cit., p.464).

It may be noticed in the four examples cited above that all processes of assimilation were regressive. Even when the first segment in the combination is [+ muṭbaq], as in e.g.(b), the outcome is realized without velarization. Sibawayh does not comment on the probability of realizing the outcome geminate with velarization because it is less likely, equally probable, or less witnessed.

He reports a case of Idghām between two consonants separated by a vowel and involving elision of a Nūn (ibid.).

e.g.(e): / 'munðu zama:n / → ['muzzama:n] (a while ago)

(f): / 'munðu 'sa:ḡah / → [mus'sa:ḡah] (an hour ago)

It is understandable that in these two cases of reduction, the vowel intervening between the dental and the sibilant consonants is elided to bring them into juxtaposition in order to realize Idghām. What seems unusual is the elision of the Nūn of the first word in both phrases. Sibawayh says nothing to account for this operation. A probable explanation is that having brought the two fricatives into contiguity, there will be a sequence of three consonants, which is not allowed in Arabic, (i.e. * - nzz - and * - nss - respectively). To avoid this formation the weaker element Nūn was sacrificed in the outcome. To account for eliding the intervening short vowel between the two fricatives it is possible that this process took place because the two phrases involved occur too frequently in speech.

He mentions nothing about adaptive changes in combinations where a sibilant precedes a dental fricative. No Idghām takes place in this context. Only changes in voice feature are noticed.

e.g.(g): / 'ʔifhaṣ 'ða:lik / → ['ʔifhaz 'ða:lik] (test that)

(h): / 'ʔabriz 'ṡa:bit / → ['ʔabris 'ṡa:bit] (point out T.)

Combinations similar to (g) and (h) above can only occur across word boundaries.

4.5.4.3 Dental Fricative + Alveolar Plosive

Complete assimilation takes place in combinations of a dental fricative and an alveolar plosive consonants in any order the two segments occur in the combination.

e.g.(a): / 'ʔabʕid 'ð̣a:lim / → ['ʔabcið̣ 'ð̣a:lim] (get rid of Dh)

(b): / 'ʔihfað̣ 'ð̣a:lib / → ['ʔihfaḍ 'ð̣a:lib] (keep Ṭālib)

(c): / 'ʔinʕat 'ð̣a:lik / → ['ʔinʕað̣ 'ð̣a:lik] (describe that)

Sibawayh attributes the above cases of Idghām to the proximity of the places of articulation of the two groups of consonants, which leads to : *"...no member of a group resisting Idghām into any member of the other group ..."* (op.cit., p.464).

Combinations of a dental fricative and an alveolar plosive can only occur across word boundaries. Clusters of two of these consonants do not occur within word boundaries except if one of them is not a radical element of the form. Sibawayh states that Idghām in such a case is optional (ibid.) as in the following example:

e.g.(d): / ḥaddaθtuhum / → [ḥaddattuhum] (I talked to them)

In the above example the morpheme /- tu -/ is a pronoun marker of the first person singular.

Sibawayh cites forms in which assimilation optionally alternates between progression and regression. The form / 'muθtarid / (one who mixes bread with cooked meat), he explains, is realized in two variants: ['muθθarid] and ['muttarid] (op.cit., p.468). He states that he favours the second variant on account of the primacy of regressive assimilation (op.cit., p.469).

4.5.5 The Ḍād

4.5.5.1 /Ḍ/ + /ð̣, ð̣, θ/ ; /Ḍ, d, t/

The controversial Ḍād of Arabic /Ḍ/ completely assimilates any one of the three dental fricatives /ð̣, ð̣, θ/ or the three alveolar plosives /Ḍ, d, t/ when it immediately follows one of them in a combination. If it occurs first in the combination it resists to be assimilated by any of these six consonants.

Sibawayh assigns this relative phonological strength to the Ḍād on account of its inherent phonetic properties. He explains that the place of articulation of the Ḍād occurs in the central part of the tongue in the mouth cavity, occupies an expansive area and overlaps

with the places of the alveolars. In manner of articulation it has a lateral property and is velarized. All these properties, he suggests, invest the *Ḍād* with the strength to influence neighbouring segments in context (op.cit., p.465). He compares the status of the *Ḍād* in assimilation to that of the sibilants and the *Shīn* /š/ (op.cit.:466).

Below are two illustrative examples of those he cited. There is no way of empirically testing the real phonetic outcome of these examples at the present time because the two modern variants of the *Ḍād* have different phonetic values, according to Sibawayh's description of the old one.

e.g.(a): /'ʔinḡat 'ḡaramah / → ['ʔinḡaḡ 'ḡaramah] (describe D.)

(b): / Xuḡ 'ḡaramah / → [Xuḡ 'ḡaramah] (take D.)

4.5.5.2 /ḡ/ + Sibilant

A *Ḍād* and a sibilant do not assimilate each other when they are side by side in a combination. Sibawayh attributes the absence of *Idghām* in this context to the phonetic properties of these two classes of consonants. The *Ḍād*, he explains, has an expansive place of articulation which enables it to resist the influence of the three alveolar sibilants, just as the *Shīn* did with them (cf. 4.5.6 below). The three sibilants too, he comments, resist the influence of the *Ḍād* because they are 'Ṣafīr' letters (ibid.).

A combination of a *Ḍād* and one of the nine consonants mentioned above can only occur across word boundaries. They do not occur in the same word as radical elements. In case the modifier morpheme /- ta -/ is infixed to a form immediately after the *Ḍād* its consonant element will partially assimilate to the *Ḍād* and acquires its two features [+ muṡbaq, + majhūr] by progressive assimilation. It will be realized [ḡ] in this context.

e.g.(a): /'muḡtajiḡ / → ['muḡḡajiḡ] (prostrating)

Sibawayh mentions that some speakers allow another step of progressive assimilation in the cluster [- ḡḡ -] to achieve *Idghām* in a reversed direction and produce the above form as ['muḡḡajiḡ] because the *Ḍād* is 'auditorily stronger' than the *Dāl*. Conversely, some even produce it as ['muḡḡajiḡ], he comments (op.cit., p.470).

He mentions another possible reason for the latter form of *Idghām* above. The consonant /t/ of the morpheme / ta /, undergoing adaptive changes, was realized as [ḡ] in this context. This modified form of this consonant occurred so frequently in speech that speakers

have taken it as the original form of this segment and represented it by the character of the velarized $\bar{\text{T}}\text{ā}' /d/$, i.e. (ڨ) in writing, (ibid.). Consequently it was treated not as a modified /t/ but as an original /d/ and, accordingly, was given a higher phonological status which enabled it to influence the $\bar{\text{D}}\text{ād}$.

4.5.5.3 - $\bar{\text{Ḍ}}\text{d}$ - \rightarrow - $\text{l}\bar{\text{d}}$ -

Sibawayh reports in the last page of his Book a rare case of sound change attested in the speech of some Arabs. The $\bar{\text{D}}\text{ād}$ is replaced by a $\bar{\text{L}}\text{ām}$, as in the following example:

e.g.(a): / $\text{ʔi}\bar{\text{Ḍ}}\text{dajaja}$ / \rightarrow [$\text{ʔi}\bar{\text{l}}\text{dajaja}$] (he prostrated)

He explains that the $\bar{\text{D}}\text{ād}$ was replaced by a $\bar{\text{L}}\text{ām}$ to avoid a cluster of two [+ muṭbaq] segments. To do that, he comments, the $\bar{\text{D}}\text{ād}$ was replaced by the most similar consonant in place of articulation and in laterality (op.cit., p.483). He does not mention whether the $\bar{\text{L}}\text{ām} /l/$ in this example is realized with or without velarization. It is probable that it is realized without velarization, judging by the reason he gives for this replacement which is to avoid a cluster of two velarized segments, when $\bar{\text{I}}\text{dghām}$ is not favoured.

This is a clear case of dissimilation aimed at maintaining sufficient contrast between contiguous segments where full assimilation is not preferred.

4.5.6 The $\bar{\text{Sh}}\text{īn}$

The voiceless palatal fricative $\bar{\text{Sh}}\text{īn} /š/$ seems to possess a phonological strength similar to that of the $\bar{\text{D}}\text{ād}$ and slightly more than the other three sibilants / ṣ , s , z /. It is never fully assimilated by any other consonant when it immediately precedes one of them.

4.5.6.1 / $\bar{\text{š}}$ / + / $\bar{\text{Ḍ}}$, $\bar{\text{Ḍ}}$, $\bar{\text{Ḍ}}$ / ; / $\bar{\text{d}}$, $\bar{\text{d}}$, $\bar{\text{t}}$ /

The $\bar{\text{Sh}}\text{īn}$ completely assimilates a dental fricative or an alveolar plosive when it occurs second in a combination with one of them.

e.g.(a): / jid 'šayʔan / \rightarrow [$\text{ji}\bar{\text{š}}$ 'šayʔan] (find something)

(b): / $\text{Xu}\bar{\text{Ḍ}}$ 'šayʔan / \rightarrow [$\text{Xu}\bar{\text{š}}$ 'šayʔan] (take something)

Sibawayh assigns to the $\bar{\text{Sh}}\text{īn}$ a phonological strength equal to that of the $\bar{\text{D}}\text{ād}$ in influencing neighbouring segments. He uses the term '*Manzilah*' (equivalent to 'status'), in his way of referring to their ranks in the hierarchy of phonological strength (op.cit., p.466).

He mentions nothing about interaction between the $\bar{\text{Sh}}\text{īn}$ and the other three sibilants in case it follows one of them in a combination.

Judging from modern Arabic the probability of assimilation seems to be rather unlikely. Probably because of this remote probability that Sibawayh did not attempt to investigate Idghām in this context.

4.5.6.2 / - šd - /

When the Shīn occurs first in a cluster with any one of the medial consonants discussed in this section no Idghām takes place but the voice feature is likely to be regressively assimilated, as in the example below.

e.g.(a): / 'ʔašdaG / → ['ʔaždaG] (with a wide mouth)

Sibawayh interprets this sound change as rendering the Shīn 'similar to the Zāy' (op.cit., p.479).

It is most likely that what he meant by a Shīn similar to the Zāy is the voiced allophone [ž] of the Shīn being similar to the Zāy in voice feature. He represents this voiced allophone of the Shīn by the character of the Shīn proper in orthography, because there is no character for a voiced counterpart of the Shīn in the Alphabetical system of Arabic. In cases where assimilation produces an allophone which is identical in phonetic value with another consonant, Sibawayh represents the conditioned allophone by the character of that other letter and describes the process as replacement 'Ibdāl', as he occasionally does in certain cases of Idghām.

4.5.7 The Jīm /j/

The palatal affricate Jīm /j/ undergoes a sound change when it precedes the Dāl /d/ in a cluster.

e.g.(a): / 'ʔajdar / → ['ʔaždar] (more worthy)

Sibawayh explains that the Jīm was made 'similar' to the Zāy because no Idghām is possible in this context. He compares this behaviour of the Jīm to that of the Shīn in the same context (cf. 4.5.6.2). To illustrate this sound change he represents this allophone of the Jīm by the character of the Shīn in the example cited above (op.cit., p.479).

In fact this allophonic variant of the Jīm is not an outcome of assimilation to any feature of the adjacent Dāl in this context. What actually takes place is that the affricate /j/ becomes the fricative [ž] by losing the compression stage of the affricate leaving this consonant with the delayed release stage, the outcome of the operation being a fricative. This is another case of dissimilation (cf. e.g. (a) in 4.5.5.3 above).

It seems that when two stops that are radical elements in the construct occur side by side in a cluster, as in the case of the two segments /j/ & /d/, complete assimilation is avoided in order to preserve sufficient contrast between the two contiguous segments, probably for semantic reasons. To achieve this contrast the first segment in the cluster loses its compression stage, becoming a fricative [ž]. The outcome of this operation will be a cluster of a fricative and a plosive [- žd -]. This way, articulation seems to become easier, as well as sufficient contrast is maintained between the two segments. This conclusion might be lent some plausibility from the following statement of Heffner (1950, pp.198-199) that:

"...Dissimilation is due to the avoidance of the difficulty of execution of two identical or closely similar movements within a very short period of time..."

When these two stops are separated by another segment they do not seem to undergo any sound change, as in / ja'di:r / (worthy).

If the second segment in the cluster with the Jīm is the voiceless stop /t/ it will experience an adaptive change in its voice feature under the influence of the preceding voiced Jīm.

e.g.(b): / ?ij'tamaçu: / → [?ij'damaçu:] (they assembled)
Sibawayh interprets this case of progressive partial assimilation as an attempt to execute similar articulatory movements (ibid.).

I believe that there is a potential case for dissimilation in e.g.(b) above. A case of partial assimilation instead seems to take place because the second segment in the cluster, the Tā', is not a radical element in the form, as the Dāl was in e.g.(a) above. The Tā' belongs to the modifier morpheme / ta / affixed to the form; thus it shows no resistance to assimilation.

In modern Arabic, however, this form is realized as [?ištamaçu:] in which the Jīm /j/ is realized as [š]. In this case the stop Jīm not only becomes a continuant but also loses its [+voiced] feature by regressive assimilation.

4.6 REMOTE PARTIAL ASSIMILATION

In the last pages of the Book Sibawayh reports a limited number of cases of remote partial assimilation.

4.6.1 /s/ + /G/

The non-velarized [+munkhafid] Sīn /s/ becomes a velarized

[+ musta'li] in the neighbourhood of the uvular [+ musta'li] Qāf /G/:
e.g.(a): /'suGtu / → ['ʃuGtu] (I drove)

Sibawayh describes this sound change as a replacement of the Sīn /s/ by a Ṣād /ʃ/ under the influence of the Qāf /G/ that follows it in the form; and interprets the process as an approximation of the two sounds by velarizing the Sīn to acquire some similarity with the Qāf (op.cit., p.479). In Chapter Three both uvular and velarized consonants are classified [+ musta'li] , (cf. 3.5.3).

4.6.2 /s/ + /X , ʃ/

The two uvular fricatives /X/ and /ʃ/ exercise the same influence on a preceding Sīn, as did the Qāf above.

e.g.(a): /'salaXa / → ['ʃalaXa] (he skinned a sheep)
(b): /'sa:liʃ / → ['ʃa:liʃ] (shedding a tooth)

Sibawayh assigns to these two uvular fricatives the same status as that of the Qāf in modifying other segment in the same context. He comments that speakers :

"...replaced the Sīn by a Ṣād paying no attention to what intervened between it and the following Khā' or Ghayn..."
(op.cit., p.480).

The above statement of Sibawayh speaks for itself in accounting for the probability of this case of remote assimilation.

4.6.3 /s/ + Muṭbaq Consonant

A velarized consonant also influences a remote preceding Sīn causing it to acquire the feature of velarization.

e.g.(a): /sira:d / → [ʃira:d] (a path)

Sibawayh explains that the Sīn was made 'similar' to the Ṭā' in spite of being 'Ba'idah' (remote) from it (op.cit., p.478). It is probable that this 'similarity' pertains to velarization.

4.6.4 /s/ → /t/ in the form /sids /

An isolated case of weakening, described by Sibawayh as irregular, takes place in the cluster /- ds -/ in the form */sids / which is realized as /sitt / (six). He attributes the occurrence of this irregular sound change to its high frequency in speech. He explains that the two Sīn letters of this form are separated by a relatively weaker segment (the Dāl) whose place of articulation is adjacent to that of the Sīn. According to the rules of Idghām, he adds, the final Sīn should completely assimilate the preceding Dāl in the cluster

/- ds -/ . The outcome of this process, he comments, will produce a consonant sequence of three sibilants in the form, i.e. */ siss / . Instead of achieving ease of articulation, which is the intended purpose of Idghām, he concludes, a more difficult utterance is created (if Idghām is to be performed). To avoid this situation, speakers replaced the final Sīn by an alveolar plosive most similar to it, which is the voiceless Tā' [t] to produce the cluster /- dt -/ ,

*"...as if they would have wanted to say */ sidt /..."*

Realizing Idghām in the final cluster of this form generates [- tt -] and the surface form [sitt] is arrived at (op.cit., pp.481-482).

This statement of Sibawayh indicates an awareness of the set of phonological rules followed in transforming the underlying form */ sids /, first into */ sidt /, and finally into [sitt]. Evidence for the reality of the consonantal formation of the underlying form is detected in the forms / 'sudus / (a sixth) and / 'sa:dis / (sixth) which have the same consonantal formation as the underlying form.

4.7 SUMMARY

This chapter was mainly concerned with the investigation of the interaction between the consonants of Arabic, as presented by Sibawayh and the phonetic changes of these processes. It was clear that, through his thorough investigation of assimilatory processes, he formulated general rules by which he asserts that the main direction of assimilation is anticipatory, as indicated by the majority of the cases investigated. Cases of progressive assimilation take place much less frequently, as indicated below.

4.7.1 Out of a total number of 123 cases of assimilation investigated there are only six cases of total progressive assimilation. All of these cases involve assimilation of a stop consonant under the influence of a preceding sibilant in the combination.

Sibawayh's rules of Idghām state that when two dissimilar segments occur in the neighbourhood of each other the preceding one is assimilated by the one that follows it.

4.7.2 Within the total number of cases of Idghām above there are 31 cases of progressive assimilation which involve one phonetic feature. Seven cases of these involve manner of articulation, five cases involve place of articulation and seventeen cases involve the feature 'Iṭbāq'.

4.7.3 The feature of velarization is assimilated to by a non-velarized segment both regressively and progressively whenever one of the segments in the combination is a [+ muṭbaq] consonant. In three cases the sibilant Sīn is produced with velarization when it occurs in the neighbourhood of one of the three elevated [+ musta'li] consonants /X, ʃ, G/. This is an indication of the relatively high phonological strength of the velarized and elevated consonants in Arabic.

4.7.4 Of the total number of 123 cases of assimilation, 99 cases (80.5 %) take place among consonants that share the feature [+ coronal]. Sibawayh realizes this phenomenon and comments that consonants produced in the buccal area are more 'suited' to Idghām, and that the probability of assimilation increases as the place of articulation gets nearer to the centre of the buccal area.

4.7.5 The following matrix shows the cases of assimilation investigated by Sibawayh and the phonetic outcome of two juxtaposed consonants. The consonants arranged vertically are the first elements in a combination of two consonants. The affricate Jīm /j/ is classified [- coronal], following Sibawayh, disregarding its [+ coronal] value in modern Arabic.

	ʔ	h	ħ	ç	X	ʕ	G	k	j	š	l	r	n	ʕ	d	d	t	ʕ	s	z	ð	ð	θ	f	m	b	w	y
ʔ																												
h			ħħ	ħħ																								
ħ				ħħ																								
ç		ħħ	ħħ																									
X						ʕʕ																						
ʕ					XX																							
G								kk																				
k							GG																					
j										šš					zd	çt												
š															zd													
l										šš	rr	nn	çç	dd	dd	tt	ʕʕ	ʕʕ	zz	ðð	ðð	θθ						
r																												
n					NX	Nʕ	NG	çk	çj	çš	ll	rr		çç				çç	çç	çç	çç	çç	çç	çç	çç	çç	çç	çç
ç																	çt											
d										šš				çç		tt	ʕʕ	ʕʕ	zz	ðð	ðð	θθ						
d										šš				çç	dd	tt	ʕʕ	ʕʕ	zz	ðð	ðð	θθ						
t										šš				çç	dd	dd		ʕʕ	ʕʕ	zz	ðð	ðð	θθ					
ʕ										šš					zd	çt		ʕʕ	zz									
ç					çX	çʕ	çG			šš					çd			ʕʕ	zz									
z										šš						zd		ʕʕ	ʕʕ									
ð										šš				çç	dd	dd	ðd	ʕʕ	ʕʕ	zz		ðð	θθ					
ð										šš				çç	dd	dd		ʕʕ	ʕʕ	zz	ðð		θθ					
θ										šš				çç	dd	dd	θθ	ʕʕ	ʕʕ	zz	ðð	ðð						
f																												
m																												
b																									ff	mm		
w																												
y																												

A table of processes of assimilation in the consonants of Arabic. Consonants that occur first in a combination of two are in the vertical line, and those that occur second are in the horizontal line. The phonetic outcome of each process is in a square. The inset large square only indicates the area where the majority of cases of assimilation take place.

THE HAMZAH IN CONTEXT

5.1 INTRODUCTION

This chapter will be devoted to study Sibawayh's investigation of the glottal stop Hamzah in context and the different kinds of phonetic changes it undergoes under the influence of the phonetic environment or the phonological rules of Arabic. Chapter Four of this study was mainly concerned with dealing with the consonants of Arabic in context. The Hamzah was not included with the other consonants in that chapter. The reason for this arrangement is that Sibawayh himself discusses the Hamzah in a separate section of the Book. The present work, therefore, conformed with Sibawayh's plan and opted to devote a separate chapter for this topic.

In his investigation of Idghām Sibawayh comments that the Hamzah does not follow the general rules of Idghām in that Idghām results in gemination and a Hamzah should not be geminated. According to him, the Hamzah is a 'heavy' consonant which should be weakened in a way other than Idghām, if ease of articulation is to be achieved. Furthermore, setting a separate section of the Book to the Hamzah is indicative of the extent of variation in the phonetic value of this consonant.

Sibawayh begins his discussion of the Hamzah by mentioning three 'things', as he puts it, that could happen to the Hamzah in context. These things are '*Tahqīq*', '*Takhfīf*' and '*Badal*', equivalent to 'full realization', 'weakening' and 'replacement' respectively. A few lines later he mentions a fourth process that could happen in realizing this consonant, namely '*Hadhf*', equivalent to 'elision'. There seems to be no particular reason for this slight inconsistency, and it can be safely presumed that the fourth case is an addition to the first three cases of the Hamzah, as will be seen in the course of this chapter. Realizing the glottal stop in four different phonetic values, according to the phonetic environment in which it occurs, indicates that Sibawayh has developed a concept of the 'letter' as the underlying entity, similar to or the same as that of the 'phoneme' which, on the surface level, is realized in allophonic variants of different phonetic values ranging from full realization to elision. He also seems to conceive of all the changes that take place in the phonetic value of the Hamzah as processes of '*Tadīf*' (lenition) of this consonant (vol.3, p.544). He also

attempts to explain that the reasons behind the tendency to weaken the glottal stop was that speakers found it difficult (or heavy) because, he states:

"...it has the farthest outlet. It is a pulse in the chest produced with some effort, so they found it difficult (to produce), being similar to a belch..." (op.cit., p.548).

Among the four allophonic variants of the Hamzah mentioned by Sibawayh only the 'weakened' form (produced with Takhfīf) is explained. The other three variants are not explained, probably because he considered them sufficiently understandable. He states that a weakened Hamzah becomes 'Bayna Bayn', roughly an 'intermediate' type of Hamzah*. This form of the Hamzah was described by him as one of the favourable derived letters (cf. 2.3.5.2 above). To explain the process of producing this intermediate Hamzah he states that it will be incompletely articulated in order to weaken it (op.cit., p.542). Judging by the present day manner of realizing the Hamzah in a similar context, especially in Qur'ānic recitation, it can be concluded that this 'incomplete' formation refers to changing its manner of production, dropping its compression stage to produce a spirantized glottal consonant. Sibawayh uses the special term '*Wāhin*' (feeble) to describe this form of Hamzah (ibid.), which can be taken as a reference to this weakened variant.

Sīrāfī (The Book, vol.3, p.546, footnote) tries to explain Sibawayh's term Bayna Bayn as a description of a place of articulation being halfway between that of a glottal stop and those of Alif, Wāw or Yā', depending on what short vowel follows the Hamzah; be it a Fathah a Dammah or a Kasrah respectively. This interpretation does not offer much to define the phonetic value of the intermediate Hamzah it is trying to describe. Besides that, Sīrāfī's remark misses the point because the actual phonetic change takes place in manner not in place of articulation. It seems that he took Sibawayh's words in the wrong sense. Sibawayh himself does not commit himself to defining any particular change in the phonetic value of the Hamzah when it is produced Bayna Bayn. He only mentions that this intermediate Hamzah is between a full Hamzah (i.e. a stop) and a long vowel. In another place he further

* Bakalla (1970, pp.86-87) quotes Saaran calling this intermediate Hamzah 'Betwixt and Between' and 'Intermediate. Semaan (1968, p.40) calls it 'Halfway articulated'.

explains that this variant of the Hamzah 'approximates' to a long vowel which is 'similar' to the short vowel that immediately follows it. He does not specify in which phonetic property they become similar.

Judging by evidence from modern Arabic, especially from Qur'ānic recitation, it seems that this variant of the Hamzah is articulated like a weak glottal fricative, somehow like an approximant accompanied by some audible friction perceived as a glide between the preceding vowel and the following one. It will be seen later in this chapter that this variant of the Hamzah only occurs intervocalically. Accordingly it can be presumed that this allophone of the glottal stop has a phonetic value nearly similar to that of the glottal fricative [ħ] which will be adopted in this study as a convenient symbol to stand for the value of this variant of the glottal stop.

It must be mentioned that the intermediate Hamzah maintains its role as the consonantal element in the syllable. Arabic verse meter, built on the syllabic system, requires this Hamzah to function as a consonant. Sibawayh refers to this fact and asserts that the weakened Hamzah has the same status of the full Hamzah in verse (op.cit., P.549).

5.2 THE INTERVOCALIC HAMZAH

Sibawayh investigates and comments on the phonetic realization of the intervocalic Hamzah in all possible environments. He deals first thing with a Hamzah intervening between two short vowels, then deals with a Hamzah between two long vowels and finally when it occurs between one short and one long vowel either way.

5.2.1 A Hamzah Between Two Short Vowels

When a Hamzah occurs between two short vowels there will be nine possibilities. In seven cases of these it will be weakened to an intermediate Hamzah [ħ]. In the other two cases it will be replaced by a long vowel, as illustrated below. This context can occur within the word or across word boundaries.

5.2.1.1 - a?V -

When the Hamzah is preceded by a Fathah /a/ it will be realized an intermediate one [ħ] irrespective of what short vowel follows it.

- e.g.(a): / 'sa?ala / → ['saħala] (he asked)
 (b): / 'qa:la ?asamiqtum / → ['qa:la ħasamiqtum]
 (He said did you hear?)
 (c): / 'ya?isa / → ['yaħisa] (he despaired)

- e.g.(d): / 'qa:la ʔibra:ʔimu / → ['qa:la ʔibra:ʔimu] (said A.)
 (e): / 'laʔuma / → ['laʔuma] (became mean)
 (f): / 'qa:la 'ʔuktub / → ['qa:la 'ʔuktub] (he said write)

Sibawayh comments that this change in the phonetic value of the Hamzah is not observed in all dialectal variants of Arabic of his time and adds that the prevailing tendency in Ḥijāz was to weaken the Hamzah in this context, while most of the speakers in Eastern Arabia, to whom he broadly refers by 'Tamīm', are more inclined to realize a full glottal stop; with minor exceptions in both dialectal communities (op.cit., pp. 542 & 551).

Then he mentions another dialectal variant of realizing the Hamzah in the same context above. He remarks that some Arabs replace the Hamzah by a long vowel when it is preceded and followed by short vowel. In e.g(a) above the outcome would be ['sa:la]. He considers this practice less current in speech, then states rules for the process, explaining that the type of long vowel to replace the Hamzah in this context will be homorganic with the short vowel preceding it as in ['wa:ji:] for / 'wa:jiʔ / (op.cit., p.555).

There are two matters to be considered in this process :

i. Firstly, if the glottal stop in ['sa:la] is considered to be replaced by a long vowel the two surrounding short vowels must be elided. On the other hand if either one of the short vowels is considered to be lengthened into a long vowel the glottal stop must be the segment that was elided, as well as the other short vowel, to avoid the sequence * ['sa:ala] or * ['saa:la].

I am inclined to believe that the process took the following steps: The Hamzah was replaced by a long vowel Alif [a:], being the vowel that harmonizes with the two bordering short vowels /a/, then these two short vowels were dropped to avoid the sequence * - aa:a - . Moreover, replacing the Hamzah by a long vowel is logically an earlier step in the process of weakening it, before that of eliding it. According to this view the following order of weakening the Hamzha might be suggested: ʔ > ʔ̄ > ʔ̄̄ > ʔ̄̄̄ > ∅

If this hypothesis is accepted the form ['sa:la] might be presumed to be generated through the following transformations:

/ 'saʔala / → ['saʔala] → ['saa:ala] → ['s∅a:∅la] → ['sa:la]

ii. Secondly, this phonetic change takes place only when the combination occurs within the word limits. The following examples might

support this view:

e.g.(h): / 'kataba 'ʔaXi: / → * [katab 'a:Xi:]

The phonetic outcome above is unacceptable for two reasons. The first is that there is no reason for deleting the inflexional vowel of the verb form / 'kataba / because the form occurs in connected speech. The second is that replacing the initial glottal stop of the second word by a long vowel produces an unacceptable form with a vowel in initial position: * / a:Xi: /.

In certain cases this phonetic change is precluded because of semantic reasons when the phonetic outcome results in ambiguity. In the verb form / 'θaʔara / (took revenge) replacing the Hamzah by an Alif produces / 'θa:ra / which means (revolted).

5.2.1.2 - uʔV -

When the Hamzah is preceded by a ʔammah /u/ Sibawayh states that it will be realized an intermediate one, unless the short vowel that follows it is a Faṭḥah, in which case it will be replaced by the semi-vowel Wāw [w]:

- e.g.(a): / 'suʔila / → [suʔila] (was asked)
(b): / 'jiʔtu ʔilayka / → [jiʔtu 'ʔilayka] (I came to you)
(c): / šuʔu:n / → [šuwu:n] (affairs)
(d): / 'baytu 'ʔuXti: / → [baytu 'ʔuXti:] (my sister's ..)
(e): / 'tuʔadah / → [tuwadah] (gentleness)
(f): / buʔa:mu 'ʔabi: / → [buʔa:mu 'wabi:] (my father's page)

5.2.1.3 - iʔV -

The same processes above will take place, he states, if the Hamzah is preceded by a Kasrah /i/, except that it will be replaced by the semi-vowel Yā' [y] if the following vowel is Faṭḥah:

- e.g.(a): / min 'çindi ʔibilika / → [min 'çindi ʔibilika] (from your herd of camels)
(b): / min 'çindi 'ʔummika / → [min 'çindi 'ʔummika] (from your mother)
(c): / 'miʔar / → [miyar] (enemies)

We notice that a Hamzah preceded by a Kasrah and followed by a Kasrah or a ʔammah can only occur across word boundaries. Sibawayh does not cite any example in which this combination occurs within the word, neither could I find any.

5.2.1.4 Sibawayh's Account

Sibawayh attempts to account for the two changes in the phonetic

value of the Hamzah in the contexts discussed above. For weakening the stop into a spirant, not into a semi-vowel, he explains that speakers wanted to indicate that the underlying form of the modified spirant allophone was a stop. This explanation applies for combinations in which the Hamzah is followed either by a Ḍammah /u/ or a Kasrah /i/, (cf. e.g. a, b, c, d in 5.2.1.2 and e.g. a & b in 5.2.1.3 above), (op.cit., p.542). If the short vowel that follows the Hamzah is a Faḥah the weakening process will be taken another step further, he adds, and the stop will be realized as a semi-vowel. The semi-vowel produced will be the counterpart of the vowel that precedes the Hamzah. To account for this different kind of change, he explains that in the combinations /- uʔa -/ and /- iʔa -/ the stop is replaced by a semi-vowel Wāw [w] or Yā' [y] respectively, and comments that this change takes place on account of the impossibility of replacing the Hamzah by an Alif. He explains that an Alif cannot be preceded by a Kasrah or a Ḍammah (op.cit., p.543). He does not explain why in the first place was the stop replaced by a semi-vowel in this context. It seems that when the open short vowel /a/ occurs after the stop it will have a greater weakening influence on the Hamzah, causing it to be replaced by a semi-vowel, which indicates a certain degree of regressive assimilation. Therefore the stop is replaced by a semi-vowel [w] or [y] when the vowel preceding it is either /u/ or /i/ respectively (cf.e.g.(e) in 5.2.1.2 & (c) in 5.2.1.3). On the other hand when the Hamzah is bordered by two open short vowels it will be replaced by the open long vowel Alif and the two bordering short vowels are deleted (cf. e.g.(g) in 5.2.1.1).

5.2.2 A Hamzah Preceded by a Long Vowel

An intervocalic Hamzah, preceded by a long vowel and followed by a short vowel, will be realized as an intermediate Hamzah if the preceding vowel is an Alif /a:/; and will be replaced by the semi-vowel Wāw [w] or Yā' [y] if it is preceded by the long vowel /u:/ or /i:/ respectively (op.cit., pp.546-547).

5.2.2.1 - a:ʔV -

When an intervocalic Hamzah is preceded by an Alif, Sibawayh says that it will be produced in the form of the weakened allophone [ħ] :

- | | | | | |
|----------|----------------|---|--------------|-------------|
| e.g.(a): | / ʕāba:ʔah / | → | [ʕāba:ħah] | (a cloak) |
| (b): | / ma'sa:ʔil / | → | [ma'sa:ħil] | (problems) |
| (c): | / ja'za:ʔuhu / | → | [ja'za:ħuhu] | (his merit) |

5.2.2.2 - u:ʔV - & - i:ʔV -

When the Hamzah is preceded by one of the two long vowels /u:/ or /i:/ it will be replaced by a semi-vowel.

- e.g.(a): / maqrū:ʔah / → [maqrū:wah] (being read)
 (b): / 'ʔbu: ʔiʃha:q / → ['ʔabu: wiʃha:q] (father of I.)
 (c): / Xaʔi:ʔah / → [Xaʔi:yah] (sin)
 (d): / liʔabi: ʔiʃha:q / → [liʔabi: yiʃha:q]

5.2.2.3 Explanations

The examples cited above present two levels of weakening the Hamzah, spirantizing it and replacing it by a semi-vowel. The kind of change in the phonetic value of the Hamzah in this context depends upon the type of the long vowel preceding it. Sibawayh offers his explanation of these changes as follows:

i. He states that when a dynamic Hamzah is preceded by Alif it can only be changed into an intermediate Hamzah. It cannot be elided, he adds, because its elision will bring the preceding Alif in juxtaposition with the short vowel that follows, which will necessarily lead to changing the Alif into a semi-vowel Wāw or Yā'. This is because the Alif cannot be followed by a short vowel, neither it has any semi-vowel correlate. But in another part of the Book he mentions a dialectal variant where the Hamzah is replaced by a semi-vowel Yā' [y] in the same example (e.g.(a) in 5.2.2.1 above). Some Arabs, he says, say [çaba:yah] for / çaba:ʔah /. Indeed the same realization is witnessed in many colloquial variants of Arabic in Iraq and the Arabian Gulf area, and probably in other regions too. To replace the Hamzah by [y] when it occurs between Alif and Fathah does not conform to any of the rules stated by Sibawayh, yet this is what actually takes place. It is also noticed that replacing a post-Alif Hamzah by a [y] can only take place if the combination occurs within the word. When the Hamzah and the preceding Alif are separated by word boundaries this replacement does not take place.

- e.g.(a): / ʔila: ʔan / → * [ʔila: yan] (until)

Changing the stop Hamzah into a spirant when it is preceded by Alif and followed by Fathah is a case similar to that when the Hamzah is preceded or followed by Fathah (cf. 5.2.1.1 above).

ii. On the other hand if the Hamzah is preceded by one of the two long vowels Wāw /u:/ or yā' /i:/ it will be replaced by a semi-vowel Wāw [w] or Yā' [y] respectively.

Sibawayh states that in this context, the only thing possible is replacing the Hamzah by a semi-vowel. Deleting the Hamzah he explains, will bring the long vowel preceding it in juxtaposition with the short vowel that immediately follows it, which will lead into changing these two long vowels into semi-vowels. This operation will produce unacceptable structures in Arabic. In e.g.(a) & (d) of 5.2.2.2 above the form / maqrū:ʔah / would become * [maqrwah] and / Xaṭi:ʔah / would become * [Xaṭyah]. The combination * - qrw - is not possible in Arabic, neither * [Xaṭyah] could have any meaning. Thus Sibawayh rules out the possibility of deleting the Hamzah in this context. The contiguous two segments [i:] and [y] in [Xaṭi:yah] tend to sound in the final outcome somehow like a geminate [y] in casual hurried speech. But a geminate [y] is in fact a double Yā', i.e. - yy - . This cluster necessitates a short vowel to precede it, producing [Xaṭiyyah] to avoid the cluster * - ṭyy - .

iii. While Sibawayh rules out the possibility of realizing an intermediate Hamzah if the preceding long vowel is Yā' or Wāw in this context he explains that this limitation only applies to cases where the preceding long vowel is a radical element in the construct. In case the long vowel is a functional morpheme it will be possible to realize the Hamzah that follows it as an intermediate one.

e.g.(b): / ʔittabiḩu: ʔamrahu / → [ʔittabiḩu: ʔamrahu]
 (follow his command)

The above example can be compared with:

/ ʔabu: ʔiṣḩa:q / → [ʔabu: wiṣḩa:q]

The final Wāw in / ʔittabiḩu: / is not a radical element in the construct, but it is one in / ʔabu: /. Sibawayh explains that the Wāw in (a) above 'comes for a meaning', while the one in (b) does not have an independent meaning of its own. The first Wāw is a suffixed morpheme which denotes masculine plurality in verb forms in Arabic.

Sibawayh's distinction between these two kinds of Wāws indicates that he realizes the nature and function of morphemic units. This is clearly shown by his definition of the two kinds of phonemes, assigning to affixed ones the role of conveying meaning. Similar morphemes occur with the imperative:

/ ʔittabiḩi: / for the feminine singular
 / ʔittabiḩa: / for the dual form, feminine and masculine

5.2.2.4 - $\bar{V}?\bar{V}$ -

Very little is mentioned by Sibawayh about how to realize the Hamzah when it occurs between two long vowels. He only mentions that when the Hamzah is preceded and followed by Alif / - a:?a: - / speakers found it heavy because, he explains, the Alif has the nearest outlet to that of the Hamzah. In this context, he states, speakers realize an intermediate Hamzah.

e.g.(a) / 'kisa:?a:n / → ['kisa:'ha:n] (two garments)

It should be mentioned that this variant of Hamzah in this context is considered by Sibawayh a less current dialectal variant (op. cit., p.553). In modern Fuṣṣḥā Arabic the Hamzah is fully realized in this context. Moreover, when the Hamzah is preceded by any one of the three long vowels, Qur'ānic recitation rules require prolongation of that long vowel for a duration three or four times its usual length, followed by a fully realized Hamzah (cf. 3.1.1.3 above).

5.3 A HAMZAH CONTIGUOUS WITH A CONSONANT

When a Hamzah occurs in contiguity with another consonant it will either be replaced by a long vowel or be elided, depending on whether the adjacent consonant follows or precedes it.

5.3.1 Preconsonantal Hamzah

When the Hamzah occurs first in a combination with another consonant Sibawayh states that it will be replaced by a long vowel, homorganic with the short vowel that precedes it (op.cit., pp.543-544).

e.g.(a): / ra?s / → [ra:s] (head)
 (b): / 'mu?min / → ['mu:min] (believer)
 (c): / ði?b / → [ði:b] (wolf)

Sibawayh states that to weaken the Hamzah in this context (which is an optional practice in these cases) the only thing possible is replacing it (by a long vowel) (ibid.). He explains that it is not possible to weaken the Hamzah by spirantizing it on the basis that being in a state of 'Sākin' it is already weak and cannot be weakened any further. According to this explanation the spirantized allophone of the Hamzah, (i.e. [ħ]), can only occur intervocalically. Furthermore he asserts that neither is it possible to elide the Hamzah in this context because there is no reason to warrant its elision (ibid.).

Sibawayh interprets this process as a replacement of the Hamzah by a long vowel, on the assumption that the short vowel preceding it

would still be there. This interpretation is in accord with his concept of presuming the occurrence of a (homorganic) short vowel preceding every long vowel in Arabic.

If Sibawayh's argument is to be accepted we shall have ^{*}[raa:s], ^{*}[muu:min] and ^{*}[ðii:b], three unacceptable sequences in Arabic. To accept his view that this is a process of replacement entails that we should have a rule that elides the short vowel preceding the segment that replaces the Hamzah in order to arrive at an acceptable surface form:

/ raʔs / → ^{*}[raa:s] → [røa:s] → [ra:s] (cf. 2.3.2.2).

This phonological process can be accounted for on basis of the syllabic structure of Arabic. The form /'muʔmin /, for example, has the syllable CVC in initial position. To keep the quantity value of the form it can only be replaced by a syllable of C \bar{V} type in this context. Accordingly the form /'muʔmin / CVCCVC (in pause) can be replaced by its modified form /'mu:min / C \bar{V} CVC, if the Hamzah is to be weakened.

Presumably Sibawayh preferred to account for this process as replacement rather than elision because he would have wanted a reason for eliding a radical element in a construct, which he apparently did not. Nothing is mentioned about what would happen when a static Hamzah is preceded by a long vowel. In connected speech this arrangement does not occur^{*}. It can only occur in pause, when at the end of an utterance the inflexional short vowel that follows the Hamzah is deleted. In this context, however, the Hamzah is fully realized, thus Sibawayh finds no phonetic changes to talk about.

5.3.2 Postconsonantal Hamzah

Reversing the sequence in 5.3.1 above by preceding the Hamzah with a consonant and following it by a vowel will lead to the elision of this Hamzah, if it is preferred by speakers not to realize it in full. According to Sibawayh, the Hamzah is elided, and its short vowel is attached to the consonant preceding it (op.cit., p.545) (to say 'attaching' a vowel to a consonant is the same as to say to be followed by that vowel).

* The syllable type C \bar{V} C does not occur medially in an utterance in Arabic. It only occurs in pause (cf. 7.2.2 below; and (c) above.).

- e.g.(a): /'min ʔabi:ka / → [ˈminabi:ka] (from your father)
 (b): / min ʔummika / → [minummika] (from your mother)
 (c): / min ʔibnika / → [minibnika] (from your son)

This phonetic change largely takes place when the combination occurs across word boundaries. Only in few cases does it occur within the word. Sibawayh cites some of the few cases in which the Hamzah is elided in this context, as in the following words:

- e.g.(d): / ʔal ʔmarʔatu / → [ʔal ʔmaratu] (the woman)
 (e): / ʔal ʔkamʔatu / → [ʔal ʔkamatu] (the truffle)

This elision of the Hamzah does not take place in /'masʔalah/ (question, problem) or /'yarʔas / (he presides over). It should be noticed that in e.g.(b) & (c) above the syllabic structure is changed.

The final consonant of the initial syllable will become the initial consonant of the second syllable. The form / min ʔibnika / : (CVC CVC CV CV) becomes [minibnika] . (CV CVC CV CV).

Evidently eliding the hamzah in this context is in contradiction with Sibawayh's previous statement (5.3.1) above that there was no reason to elide a Hamzah when it is a radical element. Nevertheless, he attempts to account for that. He explains that when speakers prefer to weaken the Hamzah in this context, they can only do that by eliding it. An intermediate Hamzah is not possible in this case because it would have the same 'status' of a Sākin, and two Sākins do not occur side by side in Arabic (op.cit., p.545).

The weakened form in e.g.(d) above is very much witnessed in many modern colloquial Arabics. Besides that, Sibawayh cites another variant of this word, realized as / ʔal ʔmara:tu / but comments that this form of the Hamzah occurs in a very limited number of words (ibid.). In Baghdadi Arabic the form /'marah / is witnessed, as well as in many other regional dialects of modern Arabic.

In Qur'ānic recitation, when the Hamzah occurs in contexts similar to those in examples a, b & c above, some reciters produce a full Hamzah, then repeat the verse with an elided Hamzah. This indicates the acceptability of both variants and that in some dialects the Hamzah is changed under the influence of the phonetic environment in which it occurs, while it is not changed in other dialects.

5.3.3 Special Cases

There are some cases in which the Hamzah is elided in context where it should not on account of being consonant in the form.

An example of such a case is cited by Sibawayh concerning verb forms derived from the root form / raʔy / (opinion, view). He explains that in these cases a post-consonantal Hamzah is elided as a process of weakening the utterance, producing the forms /'ʔara: / (I see), /'tara: / (you see), /'nara: / (we see), etc; all these surface forms being generated from the underlying forms */'ʔarʔa: /, */'tarʔa: / and */'narʔa: / respectively. Sibawayh suggests that all speakers of Arabic have agreed to elide the Hamzah in this context because these forms occur too frequently in their speech (op.cit.,p.546). He also remarks that some 'trusted' Arabs produce unreduced forms of this example, like / ʔarʔa:hum / (I see them), quoting one of his contemporarians to have heard such forms (ibid.).

Deriving the imperative verb from this root form should generate */ rʔa / if the Hamzah is not elided. Eliding it produces / ra / . Speakers must have found this very short form too awkward in practice so they practically dropped it from usage. It is not used in any modern variant of Arabic, literary or colloquial. Instead they use the form /'ʔunḏur / derived from /'naḏar / (sight, vision).

5.4 TWO NEIGHBOURING HAMZAH

When two Hamzahs occur in the neighbourhood of each other in speech one or both of them will be subject to weakening. Sibawayh states that this case follows the general tendency in the speech of Arabs to weaken the glottal stop. Even when the two stops occur across word boundaries, he remarks, at least one of them will be weakened . This practice, he adds, is to be found in the speech of all Arabs he knew of, even those who usually fully realize a Hamzah in their speech (op.cit., pp.548-549). He asserts that it does not occur in Arabic speech that two neighbouring Hamzahs are realized in full (ibid.). Two neighbouring Hamzahs could occur across word boundaries, or within the word.

5.4.1 Two Hamzahs Across Word Boundaries

Neighbouring Hamzahs across word boundaries could either be separated by a vowel or occur side by side .

4.5.1.1 - ʔV#ʔ -

A vowel that intervenes between two Hamzahs across word boundaries is mostly an inflexional short vowel of the preceding word in the utterance. In this context one or both Hamzahs are weakened.

It is not attested that both are fully realized.

i. In some dialects the first Hamzah is weakened.

e.g.(a): / 'ja:ʔa 'ʔaxi: / → ['ja:ħa 'ʔaxi:] (my brother came)

ii. In some other dialects speakers prefer to realize the first Hamzah in full and weaken the second, producing the previous example as ['ja:ʔa 'ħaxi:]. Sibawayh states that he had heard this form from certain speakers and quotes Farāhīdī to be in favour of this variant. He explains that Farāhīdī's preference is based on the assumption that speakers always weakened the second of two Hamzahs when both occur within the word; the two practices are judged to be analogical (ibid.). Sibawayh does not show any preference to one variant or the other. He comments that both variants are 'good' Arabic.

iii. A third variant is witnessed in the speech of Ḥijāzi Arabs. Sibawayh explains that as they preferred to weaken the Hamzah in their speech, they did the same to two neighbouring ones and produced the previous example above as: ['ja:ħa 'ħaxi:] (op.cit., p.550).

iv. In some cases the intervening vowel between the two Hamzahs is the long open vowel Alif /a:/, as in /'ja:ʔa: ʔilayhi / (they came to him; dual). Sibawayh mentions nothing about this case. In modern Arabic both Hamzahs are fully realized. According to rules of Qur'ānic recitation the intervening long vowel, as well as any long vowel that precedes a Hamzah is given extra duration. The aim seems to be to make the production of the Hamzah easier. This view warrants further investigation and the question will be left open, however.

5.4.1.2 The Interrogative Hamzah

The interrogative particle /ʔa / immediately precedes the phrase to be rendered in the interrogative. If that phrase has a Hamzah in initial position the phonetic environment will be similar to that in (5.4.1.1) above. The outcome, however, is not quite the same.

i. Sibawayh remarks that many Arabs 'insert' an Alif between the two Hamzahs:

e.g.(a): / ʔa 'ʔanta / → [ʔa: 'ʔanta] (is it you...?)

What actually takes place in this example is that the intervening short vowel is lengthened into a long vowel Alif (op.cit., p.551).

ii. He further remarks that in the dialects where speakers prefer not to weaken the Hamzah this interrogative particle is realized with a strong Hamzah. It is imperative, he states, to realize this Hamzah in full if the interrogative particle /ʔa / occurs in initial position

in the utterance (ibid.). The second Hamzah, he adds, can be weakened and produced Bayna Bayn, as in: [ʔa ʕanta] .

iii. Some Ḥijāzī speakers, he mentions, insert an Alif between the two Hamzahs as well as weakening the first one, producing [ʕa: ʔanta] (ibid.). This variant combines the practice of prolonging a vowel that precedes a Hamzah and the Ḥijāzī practice of weakening the Hamzah.

5.4.1.3 - ʔ#ʔ -

In cases where two Hamzahs occur side by side across word boundaries a different level of weakening will take place in one or both of them. Sibawayh states that at least one of them should be weakened (ibid.).

i. He explains that in the example / ʔiqraʔ ʔa:yah / (read a verse of the Qurʕān) it is possible to weaken the first Hamzah by replacing it with a long vowel, producing it as: (a): [ʔiqra: ʔa:yah]. He comments that this practice follows the rule that replaces a static Hamzah by a long vowel (cf. 5.3.1 above). Once more he mentions nothing about the preceding short vowel, assuming it to be still there, i.e. * [ʔiqraa:—] .

ii. Sibawayh mentions another variant of this case realized as (b): [ʔiqraʔ a:yah] and explains that it follows the rule that elides a dynamic Hamzah if it is preceded by a consonant (cf. 5.3.2). According to this explanation the second word in the utterance loses its initial consonant. This is a contradiction to rule (d), in (2.4.2) above.

It is not quite clear to me why should Sibawayh come out with this interpretation. It might seem more plausible to assume that the final Hamzah of the first word is the one that is elided to avoid producing a geminate Hamzah. Another possible interpretation could be that the [a:] allophone of the Hamzah, as it appeared in (a) above, is further reduced to a short vowel Fathah [a] as it appears in (b) as a result of the absence of stress on that syllable.

Sibawayh does not show preference to any of the two variants in (a) and (b) above on the assumption that both are accounted for by grammatical rules.

iii. A third variant, witnessed in Ḥijāzī Arabic produces: (c) [ʔiqra: ʕa:yah] . Sibawayh states that Ḥijāzī Arabs weaken both of the two Hamzahs, following their common practice of weakening this consonant. He explains that the first one is replaced by a long vowel and the second one is produced Bayna Bayn (ibid.).

iv. In his explanatory work on Sibawayh, *Sirāfi* quotes another grammarian, *Abu Zayd al-Ṭā'i*, to accept Idgham of two contiguous Hamzahs producing a geminate, just like any other two consonants. He claims it to occur in the speech of some Arabs.

As mentioned before, Sibawayh holds a different view which refuses gemination of the Hamzah as a measure of achieving ease of articulation. In some forms of modern Arabic a geminate Hamzah is witnessed in fact, as in: (d) / lam 'yaša? ?an 'ya?ti: / (he did not want to come).

5.4.2 Two Hamzahs Within the Word

Very few lexical items in Arabic have more than one Hamzah. Sibawayh mentions only one word that has two Hamzahs, and only in its underlying form. He states that in this case it is imperative to replace the second one by a long vowel. That word is / 'ʔa:dam / (Adam) which he says is a surface form derived from an underlying form * / 'ʔa?dam / (ibid). In other lexical items that might contain two Hamzahs, only one of them (the second one in the two examples below) is a radical element, as in / 'ʔaswa? / (worse) and / 'ʔajra? / (I dare). Sibawayh mentions one example in this context:

/ 'ja:ʔi? / → ['ja:ʔi:] (coming).

5.5 SUMMARY

The idea of discussing the phonetic changes in the Hamzah in a separate chapter seems to be adopted by Sibawayh to indicate the large extent of these changes in different contexts and to show that this consonant has a noticeable propensity to lenition. Another reason could be that the phonetic change the Hamzah is subject to in context is not considered by him as a process of Idghām. He remarks that this consonant requires relatively greater effort to produce, so he refuses the idea of geminating two contiguous Hamzahs to perform Idghām. Therefore, he suggests, to achieve ease of articulation, the Hamzah should be phonetically weakened. Accordingly, he goes on to investigate all the possible environments in which this consonant will be subject to weakening.

The weakened Hamzah is realized in different allophonic variants each one of them represents a certain degree of weakening, as in the suggested following order: ʔ > ḥ > $\frac{w}{y}$ > \bar{v} > \emptyset .

It seems likely that Sibawayh's consideration of the glottal stop as one of the 'Illah letters was influenced by the readiness of this

consonant to undergo different degrees of weakening as a means of achieving ease of articulation. These weakening processes are represented in the following examples which indicate the progressive stages of realizing the weakened Hamzah in different phonetic environments.

(a) ? \rightarrow h / v — v

(b) ? \rightarrow w / $\left[\begin{array}{c} \text{u} \text{ — } \text{a} \\ \text{u:} \text{ — } \text{i} \end{array} \right]$

? \rightarrow y / $\left[\begin{array}{c} \text{i} \text{ — } \text{a} \\ \text{i:} \text{ — } \text{i} \\ \text{a:} \text{ — } \end{array} \right]$

(c) ? \rightarrow \bar{v} / $\left[\begin{array}{c} \text{ — } \text{c} \\ \text{ ? — } \end{array} \right]$

(d) ? \rightarrow \emptyset / c — v

THE VOWELS IN CONTEXT

6.1 INTRODUCTION

This chapter will be a study of the way in which Sibawayh investigates the adaptive changes in the phonetic values of the vowels of Arabic in different contexts.

As indicated by the data available in the Book of Sibawayh there seems to be a great amount of variation in the values of the vowels in the spoken form of Arabic of his time as well as in the adaptive changes which these vowels undergo in different phonetic environments. These variations could be found within one dialect as well as across regional variants of the language. Sibawayh consistently points to these variations and discusses in sufficient detail the extent of the changes in the phonetic values of vowels and attempts to formulate rules to account for them.

According to him the processes that lead to changes in the phonetic values of the vowels are termed 'Imālah', 'Tafkhīm' & 'Itbā', of which Imālah occupies a much larger space in his Book than the other two processes.

6.2 IMĀLAH

The term Imālah, derived from 'Mayl' (inclination, shift) is used in Arabic linguistics to denote displacing an element in the direction of another in regards to places of articulation. Although this term does not specify the exact nature of the displacement, it is generally used to refer to the shift in the phonetic values of vowels. Sibawayh uses this term usually to refer to a certain degree of closing and fronting of the pharyngeal vowels Alif /a:/ and Fathah /a/ to a position halfway between theirs and that of the palatal vowels Yā'/i:/ and kasrah /i/ respectively. It is also used, in a limited extent, to refer to certain amount of fronting the velar vowel Wāw /u:/ in certain phonetic environments.

It can be claimed that Sibawayh is the first Arab grammarian to use this term in this sense and context. Nothing is mentioned by his tutor Farāhīdī in 'Kitāb al-Ayn' about this phenomenon. Furthermore Sibawayh goes to a great length in investigating all aspects of Imālah, discussing in detail all the possibilities of this phonological process which takes place in all the phonetic environments he can

conceive of in the Arabic of his time.

His successor Ibn Jinnī adopts the same concept of *Imālah* and uses the term in the same sense. Besides that he includes *Imālah* within a wider scope of *Idghām* (cf. Chapter Four). He considers *Imālah* as a type of *Idghām*, describing it as '*al Idhām al Aṣghar*' (the lesser *Idghām*) in contrast with what he calls '*al Idghām al Akbar*' (the greater *Idghām*) which refers to complete assimilation of a consonant (Ibn Jinnī, a, vol.2, p.141).

Sibawayh explains *Imālah* as a process of:

"...approximating a letter to another..." (vol.4, p.117).

He states that when the Alif occurs in the neighbourhood of a *Yā'* /i:,y/ or a *kasrah* /i/ it is 'brought closer' to the places of these sounds. He attributes this process to a tendency on the part of speakers to achieve ease of articulation, and compares it to what happens when a *Ṣād* /s/ and *Dāl* /d/ are contiguous, which makes the *Ṣād* acquire the [+ voiced] feature of the *Dāl* (cf. (g) in 4.5.4.1).

Sibawayh's statement is an early realization of the universal tendency in languages to achieve ease of articulation and economy of effort, which are concepts currently discussed in modern linguistics. His expression '*Iltimās al-Khiffah*' is the same as to say 'aiming for ease of articulation' (ibid.).

From the body of data presented by Sibawayh it seems clear that *Imālah* was not a consistent feature in the speech of Arabs of his time. His coverage of the subject indicates that he was trying very hard to be as comprehensive as possible to cite all potential cases of *Imālah* and to account for their causes and the phonetic environments in which they occur as well as the relation between the environment and the probability of *Imālah*. Besides that he points to the occurrence and non-occurrence of *Imālah* as a dialectal variation in regional variants of Arabic when the phonetic environments are the same.

Sibawayh does not specify the amount of change in the phonetic values of the Alif or the Fathah when they undergo *Imālah*. It is certain that they do not undergo full assimilation that might lead to converting them into *Yā'* or *Kasrah* respectively. In case an element becomes identical with another element Sibawayh uses the term '*Ibdāl*' (replacement) to describe this process, while he describes the process in *Imālah* to be that of bringing a sound 'closer' to another sound. Therefore the Alif and Fathah, after undergoing *Imālah*, can be placed somewhere between Cardinal Vowels No. 2 and No.3. For convenience the

phonetic symbols e: & e will be used in this study to stand for the values of the allophonic variants of Alif and Fathah respectively after they undergo Imālah.

It has been mentioned that Sibawayh describes the 'Alif of Imālah' to be one of the 'derived acceptable letters' (cf. 2.3.5.3 above). In describing this kind of Alif he asserts that it is 'strongly inclined' (towards the Yā'). This 'strong' change might suggest that this allophonic variant of Alif can be placed nearer to Cardinal Vowel No.2 than to No.3.

Sibawayh talks about Imālah as taking place in the Alif, but not in the Fathah proper. When a Fathah undergoes this phonetic change he talks about the consonant preceding it as the one which undergoes Imālah in the context under study.

The outcome is the same in phonetic terms, but the problem lies in the concept adopted by all the classical grammarians of Arabic, that the Alif is a 'letter' and the Fathah, its short counterpart, is 'half' a letter or part of it:

"...attached to the (preceding) consonant..." (vol.4, pp.241-242). It has been mentioned earlier that Semitic languages, one of which is Arabic, give more prominence to consonants than to vowels, and have no characters for short vowels in their Alphabetic systems. Therefore, to say that a certain consonant undergoes Imālah implies that the short vowel following it does just that. It is possible to conclude in this respect that when Sibawayh refers to Imālah in a consonant letter, he means a 'Mutaharrik letter', i.e. a CV type of syllable. In all the places where he describes Imālah in a consonant it is a dynamic consonant that he is referring to. He cites many examples where the phonetic change in the short vowel Fathah is described as Imālah in the consonant preceding it, as follows:

e.g.(a): / 'zaydan / → ['zeyden] (op.cit., p.122)

(b): / 'çamrin / → ['çemrin] (op.cit., p.142)

According to this it can be concluded that Sibawayh was considering Imālah to take place in the syllable.

However, there are certain occasions in which he does refer to Imālah in the short vowel Fathah which he believes to precede the Alif. Taking this belief for granted he concludes that when the Alif undergoes Imālah in a certain context, the Fathah preceding it will consequently do the same. This hypothesis is to be found in the following statement of his:

"...When *Imālah* affects the *Alif*, it will affect the segment preceding it..." (vol.4, p.126).*

In the following pages I shall try to discuss *Imālah* in the *Alif* and the *Faḥ* in different contexts commenting on Sibawayh's explanations where necessary. I should also mention that the subject matter is presented according to the way the elements involved in the process are distributed in the environment in which *Imālah* does or does not take place, not in the order presented by Sibawayh.

6.2.1 *Imālah* in the Neighbourhood of *Yā'* and *Kasrah*

The *Alif* /a:/ and the *Faḥ* /a/ undergo *Imālah* when one of them or both occur in the neighbourhood of a *Yā'* (/y/ , /i:/) or a *Kasrah* /i/. To say occur in the neighbourhood is either meant in contiguity with each other or when one segment or more intervene between the influencing element and the influenced one. The semi-vowel *Yā'* /y/ can occur in contiguity with an *Alif* or a *Faḥ*. A pure vowel *Yā'* /i:/ cannot do that. Pure vowels do not occur side by side in Arabic. Therefore the *Alif* or the *Faḥ* cannot be adjacent to a *Yā'* /i:/ or a *Kasrah* /i/. There will always be some intervening elements between them. The influence of a *Yā'* or a *Kasrah* on an *Alif* or a *Faḥ* will depend on the quality and the number of the intervening elements, and their distribution in the environment.

6.2.1.1 In the Neighbourhood of *Kasrah*

In the neighbourhood of a *Kasrah* /i/ an *Alif* /a:/ and a *Faḥ* /a/ undergo *Imālah*, as in the following examples:

e.g.(a): /'qa:lim / → ['qe:lim] (scientist)

In the example above the *Alif* occurs in close proximity to the *Kasrah*, with only one element intervening between them. No example is given by Sibawayh in which a *Faḥ* occurs in the place of the *Alif*, as in the form /'qalima / (he knew).

When the *Kasrah* occurs before the *Alif* or the *Faḥ* it will cause *Imālah* in them, with one or more intervening segments.

* Ibn Jinnī interprets this process the other way round. He explains that *Imālah* first affects the *Faḥ* which precedes the *Alif*, then this *Faḥ* in turn transmits the effect to the *Alif* (Ibn Jinnī, (a) vol.1 , p.219 & (b), vol.3, p.4). Sibawayh's interpretation is more plausible. At least he correctly locates where *Imālah* take place first, then extends the effect to the *Faḥ* which he presumes to precede the *Alif*.

- e.g.(b): / ɕima:d / → [ɕime:d] (a proper noun)
 (c): / ɕima:da: / → [ɕime:de:]
 (d): / 'ɕilman / → [ɕilmen] (knowledge)
 (e): / sirba:l / → [sirbe:l] (a proper noun)

According to Sibawayh, the second Alif in e.g. (c) above undergoes Imālah under the influence of the first Alif which has already done so under the influence of the preceding Kasrah, (op.cit., p.123). This example shows how an Alif, after undergoing Imālah, can in turn influence another vowel to do the same.

In examples (d) and (e) above there are two intervening consonants between the Kasrah and both the Fathah and the Alif, in which it introduces Imālah. Sibawayh explains that a single intervening consonant is not a powerful barrier to impede the influence of the Kasrah causing Imālah in an Alif or a Fathah. A combination of two contiguous consonants is no more powerful than a single one in this respect, he suggests, because the first consonant in a cluster of two is Sākin which is a weak element in itself and cannot form a strong barrier against Imālah (op.cit., p.117).

There are cases of Imālah in the Alif caused by an inflexional Kasrah of a noun in the dative.

- e.g.(f): / kála:mika / → [kále:mika] (your speech)
 (g): / 'ba:bihi / → ['be:bihi] (his door)

On the two examples above Sibawayh comments that Imālah is 'weaker' implying that it is less probable, because the Kasrah which causes it is an inflexional vowel which changes with grammatical case, suggesting that it is not as strong as a radical vowel which does not change with case, as^{is} the Kasrah in / 'ɕa:lim / and / ɕima:d / (op.cit., p.122).

In a similar context Imālah takes place in the Alif which occurs finally in a construct as a pronominal morpheme, or part of it (The Alif of / ha: /), suffixed to the construct:

- e.g.(h): / yaɕ'ribha: / → [yaɕ'ribhe:] (he beats her)
 (i): / 'minna: / → ['minne:] (from us)

Sibawayh comments that an Alif in final position undergoes Imālah only in pause (op.cit., pp.126-127). In connected speech, he adds, it does not do so.

- e.g.(j): / yaɕ'ribha: 'zaydun / → idem (Zayd beats her)
 (k): / 'minna: 'ɕamru / → idem (A. is one of us)

He states that if an Alif in final position undergoes Imālah for

any reason, the process might lead to converting this Alif into a semi-vowel $Y\bar{a}'$. He comments that when pausing on the noun /'ʔafqa:/ (a snake) some speakers realize it [ʔafqey]. His explanation is that when the Alif undergoes Imālah and is paused on, it will be 'Abyan' (more conspicuous) if it is realized as a semi-vowel $Y\bar{a}'$.

It is possible that the final combination - ey is the outcome of two transformations. In the first the Alif undergoes Imālah which changes its phonetic value into [e:]. The second is diphthongizing this allophone into [ey] because it occurs in a final position. (cf. Schane, 1973, p.58).

Arab speakers mainly prefer to pause on a [-vocalic] segment, which acts as an arresting element in the utterance. In connected speech, however, Sibawayh states that there would be no need for this process, because:

"...the Alif is more conspicuous in connected speech..." (ibid.). This phenomenon is perhaps one possible explanation for representing the Alif of /'ʔafqa:/ by the character $Y\bar{a}'$ (ع) in Arabic orthography, calling it 'Alif al maqṣūrah'.

6.2.1.2 In the Neighbourhood of the $Y\bar{a}'$

The Alif undergoes Imālah in the neighbourhood of a $Y\bar{a}'$, whether it is a long vowel /i:/ or a semi-vowel /y/. Sibawayh cites examples which show the process in this context. No examples are presented to show the Fathah in the same context. In the present sub-section the discussion will be focused on Imālah in the environment of /i:/.

- e.g.(a): /'fi:na:/ → ['fi:ne:] (in us)
 (b): /'Gawa:ri:r/ → ['Gawe:ri:r] (jugs)
 (c): /'mawa:qi:d/ → ['mawe:qi:d] (rendez-vous, pl)

In example (b) and (c) above Sibawayh refers to Imālah in the Alif only. He says nothing about the Fathah in the same forms. According to the rules he states, this Fathah should also undergo Imālah under the influence of the other process of Imālah which has taken place earlier in the Alif (cf. e.g. (c) in 6.2.1.1 above). One possible explanation of Sibawayh's silence in this case is that the Fathah in these two examples is followed by the velar semi-vowel Wāw which is likely to influence it in a way that directly opposes the influence of the $Y\bar{a}'$ in modifying its phonetic value. There is a phonological constraint on the occurrence of a Wāw /w/ between two palatal vowels.

6.2.1.3 In the Neighbourhood of the Semi-Vowel Yā'

The Alif undergoes Imālah in the environment of the semi-vowel Yā' /y/. In all the examples presented by Sibawayh in this context the Alif occurs in a position after the Yā'.

e.g.(a): / çālayna: / → [çālayne:] (on us)

He attributes Imālah in this context to the close proximity of the Alif to the Yā' (op.cit., p.124). Once more he does not mention anything about any possible Imālah in the two open short vowels preceding the Yā'. However, judging from modern Arabic there is a noticeable difference in the phonetic values of the two short vowels in this form. The one that follows the pharyngeal consonant 'Ayn /ç/ is more open and retracted than the other one which occurs after the Lām, which sounds less open and more fronted, probably under the influence of the adjacent Yā'.

The influence of the /y/ on a neighbouring Fathah is implied in what Sibawayh considers as Imālah in an Alif as in the following example:

e.g.(b): / 'yadan / → ['yaden] (a hand)

In Arabic orthography a Fathah and a following *Tanwīn* (noonation) * are represented by the character of the Alif with a diacritic: (اً). It is most probable that under the influence of written Arabic that Sibawayh consider the final two segments in this form to be Alif + Tanwīn. If this conclusion is plausible, it can explain why did he describe Imālah in this context to be taking place in an Alif (op.cit., p.126). This Alif is not an inflexional marker of grammatical case.** Thus we have / 'yadun / in the nominative, / 'yadan / in the accusative and / 'yadin / in the dative.

The other point is that Sibawayh does not mention whether Imālah would also take place in the first Fathah which is adjacent to the Yā'. It is logical, following the rules of Imālah, to expect [yeden] . Notably he does mention the form / 'yadana: / (our hand) to be produced with Imālah in the final Alif, producing ['yadane:] (ibid.). Full application of the rules should produce ['yedene:] .

* Noonation is an indefinite marker in Arabic.

** A final Alif may indicate grammatical case in some forms of *Inshād*, used in verse or prose for stylistic purposes. In these instances the Alif is only a prolonged Fathah.

A geminate $\bar{Y}a'$ also influences the Alif in the same way.

e.g.(c): / bayya:ç / → [bayye:ç] (vendor)

Sibawayh comments that the $\bar{Y}a'$ influences a following Alif in a similar way that a Kasrah does, as in: / çima:d / (cf. 6.2.1.1). Perhaps he is comparing the first element of the geminate $\bar{Y}a'$ to a Kasrah and the second to an intervening consonant. He states that the $\bar{Y}a'$ in this context has the same status of a Kasrah. It is surprising why should he say that since the $\bar{Y}a'$ itself can influence a neighbouring Alif or Fathah, at least just as a Kasrah could.

6.2.1.4 Separated by CVC

When the phonetic environment which intervenes between the Kasrah or the $\bar{Y}a'$ on one side and the Alif on the other is – CVC – whose vowel is either /u/ or /a/, this environment will form a barrier against Imalah, as in:

e.g.(a): / 'çinaba: / → idem (grapes)

(b): / yaki:luna: / → idem (he measures for us)

(c): / 'lan yaki:lana: / → idem (he will not measures for us)

If the consonant adjacent to the final Alif is a $\bar{H}a'$ /h/ the intervening environment will be weakened and the influence of the preceding $\bar{Y}a'$ will be able to surmount the barrier and modify the Alif, as in:

e.g.(d): / yaki:laha: / → [yaki:lahe:] (he measures it)

Sibawayh comments that the consonant $\bar{H}a'$ is 'Wahin' (feeble), and too weak to impede the influence of the $\bar{Y}a'$ or the Kasrah on the Alif (op.cit., p.124). He considers the form / yaç'ribaha: / to be very similar to the form / yaç'riba: /, in respect of the phonological strength of the environment. He states that in / yaç'ribaha: / the consonant $\bar{H}a'$ is so weak : "...as if it is not there..." (op.cit., p.125).

6 .2.2 Influence of Underlying Structure

In certain contexts the Alif is realized with Imalah if it is a reflex of an underlying semi-vowel $\bar{W}aw$ or $\bar{Y}a'$ which are radical elements that occupy medial or final positions in triliteral root forms. In the surface form, this Alif can be one of the segments in nouns or verb forms derived from triliteral root forms, one element of which is $\bar{W}aw$ or $\bar{Y}a'$, as in the following examples:

e.g.(a): \sqrt{Gwl} → / 'Gasla / (he said)

- e.g.(b): $\sqrt{\text{nwm}}$ \rightarrow /'na:ma / (he slept)
 (c): $\sqrt{\text{syr}}$ \rightarrow /'sa:ra / (he walked)

6.2.2.1 Underlying Yā'

When the Alif is a surface reflex of an underlying Yā' which occupies a final position in a trilateral root form it will be realized with Imālah.

Sibawayh explains that the form in which this Alif occurs is a surface form of an underlying structure with a Yā', the position of which is occupied by an Alif in the surface form (op.cit., p.118). Examples presented by him are:

- e.g.(a): $\sqrt{\text{qšy}}$ \rightarrow /'qaša: / \rightarrow ['qaše:] (supper)
 e.g.(b): $\sqrt{\text{mky}}$ \rightarrow /'maka: / \rightarrow ['make:] (pit of an Iguana)

6.2.2.2 Underlying Wāw

An Alif in a surface form could also be a reflex of an underlying Wāw .

Sibawayh states that if this Wāw occupies a final position it will be weak and prone to be changed into a Yā' (ibid.). He adds that this change becomes more probable if the surface form derivation counts more than three consonantal elements. The form /'masniy / (watered by rain) is derived from the root form $\sqrt{\text{snw}}$. He comments that in this kind of structure the Yā' takes over the place of the Wāw:

"...because the Yā' is easier for them than the Wāw ..." (ibid.).

As a result of replacing the Wāw by a Yā' the Alif appears in final position in forms derived from this kind of modified surface forms. Being a reflex of a Yā', which in turn is a reflex of a Wāw, adding to that its occurrence in a weak final position, this Alif is realized with Imālah.

- e.g.(a): /'qaša: / \rightarrow ['qaše:] (a stick) $\sqrt{\text{qšw}}$
 e.g.(b): /'qafa: / \rightarrow ['qafe:] (he pardoned) $\sqrt{\text{qfw}}$

6.2.2.3 Underlying Medial Yā' or Wāw in Verb Forms

Some root forms have a Wāw or a Yā' in medial position. The pretorite verb forms in the third person singular which are derived from these forms are realized with an Alif, as in:

- $\sqrt{\text{Gwm}}$ \rightarrow /'Ga:ma / (he stood) (cf. 6.2.2 above)

The Alif of these verb forms (in the perfect) is realized with Imālah if the initial syllable in the first person verb form has a Kasrah , i.e. Ci .

Sibawayh attributes to this Kasrah the influence that modifies the Alif. If that initial consonant has a Ḍammah /u/ there will be no Imālah. (The distribution of Kasrah or Ḍammah in this context depends on the neighbouring consonant and other structural factors which is beyond the scope to this study).

Examples of Alif with Imālah are:

- e.g.(a): $\sqrt{\text{Xwf}}$ (fear) \rightarrow /'Xiftu / (I got afraid)
 \rightarrow /'Xa:fa / \rightarrow ['Xe:fa] (he got...)
 (b): $\sqrt{\text{byç}}$ (sale) \rightarrow /'biçtu / (I sold)
 \rightarrow /'ba:ça / \rightarrow ['be:ça] (he sold)

In contrast, the Alif is realized without Imālah in the following:

- e.g.(c): $\sqrt{\text{Gwm}}$ (to stand up) \rightarrow /'Gumtu / (I stood up)
 \rightarrow /'Ga:ma / \rightarrow idem (he ...)
 (d): $\sqrt{\text{dwr}}$ (turning) \rightarrow /'durtu / (I turned)
 \rightarrow /'da:ra / \rightarrow idem (he...)

He comments on the non-occurrence of Imālah in the last two examples above, attributing it to the relative strength of a medial Wāw in the root forms as well as to the absence of a Kasrah in the first person verb forms.

There is a structural difference between the Alif in /'Xa:fa / and that in /'Ga:ma /. Each one of these two Alifs is a reflex of a different etymon. The root form $\sqrt{\text{Xwf}}$ generates * / Xawifa / in the pretorite. The combination /- awi -/ is reflected by / a:./ in the surface form /'xa:fa / and by /i/ in /'Xiftu /. On the other hand the root form $\sqrt{\text{Gwm}}$ generates * / Gawuma / whose /- awu -/ combination is reflected by / a: / in the surface form /'Ga:ma / and by /u/ in /'Gumtu /.

Sibawayh does not attempt to interpret the probability of Imālah in the Alif of the third person form of the verb by referring to the presence or absence of a Kasrah in the underlying forms. He takes the easier step by referring to a Kasrah in the surface form of the first person verb forms. His method is easier but leaves the reader in need of further explanations.

6.2.3 Imālah in the Neighbourhood of Musta'liyah

Seven consonants of Arabic are classified by Sibawayh as 'Musta'liyah', equivalent to (elevated), including the four velarized consonants / ʂ, ǧ, ɖ, ǧ̣ / and the three uvulars / G, Ɓ, X / (cf. 3.5.3 above).

Sibawayh states that when the phonetic environment usually causes Imālah in an Alif, the proximity of one of the seven consonants classified [+ musta'li] to the Alif in that context produces a counter influence which blocks or reduces the probability of Imālah. The probability of realizing an Alif or Fathah with or without Imālah depends on the distribution of the elements which cause Imālah (i.e. Yā' or Kasrah) on the one hand, and the elements which prevent it on the other hand .

The explanation presented by Sibawayh about this phenomenon states that because these seven consonants are elevated [+ musta'li] they influence the Alif that occurs in close proximity to one of them causing it to assimilate to their 'elevated' place of articulation (op.cit., p.129). In another place in his Book he clearly states that in general, consonants are more likely to be followed by homorganic vowels (op.cit., p.101). He attributes this process to the tendency on the part of speakers towards ease of articulation, comparing it to what happens in Idghām (cf. Chapter Three). In the following sub-sections, the extent of the influence of these seven consonants on the probability of Imālah will be investigated according to the distribution of these two kinds of elements in the environment.

6.2.3.1 - Ĉ a:- *

When one of the seven elevated consonants immediately precedes an Alif in the construct it will prevent Imālah of the Alif, which otherwise was to be caused by a following Kasrah, as in /'Ga:çid / (sitter), /'Ka:ʔib / (absent), /'Xa:mid / (inactive), /'ša:çid / (rising), /'ða:ʔif / (roving), /'ġa:min / (guaranteur) and /'ð̣a:lim / (oppressor).

The close proximity of the elevated consonants to the Alif in this context overrides the influence of the Kasrah in modifying the phonetic value of the Alif. Furthermore there are indications that Sibawayh is aware of a change in the value of the Alif in another direction . He expresses his belief that in this context the Alif acquires some 'elevation' under the influence of the adjacent elevated consonant. However this kind of change will be discussed in section 6.3 below, under the title of Tafkhīm.

An elevated consonant adjacent to an Alif does not always prevent

* The symbol (Ĉ) is used here to stand for an elevated [+ musta'li] consonant.

Imālah in that Alif. It has been discussed in 6.2.2.3 above that an Alif is realized with Imālah if it is a medial element in certain verb forms, inspite of being adjacent to an elevated consonant. It seems that an Alif which reflects a Kasrah in an underlying combination is more influenced by being so than it is by an adjacent elevated consonant in the surface form; compare * / 'Xawifa / → / 'Xa:fa / and / 'Xiftu / versus * / 'Gawuma / → / 'Ga:ma / and / 'Gumtu /.

An elevated consonant also prevents Imālah in an adjacent Alif if the Kasrah occurs in a preceding position, as in / ɟirGa:n / (two veins). In this example, he explains, the elevated consonant intervenes between the Kasrah and the Alif, acting as a strong barrier (op. cit., p.131).

6.2.3.2 - a:Ĉi -

When an elevated consonant intervenes between a preceding Alif and a following Kasrah it will block the influence of the Kasrah, and the Alif will be realized without Imālah. The examples furnished by Sibawayh are: / 'na:Gid / (criticizer), / 'qa:ɟis / (sneezer), / 'qa:ɟim / (a proper noun), / 'qa:ɟid / (a supporter), / 'qa:ɟil / (a proper noun), / 'na:Xil / (user of a sieve), / 'wa:ɟil / (a proper noun) (op.cit., p.129). These examples can be compared with / 'qa:lim / and / 'sa:jid / where the Kasrah produces Imālah in the Alif (cf. 6.2.1.1 above).

6.2.3.3 - a:≠Ĉ -

When an elevated consonant immediately follows an Alif across word boundaries it will prevent a preceding Kasrah from causing Imālah in that Alif. In the example (a): / yaɟ'ribha: 'Ga:sim / the Alif is realized without Imālah, in contrast with the case in (b): / yaɟ'ribha: zayd / → [yaɟ'ribhe: —] (cf. 6.2.1.4).

6.2.3.4 - a:CVC̈ -

An elevated consonant influences a preceding Alif, preventing Imālah in it even when a number of elements intervenes between them, and a Kasrah or a Ya', two elements which usually cause Imālah, is among these intervening elements, as in the following examples:

(a) / 'na:fiX / (blowing), (b) / 'na:biɟ / (genius),
 (c) / 'na:fiG / (dying), (d) / 'na:ɟid / (energetic) and so on.

Sibawayh compares this remote influence to the remote assimilation in e.g.(e): / sabaGtu / → [ɟabaGtu] (op.cit., p.479).

In case a Ya' occurs in the same position of the Kasrah in this

context, the influence of an elevated consonant on the preceding Alif will still be the same, which is the prevention of Imālah. Sibawayh considers the occurrence of the Yā' in this context an addition to the number of intervening elements between the Alif and the elevated consonant that follows. For him the Yā' is another letter (op.cit., p.130) as in the following examples:

(f) / mawa:'qi:ð / (sermons) , (g) / mana:'fi:X / (belows, pl.) and so on.

6.2.3.5 Influence of a Remote Ć

When an elevated consonant occurs in a position preceding that of the Alif, and separated by a number of intervening elements, that consonant will not have the power to prevent Imālah in the Alif. In these cases Imālah is caused by a Kasrah which occurs in a position preceding the Alif, either before or after the elevated consonant.

In this context Sibawayh presents an interesting argument for these cases of Imālah. He states that when an elevated consonant is produced the (body of the) tongue is in an elevated position, following which speakers move their tongues towards a lower position, then explains that moving from an elevated place of articulation towards a lower place is easier for speakers than the other way round (ibid.) . Perhaps he might have wanted to say that going downhill is easier than going uphill. According to the above mentioned rule the following examples illustrate Imālah of the Alif in this context:

6.2.3.5.1 ĆiCa:C

The Alif is realized with Imālah when a preceding elevated consonant is followed by a Kasrah and another consonant, i.e. - ĆiCa:C -

e.g.(a):	/ ǧi'qa:f /	→	[ǧi'qe:f]	(feeble ones)
(b):	/ ŝi'qa:b /	→	[ŝi'qe:b]	(difficulties)
(c):	/ di'wa:l /	→	[di'we:l]	(long ones)
(d):	/ ŝi'fa:f /	→	[ŝi'fe:f]	(rows)
(e):	/ Gi'ba:b /	→	[Gi'be:b]	(domes)
(f):	/ Xi'ba:θ /	→	[Xi'be:θ]	(mischievous ones)
(g):	/ Bi'la:b /	→	[Bi'le:b]	(competing)

Sibawayh comments that in case the elevated consonant is not followed by a Kasrah, the Alif will be realized without Imālah, as in:

(h): / Gāwa:'im / (lower limbs), (ibid.).

6.2.3.5.2 — ĆiCCa:C —

The same thing in 6.2.3.5.1 above takes place in case there were

two consonants in the intervening environment, i.e. - ĠiCCa:C - as in the following example:

e.g.(a): / Gis'ma:n / → [Gis'me:n] (two parts)

Sibawayh refers to Imālah in a Fathah that occurs in the same position of Alif, as in:

e.g.(b): / 'Gisman / → ['Gismen] (a part)

6.2.3.5.3 — CiĠCa:C —

An elevated consonant which occurs as the first element in a consonant cluster intervening between a Kasrah and an Alif does not prevent Imālah in the latter which is to be caused by the former, as in the construct CiĠCa:C .

Sibawayh explains that the elevated consonant in this context is a Sākin, implying that it is a phonologically weak element unable to prevent Imālah. He adds that if the second element in the cluster is a non-elevated consonant, i.e. [+ munkhafid̄], the elevated consonant will have the status of a Maksūr Ci (op.cit., p.131).

He seems to imply that after the Alif undergoes Imālah in this context, the intervening consonant cluster will be flanked by somehow similar vowels, the first of which having sufficient power to influence the second one and modify its phonetic value in a way which makes it partially assimilate to the place of articulation of the first one, i.e.: /- iĠCa: -/ → [- iĠCe: -] . Sibawayh's statements might lead to the conclusion that Imālah becomes a [- low] feature that characterizes the whole utterance.

e.g.(a): / miĠla:t / → [miĠle:t] (frying pan)

(b): / miṣ̣ba:ḥ / → [miṣ̣be:ḥ] (a lamp) and so on.

Then Sibawayh realizes that in the same examples above the context may present an alternative rule which precludes Imālah in the Alif. He states that the elevated consonant in the cluster is a Sākin, followed by another consonant and an Alif, which will give it the status of a Maftūḥ Ca, which enables it to block the influence of the preceding Kasrah on the Alif. Accordingly it will be just as correct to realize / miṣ̣ba:ḥ / in (b) above without Imālah (ibid.).

Sibawayh is clearly stating two contradictory phonological rules, one gives the elevated consonant in this context the status of a Maksūr Ci the other gives it the status of a Maftūḥ Ca . According to the first rule this consonant will allow Imālah, yet it will prevent it according to the second .

It is probable that he had witnessed occurrences of Imālah and

non-Imālah in the same context and was trying to account for each case by phonological rules that operate in the same phonetic environment. What might support this conclusion is his statement that both cases are 'accepted' Arabic that follow a (grammatical) rule (ibid.). Both variants must have been considered acceptable Arabic, otherwise he would have not hesitated to consider the unacceptable variant incorrect, or '*bad Arabic*' as he usually does when he should.

6.2.4 Influence of the Rā' on Imālah

Two sections of the Book of Sibawayh are devoted to investigate the influence of the trill consonant Rā' on the probability of the occurrence of Imālah in the realization of the Alif and the Fathah.

Sibawayh begins the discussion by explaining the manner of articulation of the trill [r], emphasizing the effect of the repeated taps made by the tongue on the alveolar ridge when producing it. When a Rā' is produced, he states, it will be 'like' producing a number of successive identical segments (op.cit., p.136). When it is followed by a vowel, it will have the status of two CV units (ibid.).

A non-final Rā' in Arabic is not as long as a rolled Scottish one. Two taps of the tongue are sufficient (Gairdner, 1925, p.21). Therefore it can be assumed that a Rā' in Arabic is the outcome of a small number of flap segments [ɾ] with very short vowel-like sounds in between them. According to Sibawayh the nature of the vowel which follows the trill consonant influences the whole syllable and a Rā' followed by a short vowel will become like two flap kind of Rā' followed by that short vowel. Following this interpretation the sequence rV will seem like and have the status of ɾɾV.

The purpose of Sibawayh's concept of assigning to the Rā' in this context the status of two segments seems to interpret the manner in which it affects the phonetic environment that determines the probability of realizing the Alif or the Fathah with or without Imālah. In the following sub-sections these relationships will be investigated according to the distribution of the interacting elements in the environment.

6.2.4.1 — ra: —

It has been shown that the Alif undergoes Imālah under the influence of a neighbouring Kasrah, as in / ɕima:d / and / 'qa:lim / (cf. 6.2.1.1). But if the consonant immediately preceding the Alif

is a Rā' it will prevent the Imālah of that Alif, as in / fira:š / (bed) and / 'ra:šid / (a proper noun).

Sibawayh explains that a Rā' followed by Alif has the status of two r units, which invests it with the power to prevent Imālah in the Alif, and attributes this outcome to the tendency towards ease of articulation (ibid.). He claims that some speakers realize the Alif of / fira:š / with Imālah, i.e. [fire:š], on account of the preceding Kasrah, but he argues that it is better not to do so (op.cit., p.142); while he mentions nothing about any probability of Imālah in realizing / 'ra:šid /.

6.2.4.2 — a:ri — , — a:ri: —

When the combinations /- ri -/ or /- ri: -/ immediately follow an Alif, the Rā' will supplement the influence of the following Kasrah or Yā' on the preceding Alif, causing it to be realized with Imālah even when the combination is adjacent to an elevated consonant.

e.g.(a): / 'Ga:rib / → ['Ge:rib] (boat)

Sibawayh explains that the initial elevated consonant would preclude any Imālah in the Alif adjacent to it if the consonant next to it was not the Rā' (op.cit., p.136), as in:

e.g.(b): / 'Ga:qid / → idem (cf. 2.3.1)

He states that in this context the Rā' 'overpowers' the elevated consonant on account of its repetitive manner of articulation (ibid.). Besides that, in consideration of the distribution of the elements in this context in which the elevated Qāf occupies a position preceding that of the Kasrah, he uses the same argument about moving from a high tongue position to a lower tongue position to account for this case of Imālah (cf. 6.2.3.5).

If the combination /- ri -/ or /- ri: -/ is preceded by Alif and followed by an elevated consonant the Alif will be realized without Imālah.

e.g.(c): / 'ṭa:riG / → idem

(d): / mafa:ri:G / → idem

When the elevated consonant Qāf (in (c) & (d) above) occurred in a position following that of the Alif, it exercised a stronger influence on the phonetic value of the Alif, overriding the influence of the combinations /- ri -/ and /- ri: -/.

In the three examples above the outcome indicates that elements which occur after the Alif in the construct acquire more phonological strength to influence its value than when they occur before it. The

elevated consonant immediately preceding the Alif was overpowered by the combination /- ri -/ immediately following the Alif. When that consonant changes its position and occurs after the Alif, even if it is in a final position in the construct, it seems to gain additional power, sufficient to influence the preceding Alif in spite of the intervening /- ri -/ combination. Changes in the phonetic outcome brought about by differences in the phonetic environment in these examples give indications about the relationships between positional strength and inherent strength factors of phonological elements. The results of these changes could be seen as cases of remote regressive assimilation.

Word boundaries can also be a factor which affects the strength of elements in their capacity to influence other elements. In a context similar to e.g.(c) above the strength of an elevated consonant is reduced if it occurs across word boundaries. In the example (e) / ħima:ri 'Ga:sim / (Qāsim's donkey) the Alif in / ħima:r / is realized with or without Imālah.

The fact that a short vowel in final position is an inflexional marker which changes with case makes this vowel less strong than a non-final vowel which does not change with case. In e.g.(e) above the probability of Imālah in the Alif of / ħima:ri / alternates between realization under the influence of the final /- ri -/ combination and non-Imālah under the influence of the initial /G/ of /'Ga:sim / which occurs across word boundaries. Therefore word boundaries and the variable inflexional vowel combine to weaken the phonological inherent strength of /- ri -/ in influencing the adjacent Alif and to allow the following segment Ġ to exercise some influence on the outcome.

Sibawayh realizes this fact and compares this case of Imālah with a higher probability of Imālah when the influencing Kasrah occupies a non-final position in the construct.

e.g.(f): / 'ʔa:miri 'Ga:sim / → [ʔe:miri 'Ga:sim]

If the same view is applied to the former case of e.g.(e) above it will probably explain the reason for realizing this utterance with Imālah in the Alif of the first word, and possibly in that of the second word too, to produce it as [ħime:ri 'Ge:sim]. It is also possible that the presence of the Qāf in the second word would prevent Imālah in its Alif, overriding the influence of the Kasrah that follows in the same word.

6.2.4.3 — a ri —

The Fathah undergoes Imālah under the influence of an immediately following /- ri -/ combination, irrespective of the preceding elements in the construct.

- e.g.(a): /'ṣibari / → [ʕiḃeri] (smallness)
 (b): /'kibari / → [kiberi] (largeness)
 (c): /'baçari / → [baçeri] (dung)
 (d): /'fuGari / → [ʕuGeru] (poverty)
 (e): / min çamri / → [min ʕemri] (from Amr)

In the last example above the consonant /m/ intervenes between the Alif and the combination /- ri -/ but does not impede the influence of the latter to modify the phonetic value of the Alif. Sibawayh explains that the Mīm in this context is a Sākin letter (op.cit., p.142).

In the above examples Sibawayh looks at Imālah as taking place in the consonant (cf. 6.2 above).

6.2.4.4 — a:rri —

When the Alif is immediately followed by the combination /- rri -/ it will be realized with Imālah.

- e.g.(a): / fa:rrin / → [ʕe:rrin] (a fugitive)

Sibawayh explains that the Sākin Rā' adjacent to the Alif cannot impede the influence of the Kasrah (of the combination - rri -) on the Alif. Besides being weak, he adds, it is homorganic with the other segment in that combination (identical in this case) which makes it similar to Mutaharrik Rā' (op.cit., p.140).

In fact the form /'fa:rrin / is a reflex of */fa:ririn /. The Kasrah after the first Rā' is elided because successive identical syllables are mostly avoided in Arabic, like the forms:

- * /'ra:did / → / ra:dd / (coming back)
 * /'ja:did / → / ja:dd / (serious person)

According to this view the Alif undergoes Imālah in similar cases under the influence of the underlying Kasrah irrespective of the type of the inflexional final vowel, unless the geminate consonant is a Rā', in which case only the final combination /- rri -/ will cause Imālah in the preceding Alif.

e.g.(b): / ra:dd / → [re:ddin] , [ʕe:ddun] , [ʕe:ddan]
 compared with / fa:rr / → [ʕe:rrin] , [ʕa:rrun] & [ʕa:rran]
 (cf. 6.2.2 above about the influence of underlying Yā' and Kasrah on the Alif).

6.2.4.5 — a:CirV —

When the combination /- rV -/ occurs close to the end of the construct, separated from a preceding Alif by a Ci syllable, the /- rV -/ combination loses its power to influence the preceding Alif, which will be realized with Imālah in this context.

- e.g.(a): /'ka:firun / → ['ke:firun] (infidel)
 (b): /'ka:firu:n / → ['ke:firu:n | (infidels)

Sibawayh explains that the Rā' in this context is too remote from the Alif, so it has no influence on such an Alif, which will undergo Imālah under the influence of a nearer Kasrah (op.cit. , p.137).

He makes an interesting observation in this context by pointing to a phonetic similarity between the Rā' and the Yā'. He states that the Rā' is homorganic with the Lām and 'close' to the Yā', on the evidence that a lisping person realizes the Rā' as a Yā' (ibid.). It can be concluded that he is implying that these consonants share one phonetic property of being 'liquids'. He uses this argument in explaining that the Kasrah possesses the power to influence the preceding Alif, in the above two examples:

"...as if the Rā' was not there..." (ibid.).

6.2.5 Imālah of Velar Vowels

The term Imālah is also used by Sibawayh to refer to a phonetic process by which the velar vowels Wāw /u:/ and Ḍammah /u/ undergo a certain degree of fronting in certain contexts. This modification in the phonetic values of these vowels takes place when one of them occurs in the proximity of a Yā' or a Kasrah, or under the influence of an underlying Kasrah in the construct.

Only few lines are devoted by Sibawayh to investigate this phonetic process and just as few examples are presented by him.

It is not easy to determine the exact amount of change in the phonetic values of these vowels in this context; but Sibawayh explains that the Wāw does not undergo 'full' Imālah, but:

"...you act as if you intend a Kasrah..." (op.cit., p.143).

It is rather given the 'colour' of the Kasrah, he explains (op.cit., pp.118-119). These observations suggest that the extent of change in the phonetic values of the velar vowels in this context is rather limited to a small amount of fronting, possibly in the region between /u/ and /ɤ/. For convenience the symbols [ɤ] and [ɤ:] will

be used to represent the phonetic values of the allophonic variants of /u/ and /u:/ respectively.

- e.g.(a): / maḏ'qu:rin / → [maḏ'q̣u:rin] (scared)
(b): / 'munGuri / → ['munG̣uri] (a watering place)
(c): / 'rudda / → ['ṛudda] (was turned back)

In e.g.(c) above the surface form / 'rudda / is a reflex of an underlying form / rudida / whose underlying Kasrah was the cause of phonetically modifying the Ḍammah of the surface form above.

Sibawayh states that the Wāw resists the degree of Imālah which the Alif accepts under the same circumstances because the Wāw "is not similar to the Yā'" (as the Alif is to the Yā'). The term 'Shabah' (similarity) which he uses is rather ambiguous here, and he offers no further explanation (op.cit., p.143).

Probably he is suggesting that the Alif and Yā' are more similar in terms of articulatory criteria. The implication of this concept is evident in the larger amount of influence exercised by the palatal vowels on the pharyngeal vowels in comparison with what they have on the velar vowels, the results of which being more extensive modifications in the phonetic values of the open vowels in a larger number of context than is the case with the velar vowels.

6.2.6 Non-Analogous Imālah

The Alif is sometimes realized with Imālah in context devoid of any phonetic environment that could cause it. Sibawayh describes these cases of Imālah as non-analogous and irregular (op.cit., p.127).

The Alif in the form / ḥajja:j / is realized with Imālah if the form is used as a proper noun for a person. Sibawayh explains that speakers did that as this form occurs too frequently in their speech. They produced it with Imālah because Imālah itself is very frequent in their speech, he comments (op.cit., p.127). Then he adds that most Arab speakers realize it without Imālah if it is used as an adjective. Therefore, there are two reasons for Imālah in this form, frequency of occurrence in speech and the part of speech it belongs to.

Phonetically, a noun and an adjective are the same in Arabic. Why then should a form be realized differently if it is a noun? Not only adjectives are distinguishable from nouns in this respect. Particles too are distinguishable from nouns. The particle forms

/ḥatta: / (even, until... etc.), /ʔilla: / (unless) and similar other particles are realized without Imālah. Sibawayh quotes Farāhīdī that if these forms were used as proper nouns for persons it would be possible to realize them with Imālah (op.cit., p.135). These forms occur in Arabic more frequently as particles than as nouns. Therefore, it is probable that nouns accept Imālah more readily than other parts of speech because of their high status in the strength hierarchy of the language, as suggested by Sibawayh (cf. Chapter Two). Being so strong seems to make them the medium that reflects the current tendency in language, which is Imālah in this case. Sibawayh attributes the probability of Imālah in nouns to their status as nouns as well as to the dominant tendency of realizing Alif, with Imālah in the form of Arabic predominant in his time.

6.3 TAFKHIM

The term Tafkhīm, derived from the root form 'Fakhm' (grand), is used by Sibawayh in reference to an allophone of the long vowel Alif, which he considers one of the 'derived acceptable letters' (cf. 2.3.5.3 above). This variant of the Alif, he states, is found in a limited number of lexical items, as in /ṣala:t / (prayers), / zāka:t / (levied tax) and / ḥaya:t / (life). He also attributes this variant of the Alif to the dialect of Ḥijāz in realizing these lexical items (vol.4, p.432)*. No other segment of Arabic is described by Sibawayh to be mufakḥam. Another lexical item is found in the Qur'ān with the same kind of Alif. / miška:t / (recess in a wall for a lamp).

Other than mentioning that this variant of the Alif is found in the Arabic dialect of Ḥijāz, no indication is given by Sibawayh about its phonetic value.

It is probable that the phonetic value of this variant of the

* Some modern linguists use the terms Tafkhīm and Mufakḥam as a cover term for the four velarized consonants of Arabic /ṣ, ḍ, ḏ & Ḑ/ and the three uvulars /q, X & ʕ/ , (Jakobson, 1957; Vilencik, 1931, Gairdner, 1935 ; Cantineau, etc.). Gairdner (op.cit., p.107) includes a velarized Lām among the mufakḥamah consonants.

Alif is somewhere between Cardinal vowels No.6 ɔ and No.7 o. *

Significantly, the Alif in the four lexical items mentioned above is represented in the orthography by the character of the Wāw (و) in the Qur'ānic script which could be an indication that the Arabs of Ḥijāz used to produce these Alifs consistently with Tafkhīm.

It could also be an indication that this Alif is a development of an older Wāw in these forms which underwent a lowering process that produced the [o:] of Ḥijāz and ultimately became the open Alif [a:] attested in / ṣāla:t / of Eastern Arabic. The Hebrew form / ṣiloh / (cf. Weingreen, 1959), equivalent to Arabic / ṣāla:t / might support this hypothesis.

In the course of investigating the influence of the seven elevated consonants on Imālah, Sibawayh mentions that these consonants prevent Imālah of the Alif because they are elevated towards the velum (cf. 6.2.3). Then he adds that because of this articulatory feature they are able to influence the Alif when it occurs in their proximity, just as the Kasrah did to the Alif (vol.4, p.129). He mentions that just as these consonants are elevated, the Alif too will be elevated when it occurs in their proximity. This is an explicit reference to the change in the place of articulation of the Alif when it is realized with Tafkhīm. This change in the place of articulation, raising the Alif in the direction of the velum, makes it somehow easier to estimate the phonetic value of the 'mufaxxamah' Alif. Once more he attributes this assimilatory change in the phonetic value of the Alif to the tendency to achieve ease of articulation.

This allophonic variant of the Alif is not described by Sibawayh as an Alif of Tafkhīm, as he described that of [ṣālo:t] above, but it can be concluded that, after it experiences this adaptive change, it will assimilate a certain degree of the feature [+ musta'li].

It is attested in many modern dialects of Arabic that the phonetic value of the Alif is modified when it occurs in the proximity of [+ musta'li] consonants as in the dialects of 'Āna in Iraq and Tripoli in Lebanon, producing / 'Xa:lid / as [Xo:lid].

* For convenience the phonetic symbol o will be used in this study to stand for the phonetic value of this allophonic variant of the pharyngeal vowels.

Gairdner (1925, pp.46 ff.) reports this phenomenon in Egyptian Arabic. Cantineau, (quoted by Jakobson, 1957, p.169) observed that the /a/ is pronounced "...entre a et. o ouvert..." when it is in contact with pharyngealized dentals; and when it is in contact with velars it oscillates between the two positions, as he witnessed in the Arabic dialects of El-Ḥamma in Syria (Cantineau, 1951, pp.78 ff.).

6.4 VOWEL HARMONY.

Arabic shows a limited tendency towards vowel harmony. This seems to be in accord with the general tendency of avoiding the repetition of identical elements, whether they are segments or syllables. I shall attempt to account for the assimilatory processes which lead to vowel harmony.

Sibawayh does not devote a special section in his Book to investigate this phonetic phenomenon but he refers to it in different places, whenever he comes across it in the course of investigating other linguistic problems. Perhaps the limited occurrence of vowel harmony in Arabic is one of the reasons for giving such a limited space in his Book to account for it.

The Arabic term equivalent to vowel harmony is *Itbā'*, equivalent to (to make follow). This term appears for the first time in the Book of Sibawayh (vol. 4, p.113).

Vowel harmony in Arabic takes place mainly among short vowels. In a few cases it involves long vowels as well. It can occur within the word or across word boundaries.

6.4.1 In Imperative Verb Forms

Sibawayh states that in some dialects of Arabic speakers introduce a short vowel into a syllable, similar to that of a preceding syllable (vol.3, p.532). The examples he cites are all verb forms in the imperative where they usually have no short vowel in final position.

- e.g.(a): / rudd / → / ruddu / (turn back)
 (b): / ?aḥibb / → / ?aḥibbi / (love)
 (c): / ʧaḡḡ / → / ʧaḡḡa / (bite)

This additional final vowel also harmonizes with the preceding vowel in connected speech .

- e.g.(d): / rudd / + / na: / → / 'rudduna: / (turn us back)

e.g.(e): / ʕaʕʕ / + / na: / → / 'ʕaʕʕana: / (bite us)

In present day Fuṣṣḥā Arabic, this kind of vowel harmony is not attested. It must have been limited to some local variants of Sibawayh's time Arabic. The examples he cites are not from the Qur'ān, and he plainly states that this vowel harmony is attested in the speech of 'some' Arabs.

When these imperative verb forms are suffixed by a personal pronoun as an object, which has a Hā' /h/ initially, the process of assimilation which produces vowel harmony will operate in the opposite direction, (i.e. progressive assimilation):

e.g.(f) / rudd / + / ha: / → / 'ruddaha: / (turn her back)

(g) / rudd / + / hu / → / 'rudduhu / (turn him back)

Sibawayh relates that he asked Farāhīdī about the reasons for this kind of vowel harmony and got the answer that the Hā' of the suffixed personal pronoun is a weak consonant and the vowel following it was able to influence the quality of the short vowel to be introduced between the verb form and the Hā'. He states that / 'ruddaha: / sounds similar to / 'rudda: / (ibid.).

It is noticed that all the examples cited by Sibawayh to illustrate this kind of vowel harmony involve verb forms with a geminate final consonant. He mentions nothing about other verb forms in the imperative where the final consonant is not geminated like / 'ʔuktub / (write). Evidently he says nothing about these cases because no harmonizing short vowel is introduced.

e.g.(h): / 'ʔuktub / + / ha: / → / ʔuktubha: / (write it)

6.4.2 In Other Forms

In some dialects of Arabic vowel harmony takes place as an outcome of regressive assimilation by which the short vowel of an initial syllable is changed. Sibawayh states that in these cases a short vowel is made to follow another short vowel (vol.4, p.109).

e.g.(a): / muʕi:n / → / miʕi:n / (assistant)

(b): / baʕi:r / → / biʕi:r / (camel)

A medial syllable whose vowel is different from those of the syllables before and after it is also changed to harmonize with the others.

e.g.(c): / ʔunbiʔuka / → / ʔunbuʔuka / (I inform you)

Sibawayh, mentions in other place of the Book another example of vowel harmony on which he comments that the Fathah of an initial

syllable is changed into a Kasrah when that lexical item is made plural by introducing a geminate Yā' to it in final position as in:

e.g.(d): / 'çasa: / (a stick) → / çisiyy / (sticks)

He describes this change as 'good Arabic' (op.cit., p.385).

A clear case of vowel harmony takes place within some lexical items in which a medial vowel changes to harmonize with a changing inflexional short vowel.

e.g.(e): / 'ʔimruʔun / (a gent) in the nominative
→ / 'ʔimraʔan / in the accusative
→ / 'ʔimriʔin / in the dative

Sibawayh comments on this case of vowel harmony saying that speakers made the preceding vowel follow the succeeding one (vol.3, p.533).

6 .4.3 In the Personal Pronoun hu

The short vowel /u/ of the personal pronoun /hu/ (it, him) and its plural forms / hum / for the masculine and /hunna / for the feminine undergoes vowel harmony if the final vowel of the morpheme it is attached to is a Kasrah /i/ or a Yā' /i:/

e.g.(a): / fi: / + / hu / → / 'fi:hi / (inside it)
(b): / bi / + / hu / → / 'bihi / (in it, with it)
(c): / fi: / + / hum / → / 'fi:him / (inside them, m.)
(d): / fi: / + / hunna / → / fi:hinna / (inside them, f.)

When the preceding morpheme does not end in a Yā' or a Kasrah, no vowel harmony takes place.

e.g.(e): / 'maça / + / hu / → / 'maçahu / (with it)
(f): / 'ʔabu: / + / hu / → / ʔabu:hu / (his father)
(g): / min / + / hu / → / 'minhu / (from him)

Sibawayh explains that the cases of vowel harmony above are results of assimilation which can be compared with Imālah, stating that the Hā' of /hu/ is a weak element, just like the Yā' is, and changing the short vowel which follows it is done for ease of articulation, to execute similar articulatory actions (vol.4, p.195).

Then he adds that speakers in Ḥijāz produce the form in e.g.(b) above as / 'bihu: / (ibid.).

The form / hum / is produced with an inflexional short vowel in connected speech. In the nominative it is produced as / 'humu /. In this case, Sibawayh states, some speakers produce it as / 'bihumu /, others as / 'bihimu /. In the two forms above there is a limited

vowel harmony in either variant of the form.

Sibawayh seems to recognize that there are limits to the occurrence of vowel harmony in Arabic. He mentions that some speakers from the tribes of Rabi'ah produce / min / + / hum / as /'minhim /. He rejects this form and describes it as 'bad Arabic' (op.cit., p.196). He explains that when an element intervenes between the Kasrah and the Hā' (the /n/ in this case) the original vowel which follows the Hā' should be kept.

When the personal pronoun has no Hā', like / kum / (your) vowel harmony is only witnessed in what Sibawayh describes as very bad language as in:

e.g.(h): / bi / + / kum / → ['bikim] (with you)

In spite of his disapproval of this production, he also attributes it to the tendency towards ease of articulation.

6.5 SUMMARY

6.5.1 Sibawayh investigates most of the cases of assimilation in the vowels of Arabic under the heading of Imālah which mainly refers to modifications in the phonetic values of the pharyngeal vowels of Arabic under the influence of the palatal vowels and the semi-vowel Yā'.

He presents a thorough investigation of all contexts in which this phonetic process takes place and the probability of its occurrence. The following rule may be considered to capture the generalization pertaining to these processes:

$$\begin{bmatrix} V \\ + \text{ low} \\ - \text{ back} \\ - \text{ front} \end{bmatrix} \rightarrow \begin{bmatrix} V \\ - \text{ low} \\ - \text{ high} \\ + \text{ front} \end{bmatrix} / \begin{bmatrix} - & CiC_0 \\ CiC_0 & - \\ Cy & - \end{bmatrix}$$

6.5.2 Sibawayh also uses the term Imālah to refer to fronting velar vowels of Arabic in the neighbourhood of palatal vowels:

$$\begin{bmatrix} V \\ + \text{ back} \end{bmatrix} \rightarrow \begin{bmatrix} V \\ - \text{ back} \\ - \text{ front} \end{bmatrix} / \text{---} \begin{bmatrix} C_0 \left(\begin{matrix} V \\ + \text{ front} \end{matrix} \right) \end{bmatrix}$$

6.5.3 The open vowels are modified in a different manner in the proximity of one of the seven consonants classified [+ musta'li]. In this context the Alif assimilates this phonetic feature and will have the phonetic value [o:]. The same variant of the Alif is realized in a limited number of lexical items, most probably

reflecting an underlying Wāw. Sibawayh terms this process 'Tafkhīm'. In the neighbourhood of the seven [+ musta'li] consonants the process is represented by the following rule:

$$a: \longrightarrow o: / \left[\begin{array}{c} \hat{c} \quad \text{---} \\ \text{---} \quad \hat{c} \end{array} \right]$$

or

$$\left[\begin{array}{c} v \\ + \text{ low} \\ - \text{ back} \end{array} \right] \longrightarrow \left[\begin{array}{c} v \\ - \text{ high} \\ - \text{ low} \\ + \text{ back} \end{array} \right] / \text{---} \left[\begin{array}{c} \hat{c} \\ + \text{ musta'li} \end{array} \right]$$

6.5.4 Vowel harmony is applied to a limited extent in Arabic. It is mainly confined to few cases which involve modifying the vowel of suffixed pronoun markers, as well as isolated cases in other forms.

6.5.5 The presence of certain phonological elements in the environment may either have a reinforcing effect on vowel modification or a suppressing effect. The trill consonant Rā' seems to produce either effect, depending on the type of vowel that follows it. If that vowel is a Yā' or a Kasrah its effect in introducing Imālah in the Alif will be reinforced if preceded by a Rā', and vice versa.

6.5.6 Besides introducing Tafkhīm in a neighbouring Alif the seven [+ musta'li] consonants may block Imālah in the Alif by counteracting the influence of an environment that may otherwise introduce Imālah in it.

6.5.7 Word boundaries may also act as a weakening factor on the environment. It seems that an influencing element loses some of its phonological strength on a neighbouring vowel if word boundaries intervene between the two.

CONCLUSION: A GENERAL ASSESSMENT

7.1 THE SOUND SYSTEM OF ARABIC

By the time the first attempt was made to study Arabic grammar the sound system of the language was considered to be adequately represented by its alphabetical system. This system comprised twenty-eight letters that represented the consonantal units (including the two glides Wāw and Yā'). None of the units of the Alphabet stood for a vowel sound . When the need was felt to have the vowels represented in writing symbols were invented, but only for the short vowels, by al-Du'alī (cf. 1.3). Two of the long vowels the /u:/ and /i:/ presented no problem because they (and their semi-vowel correlates /w/ and /y/) were represented by the Wāw and Yā' respectively. Only the long vowel /a:/ remained in need of a consistent method to represent it in writing. In some cases it was represented by the character of the Hamzah (ʾ).

Farāhīdī is credited with solving this discrepancy by inventing a special symbol for the Hamzah, leaving the character of Alif to stand for the long vowel /a:/. However he did not seem to worry much about the other two long vowels of Arabic, assuming that the two characters Wāw and Yā' were adequate enough to stand for both long vowels and semi-vowels. Thus the 29th unit was added to the Alphabet .

Sibawayh not only followed his tutor's steps but went much farther. His description of the sound system of Arabic went beyond the limited scope of alphabetical system. He realized that the units of the Alphabet do not represent all the sound segments observed in speech. He noticed that some speech sounds were phonetically different in certain context from the canonical sounds the units of the Alphabet stood for. So he adopted the concept that a Ḥarf is basically a speech sound of a particular phonetic value. Accordingly he named a list of 'derived' letters which made the total number of speech sounds 'forty two letters' (cf. 2.3.1).

The following remarks are my comments on his description of the sound system of Arabic.

7.1.1 The Vowels

While Sibawayh accepted the duality of representing a semi-vowel

and a pure vowel by the same alphabetical unit he took sufficient care to emphasize the phonetic distinction between the two classes of sound. Although he described the two glides as possessing 'some degree of vocalicity' he is certainly aware of the differences in their phonetic properties (cf. 3.2 above). For him these differences are manifested in the impossibility of realizing Idghām between a pure vowel and a semi-vowel (cf. 4.3.3 above). Another matter is that, unlike a semi-vowel, a long vowel cannot be followed by a short vowel (cf. 2.4.2.1). Besides these accurate observations he is guilty of the unfelicitous view that every long vowel in Arabic is preceded by its short vowel counterpart. In spite of being a misconception this remark indicates that he recognizes the phonemic contrast between short vowels and long vowels. Accepting the possibility of two homorganic vowel segments occurring side by side can only establish their identity as two separate phonemes.

"...Deux sons...ne peuvent être considérés comme des variants d'un même phonème si dans la langue en question ils peuvent se trouver l'un à côté de l'autre..."

(Troubetskoy, *Principes*, 1949, p.52).

7.1.2 The Consonants

So far as the consonants are concerned the Alphabet of Arabic represents a one to one correspondence between the letters and the phonemes of the language. Sibawayh's addition of further thirteen 'additional' letters to the 'original' twenty nine is based on his realization that certain sounds observed in speech are contextually conditioned variants of the 'original' sounds. Accordingly he considered the conditioned variants as *Furū'* (branches, derivations) of the original ones.

This system of classifying the speech sounds of Arabic into original and derived sounds, based on the criterion that the latter are only phonetically conditioned variants of sounds, is parallel to the modern view of the phoneme and its allophonic variants. Therefore, Sibawayh seems to have prefigured modern theories about the concept of the phoneme.

7.2 STRUCTURAL UNITS OF ARABIC

Sibawayh's theory on the phonology of Arabic is based on the concept of the Ḥarf as the structural unit in the language. For him the Ḥarf is a unit that occurs in two forms: Sākin and Mutaharrik. In the following sections I shall attempt to evaluate the application of this concept and present my own views about the matter.

7.2.1 Mutaharrik and Sākin

For Sibawayh the term Mutaharrik denotes a consonant followed by a short vowel, i.e. CV. He describes it as the minimum pronounceable utterance in Arabic. Unlike the other type of letter, the 'Sākin', this definition of the Mutaharrik does not pose any problem, as will be seen below.

A Sākin, for Sibawayh, is any segment not followed by a short vowel. According to this view this Sākin letter is not only a (C) unit, as should be the case, but a long vowel (V̄) too is considered a Sākin. Presumably he seems to have based this unfelicitous consideration on the fact that a long vowel cannot be followed by a short vowel; which is in fact quite right. But this view creates a problem in the sense that in constructs like / na:s / (people) and / maka:n / (place) two Sākins occur side by side in connected speech and three Sākins in pause. These occurrences do not agree with his often stated rule that two Sākins do not occur side by side (cf.

2.4.2 above). To avoid the consequences of this situation he presumed (as did all the succeeding Arab grammarians) the occurrence of a homorganic short vowel immediately preceding every long vowel in Arabic, (i.e. * -V̄-). He refers, for example, to a Fathah /a/ preceding the Alif /a:/ in the form / Ga'fa: / (which he presumes to be / *Ga'faa: /) and claims that when this form is rendered in the plural its Alif is deleted and the plural marker Wāw and Nūn is suffixed immediately after the remaining Fathah (vol.3, p.390).

/ Ga'fa: / → / Ga'fawn /

This mistaken view had persisted for a long time and probably only a limited number of linguists have felt the need to refute this misconception. What is required to redress the situation is a reform of the theory by a refutation of the view that a long vowel is a Sākin element. Instead, I propose the following view:

It should be established that pure vowels, in contrast with consonants, are a distinct class of phonological elements,

to which the concept of *Sākin* and *Mutaḥarrrik* does not apply. They are themselves the segments that render a *Sākin* letter *Mutaḥarrrik* when one of them (a short or a long one) follows it. That means a *Mutaḥarrrik* letter could be in one of the two forms CV or $\bar{C}\bar{V}$. For this purpose vowels could be classified into two sub-classes: 'Short Ḥarakah' / a, i, u / and 'Long Ḥarakah' / a:, i:, u: /.

Following this view only the consonants of Arabic (including the two glides /w/ and /y/) could occur as either *Sākin* or *Mutaḥarrrik*.

7.2.2 Syllabic Structure

It has been argued that the modern concept of the syllable was partly known to Sibawayh in his concept of a *Mutaḥarrrik* as CV. Yet he deserves to be credited with recognizing its structural characteristics, its composition in terms of two contrasting elements of consonant and vowel, and defining the central role of the vowel in its structure. This view of Sibawayh prefigures similar modern views, like Hooper's definition of the syllable as:

"...the smallest phonological unit that may be multisegmental (i.e. the smallest pronounceable unit)..." (Hooper, 1976, p.189).

Sibawayh makes repeated references throughout the Book to a number of constraints that operate on the structure of Arabic, according to which the number of syllable types will be limited to only three. These syllables are either a *Mutaḥarrrik* letter, i.e. CV (and $\bar{C}\bar{V}$ according to my view) or a combination of a *Sākin* and a *Mutaḥarrrik*, i.e. CVC (and $^*C\bar{V}$ according to Sibawayh's view).

7.2.2.1 Free Syllables

The three types of syllables CV, $\bar{C}\bar{V}$ and CVC could occur in any position in the construct, initially, medially or finally. Any one of them could also constitute a word by its own. Accordingly it could be convenient to call this type of syllables 'Free Syllables'. This type may also be classified into two sub-types, short syllable CV and long syllable CVC or $\bar{C}\bar{V}$. The two long sub-types have the same quantity value in Arabic verse metre.

7.2.2.2 Contextual Syllables

Three other types of syllables can be recognized in Arabic, viz $\bar{C}\bar{V}C$, $\bar{C}\bar{V}CC$ and $C\bar{V}CC$.

(a) The type $\bar{C}\bar{V}C$ could occur initially in the form, as in /*Xa:ṣṣun*/ (special) and /*maddah*/ (matter); or medially when a prefix is added

to the form: / ʔal'ma:ddah / (the matter). In these forms the final consonant of this syllable is immediately followed by an identical consonant in the next syllable (i.e. $C_1\bar{V}C_2C_2$ —or $C_1\bar{V}C_2C_2VC_3$ →). In fact the combination — C_2C_2 — in these forms is a reflex of an underlying — C_2VC_2 — combination (i.e. $C_1\bar{V}C_2VC_2$ —& $C_1\bar{V}C_2VC_2VC_3$ —respectively). The reason for eliding the short vowel that intervened between the two C_2 consonants was to realize Idghām as a means of achieving ease of articulation (cf. 4.2.1 above). Therefore, the syllable type $C_1\bar{V}C_2$ could be considered a modified reflex of $C_1\bar{V}C_2V$ sequence when it is followed by C_2V ; or by $C_2\emptyset$ in pause (cf. (b) below).

i.e. $C_1\bar{V}C_2VC_2$ — → $C_1\bar{V}C_2\emptyset C_2$ — → $C_1\bar{V}C_2C_2$ —

This type of syllable does not occur in a $C_1\bar{V}C_2C_3$ sequence.

(b) The syllable type $C\bar{V}CC$ only occurs in pause, when a final vowel is elided, as in / Xa:ṣṣ / and / ḡa:ll / (a strayer).

i.e. $C_1\bar{V}C_2C_2V$ → $C_1\bar{V}C_2C_2\emptyset$ → $C_1\bar{V}C_2C_2$

Therefore this type can only occur when pausing on forms that have the structure $C\bar{V}CCV$.

(c) The syllable type $CVCC$ occurs only in pause, as an outcome of eliding the final short vowel of a $CVCCV$ construct:

e.g. / 'kuntu / → / kunt / (I was)
 $CVCCV$ → $CVCC\emptyset$ → $CVCC$

7.3 PHONOLOGICAL ELEMENTS HIERARCHY

Sibawayh adopted Farāhīdī's concept of classifying the phonological units of Arabic into Ṣaḥīḥ and Mu'tall. These two terms have the implication of 'strong' and 'weak' respectively. Sibawayh, however, did not confine the concept of strength to these two classes of phonological elements only. He applied it more extensively to other aspects of Arabic phonology.

7.3.1 Sibawayh's View of Strength

(a) Sibawayh suggests that the noun is stronger than the verb, believing the noun to be the basic root form that refers to tangible objects while the verb is a form derived to describe actions of the noun (vol.2, p.12). The verb in turn is considered by him to be stronger than the particle.

(b) Within the structure of root forms of Arabic he states that a radical element is stronger in initial position, less strong in a medial position and least strong, or weakest, in a final position.

This hypothesis may offer some explanation of the phonological rule of Arabic that elides the final short vowel in pause and the tendency to elide the short vowel of the penultimate syllable in some trisyllabic forms; but not that of the initial syllable.

(c) According to the phonological rule of Arabic that a Sākin (i.e. C) cannot occur in syllable initial position (cf. 2.4.2) nor as an isolate (cf. 2.4.3), it can then only occur in syllable final position. Therefore a combination of a Mutaḥarrrik letter and a Sākin letter can only occur in the sequence CV + C (i.e. CVC form).

In this respect Sibawayh states that a Mutaḥarrrik is 'strong' and a Sākin is 'weak' to the extent that he describes it as 'dead' (vol.4, pp.119 & 134).

This early statement of Sibawayh anticipates similar modern views in linguistics, like Hooper's (1976, p.199) conclusion that:

"...a great deal of evidence indicate that syllable initial position is universally stronger than syllable final position..."

(also cf. Vennemann, 1972 c, p.109 & 1972 d, p.9).

(d) Sibawayh puts into application this principle of relative positional strength of phonological elements in his treatment of assimilation. His fundamental rule states that in Idghām a preceding element tends to become similar to or identical with (i.e. assimilates to) a following element in a combination (cf. 4.2.1) . This principle also predates similar views of modern linguistics concerning the behaviour of neighbouring segments in assimilation. Hooper(op.cit., p.200) suggests that assimilation is found to occur more readily at the end of the syllable than at the beginning. Vennemann (1972 d, p.15) supports this conclusion explaining that assimilation in syllable final position is entirely natural because assimilation is a weakening process.

Sibawayh does not explicitly express his view of assimilation as a weakening process as such. He basically looks at it as a means of achieving ease of articulation. In cases of Idghām where two identical consonants are involved it is performed by eliding the short vowel of the first of a sequence of two Mutaḥarrrik letters bringing the two consonants into contiguity and realizing them as a geminate.

i.e. - CVCV - → - CØCV - → - CCV -
 e.g.(a): /'madada / → /'madØda / → /'madda /

e.g.(b); / ʔal'ma:lu 'laka / → / ʔal'mal∅ 'laka /
 → / ʔal'ma:l 'laka / (the property
 is yours).

Vowel elision, as a step in the process of Idghām, implies rendering a Mutaharrik letter into a Sākin (i.e. CV → C∅ → C). According to Sibawayh's view above that a Sākin is weak and a Mutaharrik is strong it may be the case that Idghām can be considered as a process of weakening, being in line with Vennemann's view above.

7.3.2 A Proposed Scale of Strength Hierarchy

No study is available at the present time that offers a comprehensive strength hierarchy of the phonological elements of Arabic.

I feel motivated to propose a possible scale of hierarchy of these elements. It will be based on observations made by Sibawayh and on my own conclusions drawn on the material presented in this study. The proposed scale of strength hierarchy could only be claimed as a tentative outline. The presented facts will be based on three factors that help to construct such a scale. These are: Sound changes, processes of assimilation and cases of elision.

It is possible that such a study would help explain a good deal of linguistic phenomena observed in modern Arabic, especially the diverse variation in phonology that characterises modern variants of colloquial Arabic. If the proposed results prove to be acceptable it will be one step in the field of synchronic linguistic studies about Arabic.

7.3.2.1 Sound Changes

Sound changes can offer clues to relative strength of phonological elements by means of which a system of strength ranking can be justified (cf. Hooper, 1976, p.203). The following sound changes in the consonants of Arabic have been discussed in this study, most of which are weakening changes:

(a) The uvular voiced plosive Qāf /G/ changed into a voiceless [q], a velar [g] and subsequently got affricated into a [j]. It even spirantized into a [ʃ] (cf. 3.4.1).

(b) The velar plosive /k/ is affricated in some dialects as a [č] in the neighbourhood of palatal vowels (cf. 3.4.2).

(c) The Semitic plosive /g/ was affricated in Arabic to a [j], and further weakened in some regional dialects to a fricative [ž] or to

a glide [y] (cf. 3.3.4).

(d) The controversial Ḍād /Ḍ/ either changed into an interdental [Ḍ̣] (which incidentally is described by Sibawayh as the 'weak' Ḍād (vol.4, p.432)) or into the alveolar plosive [Ḍ] (cf. 3.4.4).

(e) The old form of Ṭā' /Ṭ/ changed into a voiceless [ṭ] in modern Arabic (cf. 3.4.5).

(f) The glottal stop Hamzah, discussed in Chapter Five above, has shown a great propensity to change its phonetic value in certain contexts, all of which involved weakening processes. It either changed into a spirant [ħ], a glide [y] or [w], a pure long vowel \bar{V} or was totally elided.

(g) The consonantal system of Arabic includes six consonants which are not found in the old consonantal systems of most other Semitic languages like Hebrew, Syriac and Aramaic all of which comprise only twenty two consonants (Gelb, 1952, p.137). A close look at the six consonants peculiar to Arabic will indicate that five of them are weakened forms of other consonants common to all Semitic languages. The four Rikhw consonants /θ, ḏ, ḏ̣, ḅ/ can be considered as weakened variants of the four Shadīd consonants /t, ḏ, d, ḡ/ respectively. The uvular fricative /X/ can also be considered a weaker shade of the pharyngeal /ħ/* . Only the Ḍād /Ḍ/ has no Shadīd counterpart in the system. It stands as a unique speech sound of Arabic.

Sibawayh's binary classification of the phonetic features of Arabic phonology suggests that some of these features are based on a concept of relative strength. Besides the two classes Ṣaḥīḥ and Mu'tal discussed in (7.3. above), the classification of consonants into Shadīd (tight) and Rikhw (loose) has a clear implication of 'strength' and 'weakness' respectively. His subsequent comprehensive

* Pre-Islamic and early Islamic orthography of Arabic used the same characters for each of the five pairs of consonants above. When Arabic linguistic studies flourished after Islam dots were added to some characters to differentiate between members of every pair. A dot was used with the characters of the four 'weak' consonants Dhāl Dhā' Ghayn and Khā'. Three dots were used for the Thā' in contradiction with two dots for the Tā'. The exception seems to be the relation between the Ḍād and its non-dotted partner the Ṣād. The phonetic relation between them does not seem similar to that between members of each of the other five pairs.

treatment of assimilation is very much based on this aspect of his phonological theory.

7.3.2.2 Assimilation

Processes of assimilation offer many clues to the relative strength of the segments according to their phonetic features. A good example of these processes are cases of progressive assimilation in which the outcome is a result of the conflict between the positional strength of the segments and their inherent strength. Some of these examples are cases of assimilation in which the feature of Iṭbāq is almost always preserved in the outcome if one of the segments involved is a velarized consonant. These cases indicate that this feature is phonologically strong in Arabic. Among thirty one cases of progressive assimilation investigated seventeen of them involve velarization (cf.4.7.2 above). Sibawayh is well aware of this fact as he states that when one of the two segments involved in assimilation is a [+ muṭbaq] the outcome will always be realized with Iṭbāq(vol.4:481).

e.g.(a): /'muṣṭabir / → ['muṣṭabir] (behaving patiently)
Similarly the feature of voicing is progressively assimilated in five cases out of thirty one.

e.g.(b): /'muztajir / → ['muzdajir] (reprimanding)

According to the two examples above some cases of assimilation are processes of strengthening in which a phonetic feature could be phonologically stronger than the positional strength of another element in the utterance.

Processes of assimilation in the vowels of Arabic also provide a clue to their relative phonological strength. The investigation presented in Chapter Six of the adaptive changes that take place in the phonetic values of the vowels revealed that these changes follow a regular pattern. The pharyngeal vowels Alif /a:/ and Faṭḥah /a/ partially assimilate to the places of articulation of other vowels in certain phonetic environments. The velar vowels Wāw /u:/ and Ḍammah /u/ also tend to be fronted in the neighbourhood of front vowels. On the other hand close vowels show no tendency to assimilate to the place of articulation of the open vowels; nor the front vowels to the back vowels.

If these cases of assimilation can be considered processes of weakening it can be concluded that, in Arabic, the pharyngeal vowels are the strongest, the velar vowels less strong and the palatal vowels

least strong. These conclusions are in accordance with the universal scale of phonological strength suggested by Hooper (1976), (cf. Venemann & Ladefoged, 1973, pp.61-74).

Sibawayh does not talk in matters of phonological strength in his investigation of the vowels of Arabic in context. Instead he talks in matters of ease of articulation of these vowels. He considers the open vowels the easiest to articulate, the front vowels less easy, and the back vowels least easy, (vol.4, pp.119 & 167). This classification seems to be phonetically based, since the tongue is least involved in producing the open vowels, more involved in producing the front vowels and both the tongue and the lips are involved in producing the back rounded vowels.

According to this view ease of articulation in *Imālah* and *Tafkhīm* is achieved by means of reducing the amount of contrast between neighbouring vowels in the utterance, and could be considered as partial vowel harmony.

7.3.2.3 Elision

Processes of elision too may be taken as indications of phonological strength of segments. Some cases of elision take place within word structure, other cases affect parts of phrases which are more current in speech.

(a) In triliteral root forms of Arabic the vowel of the penultimate syllable is subject to elision if it is a high vowel *Kasrah* or *Dammah*, but not if it is the low vowel *Fathah*.

- e.g.(a): / 'çaḡudu/ → / 'çaḡd / (arm)
 (b): / 'faXiḡu/ → / faXḡ / (thigh)
 (c): / jamalu/ → idem (camel)

Following the assumption that weaker elements are more subject to elision it can be concluded that low vowels are stronger than high vowels.

(b) Phrases that occur more frequently in speech tend to be reduced and elided, evidently for economy of effort. The phrase word [ʔe:š] or [ʔays̄] appeared in Arabic speech as early as the second century of Hijrah (eight century A.D.) as a reduced form of the interrogative phrase / 'ʔayyu 'šayʔin / (what ?), (Al-Akhfash). This form is further reduced in some modern colloquial Arabics into [ʔeš] or just [š].

A previous study done by the writer of this work (Nassir, 1980) investigated elision and reduction in a number of interrogative phrases.

It was found out that the reconstructed phrase / 'ʔayyu 'šayʔin 'huwa / (what is it?) is realized in different reduced forms in a number of colloquial Arabics. In Muṣil, in Northern Iraq, it is realized as ['ʔašnu:], in rural Southern Iraq it is ['šinhu:], in Baghdādī Arabic it is ['šinu:], in parts of Algeria it is [šnu:] and in Damascus it is reduced to [šu:] or [šu]. If it is possible to predict the chronological order of elision in these interrogative forms it will help to establish the relative phonological strength of elements if we presume that elision occurs preferentially to weak elements.

The less elided forms ['ʔašnu:] and ['šinhu:] above appear to be older than the other forms on the basis that fewer elements are elided from the complete reconstructed form above. The first form retains the initial glottal stop /ʔ/ and the second one retains the glottal fricative /h/ of the final word / huwa /. It might be difficult to determine which one of the two forms is older, but it might be safe to presume that each belongs to a different dialectal variant of Arabic. It has been mentioned that Ḥijāzī Arabic tended to elide the Hamzah, unlike the Nejdī Arabic. Then it is likely that the Muṣilian form ['ʔašnu:] is identified with Nejdī Arabic, while the other form ['šinhu:] has an affinity with Ḥijāzī Arabic. The Baghdādī form [šinu:] might be a development of the latter form by eliding the final Hā'. The Algerian form [šnu:] also seems to be a product of this variant. In addition to that the loss of the vowel of the initial syllable is most probably a result of a shift in stress to the final syllable of the form. The Damascene form [šu] is left with the least number of elements that might constitute a pronounceable utterance.

According to the processes of elision investigated above it seems that the sibilant Shīn /š/ enjoys the highest phonological strength among the other elements of this phrase. The nasal Nūn /n/ appears to be ranked next to the Shīn, followed by the glottal stop /ʔ/, the glottal fricative Hā' /h/, then the glides /w & y/ ; and finally the vowels.

7.3.2.4 Summary

On the basis of the observations presented above the following preliminary scale of strength might be set up to establish a tentative

scale of strength relationships of phonological elements:

- (a) In root forms: initial element > medial element > final element
- (b) Syllable initial position > syllable final position
- (c) Mutaharrik > Sākin
- (d) Ṣaḥīḥ > Mu'tal
- (e) Shadīd > Rikhw
- (f) Majhūr > Mahmūs
- (g) Open vowel > Close vowel
- (i) Muṭbaq > Munfatih
- (h) Back vowel > Front vowel
- (j) Mutafashī > non-Mutafashī

7.4 PSYCHOLINGUISTICS

Cathy Wheeler (1980, p.52) remarks that:

"...a growing number of phonologists have become concerned with the problem of psychological reality of phonology in the past decade..."

This remark brings to mind the numerous observations which suggest that Sibawayh was trying to interpret speech events in the light of postulated mental processes.

How far is it possible to identify Sibawayh's method with claims made by modern psycholinguistics? Was he trying to interpret linguistic performance on the basis of mental organization of linguistic knowledge obtained by speakers? There is ample evidence in the Book suggesting that he was trying to account for facts about Arabic in the same way he believed speakers were trying to account for them according to the grammar they have internalized.

7.4.1 Sibawayh ascribes to speakers of Arabic, on whose performance he bases his observations, the mental knowledge of linguistic relationships and phonological rules. This can be found in many of his explanations of phonological processes. The following two examples are illustrative of his many statements in this respect, presented by me with some rephrasing and expansion for clarity.

- (a) *"...To derive the form /'muṣṭabir / from /'ṣabara / they produced ['muṣṭabir]. They wanted to achieve ease of articulation in producing the two juxtaposed letters Ṣād /ṣ/ and Tā' /t/ by means of Idghām. Knowing that the Muṭbaq Ṣād does not allow itself to be dominated by a Munfatih (non-velarized) non-strident Tā' (cf. 4.5.4.1 above), they replaced the latter by Ṭā' /ṭ/ which has one similarity with the Ṣād (i.e. velarized) in order to execute similar*

articulatory actions. They knew that Idghām (i.e. complete assimilation) was not permissible. Other speakers still wanted to realize Idghām in the outcome – ṣṭ – . Realizing that the Ṣād resists to be dominated by the Tā', they allowed the former to dominate the latter and produced [ˈmuṣṣabir] (by progressive assimilation)." (vol.4, p.467).

- (b) "...The same case (as in 'a' above) applies when the first segment in the cluster is Dhā' /ð/ in /ˈmuðtalim/ (complaining). To perform Idghām in the cluster – ðt – they knew that Itbāq should be preserved. Therefore, treating the Dhā' as they did the Ṣād (in 'a' above), they 'replaced' the Tā' by its Muṭbaq allophone ṭ to achieve ease of articulation. They realized that it was not permissible to produce a Muṭbaq and a Munfatiḥ side by side. They behaved as if they would hate to deprive the Dhā' of its feature of Itbāq, had they performed Idghām (which implies complete regressive assimilation), (op.cit., p.468).

(for more similar examples cf. vol.4, pp. 469, 470, 477, 478, 480, etc.).

Sibawayh interprets the tendency of the speakers to behave in a way that opposes the general rule of Idghām by remarking that:

"...They find it unfair to allow a Munfatiḥ letter to dominate a Muṭbaq one..." (op.cit., p.460).

The same principle is applied when he explains why the Ḍād /ḍ/ cannot be dominated by any of sibilants /ṣ, s, z/ on account of the higher phonological strength he assigns to the 'Mutafashshī' Ḍād (op.cit., p.466).

The mode of argumentation he uses in describing these processes might be taken as an indication that he was trying to probe the mental activities of his model speakers of Arabic. He seems to be tracing the steps taken by speakers in transforming underlying forms into possible surface forms; concluding that speakers follow certain ordered rules of which they have mental knowledge. Some of these rules pertain to common well attested processes like regressive assimilation. Others are rules peculiar to their own language by which they should abide despite the conflict with the general rules mentioned above. Sibawayh could have merely pointed to the processes concerned and explained the rules for them. Instead he goes farther and

tries to account for the outcome by attempting to explain the mental steps he believes speakers go through. He begins by mentioning the expected outcome according to the general tendencies in phonology, then he superimposes phonological rules peculiar to Arabic on the whole process and concludes by presenting the realized outcome as a logical result influenced by speakers' knowledge of the phonology of their language.

7.4.2 Sibawayh also seems aware of the fact that neuro-muscular limitations in articulatory phonetics are responsible for certain phonological processes. He states that speakers found it difficult to utter a sequence of identical syllables, and expresses his belief that this phenomenon is responsible for some phonetic facts in Arabic (e.g. forms like /'radada / are produced as /'radda /). He explains that in such cases they found it difficult or uncomfortable:

"...to use their tongues in one place twice in succession."

(op.cit., p.417).

He explains that they would prefer to have a 'time interval' between the two elements. To avoid this situation, he adds, they elided the intervening vowel and produced a geminate of the now contiguous identical consonants (ibid.).

7.4.3 As a linguist Sibawayh seems to be trying to adopt a causal concept for predicting and explaining the facts of linguistic performance by making references to the mental events, processes and capacities of speakers. Through this conception of what is tantamount to linguistic competence, Sibawayh clearly emerges as a theorist of the mental operations that underlie speech. These conclusions could be inferred from his argument which attempts to account for linguistic competence of a model speaker of Arabic. His hypothesis is that performance is a result of certain ordered rules that operate on the segments in any phonetic environment. Once more we find Sibawayh an anticipator of modern views in linguistics; who advocates the principle of making linguistic hypotheses on mental facts. By interpreting phonological processes on grounds of mentally conceived rules he seems to prefigure Wheeler's commentary that states:

"...It is precisely the task of psychological phonology to find out whether speakers have internalized a rule at all for a given pattern, and if so, to discover what its form

is, not to assume that these things are already known..." (p.73).

7.4.4 It cannot be ascertained whether Sibawayh's predications about the mental operations he was trying to describe were based on experiments carried out by him, or mere impressionistic conclusions. It does not seem likely, however, that at that very early stage of Arabic studies scholars of linguistics were in a position to conduct psycholinguistic techniques to validate their hypotheses. Neither does Sibawayh refer or mention any such experiments.

If this interpretation is to prove valid he should indeed be given credit for being a pioneer in psycholinguistic speculations.

7.5 SOCIOLINGUISTICS

In this section I shall try to discuss the way Sibawayh examines the phonology of dialectal variants of Arabic and his concept of language as a form of social behaviour.

7.5.1 It is evident that Sibawayh was mainly concerned with the High form of Arabic. This preoccupation with the High form is understandable on account of the prestigious position this form occupies in Arabic culture, being the language of the Qur'ān. His examination of the variations in the phonology of Arabic is limited to differences he observed within regional or communal variants of this form of the language. All the examples he cites to illustrate different phonological relationships are borrowed from what he considers 'acceptable Arabic', like Qur'ānic verses, lines of Arabic poetry or utterances of speakers 'whose Arabic is trusted', (vol.4, p.128). We also notice that the High form of Arabic which is the subject of his study is not confined to any single regional variant. This form of Arabic is not presented by him as a language of a uniform grammar. A certain degree of variation in phonology is considered acceptable within the limits of what he seems to consider the model literary form of Arabic.

Nowhere does he refer to what might be considered a colloquial form of the language. The only indication of the existence of such forms is found in the chapter in which he describes a number of allophonic variants of consonants as 'unfavoured' and do not occur in the language of those whose Arabic is acceptable, nor are favoured in reciting the Qur'ān or poetry (op.cit., p.432), (cf. 2.3.6). The Qur'ān and the poetry are, therefore, the two criteria by which he judges the legitimacy of linguistic performance. The 'acceptable' and

'trusted' form of Arabic pronunciation, therefore, was considered as the 'received pronunciation' of early Islāmic era.

7.5.2 It is also noticed that Sibawayh, in his discussion of variation in the phonology of Arabic, recognizes two main dialectal variants. The first is that of 'Ḥijāz' in Western Arabia, and the second is what he calls 'Tamīm' dialect which broadly represents the variant prevailing among the tribes of Central and Eastern Arabia. References are also made to sub-variants within each main variant which he usually attributes to a certain tribe or tribes.

The examples he cites and his commentary on differences between them suggest that the main difference is that the Ḥijāzī dialect shows more conservatism in the extent to which it allows adaptive changes in the phonetic values of segments under the influence of the context. On the other hand the 'Tamīm' dialect seems more ready to accept these changes. In the following two examples, (a) illustrates the conservatism of Ḥijāz and (b) the absence of assimilation in that dialect.

(a) To derive the imperative form from the preterite form /'radda / (which itself is a reflex of the underlying * /'radada /), Tamīm speakers produce / rudd /, while Ḥijāzī speakers produce /'ʔurdud / (the epenthetic /ʔu-/ is to avoid the initial cluster /-rd -/ .) Sibawayh accepts both variants but comments that the Ḥijāzī form is 'the ancient good Arabic', (vol.4, p.473).

(b) To produce the phrase / hal / + / raʔayta / (did you see?) Tamīm speakers and most other Arabs produce it with assimilation [harrāʔayta]. In Ḥijāz, on the other hand, speakers produce it without assimilation /'hal raʔayta /. He comments that the second variant too is 'permissible Arabic' (op.cit. p.457).

7.5.3 Sibawayh ascribes to the community the initiation of linguistic changes. He describes processes of reduction and simplification in forms as taking place in 'their' speech. In cases when these changes are judged as 'unacceptable' he frequently mentions that it is heard from speakers whose speech is 'not trusted' or 'not acceptable' (op.cit., p.129; etc.).

The examples he cites are claimed to be elicited from 'groups' of speakers, not from individuals, as the following statement indicates:

"...we heard all that we mentioned...from the Arabs..."

(op.cit., p.143). Similar statements are found in numerous parts of his Book. A similar view of B. De Courtenay is reported in Stankiewicz (1972, p.276), rejecting the opinion that ascribes to one man the introduction of a linguistic innovation.

7.5.4 With all the importance he attaches to the formal variant of Arabic and to community-initiated linguistic changes, he accepts in an objective way certain variations that are attributed to individuals in realizing the vowels in identical contexts. The following statement, (slightly rephrased) is an example of this attitude:

"...not every one who produces the Alif with Imālah agrees with the other who does that, for each one of them might disagree with the other... any one of them might realize Alif with Imālah where the other does not...so if you find an Arab behaving this way do not consider him inconsistent, because this is the way they are..." (vol.4, p.125).

7.5.5 In more than fifty places in the Book Sibawayh states that this or that form is shortened, reduced or weakened because of its high frequency in speech. He seems to consider this factor one of the reasons of linguistic change. He states that:

"...they dare change what occurs more frequently in their speech..." (op.cit., p.111).

- e.g.(a): * / 'layisa / → / 'laysa / (a negative verb)
 (b): / ?aħ'sastu / → / ?aħastu / (I sensed)
 (c): / 'yastađi:çu / → / yasđi:çu / (he is able to)

This view of Sibawayh predates similar views in modern linguistics, like Schuchardt's theory according to which:

"...the frequency of repetition of a word determines its change and shortening..." (reported in Stankiewicz, 1972 , p.273).

APPENDIX

INDEX AND DEFINITIONS OF LINGUISTIC TERMS

- Ajwaf (adj.) / 'ʔajwaf /: Farāhīdī's description of the four 'Illah letters regarding their place of articulation (2.3.4, p.33).
- Akhfā (adj.) / 'ʔaxfa: /: A phonetic property that refers to a degree of 'mellowness', in contradistinction to 'Andā' below. (4.5.4.1, p.132).
- Andā (adj.) / 'ʔanda: /: A phonetic property that describes a degree of 'stridency' (4.5.4.1, p.132).
- Asalah (n.) / 'ʔasalah /: The tip of the tongue (2.3.4, p.32).
- Asaliyah (adj.) / ʔasaliyyah /: Consonants in the production of which the tip of the tongue is involved (2.3.4, p.31).
- Aşl (n.) / ʔaşl /: 'Origin' of a form, denoting its underlying structure (2.5.2, p.52; 3.2.2, p.65).
- Aşwāt Nāqīşah (n.) / ʔaşwa:t 'na:qīşah /: 'Incomplete sounds'; a reference to the short vowels of Arabic (3.2, p.55).
- Badal (n.) / 'badal /: 'Replacement' of a phonological element by another element, see Ibdāl (5.1, p.144).
- Ba'īd (n.) / ba'ī:d /: 'Remote'; a segment separated from another by a number of intervening elements (4.6.3, p.140).
- Bayna Bayn (n.) / 'bayna 'bayn /: 'intermediate'; allophone of the intervocalic glottal stop with the phonetic value ħ (2.3.5.2, p.37; 5.1, p.145).
- Ḍammah (n.) / 'Ḍammah /: The rounded close back (velar) short vowel of Arabic with the phonetic value u (3.2, p.55).
- Ḍhar (n.) / Ḍahr /: 'Dorsum' of the tongue as place of articulation.
- Dhalaq (n.) / 'Ḍhalaq /: The 'apex' of the tongue (2.3.4, p.31).
- Fā'il (n.) / 'fa:çil /: 'Subject'; as part of speech (1.5.2, p.13).
- Fāşilah (n.) / 'fa:şilah /: Farāhīdī's term for a quadriliteral or a quintiliteral form in Arabic (2.4.1, p.42) sub-divided:
 (a) Kubrā: a quadrisyllabic form CVCVCVCVC or CVCVCVCV̄ .
 (b) Şuġhrā: a trisyllabic form CVCVCVC or CVCVCV̄ .

- Faṭḥah (n.) / 'fathah /: The unrounded open (pharyngeal) short vowel of Arabic with the phonetic value a (3.2, p.55).
- Fi'l (n.) / fiql /: 'Verb' as part of speech (1.5.2, p.13).
- Fuṣḥā (adj.) / 'fuṣḥa: /: 'Eloquent'; a term adopted in this study to describe the form of Arabic used in 'official' contexts, or what is sometimes described as 'Literary Arabic' (1.2, p.1).
- Ghalīḍḥah (adj.) / ḡāli:ḍah /: 'Thick'; describing the Mahmūs allophone of the Qāf (3.4.1.2, p.74).
- Ghunnah (n.) / 'ḡunnah /: 'Twang'; a phonetic term equivalent to 'nasality' (3.4.9, p.93; 4.4.6.3, p.120).
- Ḥadhf (n.) / ḥaḍf /: 'Elision', 'deletion', of an element or a part of a form (3.2.2, p.64; 5.1, p.144).
- Ḥalq (n.) / ḥalq /: 'The pharynx'; as place of articulation (2.3.3, p.26; 2.3.4, p.28).
- Hams (n.) / hams /: 'Whisper'; a phonetic term, equivalent to 'voicelessness' (3.3.1, p.56).
- Hamzat al- Waṣl (n.) / 'hamzatu lwaṣli /: The linking Hamzah, i.e. the combination / ?a / used immediately before the definitive Lām to avoid consonant clusters in initial positions (4.3.1, p.109).
- Ḥarakah (n.) / ḥarakah /: 'Movement'; a short vowel in Arabic (2.4, p.40; 3.2.1.3, p.58).
- Ḥarf (n.) / ḥarf /: Most broadly a 'Letter'; used also in this study to refer to 'speech sound' (2.3, p.21); 'syllable' (2.4, p.40); and 'particle' (1.5.2, p.13).
- Hāwī (adj.) / 'ha:wi: /: 'Airy'; used by Farāhīdī to describe the articulation of the glottal stop (2.3.4, p.33); and by Sibawayh to describe the long vowel Alif (3.2, p.54).
- Ḥayyiz (n.) / 'ḥayyiz /: 'Area' or 'space' of articulation (2.3.4, p.28).
- Ibdāl (n.) / ?ibda:l /: 'Replacement' of an element by another (4.2.2, p.106).
- Idghām (n.) / ?idḡa:m /: A phonological process by which two neighbouring identical segments are made contiguous by eliding the intervening short vowel and realized as geminate (4.2.1, p.104).

- Ikhfā' (n.) / ʔiXfa:ʔ /: 'Concealing';
 (a) The manner of realizing the alveolar nasal Nūn when it immediately precedes certain consonants (4.4.6, pp. 119 ff.).
 (b) A certain degree of vowel reduction (4.2.3, p.107).
- 'Illah (n.) / 'çillah /: 'Weakness' in elements; equivalent to 'vocalicity'; used as a cover term for long vowels, glides and the glottal stop (3.2, p.55).
- Imālah (n.) / ʔima:lah /: 'Inclining'; a phonetic term that refers to: (a) raising and fronting open vowels;
 (b) fronting back vowels (2.3.5.3, p.37; 6.2, p.160).
- Inḥirāf (n.) / ʔinhira:f /: 'Deviation' or 'diversion'; equivalent to 'laterality' (2.3.4, p.31; 3.4.7, pp.90-92).
- Iqlāb (n.) / ʔiqla:b /: 'Converting' (or replacing) a segment into another, see Ibdāl above.
- Ism (n.) / ʔism /: 'Noun', as part of speech (1.4.2, p.13).
- Isti'lā' (n.) / ʔistiqla:ʔ /: 'Elevating'; a phonetic term that refers to a property that characterizes uvular and velarized consonants of Arabic; see Musta'li below (3.5.3, p.96).
- Itbā' (n.) / ʔitba:ç /: To make follow; phonetically equivalent to 'Vowel Harmony' (6.4, p.182).
- Iṭbāq (n.) / ʔiṭba:q /: 'Enclosing'; phonetically equivalent to 'Velarization' (3.5, p.94).
- I'timād (n.) / ʔiqtima:d /: 'Supporting, performing'; a term used by Sibawayh to refer to the action of producing a sound (3.3.1, p.67).
- Jahr (n.) / jahr /: 'Loudness, sonority'; phonetically equivalent to 'Voicing' in sound production (3.3.1, p.56).
- Jawf (n.) / jawf /: 'The chest cavity'; a term used by Farāhīdī to refer to the outlet of the vowels (2.3.4, p.33).
- Kasrah (n.) / 'kasrah /: The unrounded close front (palatal) short vowel of Arabic with the phonetic value i (3.2, p.55).
- Khabar (n.) / 'Xabar /: 'Predicate' as part of speech (1.5.2, p.13)
- Khafīf (adj.) / Xafi:f /: 'Light'; see 'Sabab' below.
- Khafiyah (adj.) / Xafiyyah /: 'Concealed'; a phonetic term used in

reference to the assimilative Nūn; see 'Ikhfā' above, (4.4.6, pp.119 ff.).

Khayshūm (n.) / Xayʃu:m /: The nasal cavity (2.3.4, p.32).

Kubrā (adj.) / 'kubra: /: 'Larger'; see Fāṣilah above.

Lahāt (n.) / laha:t /: The area of the velum and the uvula as place of articulation (2.3.4, p.29).

Lāḥah (n.) / 'laθθah /: The 'teeth gum' or 'alveolar ridge' as place of articulation (2.3.4, p.32).

Lāḥawiyah (adj.) / 'laθθawiyah /: Phonetically equivalent to 'Alveolar' (2.3.4, p.32).

Layyinah (adj.) / 'layyinah /: 'Soft'; a phonetic description of the vowels (3.2, p.55).

Līn (n.) / li:n /: A phonetic property of the vowels equivalent to 'Vocalicity' (3.2.1.2, p.57).

Madd (n.) / madd /: 'Length'; a phonetic property of the vowels (3.2.1.3, p.58).

Maf'ūl (n.) / maf'qu:l /: 'Object' as part of speech (1.5.2, p.13).

Maftūḥ (adj.) / maftu:h /: A consonant followed by a Fathah /a/ in Arabic; i.e. Ca (6.2.3.5.3, p.173).

Maḥdhūf (adj.) / maḥḏu:f /: 'Elided, deleted'; a form of which a radical element is deleted (2.4.4, p.46; 2.5.1, p.49).

Mahmūs (adj.) / mahmu:s /: 'Whispered'; phonetically equivalent to 'Voiceless' (3.3, pp. 66 ff.). See 'Hams' above.

Majhūr (adj.) / majhu:r /: 'Loud, sonorous'; phonetically equivalent to 'Voiced' and 'unvoiced' (3.3, pp.66 ff.).

Majmū' (adj.) / majmu:ç /: 'Collected'; a bisyllabic form; see 'Watad' below.

Maksūr (adj.) / maksu:r /: A consonant followed by a Kasrah /i/ in Arabic, i.e. Ci (6.2.3.5.3, p.173).

Manzilah (n.) / 'manzilah /: 'Status, function' of a phonological element (4.5.6.1, p.137).

Ma'qūdah (adj.) / maçqu:dah /: 'Tied'; a phonetic description of a voiceless Qāf (3.4.1.2, p.74).

- Maṣḍar (n.) / 'maṣḍar /: 'Source', 'infinitive form' (2.4.4.1,p.47)
- Mazīd (adj.) / mazi:d /: A root form to which affixes are attached (2.4.4, p.46; 2.5.1, p.49).
- Mubtada' (n.) / 'mubtada' /: 'Subject' as part of speech (1.5.2, p.13).
- Mudraj (n.). / 'mudraj /: 'Place of articulation' (2.3.4, p.28).
- Mufakham (adj.) / mufaXXam /: Made 'Grand'; a term used by Sibawayh to describe raising and backing the two open vowels of Arabic the Faṭḥah and the Alif in certain contexts (6.3, p.180; also cf. 3.5.1, pp.94 ff.).
- Mujarrad (adj.) / mujarrad /: 'Bare'; a root form containing only its radical elements (2.4.4, p.46).
- Mukarrar (adj.) / mukarrar /: 'Repeated'; phonetically equivalent to 'Trill' (3.4.8, p.92).
- Mukhraj (n.). / 'muXraj /: 'Outlet', 'Exit'; place of articulation (2.3.4, p.28).
- Munfatiḥ (adj.) / 'munfatiḥ /: 'Open'; phonetically equivalent to 'non-velarized' (3.5.1, pp.94 ff.).
- Munḥarif (adj.) / 'munḥarif /: 'Diverted'; phonetically equivalent to 'Lateral' (2.3.4, p.31; 3.4.7, pp. 90-92).
- Munkhafid (adj.) / 'munXafiḍ /: 'Non-elevated'; not having the phonetic property of 'Isti'la ' ; see Musta'li below (3.5.3, p.96).
- Mushrabah (adj.) / 'mušrabah /: An element that had acquired a quality of another element (3.6, p.97).
- Musta'li (adj.) / mustaqli: /: 'Elevated'; having the property of Isti lā' (3.5.3, p.96).
- Mutafashshī (adj.) / mutafašši:/: 'Expansive', 'spread'; a consonant whose place of articulation occupies a large area (3.7, p.101).
- Mutaḥarrik (adj.) / mutaḥarrik /: 'Moved'; a consonant followed by a short vowel in Arabic i.e. CV (2.2, p.20 ; 2.4, p.41).
- Mu'tal (adj.) / muḥtal /: 'Weak' , 'Vocalic';
- (a) A phonetic term for the vowels and the Hamzah (3.2, p.55).
- (b) A root form one of whose radical elements is a glide.

- Muṭbaq (adj.) / 'muṭbaq /: 'Enclosed', 'Velarized'; having the phonetic property of 'Iṭbaq' (3.5.1, pp.94 ff.).
- Muthannā (n.) / muṭanna: /: The dual form in Arabic(3.2.1.2,p.58).
- Nafas (n.) / 'nafas /: 'Breath'; sometimes used by Sibawayh to describe voiceless sounds (3.3.1, p.67).
- Niṭ'iyah (adj.) / niṭ'ciyyah /: A phonetic description of 'prepalatal' consonants (2.3.4, p.31).
- Palatal Vowels : The two close front vowels of Arabic, the Yā' /i:/ and the Kasrah /i/ (3.2.1.5, p.63).
- Pharyngeal Vowels : The two open vowels of Arabic, the Alif /a:/ and the Fathah /a/ (3.2.1.5, p.63).
- Qalqalah (n.) / 'qalqalah /: Energetically releasing voiced plosives of Arabic when one of them occurs finally in pause (3.4.3.1, p.79; 3.6.1, p.97).
- Qamarī (adj.) / 'qamari: /: 'Moon' letter; the fourteen [- coronal] consonants of Arabic including the two glides Yā' and Wāw (3.4.3.1, p.79).
- Quwwah (n.) / 'quwwah /: 'Strength', 'power'; used by Sibawayh to refer to phonological strength of elements (2.5.2, p.51).
- Rawm (n.) / rawm /: 'Intending'; a manner of reducing the duration of short vowels (3.2.1.4 c, p.61).
- Rikhw (adj.) / riXw / or / raXw /: 'Loose'; a phonetic term equivalent to 'Fricative'; that defines consonants articulated without making any contact between the articulators (3.4, p.72).
- Sabab (n.). / 'sabab /: Farāhīdī's term for a biliteral form in Arabic, sub-divided into:
- (a) Khafīf: a monosyllabic form CVC or CṪ
 - (b) Thaḳīl: a bisyllabic form CVCV
- (2.4.1, p.42).
- Ṣafīr (n.) / ṣafi:r /: 'Whistling'; a phonetic feature that characterizes the three sibilants of Arabic / s, s, z /; called 'Hurūf al-safīr' (4.5.4.1, p.132).
- Ṣaḥīḥ (adj.) / ṣahi:h /: 'Strong', 'Complete'; (3.2, p.54) :
- (a) A phonetic cover term for 'Consonant'.
 - (b) A root form all the elements of which are consonants.

- Sākin (n.) / 'sa:kin /: 'Not moved', 'Static'; a consonant not followed by a short vowel in Arabic (2.2, p.20; 2.4, p.41).
- Şawt (n.) / şawt /: 'Sound, phone, voice' (3.3.1, p.68).
- Shabah (n.) / 'šabah /: 'Similarity' or 'similar to' in phonetic properties (6.2.5, p.179).
- Shadīd (adj.) / šadi:d /: 'Tight'; a phonetic term that defines consonants in the articulation of which the articulators come into contact with each other, as opposed to Rikhw above (3.4, p.72).
- Shafawī (adj.) / 'šafawi: /: 'Labial' or 'bilabial'; a phonetic term describing segments in the articulation of which the lips are involved (2.3.4, p.32).
- Shajr (n.) / šajr /: The middle part of the hard palate as place of articulation (2.3.4, p.30).
- Shamsi (adj.) / 'šamsi: /: 'Sun' letter; the fourteen [+ coronal] consonants of Arabic, in contradistinction to Qamarī above (3.4.3.1, p.79).
- Shubhi Ghayr al- Mu'tal (adj.) / 'šubhi'bayrai lmuçtal /: A phonetic term equivalent to 'semi-consonant' in reference to the two glides Wāw and Yā' when one of them is followed by a short vowel (2.4.2.1, p.43; 3.2, p.54).
- Şuwayt (n.) / şuwayt /: Diminutive of 'Şawt'; a schwa-like vowel produced in pausing on voiced plosives (3.3.1, p.68; 3.6.1, p.98).
- Taḍ'īf (n.) / taḍ'qi:f /: 'To make weak'; weakening a form by eliding one of its elements (3.2.1.4 d, p.61; 5.1, p.144).
- Tafashshī (n.) / tāfašši: /: A phonetic term that describes an auditory quality of consonants on basis of their manner of articulation (3.7, p.101).
- Tafkhīm (n.) / tafxi:m /: 'to make grand'; a phonetic term equivalent to 'Velarization'; see Mufakham above (2.3.5.3, p.37; 6.3, p.181).
- Tahqīq (n.) / tahqi:q /: Full realization of a segment (5.1,p.144).
- Tajwīd (n.) / tajwi:d /: The traditional style of Qur'anic recitation (3.4.1.1, p.74).

Takhfīf (n.) / taḫfi:f /: 'To make lighter' :

(a) Eliding a short vowel in pause (3.2.1.4 a, p.61).

(b) Weakening an intervocalic glottal stop into a spirant ḥ
(5.1, p.144).

Takrīr (n.) / takri:r /: 'Repeating'; a phonetic term, equivalent to 'trilling', describes the manner of articulating the Rā' in Arabic (3.4.8, p.92).

Tanwīn (n.) / tanwi:n /: 'Noonation'; affixing a final Nūn to noun forms in Arabic as an indefinite marker (6.2.1.3, p.166).

Ṭarafayn (n.) / ṭarafayn /: 'Two outer ends'; in reference to the area in which the 'peripheral' segments are articulated.

Tashdīd (n.) / tašdi:d /: 'Gemination' of consonants (4.2.1,p.105).

Thanāyā (n.) / θāna:ya: /: The incisor teeth (4.5, p.127).

Velar Vowels: The two close back vowels of Arabic the Wāw /u:/ and Ḍammah /u/ (3.2.1.5, p.63).

Wāhin (adj.) / 'wa:hin /: 'Feeble, weak'; a phonetic description used by Sibawayh in reference to the glottal fricative Ḥā'
(5.1, p.145; 6.2.1.4, p.167).

Watad (n.) / 'watad /: Farāhīdī's term for a triliteral form, subdivided into:

(a) Majmū': 'collected', a bisyllabic form CVCVC or CVCV̄

(b) Mafrūq: 'separated', a bisyllabic form CVCCV or CV̄CV

(cf. 2.4.1, p.42).

ABBREVIATIONS USED IN REFERENCES AND WORKS CONSULTED

AH	After Hijrah
AIEO	Annals de l'Institute d'Etudes Orientales.
BSL	Bulletin de la Société Linguistique de Paris.
BSOAS	Bulletin of the School of Oriental and African Studies, University of London.
GLECS	Contes Rendus du Groupe Linguistique d'Études Chamito- Sémitiques, Paris.
JAOS	Journal of the American Oriental Society, New Haven, Conn.
JRAS	Journal of the Royal Asiatic Society of Great Britain and Ireland, London.
JSS	Journal of Semitic Studies.
LA	al-Lisān al-Arabī, Rabat.
MAM	Majallat Ādāb al-Mustansiriyyah, Baghdad.
MEJ	Middle East Journal.
MMLA	Majallat Majma' al-Lughah al-Arabiyyah, Cairo.
MUSJ	Mélanges Université Saint Joseph, Beirut.
MW	Muslim World
PICL	Proceedings of the International Congress of Linguistics.
PICPS	Proceedings of the International Congress of Phonetic Sciences
SI	Studia Islamica.
ZES	Zeitschrift für Eingeborenen-Sprachen, Berlin.

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