

# **The Morpho - Phonological and Phonetic Canonical Theory of Arabic**

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## **ABSTRACT**

This paper endeavors to introduce the major "Arabo-Islamic" thinkers in the areas of 'morpho- phonology" and "phonetics". It tries to set their works in this field in comprehensive and mature historical and scientific contexts. The present study investigates the works of some the "Arabo-Islamic" thinkers and their efforts. It starts with morpho-phonology ( ' ilm al-taṣrīf ) which is unquestionably interrelated with phonetics. They are central in terms of enduring social and intellectual influence on the overall cultural system of Classical Islam. The study is devoted to the second field that includes morphology, which defines the structure of words, phonology, which describes the variations within this structure, and phonetics, which is most often treated when studying one phonological process, germination ( ' idghaam ). It also focuses upon study of phonetics with the school of lexicology and its pioneer which studies the arrangement of sounds within the mouth and nasal cavities in a step that forms phonetically-based dictionaries. It moves to the grammarians and the phoneticians and their research of Arabic sounds; their properties, divisions into different classes or groups, the relation of sounds to meanings, etc. Remitters of the Quran have effectively participated in areas of places and manners of articulation of sounds, accuracy of pronunciation, mastering sounds in connected speech, variation in pronouncing sounds, etc.

## **0. Introduction**

The corpus of Arabic linguistics constitutes one of the major linguistics traditions in the world. Two of the central fields of this tradition are highly significant: syntax ( ' ilm al-naḥw, ' ilm al-I'raab ), and morpho-phonology ( ' ilm al-taṣrīf ) which is unquestionably interrelated with phonetics. They are central in terms of enduring social and intellectual influence on the overall cultural system of Classical Islam. The study is devoted to the second field that includes morphology, which defines the structure of words, phonology, which describes the variations within this structure, and phonetics, which is most often treated when studying one phonological process, germination

( ' idghaam ).The division between morphology and phonology is perfectly explicit in the writings of the later grammarians( Ibn-ʿUṣfur's,d.669A.H.: 400ff.).Let us look at the components of the field of the study.

### **1. Morphology**

Morphology enumerates the basic nominal and verbal structures ( binya aṣliyya ) and describes the process of derivation which make it possible to generate other forms of language. A basic structure is an arrangement of the positions of consonants and vowels linked with a grammatical "meaning", i.e. verb, past.... These positions are written F, ' , L: where F = C1, first consonant; ' = C2, second consonant; and L = C3, third consonant. The last of these may be repeated to represent a fourth and, possibly, a fifth consonant. Thus, CACC is written FA'L and CACCAC is written FA'LAL. The segments of the root ( aṣl ) take their positions in the arrangements thus defined. The root itself is a complex element comprising two sides, one phonic(three or four consonants ) and the other semantic; a semantic value common to all words which are derived from it (Carter, 1981: 50ff.)

No new words, except plurals and diminutives, can be regularly derived from the basic nominal structures ( ten triconsonantal: FA'L, FI'L, FU'L, FA'AL, FA'IL, FA'UL, FI'AL, FI'IL, FU'UL, FU'AL; six quadriconsonantal: FA'LAL, FI'LIL, FU'LUL, FI'LAL, FI'ALL, FU'LAL; and four pentaconsonantal: FA'ALLAL, FI'LALL,FA'LALIL, FU'ALLIL). Hence, once their inventory is closed, they have been fully dealt with and we turn to the basic verbal forms, ( three triconsonantal: FA'ALA, FA'ILA and FA'ULA; and one quadriconsonantal: FA'LALA ) which are the source of numerous morphological processes.

A controversial question concerns the way in which the association between the root and these basic verbal structures is affected. The prevailing opinion is that the association between the two is brought by means of a nominal form ( the maṣdar ) which, by expressing a process without linking it to a given time is conceptually simpler than the verbal form, which is intrinsically linked with time, and constitutes the initial stage of all derivational processes (Ibid.).

#### **1.1 Verbal Morphology**

The basic structures, which assume the form of the third person masculine of perfective verbs, e.g. "ḍaraba", are involved in two types of processes: without augment and with augment. The first corresponds to what is traditionally inflectional morphology, and the second to the morphology of derivation and composition (Mubaarak,1974: 125ff.) . Consider these two types below:

1.derivation "without augment" does not modify the basic consonantal structure and makes it possible to derive the verbal form of the imperfect and of the imperative, by prefixation and modification of the vocalic structure, as in:

-kataba(perfect) → yaktubu (imperfect) → uktub (imperative)

-fataḥa (perfect) → yaftaḥu (imperfect) → iftaḥ (imperative)

2.derivation "with augment" modifies the consonantal pattern of the basic structure, by affixation or doubling, to give an augmented form, from which one can thereafter form an imperfect and an imperative. This modification is correlated with the expression of a grammatical "meaning" (Ibid.). Hence, for example, in the augmented verbal form (ʿafʿala), the adding of the prefix ( ʿa ) brings about a modification of the properties of the verb, since the verb ( ḍahaba , i.e. he has left ) acquires transitivity through this prefix: ʿḍahaba, i.e. he caused to depart ).

### 1.2 Derived Nominal Morphology

Participles and their intensive forms, adjectives, nouns of time, place, and instrument, and comparatives are derived from the imperfect with which they have a relationship which is formal (they share the same structure, CVCCVC: yafʿal, mafʿal, mafʿil, ʿafʿal ... ) and/or semantic (ibid. : 200f.). The explanation of the derivational scheme can be shown when applied to the intensity adjective (ʿakuwl, meaning- 'guzzler').

It is to be observed, in the first stage, that the root (its phonetic and semantic aspect) combines with the meaning (maʿnaa II) of the process and forms of the maṣdar. The addition of tense (past) is effected in the basic verbal structure FAʿALA. By derivation without augment the imperfect is obtained, then, by nominal morphology, one obtains the participle FAʿʿ IL which expresses (the being of the subject) and its intensive form FAʿUWL. The central idea being that every element in the chain of derivation cumulates the "grammatical meanings" of those which precede it and adds another one. This is how the relationships which exist between the "binya-s", basic and derived, which can be found in the language are expressed; certain morphological or syntactic properties of the derived forms being deducible from their antecedents. The plural and the diminutive can be derived from the basic or derived nominal forms. These two processes are often the source of very complex phonological processes (Ibid.).

In addition, "taṣriif" is the procedure of recognition which makes it possible link all words in language to one of the structures defined or produced by morphology. It consists of assigning a pattern "wazn" to every word except particles. The "wazn" is itself written by means of the symbols FʿL and the augments are produced as they are. Thus, for a word like "istaqraḍa, meaning-to borrow", this procedure allows us to assign to it the wazn "istafʿala", the perfect

of an augmented verbal form, which is the same as saying that "ista-" has been recognized as an augment, *q* as C1 (=F), *r* as C2 (=') and *ḍ* as C3 (=L).

## **2. Phonology**

It is stated above that each phonetic form is assigned to a structure, basic or derived or augmented. It is necessary now to explain the discrepancies which exist between these structures and some of their phonetic realizations: for example, the form "qa'la" which is [qaala], i.e. he said. The procedure of recognition enables to detect the wazn "fa'ala", linking to the basic structure FA'ALA ([verb], [perfect]), and permits the identification of its root-segments: QWL. Thus, its phonetic form should be "qawala". The function of the second part of the "taṣriif" is precisely to explain this gap between the representation at the end of the application of the identification procedure and the form actually pronounced (lafẓ). Such explanation is always conceived in synchronic, not diachronic, system that links the primary-form "aṣl" to the occurring form ( Ibn-Jinni, d. 392A.H., Munṣif, I: 190 ).

To illustrate more, Ibn Ya'iish argues about the primary form of the verb "qaala". As stated above, this verb includes a "w" as second root-segment, but how is it possible to justify referring it to the basic structure FA'ALA rather than to FA'ILA or FA'ULA? Since the imperfect of "qaala" is "yaquulu", which has "yaqwulu" as its subjacent representation, it is impossible to advocate that "qaala" goes back to the basic structure FA'ILA, for the verbs with basic structure FA'ILA form their perfect in "yaf'alu", apart from a few exceptions which do not enter into the argument. In an attempt to deal with the exceptional vague data, Ibn Ya'iish explains them in the following terms (Ibn Ya'iish, d.643A.H., Sharḥ al-Muluuki: 52) :

The first part of his argument is clear: all FA'ULA are intransitive; now, the verbs analysed are transitive, therefore they cannot be assigned to FA'ULA. The second part of the argument shows that, from all transitive verbs, we can indeed form what is called "ism al-faa'il", whereas from an intransitive verb an adjective "ṣifa mushabbaha" can be derived which most often has the form "fa'iil". Since it is an active participle which is derived from "qaala" and not an adjective, it is impossible for its primary form to be FA'ULA.

In this regard, rules are formulated which describe the passage from the initial representation to the pronounced representation. This formulation naturally includes precise phonetic contexts and morphological data which can be in the notation F'L. There is a natural tendency behind these rules which is supposed to be shown through the linguistic behavior of ancient Arabs, the only speakers considered to be reliable informants, the lightness (xiffa) according to which "a" is lighter than "i", which is in turn lighter than "u", etc. This is a gradation which agrees with the sonority scale of modern phoneticians. Such

rules are applied to avoid the "heavy" sequences, which would have offended the linguistic sensitivity of ancient Arabs, which was characterized by a tendency towards general balance and harmony (Ibid.). There are several kinds of the phonological processes which facilitate this tendency. They are described in the following sections.

### 2.1 Substitution ( *badal* )

It is noted that all the phenomena of consonantal assimilation come under this heading (Ibn-Jinni, d. 392A.H., Muluuki:289). There are specific criteria which make it possible to decide which allophone figures in the primary form. They are:

#### 1-morphological parity

One considers all the terms derived from the same root and, if one observes in one segmental position a segment which does not appear in the other terms, one concludes that it has been substituted for the one which appears in the other terms. For example: "tawajjaha" ('turn one's face towards'), "muwaajaha" ('to face'), "wagiih" ('possessing a beautiful face') and "ujuuh" ('faces'), all derived from "wajh" ('face'). In the " F " position (first-root segment) there is always a "w", except in "ujuuh", where there is a " ' ": we can conclude that the primary segment is the " w ", that the " ' " is the substituted segment, and that the primary form of this term is "wujuw" (al-Astaraabaadii, Shaafiya, III: 197).

#### 2-the lack of peer

It can be seen that substitution has occurred because, if it were not said that the segment in question has been substituted for another, that would imply the existence of a structure which is unknown elsewhere. For example, if we do not say that the "h" of "hara''qa" [haraaqa] ('to pour') has been for a " ' ", that the " ṭ " of "iṣṭabara" ('to be patient') has been substituted for a "t", like the first of the two "d's" in "idda''raka" [iddaaraka] ('to reach and seize one another'), we are led to suppose the existence of the structures "haf 'ala", "ifta'ala", and "iffa''ala" which are unknown elsewhere (al-Astaraabaadii, Shaafiya, III: 198-9).

The phonetic reason for the substitution in the case presented above is the requirement for harmony, which constitutes the ultimate reason for the application of the rule of substitution, was a part of the ancient speakers of the language.

### 2.2 Erasure ( *ḥadf* )

This process applies particularly to verbs with an initial "w" which, when their perfect is of the FA 'ALA class, lose this "w" in the imperfect, for example "waṣala/yaṣilu"('to arrive'), but keep it in the other cases, for example "waji'a/yawja'u"('to feel a pain') and "wafura/yawfuru"('to be abundant'). For the Arabic grammar, the rule must therefore be formulated in a precise enough way so that it only erases the "w's" of the first class, but they have also to find an

explanation for the fact that it does not apply in a very similar context, that is in the FA'ULA (Ibn-Jinni, in Ibn Ya'iish, d.643A.H., Sharḥ al-Muluuki: 333). The erasure of the "w" is attributed to the heaviness of the sequence in question. But if the cause of dropping the "w" is linked with its constituting a heavy sequence, how is it that in the imperfects of the FA'ULA class, like "waṭu'a/yawṭu'u", the "w" is retained? Given the heaviness scale, a "yXwXu" sequence should be heavier than a "yXwXi" sequence. This objection has been the subject of long debate. It was made clear by Ibn-Jinni himself to his teacher, Abu Ali, who replied that the stability of the FA'ULA class prevented the rule being applied. As for Ibn-'Uṣfur's (Mumti': 428ff.), he argues laboriously to demonstrate that the sequence "yXwXu" would be, in spite of appearances, lighter than the other. The justification for this rule has raised many other objections and was an important point in the controversy between the Baṣra and Kufa 'schools'.

### 2.3 Mutation (qalb)

This process explains the transformations which affect the glides in accordance with their vowel context, hence: "y" is substituted for "w" when the latter is preceded by "i", not followed by a vowel and not geminated (Ibn Ya'iish, d.643A.H., Sharḥ al-Muluuki: 220).

It should be remembered that for the Arabic grammar, there are three glides: the "w", the "y", and the "ʾ", which corresponds respectively to "u, i, and a". We will study in detail the argumentation of the Arabic grammar in respect of the intervocalic glide, for example in forms like "qaala" and "raama", the primary forms of which are "qawala" and "ramaya".

Mutation can apply to the "w" and "y" of the second radical in the verbs of each class and to the "w" and "y" of the third radical in nouns and verbs. It is therefore, a process whose field of application is very wide (Ibid.). The phonetic context is therefore very precise:

$$\{ w ; y \} \rightarrow \text{ʾ} / a \_ V$$

One can be sure that the sequence of four similar elements will not arise again; indeed, to be unable to be followed by a vowel is, for the Arabic grammar, one of the distinctive properties of the "alif".

However, this justification, to which is due the application of the rule, is hardly sound and that is why its field is limited to the "ʾ" and the L of words, and that is also why the rule is subject to numerous conditions. The first condition is that the vowel which follows the "w" or the "y" should be supplied by the base and not be of epenthetic origin. The second condition is that the application of the mutation process should not give rise to an ambiguous form; thus in the dual, in "qaḍaya" for example, the rule is not applied, because its application would give rise to the appearance of "qaḍa" [qaḍaa] and the form of the dual would lead to confusion with the singular form. The third condition

is that if the word is a noun it should resemble the verbal form; so the rule is not applied to "nazawa''n" and "ghalaya''n", for a verbal base in FA'ALA''N does not exist.

If we return to the primary form "qawala" and apply the rule to it, as it has been formulated, we have to ask another question: if the "w" becomes "''", that gives rise to "qa''ala"; now, the spoken form being "qa''la" [qaala], how is the disappearance of the "a" affected?(ibid.: 225).It is therefore necessary to add all those elements to the formulation of the rule:

V  
↓  
{ w / y } → '' / a \_ Ø / pattern identical to the verbal patterns

The appearance of the forms "qa''la" [qaala] and "ba''a" [baa'a] will therefore be explained in the following way:

Primary form ( aʕl ): qawala ramaya

Analysis: "awa" and "aya" constitute sequences which are rejected by the linguistic intuition of the speakers of the language.

Weakening of the glide by erasing the vowel, which gives:

qawØla ramayØ

Changing of the glide to "alif": qa''la rama''

As for the "alif", which is, as we said previously, the low homorganic glide of "a", it is distinguished from the two others "w, y" by certain properties: it is never followed by vowels; it can never be situated at the beginning of a word; it cannot be pronounced in isolation but must necessarily be realized after an "a", which is only vowel after which it can occur; it cannot be geminated; it is not a part of basic structures, either in nouns or in verbs.

At any rate, it allows the Arabic grammarians to treat what we call the long vowels in a unified way. For them, the "aa" of "qaala", like the "uu" of "yaquulu" and the "ii" of "yabii'u" are composed of two elements: a vowel (ḥaraka) and a consonantal segment (ḥarf), which allows perfect isomorphy between the sequences CVV and CVC (Carter, 1983: 31ff.) .

## 2.4 Transfer (naql)

This is a metathesis glide/vowel in certain verbal radicals and in those which present an identical structure: "yaqwulu → yaquwlu". Studying the "naql" will allow us to state precisely once more what the formulation of a phonological process is.

The facts treated here pose a problem both as regards the application of the rules and the justification by having recourse to the linguistic intuition of the ancient speakers of the language. In the simplest cases it seems to be, as we have said before, a phenomenon of metathesis which none of the Arab grammars which are at all consistent has failed to include. As the imperfect of the FA'ALA verb always has the structure "yaCCVC", say "yaf'ulu" for example, we assume

under a "qiyaas" that "qawama" has "yaqwumu" for the primary form of the imperfect, and we will have seen that the passage from "yaqwumu" to "yaquwmu" [yaquumu] has been effected by means of metathesis. But why must the sequence "Cwu" be transformed into "Cuw", when it is commonly found in the language, for example in "dalwun" ('bucket'), and in "ḡabyun" ('gazelle')? Al-Astaraabaadii says expressly (Shaafiya, III: 144) that a glide preceded by a consonant and followed by a vowel should not be subject either to transformation or to mutation, for this sequence is light. So does Ibn Ya'iish: 'When a glide is preceded by a consonant, the vowel does not weigh down on it' (Ibn-Jinni, in Ibn Ya'iish, d.643A.H., Sharḥ al-Muluuki, 448).

We therefore have a new case where the application of a rule to a "light" form is justified by a reference to the related "heavy" form, but this time no longer within a paradigm, but within a "genus": the verb and its derived forms. The argument is supported by cases where, in order to safeguard the unity of the genus, processes are at work in the forms of the perfect because they are applied to the forms of the imperfect, which are considered to be heavy (Ibid.).

But let us now consider "yaxa''fu" [yaxaafu] and "yaha''bu" [yahaabu]. Ibn-Jinni says that the "w" and the "y" of their primary form, "yaxwafu" and "yahyabu", are changed into "alif". Now, it is obvious that these primary forms do not answer the phonetic context of the rule of mutation, at least not in the standard conception of the application of a rule, but the latter does not corresponds with that of the Arabic grammarians. For them, a rule can always refer to an earlier state of the derivation, and the application of mutation to obtain "yaxa''fu" constitutes an excellent example of this. Mutation, as we have seen, applies in a phonetic context where the glide is preceded by "a" and followed by a vowel. If we consider the primary form "yaxwafu", we note that the "w" is indeed followed by a vowel and that the context of the right side of mutation is fully satisfied. The vowel transfer gives the form "yaxawfu" and that is where the context of the left side of the mutation rule is satisfied, since the "w" is preceded by a vowel, precisely the "a" which has just been transferred.

But what will happen in a case where the subjacent form does not contain a vowel, as in form IV of "qaama", "aqaama"? The primary form being "aqwama", the "w" is not preceded by a vowel and yet mutation has been applied after the transfer, to give "aqa''ma" [aqaama]. This does not create a bigger problem than the "w" in "na'idu" or the transfer of the "u" in "yaqwulu": 'If forms like "ara''da" [araada] and "aqa''ma" [aqaama] have been affected by changes, it is because they have related to the simple form' (Ibid.), that is "qawama" and "rawada", where the heavy sequence effectively exists. We see how far the unity of the genus must be extended to justify the application of the rules here.



### 2.5 Gemination (' idghaam)

When the " ' " and " L " are identical consonants, two rules apply: a rule of erasure, when the sequence in question is preceded by a vowel, as in "madada", which becomes "madda"; and a rule of metathesis when it is not: "yamdudu" becomes "yamuddu".

Germination is not effected, however, in the nouns. It is not, furthermore, the only phonological process which distinguishes the verb from the nouns, applying to the former and not to the latter. The nouns being considered as lighter, the heaviness which is constituted by the succession of identical elements appeared tolerable and did not cause any change) Ibn-Jinni, in Ibn Ya'iish, d.643A.H., : 450)

### 2.6 Epenthesis

The group of three consonants are separated by a rule of epenthesis which inserts an " i " after the first one. The heavy sequence constituted by " t l ' " and " t l j ", which was offensive to the ancient speakers' linguistic feeling, was thus lightened. This heaviness of the three vowelless consonants is presented by Ibn-Jinni (Xaṣaaiṣ, I: 90) as an articulatory constraint which is a part of human nature and applies 'as well to the black-skinned as to the red-skinned'.

### 3. Phonetics

The study of the speech sounds, utilized by all human languages to represent meanings is called **phonetics**. To describe speech sounds, one has to describe what an "individual sound" is and how one sound differs from another. When we speak, the physical sounds we produce are continuous stretches of sound, which are the physical representations of strings of discrete linguistic segments (Fromkin and Rodman, 1978:35).

When the sounds in languages are studied, one of two approaches is adopted; either the way in which sounds are produced (i.e., phonetics), or the way in which sounds are used in language and the role that they play. This latter way is called **phonology** (i.e., functional phonetics, to some scholars) (See Hockey, 1994:66ff. for more information).

As for Arabic, it is worth stating that earliest research in its phonetics was not from one source of linguistic tradition. It is usually hard to find one field that dealt completely with phonetics. But this is not a reason to neglect the contributions of Arabo-Islamic scholars to this area. Among the names to be cited in the study of phonetics are: al-Xaliil (d. around 175A.H.), Siibawayhi (d.180 A.H.), al-Zajjaaji (d.337A.H.), Ibn-Jinni (d.392A.H. The sources of the phonetic tradition may be lexicology (ma' aajim), syntax (naḥw proper), the ritual recitation of the Holy Quran (tajwiid), and the Inimitability (i' jaaz) of the Quran.

### **3. 1 The Phonetics of Lexicology Specialists and the Grammarians**

The first scholar to initiate the phonetic study of Arabic is al-Xaliil(d. around 175A.H.). His name is associated with metrics, lexicology, music, and even mathematics. His efforts in phonetics are apparently clear in his lexicographical work "Kitaab al-'Ayn" which is arranged according to a specific phonetic pattern. The lexical items are arranged following a phonetic scheme, that is, in such a way that their radical consonants start from the lower points of articulation, in the throat, and proceed upwards to the lips. This explains the title of the book, which is the name of the voiced fricative pharyngeal in Arabic, one of the lowest-articulated consonants in the language (vol.I:57).

To add, he discussed features of Arabic sounds such as "shadiida"(i.e., strong), "rixwa"(i.e., soft or continuant), and the feature of "itbaaq"(i.e., closure or emphasis), (ibid.:57ff.). Apart from the direct contributions of al-Xaliil, it be noted that in many passages of Siibawayhi's "Kitaab" where phonetic and phonological issues are raised, reference is explicitly made to the teachings of al-Xaliil, which suggests that in these matters he has been considered an authority in his time.

Other grammarians such as al-Zajjaaji (d.377A.H.), and al-Zamaxshari (d.538A.H.) have also contributed to the field of phonetics, but not as widely and faithfully accepted as those treatments of Siibawayhi. He has tackled phonetic matters at the end of the fourth volume of his "Kitaab", when he discusses the problems of "idghaam"(i.e., assimilation). He states (vol.IV:431-436). He then classifies Arabic speech sounds, their context of frequency (i.e., in the Holy Quran and poetry), and their social and professional purposes (i.e., high and low variants). He, in addition, displays their major phonetic traits according to which they are to be classified.

The classification of Arabic consonants set by Siibawayhi rests upon a definite system of phonetic features that describe the places and manners of articulation of segments. He lists 16 places of articulation, starting from the pharynx to the lips, with some difference to the teachings of al-Xaliil. Other general articulatory and auditory properties are presented in order that the segments are into families of sounds. He uses terms like "majhura"(i.e., loud, or voiced or sonorous for some translators) and "mahmusa"(i.e., murmured, or unvoiced for other translators) and "shadiida"(i.e., strong), "rixwa"(i.e., soft or continuant), "munḥarifa"(i.e., twisted, or crooked or oblique, for some translators), "mukarrara"(i.e., reiterated or repeated), "layyna"(i.e., lax or flexible), "hawiya"(i.e., chasm), etc.(Ibid). It seems reasonable to infer that Siibawayhi's phonetic analysis differentiates between primary articulation, which gives a sound its basic identity, and secondary articulations, which help distinguish segments belonging to the same family. To illustrate, in discussing

the feature of "iṭḡbaaq"(i.e., closure or emphasis), of the four consonants "الصاد" (ṣ), "الضاد" (ḍ), "الطاء" (ṭ), "الظاء" (ẓ) (ibid.:435-436).

Another great name in Arabic phonetics after al-Xaliil and Siibawayhi is Ibn-Jinni (d.392A.H.). He is the author of the first book almost exclusively devoted to the phonetic properties of Arabic, a book that is entitled "Sirr Ṣinaa'at al-I 'raab". His phonetic observations are also seen in his other book "Xaṣāiṣ". In introducing to his book "Sirr Ṣinaa'at al-I 'raab", Ibn-Jinni states that the main aim of his book is to recognize Arabic segments singly and to describe each clearly and fully (Ibn-Jinni, vol.I:5). In this, he is the first one, to our knowledge, to use with full awareness the linguistic term "ṣawt"(i.e., sound) where no other scholar precedes him (ibid.:4). Going through the minutiae of the book, one can observe the following:

1. He mentioned the speech apparatus of sounds articulation in Arabic. Four articulators are to be used in pronouncing a sound; they are the " chest ", "pharynx ", "mouth ", and "nose". The pharynx and the mouth are both divided into front, middle, back and each is responsible for producing some sounds. The mouth contains some other articulators, such as the tongue, which can be divided into front with its tip and blade, middle, back and sides. The teeth are used in the production of sounds through first incisors (i.e., front teeth), canine-teeth and molars. Lips, both or the front part of the lower lip, and nostrils are made use of in Arabic (ibid.: 6-9).
2. He differentiates "letter" from "sound". No other scholar before him does this (ibid.: 13-14).
3. Like al-Xaliil and Siibawayhi, he believes that Arabic has 29 sounds with 16 places of articulation. Yet he differs from al-Xaliil and agrees to Siibawayhi as for the arrangement of the lowest points of articulation and the highest ones (ibid.: 45-48).
4. He adds new parameters in classifying Arabic sounds, such as "degrees of openness of the mouth" which results in "shadiida"(i.e., strong), "rixwa"(i.e., soft or continuant), and "mutawaṣṣiṭa"(ibid.: 60-62).
5. Properties like "majhura"(i.e., loud, or voiced or sonorous for some translators), "mahmusa"(i.e., murmured, or unvoiced for other translators), "munfatiḥa"(i.e., opened) etc. are involved in his description of sounds into families (Ibid.).
6. Sounds for him have a strong interrelationship to meanings functionally. This reminds us of the linguistic term "phonoaesthetic function " (ibid., vol.II: 828).
7. Phonetics to him has a strong connection with music or musicology, stress and intonation. This belies the opinion that Arabic linguists completely failed to recognize these phenomena (ibid.: 9).

8. He analyses the phontactics and constraints of the collocational possibilities of consonants in an Arabic root or syllable (ibid.: 811). This brings into mind the two principles of "selection" and "combination" of the "Functional Phonetics" of André Martinet cited in (Hockey, 1994:66-67).

### **3. 2 The Phonetics of the Quran Reciters**

The Quran is, in its words, "light" which means that it is self-manifesting, with no need of an external agent to be made manifest; other things need light to become visible and manifest. *With it Allah guides those who pursue His pleasure to the ways of peace, and brings them out from darkness into light by His will, and guides them to a straight path (Quran, 5:16).* The Quran is a unique document, not only in the realm of religious literature but also in the domain of language. It is also unique because it has been preserved in the original form that it was revealed to its prophet.

It is a well-known fact to Muslims that till now oral tradition is responsible for learning and transmitting the Quran. However, there exist several modes of divergent oral transition concerning the rendering of a number of passages in the sacred text. This situation has led to a completely-developed technical specialization that requires long and hard training to master the ritual recitation of the Quran. This specialization is not an exception in making use of Arabic sounds and in mastering their articulation, their proper rhythm, the techniques of pausing, the kinds of "المد" ( i.e., prolongation), and the effect on meaning, etc. This discipline of recitation answers a number of questions relating to the phonetics of Arabic. It records in the fine details of the phonetic realization of each and every sound. It also tracks the minutiae that (may) happen to the articulatory and/or acoustic properties of sounds through their different contexts or discourses. The earliest writings in this field can be dated back to Ibn-Xaalawayhi (d.370A.H.), Abu Ali al-Faarisi (d.377A.H.) , and Ibn-Jinni (d.392A.H.).

### **Conclusions**

The corpus of Arabic linguistics constitutes, unquestionably, one of the major linguistic traditions in the world, together with the Indian and Greek ones. It is consequently obvious that the very limited amount of space devoted to the Arab grammarians in the main histories of linguistics is quite out of proportion to the real importance of this tradition.

This study has tried to give an overall view of the "sciences" of language in the Arabic culture. It has concluded with the following points:

1-the Arabic grammarians' texts constitute an indispensable source for any description of Arabic, not only by the dint of the facts which they relate, but also through the explanations of them which they give.

2-the part of the theory of the Arab grammarians that has been uncovered here constitutes a subject worthy of study in itself. Furthermore, in respect of the

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sources, the question is to know whether there was a borrowing of theoretical framework and not to know whether Arabic grammar owes something or does not owe anything at all to neighboring cultures.

3-the Arabic texts being technical, it follows that they must be read with a technical approach, which implies that the reader should have at his disposal adequate conceptual tools, and should use the same precise scientific method and the same attention to detail which would be required when analyzing contemporary linguistic texts.

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## Appendix

### Transcription System

ب	ء	z	ظ
b	ب	‘	ع
t	ت	gh	غ
t	ث	f	ف
j	ج	q	ق
h	ح	k	ك
x	خ	l	ل
d	د	m	م
d	ذ	n	ن
r	ر	h	ه
z	ز	w	و
s	س	y	ي
sh	ش	a	
ṣ	ص	aa	ا
ḍ	ض	u	
ṭ	ط	uu	و
		i	
		ii	