The formulation and classification of definitions for phonetics and phonology in the Classical Arabic linguistic treatises

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Abstract

This study seeks to uncover the methodology of the ancient Arab linguists in producing definitions for phonetic and phonological terms, by determining the elements of these definitions and establishing their categories. The study investigates the types of definitions that formed the basis of the Arab linguists' formulations by focusing on phonetic concepts and the significance of the definitions. I examine the extent of the compatibility of these definitions with the criteria and requirements of integrated definitions and with the extrapolation of these categories to guarantee that the interpretation of phonetic concepts is relevant to precise definition and involves complete components. The analysis of this data enables the recognition of the essential elements on which these definitions are based and allows for a recognition of the types of definition, and whether they are integrated or partial. The findings indicate that the definitions of the phonetic terms in these treatises were formed using different types of elements, both integrated and partial, as well as some non-essential elements that should ideally have been included in the discussion rather than the definition. This study suggests that it is not possible to rely on the elements of partial definitions and they should be classified as negative definitions, since they lack the full requirements of proper definitions.

Keywords: Arabic, grammar, terminology, definitions, ancient Arab linguists, classical Arabic grammatical treatises

1. Introduction

In any field of knowledge which uses specific terminology, each of the terms used relates to a mental concept that can be conceptualised by a specialist on the basis of its general features. Additionally, each term may share some features with other concepts, as well as possessing individual features which distinguish it from the rest. As such, it is important for each term to be defined according to clear characteristics so that it is not confused with other concepts. If the concept focusses on the mental image of the term, the definition turns this mental image into a physical reality through its expression using common words in a way which is well organised and considered normal in a particular situation. Thus, the true nature of the term is revealed, including information and data that govern it and decide its features due to the fact that 'definitions are social constructions rather than objective descriptions' (Lohuis et al., 2013, p.706). The definition clarifies the whole idea of the concept by mentioning its basic elements and the essential features without which it becomes another concept. Contemporary terminology studies stipulate that a definition should not include ambiguous or strange words which make its understanding difficult, or metaphorical expressions devoid of clear connections and consequently lead to confusion and distraction. Definitions need to be concise and brief and do not include arbitrary generalisations which cover multiple indistinguishable concepts. They should not involve complex structures or unnecessary secondary details (Wacker, 2004). Contemporary studies developed to set conditions and limitations for the definition of scientific terms.

The Classical Arabic grammatical treatises applied some of these conditions when defining terms, but their methodology was not without flaws and defects; especially regarding the definitions of terms whose concepts were not yet clear or complete in the second Hijri century. The phonetic terms' definitions in the Classical Arabic treatises is regarded as one of the crucial issues. These issues investigates the extent to which ancient Arab linguists ensure the accuracy of phonetic concepts. This helps to avoid confusion in generating definitions for the terms, and ensures that the specialists in the same field have a common unified understanding of the characteristics of these topics. The methodology for the definition of phonetic terms in the Classical Arabic grammatical treatises can be considered according to the following points:

1- Component elements of the definitions
2- The location of the definitions
3- The types of definitions

These are the three essential points, and through their analysis it is possible to understand the methodology of the Classical Arabic grammatical treatises in the study of phonetic and phonological topics within the introduction of the chapter on *ʔidɣa:m*.

2. Component elements of the definitions

This theme deals with the components of the definition of phonetic terms in the introduction to the chapter on *ʔidɣa:m* for the study of phonetic topics in the Classical Arabic grammatical treatises. By delimiting the elements of the definitions in these treatises, one can recognise the basic structure adopted by the ancient linguists and grammarians in the formulation of their definitions, as well as the method followed in clarifying phonetic concepts through these components. Through determining these components, it may be possible to benefit from them in contemporary phonetic studies in the formulation of the definitions of contemporary phonetic terms, by adding this information or suggesting other alternatives leading to greater clarity of the phonetic concept for students and researchers. What is important in this context is that there may be multiple components of definitions in these works and that the definitions vary between those that contain multiple elements and those that contain only one or two elements. There are seven aspects of the definitional components in these treatises, as shown in the following points.

2.1- Lexical sense

The lexical sense is an input to the technical sense of the words before they shift to become terms that require precise definitions in a specific field of knowledge. In the field of phonetics, the ancient Arabic grammatical treatises used in their methodology the lexical sense element in the definition of some Arabic phonetic terms such as *ħuru:f ʃaɣriyyah* (As-Siyu:ṭi:, 2001, 6/ p. 292). It seems that treatises in the early Hijri centuries did not have a pressing need for the lexical sense in their definitions because they were close in time to Classical Arabic, while later grammatical treatises such as *Ibn ʕaqu:l* (d. 694 AH - 1367 AC) in the eighth Hijri century and *As-Siyu:ṭi:* (d. 911 AH - 1505 AC) in the ninth Hijri century displayed this phenomenon more than the early treatises (Ibn ʕaqu:l, 1982, 4/ pp. 239-250; As-Siyu:ṭi:, 2001, 6/ pp. 280-290).

2.2- Characteristics

The characteristics of each concept in the definitions represent the primary features that distinguish each concept from every other concept. These characteristics enable the reader to understand the reality of the concept of this definition and to create a conceptual image that is differentiated from that for other concepts, especially if the definition contains the necessary characteristics of the term and not the casual features that may not be present in all circumstances. In fact, the definitions of phonetic terms in the Classical Arabic grammatical treatises range from those that contain detailed characteristics of the term and those that involve only secondary characteristics insufficient to clarify the whole definition. For instance, the definitions that quoted from Sibawayh in the Classical Arabic grammatical treatises in relation to the terms *hams* and *ǧahr* involve several distinguishing features, while the definitions of the manners of articulation of other sounds like *raḵw* and *ʃadi:d* involve descriptions which are so abbreviated as to be defective; this is in the approach of *Al-Mubarrid* with many types of these definitions (Al-Mubarrid, 1994, 1/ p. 83-86).

2.3- Synonyms

This involves words or phrases that give a similar matching meaning by indicating a similar concept for speakers of the same language from a single language environment (Wang, 2012). Ancient linguists mention a number of conditions for synonymy, such as a unified meaning between two words, belonging to the same dialect, and sameness of tense. However, the question of whether 'full' synonymy exists is a subject of disagreement, as a result of the tiny differences between many words sometimes classified as synonyms even if they are similar in their general meaning (Beall and Kafadar, 2008). Therefore, it is better that synonymy be described in terms of proximity of meaning rather than complete correspondence, in order to take into account the slight meaning differences which exist between words and phrases. This is especially true if the words described as synonyms are used in different manners according to dialect, era and linguistic environment, even if all the previous elements are within the scope of one language. The Classical Arabic grammatical treatises start the *ʔidɣa:m* chapter with phonetic topics and explain the word *ʔidɣa:m* using the word *ʔidḵa:l* 'entering' through approximation of meaning (As-Siyu:ṭi:, 2001, 6/ p. 280). There is a minor difference between the two, such that the former is a term in the field of phonetics relating to the topic of assimilation, while the latter is a word in the general Arabic lexicon that is used more often in the physical field than the abstract one, for instance as a past verb *ʔadḵala* 'he entered' his hands into the bag (Ibn Manẓu:r, 2003, 3/ p. 160, p. 323).

In relation to accepted and unaccepted allophones, synonyms were pervasive to clarify these terms especially unaccepted allophones, in definitions such *al-ħuru:f ɣayr al-mustaħsanah* 'the unappreciated sounds'(Az-Zaǧǧa:ǧi:, 1988, p. 409), *al-ħuru:f al-mustaqbaħah* 'the undesired sounds' (Ibn ǧinni:,1993, 1/ p. 4) and *al-ħuru:f al-mustahganah* 'the reprehensible sounds' (Ibn Yaʕi:ʃ, 2001, 5/ p. 518) which have essentially the same significance. These words originally have approximately synonymous senses and point to eloquent speakers at the correct linguistic level refraining from using these unaccepted sounds, in accordance with their criteria for the classification of the sounds firstly into primary and secondary sounds, and then into accepted secondary and unaccepted secondary sounds.

2.4- Antonyms

These are words and phrases that are opposite in meaning which have an inherently incompatible binary relationship to other words and phrases (Crystal, 2011). The use of antonyms as one of the elements of definitions of Classical Arabic phonetic terms is common, with the intention of bringing the meaning closer to the reader's mind. Most of the time, the ancient Arab grammarians use this method to define terms after referring to the corresponding (antonymic) term in previous places such that the reader and receiver have understood and recognised their meaning and significance. Accordingly, the terms following the original preceding terms are defined through the deletion of opposing terms, especially at the level of characteristics and features. As a result, many of the terms used to express the manners of articulation of the sounds in Arabic only indicate that they are the opposite of another manner that was previously described, without stating the term's own features and characteristics. For example, the definitions of the phonetic terms *hams, raḵwah* and *munfatiħah* are produced through a contrast with the corresponding characteristics, i.e. *ǧahr, ʃadi:dah* and *muṭbaqah* respectively (Sibawayh, 2015, 5/ pp. 730-732; Ibn As-Sarra:ǧ, 1996, 3/ pp. 399-401).

2.5- Examples

These are sounds, words and phrases that contain features that illustrate the phonetic laws and findings of the ancient Arab grammarians through close inspection of Arabic sources, such as the Quran, old Arabic poetry, and Arabic dialects found across the ancient Arabic peninsula. Relying on examples in definitions is an important requirement for interpreting obscure topics that need to be explained in order to grasp and entrench the idea in the mind, especially for beginners in the study of phonetic topics. There are several definitions of Classical Arabic phonetic terms which include explanatory examples. Indeed, some definitions are based more on examples than on the precise features and characteristics which are expected to appear in the definition, such as in respect of accepted and unaccepted allophones in Arabic according to the criteria of the ancient Arab grammarians (Ibn Yaʕi:ʃ, 2001, 5/ pp. 519-521; As-Siyu:ṭi:, 2001, 6/ pp. 294-296).

2.6- Causality

This involves the motivating starting points for the choice of Classical Arabic phonetic terms and their influence in deciding the definitions, as well as the results in identifying the sounds and definitions. A survey of the definitions of phonetic terms in the Classical Arabic grammatical treatises shows that causality is a common element in a number of them. Despite the importance of causality in a number of cases as an influential element in the definition, a problem arises in stopping at mentioning causality at the expense of other important elements in the components of a definition. The definitions in some grammatical treatises of terms like *mukrrar, mutbaqah, qalqalah,* and *ṣafi:r* were mostly characterised by appeals to causality (Al-Mubarrid, 1994, 1/ pp. 84-85; Az-Zaǧǧa:ǧi:, 1988, pp. 414-416), as will be discussed later in relating to definitions using causality and their negative impact on the content of the definitions.

2.7- Practical experiments

Practical experiments are used in the Classical Arabic grammatical treatises as a method of describing sounds and identifying their correct pronunciation, even if this is achieved using traditional methods and primitive means according to the tools available at that time. These practical experiments feature among the elements of the definitions of certain Classical Arabic phonetic terms, making it possible to distinguish between the places and manners of articulation in Arabic according to the criteria of the ancient Arab linguists and grammarians. There are a variety of practical experiments described in the Classical Arabic grammatical treatises in the chapter on *ʔidɣa:m*, some independent of definitions and some linked to them, considering them among the inherent features of the phonetic concept being described. The definition of the *raxwah* manner of articulation was made through practical experiments which distinguish it from the contrasting *ʃaddah* manner of articulation, rather than through a detailed definition of the features and characteristics distinguishing this manner of articulation (Sibawayh, 2015, 5/ p. 731; Ibn As-Sarra:ǧ, 1996, 3/ p. 402).

In their definition of nasalisation, these treatises refer to the place of articulation between the oral and nasal cavities. They then explain the features which distinguish this manner of articulation through practical experiments which test the sounds involved by cutting off the passage of air from the nose using the hands, thus leading to a defect in their production as an indication that the oral cavity is indispensable in this manner of articulation. These examples demonstrate that practical experiments were an important element in the definitions of the Classical Arabic phonetic terms especially in the initial phase of phonetics in the grammatical treatises in the first Hijri centuries (Sibawayh, 2015, 5/ p. 731; As-Si:ra:fi:, 2008, 5/ p. 387 ;Ibn As-Sarra:ǧ, 1996, 3/ p. 403;). These seven elements are what the Classical Arabic grammatical treatises relied on in their definitions of phonetic terms. Despite the numerous elements involved, certain definitions of terms contain only one or two elements; it is not necessary for there to be several elements involved in a definition regardless of the importance of this, as will be clarified later in the discussion of types of definitions. These elements reflect the ancient linguists' recognition of the essential definitional elements from which a particular phonetic concept is generated, and which distinguish it from all other phonetic concepts. However, the fact that definitions did not necessarily incorporate all these elements led to the emergence of incomplete definitions which do not provide a completely distinct understanding of the notion: these lack other elements which would provide a fully independent definition.

3. The position of the definitions

The methodology of the Classical Arabic grammatical treatises differs from that of contemporary phonetic studies in its approach to defining phonetic terms. Contemporary phonetic studies typically structure their methodology by mentioning the term first and then providing a definition, which is clarified in two ways: the basic lexical meaning of the term, and then the technical sense of this term in the field of phonetics (Trask, 2004; Crystal, 2011; Richards and Schmidt, 2013). The first step is to mention the term, which may be composed of one or more elements. The second step clarifies the basic lexical meaning of this term, especially if the term is multiply polysemous, in order to link this to the specific meaning of the term in phonetics. The third important step is where the term is defined precisely according to its use in the field of phonetics through explaining its significance here and distinguishing it from its basic lexical meaning and clarifying its features, thereby differentiating it from other technical terms (Matthews, 2014). These steps in the methodology of many contemporary studies of phonetic terms were by contrast not employed by the Classical Arabic grammarians in their presentation of the definitions of phonetic terms. In fact, there are no common steps to which all the classical linguists and grammarians adhered in their presentation of phonetic topics.

The elements that explain the definitions of the phonetic terms in these treatises differ in their arrangement from one term to another, and are not presented in a fixed and organised manner for all terms. Terms may be composed of one, two or three words in these treatises, and their compositional elements may be presented after the definition and the explanation of their content (e.g. Al-Mubarrid, 1994, 1/p. 292). It is not necessary for the term to come before the definition. The features that are linked to the term are presented before the content of the term under some topics, while under other topics the content precedes the features and characteristics.

The definition of the phonetic terms in these treatises is accompanied by a number of elements that attempt to present the definition in several ways in order to clarify the intended meaning through descriptions and examples. In addition to these elements, some linguists and grammarians resort to mentioning the antonyms of terms in their definition of them, especially if the antonym is more commonly used, on the basis that the learner and reader who do not have existing detailed background knowledge will already understand the opposite meaning mentioned in the definition (Ibn Yaʕi:ʃ, 2001, 5/p. 522). While the norm for terms is that they follow the definition immediately, other elements such as the features (Wright and Budin, 2001), criteria and practical experiments associated with the concept are presented in the Classical Arabic grammatical treatises in different ways. The most logical form of organisation is to start with the term, followed by it definition, and then the other elements that are employed in these treatises, as was done by *Ibn As-Sarra:ǧ* (d. 316 AH-929 AD) in his definition of the terms *al-ha:wi:, aʃ-ʃadi:d, al-munħarif and al-mukrrar* (Ibn As-Sarra:ǧ, 1996, 3/p. 402-404). In addition to this method, however, there are other methods adopted by the grammarians in their presentation of the definitions of phonetic terms along with the other elements (Bu:ru:bah ,2006). These are (i) Description, definition and term, (ii) Term, sounds and definition, (iii) Term, sounds, antonymic term and definition, (iv) Term, definition and basic meaning, and (v) Definition, term and sounds. They will be discussed in turn in the following sections.

3.1- Description, definition and term

In this method, the definition comes before the term intended for clarification, but is preceded by a description introducing the definition. The term itself is at the end. As an example, *Al-Mubarrid* (d. 286 AH- 899 AD) used this method in his definition of the term *al-ha:wi:*, which was specifically identified by the ancient grammarians with the sound of *ʔalif* to distinguish it from other long vowels (Al-Mubarrid, 1994, 1/p. 292). Despite the negativity of this method in delaying mention of the term until after the definition, *Al-Mubarrid* first explained the *ʔalif* as part of the structure of the word and followed this by discussing the sound *ʔalif* separately in phonetics, before being considered as part of a word, and delaying the use of the term itself until after the definition (Al-Mubarrid, 1994, 1/p. 292).

3.2- Term, sounds and definition

In this method the term comes first, then the sounds associated with the term, which belong mostly to one of the manners of articulation, and lastly comes the definition of the term. There is a separation between the term, and the definition involving a discussion of the sounds that are inherent to the term, while the definition itself is only mentioned in limited contexts. For instance, when Sibawayh and other grammarians speak about the manners of articulation of *ǧahr* and *hams*, they mention first the terms *al-mahmu:sah* and *al-maǧhu:rah*; enumerate the sounds for each of these manners; and later provide the definition of these terms and the relevant distinguishing features (Sibawayh, 2015, 5/ pp. 730-731; Ibn As-Sarra:ǧ, 1996, 3/pp. 401-402). It seems that the sounds for these manners of articulation are mentioned before the definition because this makes it easier to distinguish between the two manners of articulation. Applying the pronunciation of the sounds achieves this better than would a definition, which may not clarify the differences in their manners of articulation.

3.3- Term, sounds, antonymic term and definition

In this method, the term is put first, followed by the relevant sounds and the opposing (antonymic) term, and then the definition of the term is presented at the end. This method is common among certain grammarians such as *Ibn Yaʕi:ʃ* (d. 643 AH- 1246 AD) in his interpretation of the book of *Az-Zamaḵʃari* (d. 538 AH- 1143 AD) in the chapter on *ʔidɣa:m*, which deals with phonetic, phonological and morphological topics (Ibn Yaʕi:ʃ, 2001, 5/pp. 515-525). *Ibn Yaʕi:ʃ* defines many terms using this method especially the terms for the manners of articulation in Arabic, such as *muṭbaqah, mustaʕliyah,* and *muðlaqah*. The opposite (antonymic) terms to these are *munfatiħ, munḵafiḍah* and *muṣmatah*, respectively (Ibn Yaʕi:ʃ, 2001, 5/p. 522).

It seems that this method of defining these terms through the indication of the opposing term before the definition is that the opposing term becomes part of the definition itself, which becomes indispensable for the distinction between the two opposing categories similar to defining something by mentioning its opposite.

3.4- Term, definition and basic meaning

In this method, the phonetic term comes first, followed by the definition of the term, and then the indication to the basic meaning of the term prior to its addition as a term in the field of phonetics. It is an uncommon approach in terminology studies, in which terms are typically defined first by referring to their basic meaning before considering the definition in the specialised field. In the Classical Arabic grammatical treatises, *As-Siyu:ṭi* employed this method in his definitions of certain Classical Arabic phonetic terms such as the manner of articulation *muðlaqah* and *hams*, which he defined first before mentioning their basic meanings in Arabic dictionaries (As-Siyu:ṭi:, 2001, 6/ p. 297). In his definition of the term *muðlaqah*, *As-Siyu:ṭi* mentioned the reason for the designation of this term, in a manner similar to explanatory definition and then linked this definition to the basic meaning of the word. It seems that this method is used to further clarify and link the specific phonetic sense to the already existing general sense.

3.5- Definition, term and sounds

In this method, the definition is placed before the term, and then followed by the sounds associated with the definition. An example of this method is found in Al-Mubarrid's definition of term *qalqalah*, which he considered among the manners of articulation in Arabic which are specific to certain sounds (Al-Mubarrid, 1994, 1/ p.85). *Al-Mubarrid* starts by defining the term *qalqalah* before mentioning the term itself. After that, he clarifies the sounds of this manner of articulation, their ranks and their state between *waqf* 'pause' and *waṣl* 'liaison'. In this method, the definition resembles an introduction to the term. This is because the phonetic term for this manner of articulation is used to describe the pronunciation of these sounds in Classical Arabic speech, even by non-specialists, but the precise definition of the term is specific to linguists.

The different treatments of terms, definitions and sounds discussed above show that the definition of Classical Arabic phonetic terms often occupy different positions in the text, and it is not necessary for the definition to come after the term. It may come first, before the term and other elements, and may also come after the term at the end of the text following other elements that separate it from the term. In addition, the definition sometimes appears intermediately between the phonetic term and the sounds associated with this term. The context usually decides the position of the definition according to the manner of presenting and explaining the topic, and there is no fixed methodology for the position of the definition in the text.

In cases where the sounds are the key features which distinguish a manner of articulation from other manners, the sounds are typically put before the definition. The role of the definition itself this becomes that of an additional clarification of the manner, which is chiefly characterised by its sounds, more so than definitions or descriptions. In other positions, the term may be separated from the definition of the opposing (antonymic) term, since the grammarians realised that opposition between the two terms clarifies the intended meaning and dispels confusion better than would a subsequent definition. On the other hand, when the definition comes before the term and the associated features, this definition becomes similar to an introduction to the concept which is found among speakers before being represented by a specific term. Through their use of each of these various methods, it can be argued that the Classical Arabic grammatical treatises focus on the most important content which distinguishes one particular concept from others according to their criteria, regardless of whether the definition comes at the start of the section of text, in the middle, or at the end.

4. The categories of definitions

There are numerous ways of defining terms in different fields of knowledge according to the constituent elements of these terms, which require precise expression in order to become suitable for regulation and analysis (Manes, 1980). The Classical Arabic linguistic treatises in the second Hijri century were not concerned with the theoretical aspect of the classification of definitions in terms of categories and types. Accordingly, definitions in these treatises appear in different forms and their treatment is not uniform. Some of the definitions in these treatises contain numerous details regarding the concept being defined, and of the precise senses in which the term is used in linguistic fields like phonetics, morphology and syntax. Some terms are defined using only a few words with a brief definition of the term.

No matter how different the categories of definitions in the terms are, there must be general conditions and precise rules for the contents of all definitions in order for there not to be defects leading to misunderstanding of a term. Theoretical studies in the definitions of terms place limitations on these definitions to allow them to become sufficiently meaningful, fulfilling the purpose for which they were developed in order to gain the approval of specialists and scholars in the field in question (Benelazmia, 2014). These definitions may differ from one field to another, but they agree in some general points, for example that that the definition should refer to the concept itself and not to its secondary aspects or associated elements, and that the definition should not contain antonymous words or figurative expressions, which may lead to confusion and ambiguity (Droogers, 1989). The standard and effective definition avoids the use of generalities that may refer to non-specific concepts, by identifying characteristics and features distinguishing the concept in question from other related ones, and avoiding vague words that require a further definition (McKeown, 1993).

As a matter of fact, definitions of phonetic terms in the methodology of the Classical Arabic grammatical treatises vary in the extent to which they conform to the rules and conditions of definitions as understood by modern scholars. These variations become clear through a recognition of two different categories of definition: 1. Detailed definitions, 2. Partial definitions. These two categories involve different methods and may vary in the type of definition used.

4.1- Detailed definitions

Detailed definitions differ from partial ones in that the former comprise a set of definitional elements and not just one element (e.g. definition using an example or definition through the use of an antonym only), as is the case with partial definitions. Detailed definitions seek to enable the reader to precisely understand the meaning of what is being defined and to form a mental image of it, distinguishing the concept from related ones in a concise manner, and omitting secondary connotative features which cannot be shown to be present in all cases (Hurley, 2011). By providing appropriate details, detailed definitions demonstrate the necessary basic elements of the concept, which are found in all situations and cannot be omitted as this will lead to flaws in the understanding of the definition or confusion with other concepts. Accordingly, a correct definition of a term is one that is committed to revealing the full facts of the concept to be defined by clarifying its permanent characteristics and the unique features that distinguish it from other concepts; whether these be general linguistic concepts or, in the field of phonetics, specific phonetic concepts (Heiss, 2007). The ancient Arabic grammatical texts provide model examples of the detailed definition of Arabic phonetic terms, regardless of whether they are correct or not according to the phonetic criteria used in contemporary linguistic theories. These definitions are based on the understanding of the ancient linguists and grammarians of phonetic concepts in the first Hijri centuries, some of which had not been fully developed at that time. It is not reasonable to evaluate these definitions in accordance with modern phonetic criteria, due to differences in methodology among other reasons. These definitions, when analysed, contain critical elements used to explain the phonetic concept in question, first through the concept itself and then in the selection of words which clarify this concept in terms of the characteristics that distinguish it from other related concepts; in addition to the experiments and sounds specific to this concept.

When looking at the definitions of *mahmu:s* and *mağhu:r*, for example, one notices that most Classical Arabic grammatical treatises agree with the definition of Sibawayh, either using the same words as were employed by Sibawayh or using synonyms thereof, which relay them same meanings. Both types of definition contain details, notwithstanding the difficulties and ambiguities identified by some researchers in these definitions, and the interpretations and clarifications which other researchers attempted to prove to be compatible with contemporary phonetic studies (Al-Nassir, 1993; Suleiman, 1995; Al Rasyid, 2009). The definitions of *mahmu:s* and *mağhu:r* used by Sibawayh and those who agreed with him are composed of three sentences (Sibawayh, 2015, 5/pp. 730-731; Ibn As-Sarra:ğ, 1996, 3/pp. 401-402). Each of these involves distinct concepts relating to two opposing manners of articulation, such as the positions of the articulatory organs in the places of articulation, the strength and weakness of adoption, and the airflow related to the sound between movement and stoppage. The distinct concepts used in these definitions involve two manners of articulation which cannot be confused with one another because each is clearly distinguished from the other. Numerous ancient scholars repeated the expressions used by Sibawayh in these definitions and it has proved hard for contemporary researchers to understand the features of each manner of articulation (Az-Zağğa:ği:, 1988, p. 409; Ibn ʕuṣfu:r, 1998, p. 448; Ibn Ğinni:, 1993, 1/p. 60) .

However, what is agreed upon by both ancient and modern scholars is the features of each of these manners of articulation and the fact that they do not overlap with each other, due to the use of a concept in one definition and its opposite in the other. In addition to aspects of the definition of *mağhu:r*, there is also in the definition of *mahmu:s* of an experimental element regarding the possibility of repeating the sound, something which is not possible in the case of *mağhu:r* (Sibawayh, 2015, 5/ pp.730-731; Ibn As-Sarra:ǧ, 1996, 3/pp. 401-402). This means that ancient Arabic linguists wanted to identify in their definitions of these manners of articulation clear independent denotations through the creation of definitions specific to each manner of articulation.

Although little has changed in respect of the Arabic phonetic terms in the Classical Arabic grammatical treatises, the definitions of these terms have developed from the use of abbreviated descriptions to the use of specialised linguistic details. The definitions of the Classical Arabic phonetic terms are limited to the specific field of linguistics without linking them to other linguistic fields, especially in the first period of studying phonetic topics. There are, however, other treatises in subsequent Hijri centuries which expanded these definitions by linking the denotations in these other fields with the conventional concept denoted by these definitions. For example, Sibawayh, and those grammarians who agree with him (in defining *hams* using the same words or using antonyms thereof) confine themselves in defining this manner of articulation to this specific phonetic concept as one of the manners of articulation in Arabic (Az-Zaǧǧa:ǧi:, 1988, p. 409; Ibn ʕuṣfu:r, 1987, p. 448; Ibn Ǧinni:, 1993, 1/ p. 60). By contrast, other grammarians linked this definition to the more basic sense of *hams*, noting that *hams* essentially denotes a hidden sound which is produced by low whispering, which is difficult for others to hear (Al-Ɂanba:ri, 1957, p. 423; Ibn Durayd , 1987 1/ p. 46). As a result, the definition was developed from this basic sense, and subsequently this manner of articulation was defined to include the basic sense. This was linked to the category of weak manners of articulation as a result of this feature, as opposed to the category of the strong manners of articulation according to the different categorisations of the ancient Arab linguists and grammarians. Similarly, Sibawayh and those early grammarians who agreed with him in the first Hijri centuries provide a list of the places of articulation associated with particular sounds without providing a definition of these places (Sibawayh, 2015, 5/ pp.729-730; Al-Mubarrid, 1994, 1/ pp. 83-84; Ibn As-Sarra:ǧ, 1996, 3/ pp. 400-401; Az-Zaǧǧa:ǧi:, 1988, pp. 410-411). By contrast, the later treatises such as *Hamʕ al-hawa:miʕ* by *As-Siyu:ṭi:* indicate in detail in the meanings of the terms for some places of articulation (As-Siyu:ṭi:, 2001, 6/ pp. 291-294). An example is the term *aʃ-ʃağriyyah*, which describes the Arabic sounds which emerge from the middle of the tongue, i.e. /ǧ/, /ʃ/ and /y/. *As-Siyu:ṭi* refers to the meaning of this term from a general lexical perspective (As-Siyu:ṭi:, 2001, 6/ p. 292). Then he refers to the views of previous scholars on the meaning of this term as well as the relation between the basic meaning and the phonetic concept involving the places of articulation of these sounds (As-Siyu:ṭi:, 2001, 6/ p. 292).

The definitions and examples above review the methodology used in some of the detailed definitions of Classical Arabic grammatical and phonetic terms. As has been seen, there are definitions that developed from the stage of stage of origination of the phonetic concept, to that of categorisation and detailed description due to developments in phonetic studies over a number of centuries in the Classical Arabic grammatical treatises which focused on the phonetic topics especially in the chapter on *Ɂidɣa:m*.

4.2- Partial definitions

Partial definitions of Classical Arabic phonetic terms differ from the previous detailed definitions, chiefly in the manner in which the elements of the definitions are presented. These partial definitions confine themselves to mentioning only one or two elements in the definition, leading sometimes to defects making the whole concept referred to in the definition unclear and too narrow or a circular definition due to the absence of further details which distinguish this particular concept from other related notions (Gratton, 1994). This type of definition does not enable the reader to fully grasp the concept as a result of being confined to only a few words or containing only disorganised secondary information about the features of the concept, which is not even proved in all cases (Gibbon, 2013). This type of definition, which confines itself to a few words, and may simply refer to another definition, leads to the distraction of the reader's attention from the definition at hand to that of the other definition. In the ancient Arabic grammatical texts dealing with phonetic topics, three types of partial definition can be identified:

1- Definition by antonym
2- Definition by justification
3- Definition by example

Each of these types is different from the others in the way features are presented, each type having positive aspects that it illustrates, and shortcomings regarding what is not included in the definition.

4.2.1- Definition by antonym

What is meant by 'definition by antonym', is defining the term through the exclusion of opposing features in order to facilitate an understanding of the definition in the mind of the reader and learner, on the basis that the opposing definition is already familiar to speakers because of their prior knowledge of the concept which it denotes (Murphy, 2003). For the most part of this definition, the vast majority of antonymic couples in dictionaries are adjectives (Paradis and Willners, 2007). In the Classical Arabic treatises, this type of definition begins with the mention of the phonetic term and then provides a definition of the opposing term, which, by its nature, does not apply to the concept at hand, as a way of differentiating it from other features in previous definitions. For example, when Sibawayh defines the concept *munfatiħ*, he first explains that all sounds are included under this concept, except those sounds covered by the opposing term *muṭbaq* which he has mentioned earlier (Sibawayh, 2015, 5/ p.732). Sibawayh was followed in this approach by some other grammarians such as *Ibn As-Sarra:ǧ* (Ibn As-Sarra:ǧ, 1996, 3/p. 404). There is no separation under another topic heading between the previous term *muṭbaq* and the term defined by its opposite *munfatiħ*. This made it easier for the grammarians to define the manner of articulation of *munfatiħ* using its opposite. This method of definition was devised by the grammarian *Ibn Yaʕi:ʃ* when he defined the term *ʔalif al-ʔima:lah* which is also called *ʔalif at-tarḵi:m* in the Classical Arabic phonetic treatises (Ibn Yaʕi:ʃ, 2001, 5/ p. 520). In defining the term *ʔalif al-ʔima:lah*, *Ibn Yaʕi:ʃ* made reference to the opposing term, *ʔalif at-tafḵi:m*, and its features, thereby making clear difference between both of them for readers and learners (Ibn Yaʕi:ʃ, 2001, 5/ p.520). Additionally, *Az-Zamakʃari:* adopted this method in his definition of several terms, merely stating that the concept in question was the opposite of that defined by the previous term, as with the terms *hams, raḵw* and *munḵafiḍah*, and others (Az-Zamakʃari:, 1993, 10/ pp. 546-548).

Definition by an antonym depends on the recognition of the reader of the former opposing term and its distinguishing features. To a reader that does not have previous background knowledge, definitions of these terms merely constitute definitions by antonyms without any real explanation. An individual reading the phonetic terms *munfatiħah* and *ʔalif al-ʔima:lah*, discussed above, cannot understand their definitions if they do not have prior knowledge of the opposing definitions *muṭbaqah* and *ʔalif at-tafḵi:m* and the features they involve. In addition, the sense of opposition between concepts can be included in a definition without the need to mention the antonym. Thus, the defect in this category of definitions in Classical Arabic phonetic terminology is that opposing words may be mentioned without specifically explaining either one of them, leading to a lack of clarity.

4.2.2- Definition by justification

What is meant by 'definition by justification' is defining terms through identification n of the reasons behind the choice of the phonetic term in the definition, and showing the relationship between these reasons and the phonetic term. It is worth noting that this kind of definition is a partial one due to the inclusion of justification at the expense of the term's essential elements. Terms have philosophical connotations, which means the definition by justification (in the sense of giving reasons for the choice of the term) is redundant (Chang, 1998, pp. 1575-1577). This type of definition in the Classical Arabic grammatical treatises focuses on the reasons behind the definition rather than on clarifying the features and characteristics of the concept. When Sibawayh defined the term *al-ħuru:f al-layyinah* 'semi-vowels' or 'glides', he focused on the reasons for using this term, which is the fact that the place of articulation expands to accommodate the air flow more so than with other sounds (Sibawayh, 2015, 5/ p. 732). In this he was followed by *Ibn As-Sarra:ǧ*, who used the same words to describe the concept (Ibn As-Sarra:ǧ, 1996, 3/ p. 403). Sibawayh and other grammarians also adopted this method in their definition of the sounds that emanate from the nasal cavity in Arabic, /m/ and /n/, linking these sounds to nasality (Sibawayh, 2015, 5/ p. 731; Al-Mubarrid, 1994, 1/ p. 84). In his definition of /r/, *Az-Zamakʃari:* similarly focuses on the repetition of the sound, arguing that this is causally connected to the continuation of the pronunciation because stopping would lead to difficulty and heaviness of the tongue in articulating the sound (Az-Zamakʃari:, 1993, 10/ pp. 547-548). This was clarified also by *Ibn Yaʕi:ʃ* in his interpretation of the book of *Az-Zamakʃari:* in the chapter on *ʔidɣa:m* (Ibn Yaʕi:ʃ, 2001, 5/ p. 522). Using this type of definition, *Az-Zamakʃari:* limits himself in defining the *ṣafi:r* sounds to mentioning the reason for the possibility of whistling with these sounds without providing a detailed definition of the content of the sounds themselves (Az-Zamakʃari:, 1993, 10/ p. 547).

Such a definition was later provided by *Ibn Yaʕi:ʃ*, who clarified the places of articulation and features of this manner of articulation (Ibn Yaʕi:ʃ, 2001, 5/ p. 524). There are numerous examples in the methodology of these treatises of definitions which focus on the reasons and justifications for the choice of a certain term at the expense of other elements which should be included in the definition. Although *Ibn ʕaqi:l* used this type of definition for many of the manners of articulation in Arabic, he went beyond earlier grammarians in adding other elements to the definitions (Ibn ʕaqi:l, 1982, 4/ pp. 244-250). The negative aspect of these definitions is that they confine themselves to the reasons associated with the term as a link between its basic meaning and the technical phonetic definition, rather than addressing the features that distinguish this phonetic concept from others.

4.2.3- Definition by example

'Definition by example' in the Classical Arabic linguistic treatises is definition which utilises real examples taken from the Quran or Classical Arabic poetry, or the ancient Arabic dialects of the Arabian Peninsula. This kind of definition clarifies a phonetic concept through providing concrete examples which facilitate the understanding of the content of the definition. However, such definitions generally do not mention the reasons and justifications for this concept, nor do they refer to opposing terms and definitions as in the previous categories. After mentioning the consonants of Arabic involving the *raḵwah* manner of articulation, Sibawayh defined the term *raḵwah* through two examples in which the final syllables end with one of the sounds involving this manner of articulation (Sibawayh, 2015, 5/ p.731). He then explained the possibility of this sound continuing (being prolonged) in these two syllables, thereby indicating an essential feature of this manner of articulation through examples. This type of definition was common in some Classical Arabic linguistic treatises in dealing with the two categories of allophones – acceptable allophones and unacceptable ones – defining them by employing examples, without mentioning other details in the definition such as their features, places of articulation and the cities and villages where they were widely used at that time (Sibawayh, 2015, 5/ pp. 728-729; Az-Zamaḵʃari:, 1993, 10/ p. 546).

By contrast, in some treatises there are definitions which do not include clarifying examples, as in the case of al-Mubarrid with several phonetic terms such as *muṭbaq* and *munfatiħ*. These are extremely important for understanding secondary expressions in abbreviated definitions, which can become defective due to the lack of the required conditions in the definition (Al-Mubarrid, 1994, 1/ p. 85). In addition, although the examples used by the ancient Arab grammarians for defining phonetic terms contain many features of the phonetic concept being referred to, definition by example is only suitable for beginners in scientific fields in order to allow them to understand different terms and distinguish between them (Klausmeier and Feldman, 1975). This type of definition is not sufficient for clarifying precise phonetic issues which require details of all the features and characteristics involved. This demonstrates that the discussion of the phonetic topics in the chapter on *ʔidɣa:m* in these treatises is for educational purposes, and is an introductory preface to the topic of assimilation and dissimilation in Arabic. Therefore, the employment of these examples in the definition of the Classical Arabic phonetic terms is not sufficient to clarify the terms themselves or analyse their features. This requires more detail in the definition in order to distinguish specific phonetic terms and their associated notions from one another.

5. Concluding remarks

Through an analysis of the definitions of the Classical Arabic phonetic terms, it appears that there is a set of specific constituents which make up these definitions. These constituents are: the lexical meaning, features, synonyms, antonyms, examples, reasons and practical experiments. There is a disparity in the use of these constituents among the definitions in these treatises: some of these definitions contain more than three elements while others contain only one or two. Despite the importance of these elements in the formulation of the definitions, there is an overlap in the use of these elements, some of which pertain to the details which come after the definitions themselves and are not part of the content of the definition, e.g. examples and practical experiments. This leads to the existence of incomplete definitions which do not contain essential elements for the recognition of the concepts involved. Definitions of the phonetic terms in the Classical Arabic grammatical treatises were found in numerous places: both before and after the term itself. Thus, the definition may come before the term or may be placed intermediately between the term and the associated sounds; or it may be found at the end of the paragraph following several other elements. This shows that there were no specific procedures in the early treatises, especially in the second and third Hijri centuries, for presenting the definitions, which had no fixed positions in relation to other elements. It seems from the positions of the definitions in the paragraph that context is what decides whether the definition should come earlier or later. This led to a defect in certain positions due to the separation between the term and the definition using other elements.

Regardless of whether these definitions are correct or not, the detailed definitions were composed of several constituents in order to identify the distinguishing features of the phonetic term. These definitions cannot be measured in terms of contemporary notions, as the criteria differ between the classical and contemporary approaches. In contrast, the partial definitions of the phonetic terms in these treatises are incomplete and cannot fully distinguish the concept intended by the term, as some of them are non-criterial constituents which are not applicable in all positions.

6- Suggestions

The above are the most important results shedding light on the methodology for formulating the definitions of phonetic terms in the classical Arabic linguistic treatises. This study provides new research opportunities for the study of the formulation of phonetic terms in the non-linguistic classical Arabic treatises which explore phonetic topics such as the discipline of *Taġwi:d* 'rules for the correct pronunciation of the Holy Quran' and philosophical treatises. A comparison could be made between these fields in terms of the elements and categories they use and their features and characteristics. These results would lead to a study of the presentation of phonetic terms which precedes these definitions in these treatises, in terms of the methods of generation of these terms and the elements which they comprise, as well as disagreements between the ancient linguists in relation to the multitude of terms for one phonetic concept in some cases, compared to the plurality of phonetic concepts for one term in others.

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