





جامعة أحمد بن يحيى الونشريسي
تيسمسيلت-

المعيار

مجلة نصف سنوية متعددة التخصصات
مصنفة " C "

في الآداب، الحقوق والعلوم السياسية، علوم وتقنيات
النشاطات البدنية والرياضية، العلوم الاقتصادية، والعلوم الإنسانية
والاجتماعية

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Mensson

كلمة العدد

السلام عليكم،

بعد واجب التّحيّة تطل عليكم مجلة المعيار – كما عودتكم – بمجلد جديد وعدد متجدد هو المجلد السادس عشر، العدد الأول، حاملة في طيّاتها مجموعة ثرية ومتنوعة من المقالات العلميّة والبحوث الأكاديمية، التي تتناول طيفا واسعا من المواضيع والقضايا التي تهم القارئ المتطلّع للمعرفة والفهم العميق.

وكالمتوقع، يتضمن هذا العدد نخبة من المقالات التي كتبت بأقلام نيرة، وبأفكار ناضجة، تجمع بين العمق العلمي والطّرح الجذّاب، وذلك في مجالات شتى، تشمل: الأدب، والقانون، والسياسة، والاقتصاد، والاجتماع، وغيرها وبلسان مختلف اللّغات منها الانكليزيّة، الفرنسية والألمانيّة، ومن الميادين التي تتجدّد أهميتها مع متغيرات الواقع وتحديات العصر.

وما يضيفي على هذا العدد طابعا خاصّا، هو ما يتضمنه من أعمال كتبت من داخل الوطن ومن خارجه، في دليل واضح على عمق الامتداد العلميّ للمجلة، وحرصها على جمع الآراء والأصوات العلميّة من كافة الأصقاع، فكلّ مقال يضيف بعدا ورؤية تساهم في بناء معرفة شاملة ورؤية متوازنة نتطلّع من خلالها إلى نيل رضى القارئ والفوز بإعجابه.

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أ.د. عيساني محمد

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Suprasegmental phonemes in linguistic analysis



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Abstract:

This research paper aims to shed light on certain significant linguistic phenomena in the field of phonetics. We addressed suprasegmental phonemes: the syllable, stress, and intonation. We started with a core issue: What is the importance of suprasegmental phonemes in linguistic analysis? To answer this question, we followed a specific methodology, which included an introduction that provided a general idea about the topic. Then, we elaborated on the syllable, stress, and intonation in detail, with a reference to rhythm due to its close relationship with intonation. Finally, we concluded with a summary of the findings and recommendations. Throughout the work, we relied on the descriptive method as it was the most suitable for the study, using analysis and representation techniques. As a conclusion of our research paper, the most important findings can be summarized as follows: Phonemes beyond the morpheme level are secondary phonemes, as outlined by phoneme theory. However, they are fundamental to language. Various studies have demonstrated that Arabic is a segmented, stressed language that relies on intonation. It is a rhythmic language, with Arabs naturally inclined towards rhythm, which serves as a point of convergence for most phonetic phenomena. From this standpoint, we recommend placing greater emphasis on the practical aspects of phonetics, using artificial intelligence advancements to advance Arabic linguistic studies. This involves encouraging researchers, including professors and students, to delve into the field of computational studies that rely on computing and automatic analysis of spoken Arabic. Such an approach is expected to prove linguistic heritage with scientific accuracy across various levels of linguistic study.

key words: Intonation; Language; Rhythm; Syllable.

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Introduction:

Phonetic studies initially emerged as a pressing necessity to preserve religious sanctities, as seen in the Sanskrit language. The Indians dedicated themselves to studying, describing, and codifying it as the tool of Vedic literature, considering any disruption in this language would inevitably lead to the distortion of Vedic texts and diminish the religious ceremonies value. (Monin, 1972, p. 62)

Due to its close connection with the recitation and comprehensive analysis of the Quran, phonetic study is also considered a fundamental element in Arabic linguistic studies to understand the Qur'an's meanings. This is evident through the phonetic features and symbols added by the scholars of Quranic recitation, depending on the principles established by predecessors such as Al-Khalil and Sibawayh.

This means that Arabic linguistic studies, especially phonetics, emerged as necessary to ensure the proper performance of Quranic verses and to understand their rulings and meanings. Additionally, it aided non-Arabs in learning the Arabic language. Dr. Abduh al-Rajhi states: "The foundation of phonetic study is based on Quranic readings. Although it is theoretically later than other Arabic sciences like grammar, it is practically earlier. Ancient grammarians were also leading figures in Quranic recitation, as we know from figures like Abu Amr ibn al-Ala and al-Kisai. If the Veda motivated the Indians to study phonetics with such precision, as language historians note, the recitation of the Quran prompted initial Arab scholars to observe and study the sounds of the language. This led to an early scientific study of Arabic phonetics, which is similar to modern scholars' assert. (Al-Rajhi, 1978, p. 192)

Therefore, there is a strong relationship between the Quranic recitations and phonetic studies. The Quran, being the word of Allah, elevated the Arabic language, as Allah chose it to convey His message.

Language speech is not just a collection of individual sounds; people do not utter isolated sounds. Rather, they speak in words, sentences, and paragraphs. This means that the sounds of a language do not retain their characteristics, as the sounds of a single word and the sounds of words in speech acquire new qualities and phonetic characteristics. This results from inherited pronunciation habits and psychological emotions that affect the prominence of speech sounds, making them rise and fall. It also influences the arrangement of sequential tones in speech groups, necessitating the study of several speech phenomena such as syllables, stress, and intonation.

Hence, the research problem arises: What is the importance of suprasegmental phonemes in linguistic studies?

This research seeks to verify the hypothesis that suprasegmental phonemes are fundamental in the linguistic analysis of any spoken

language, particularly Arabic. We adopted a descriptive method relying on analytical mechanisms with examples to achieve the study's objectives. The study is divided into several elements: discussing syllables, stress, and intonation in various aspects of phonetic phenomena, and then linking them to rhythm.

The Syllable:

Linguistically, Ibn Faris defines a "syllable" as: "... the letters (ق = qaf, ط = ta, and ع = 'ayn form a single root, indicating the separation and distinction of one thing from another." (Faris, 2001) According to Ibn Manzur, "cutting" means "the separation of some parts of a body from one another. The end or point of something where it breaks off is called its cut'... and the 'cuts' in the Quran refer to the places of pause." (IbnManzur, 1990)

In terminology, the researcher 'Bertil Malmberg views the syllable as a modern division of the linguistic event that was not practiced by the ancients, meaning that the study of the syllable is a recent matter addressed by scholars with varying definitions. (Malberg, 1988)

According to Dr. Tamam Hassan, it is 'expressions of an organized pattern of analytical parts or chest pulses during the speech, or structural units or specific shapes and quantities. (Hassan, Research Methods in Language (Manahij Al-Bahth fi Lugha), 1990)

Dr. Abdul Rahman Ayoub says: "A syllable is a group of sounds that represent two bases enclosing a peak," (Ayoub, 1968, p. 139) , and this peak is "an auditory peak, which is often a vowel, usually accompanied by other sounds. (AbdulTawab, 1982, p. 101)

The syllable is considered the fundamental suprasegmental unit of the rhythmic system of language, carrying values of stress, pitch, and duration. (Auchlin, 1997, p. 51)

Moreover, the syllable is ideally the basic unit that enables the formation and interpretation of the fundamental rhythmic patterns in any language. (Todorov, p.34,38)

Thus, we can say that there is no accurate syllable definition, as it is a specific unit in each language considering the linguistic system and the varying speech habits among languages. Each language has its particular syllabic system. In this context, it is appropriate to provide some interpretations of the syllable through the theory of chest contraction and Jespersen's theory. (Omar A. M., 1976, pp. 284,286)

STETSON's Theory (Chest Contraction):

Stetson observed the way syllables are divided and the movements of the respiratory system during speech. He realized that the rapid contraction and relaxation of the respiratory muscles produce a sequence of small bursts of breath. The release of air generates the effort or energy needed to form the prominence peaks that we perceive as syllables.

Jespersen's Theory:

The clarity of sound depends on the air mass that carries it, which takes the form of successive vibrations. Jespersen observed that the larger the air mass, the greater the audibility, and vice versa. There is a direct proportionality between the amount of emitted air and the strength of hearing.

A syllable cannot be studied or understood in isolation from the context of words. "A word is, in reality, only a part of speech, usually consisting of one or several syllables closely connected, and it is hardly understood during pronunciation but remains distinct and clear in hearing. Undoubtedly, the independent meanings of these aggregates in each language help distinguish them. (Anis, 1971, p. 63)

Therefore, it is necessary to determine the syllables of each language in a way that suits its phonetic structure and the speaking habits of its speakers. (NourEl-Dine, p. 103)

Syllable Formation:

A syllable composed of "a group of individual sounds comprising one free sound accompanied by one or more bound sounds. (Al-Antaki, p. 254) This juxtaposition of linguistic sounds produces vibrations in the form of a wavy line (a sine wave curve) with peaks and troughs resulting from the variation in auditory clarity between the sounds. The peaks represent the highest clarity of sound. Vowel sounds often occupy these peaks, along with the sounds of (ل = lam = /l/, م = mim = /m/, and ن = nuun = /n/, also considered syllabic sounds. Meanwhile, the troughs are typically occupied by consonant sounds. (Anis, 1971, p. 161) In essence, any syllable involves of a nucleus, a syllabic sound, an onset, and followed by a coda.

Syllable Forms (Types): syllables can be divided in two ways:

1. Vowel Position:

- **Open Syllable:** ends with a vowel (Vowel V or Consonant Vowel = CV). Any syllable that can be extended, comprising of a consonant followed by a long vowel, such as (بَا = Baà), or a consonant followed by a vowel and a short vowel, such as (بَا = Ba). An example in English: "ago" (/ə'gou/) or "ena" (/i'na:/). (AbdulTawab, 1982, p. 102)
- **Closed Syllable:** ends with a consonant (VC or CVC). Any syllable that cannot be extended and contains a consonant and a long vowel, followed by a consonant, such as (بَاب = Baàb = door), or a consonant and a short vowel followed by a consonant, such as (مِنْ = Mina = from). An example in English: VC= "at". CVC "cat" (/kæt/) or "sit" (/sɪt/).

- **Doubly Closed Syllable:** it is made up of a consonant, a short vowel, and then two consonants, CVCC example;(بدر = badr = moon).

Thus, a syllable is described as open if it ends with a vowel, and it is described as closed if the vowel is followed by one or more consonants. (Malberg, 1988, p. 155)

2. Length and Shortness: (Al-Antaki, p. 257)

- **Short Syllable:** a consonant and a short vowel, such as (ب = Ba).
- **Medium Syllable:** a consonant and a long vowel, such as (با = Baà), or two consonants and a short vowel, such as (من = Mina = from).
- **Long Syllable:** two or more consonants and a long vowel, such as (كيس = kais = bag), or three consonants and a short vowel, such as (بدر = badr = moon).

The Arabic linguists have classified its syllables into five types, which are: (Anis, 1971, p. 155) (NourEl-Dine, p. 96) (Al-Antaki, p. 258)

- | | | |
|---|---|------------------|
| • Consonant + Short Vowel | } | Open Syllables |
| • Consonant + Long Vowel | | |
| • Consonant + Short Vowel + Consonant | } | Closed Syllables |
| • Consonant + Long Vowel + Consonant | | |
| • Consonant + Short Vowel + Consonant + Consonant | | |

There is a sixth form, formed of (consonant + long vowel + consonants consonant) which occurs only in the case of a stop, and is called the extended syllable. (Malberg, 1988, p. 201)

Tammam Hassan added another type consisting of a vowel and a consonant (VC), as found in the definite article (ال = Al= the) by dropping the linking hamzah “hamzat al-wasl” and considering the fatha (**A small diagonal line placed above a letter, representing a short /a/ sound**) and the silent ل = lām = /l/. He points out in this context that this syllable is only theoretical, meaning it is not used in phonetic studies since it begins with a vowel, while it is known that Arabic syllables start with a consonant. (Hassan, *Research Methods in Language (Manahij Al-Bahth fi Lugha)*, 1990, p. 140)

Dr. Tammam Hassan says, "It is necessary to recognize two types of syllables: The first is the theoretical syllable, and the other is the phonetic syllable... The first of these is abstract, composed of letters, while the other is perceptible and audible, composed of sounds. (Hassan, *Research Methods in Language (Manahij Al-Bahth fi Lugha)*, 1990, p. 141) This dual approach is a natural consequence of acknowledging the fact that what is theoretical does not always necessarily manifest in actual speech." This

perhaps explains the lengthening of syllables by reciters, as in (الضَّالِّينَ = Al-Dhalin = misguided) and (يَشَاءُونَ = Yashaoun = They desire), which is something specific to Quranic recitation and not found elsewhere (Anis, 1971, pp. 164,166)

Formation of the Arabic Word:

A word in the Arabic language is composed of a series of syllables, and the number of syllables varies from one word to another. It can either be: (Sweid and Mustafa, 1993, p. 207)

- **Monosyllabic:** for example, "من" = Min = from (m/i/n = consonant + short vowel + consonant).
- **Disyllabic:** for example, "لَمَّا" = lamma = when (lam / ma = consonant + short vowel + consonant / consonant + long vowel).
- **Trisyllabic:** for example, "يُدَافِعُ" = yodafii = defend (yo/da/fii = consonant + short vowel / consonant + long vowel / consonant + short vowel / consonant)
- **Quadrisyllabic** : for example, "يَتَنَبَّأُ" = yatanabbao = predict (ya/ta/nab/ba/o = consonant + short vowel / consonant + short vowel / consonant + short vowel + consonant / consonant + short vowel + consonant).
- **Pentasyllabic:** for example, "بِأَنفُسِنَا" = bianfosina = by ourselves (bi / an / fo/si / na) (consonant + short vowel/consonant + short vowel + consonant/consonant + short vowel/consonant + short vowel/consonant + long vowel).
- **Hexasyllabic:** for example, "يَتَنَافَسُونَ" = yatanafasouna = they compete (ya / ta / na / fa/sou / na) (consonant + short vowel/consonant + short vowel/consonant + long vowel/consonant + short vowel/consonant + long vowel/consonant + short vowel).
- **Heptasyllabic:** for example, "فَسَيَكْفِيكَهُمْ" = fasayakfikahumu = So will suffice you against them (fa/sa/yak/fi/ka/hu/mu = consonant + short vowel/consonant + short vowel/consonant + short vowel + consonant/consonant + long vowel/consonant + short vowel/consonant + short vowel/consonant + short vowel).

Stress:

Language phonemes do not retain their characteristics because single-word sounds acquire new attributes and phonetic properties during speech due to inherited pronunciation habits and psychological influences that affect the direction and the rising and falling intonation in speech sounds and the sequential arrangement of tones in the speech group. Therefore, the researcher must study several speech phenomena, such as stress and intonation, (NourEl-Dine, pp. 87,88) which are considered suprasegmental phonemes. (El-Ibrahimi, p. 83)

Dr. Tammam Hassan has pointed out that studying stress and intonation in Classical Arabic is risky because the ancient scholars did not address these two phenomena. (Hassan, **Research Methods in Language (Manahij Al-Bahth fi Lugha)**, 1990, p. 163;164) He believes that what is attributed to Classical Arabic in this regard is derived from the varied use of Classical Arabic. He exemplifies this with the differences and variations in the pronunciation of Quranic verses from one country to another, despite it being a unified text."

Definition of Stress:

Stress is the degree of force with which we can pronounce a sound or syllable. Any high degree of pronunciation force means a strong movement of the human speech organs and is often accompanied by a movement of the hand, head, or another part of the body. This gives us the characteristic of loudness or roughness. As the intensity of pronunciation weakens, the speech organs also weaken, giving us the characteristic of softness. (Jones, **An Outline of English phonetics**, 1972, p. 245)

Stress is also a positional feature related to the location within the word and the speech group. It is a relative clarity of a sound or syllable compared to the other sounds and syllables in the speech. (AbdelTawab, 1990, pp. 87,88) Stress is a sudden burst that affects the speech organs during the pronunciation of a syllable of the word, leading to an increase in one or more of the following elements: the duration of the syllable, its intensity, or its pitch. (Al-Antaki, p. 262) This increase leads to auditory clarity of one syllable compared to the remaining syllables. This clarity is attributed to two factors, one associated with the rising and falling pitch, due to the diaphragm movement pressing on the lungs to expel air, resulting in an increasing amount of air and widening the range of vocal cord vibrations, thus raising the pitch.

The other factor is connected to the tension of articulation. If the sounds are voiced, the vocal cords come closer together, allowing only a small amount of air to pass through, increasing the amplitude of the vocal cord vibrations and raising the pitch. If the sounds are voiceless, the vocal cords move apart, allowing more air to escape, making the sound clearer to hear than an unstressed sound. (Al-Antaki, p. 263) This means that stress is corresponding to exhalation force, making it dynamic stress that relies on strength. Therefore, we can say that stress is an intrinsic activity of the speaker that results in the prominence of a particular sound. (Jones, 1950, p. 137). It is important to note that stress is closely connected to the length of the word, as it is one of the acquired factors that affect the extension of the sound. The stressed sound is longer than the unstressed one. (Al-Sheikh, 1999, p. 56)

Stress Types:

Base Stress: it is also called “word stress” and pertains to individual words. Dr. Tamam Hassan described it as silence because the auditory clarity of stress is not achieved outside of usage. He stated that "assigning stress to words and forms outside of context pertains to the morphology system as required by analysis, where one cannot claim auditory clarity in silent words and forms. (Hassan, p. 171) When stress exists in a single word, it is called word stress. However, this stress may be modified in terms of location, intensity, and weakness within sentences and phrases. This modification often depends on the importance of the words and also on intonation. (Bishr, p. 162)

Contextual Stress: this type of stress is known for stressing sentences and is called contextual stress because it navigates through the context. (Abdeljalil, 1998, pp. 120,121) The speaker emphasizes a word in its sentence, increases its stress, distinguishes and emphasizes it from other words, or indicates a specific purpose. The purpose of the sentence may vary depending on which word is strongly stressed. (Anis, 1971, p. 174) Thus, it carries an emotional or expressive function. (NourEl-Dine, p. 114) In context, the clarity of the stress value varies and affects the value of the discourse. (Martini, Principles of General Linguistics, p. 82)

Contextual stress determines the intended meaning by observing the stressed unit. For example, in the sentence "Did Muhammad come yesterday?", the meaning changes based on which word is stressed. If the word "come" is stressed, the speaker asks if Muhammad came. If "Muhammad" is stressed, the listener might think the inquiry is about who came. If "yesterday" is stressed, it indicates that the speaker is asking about the time/

Degrees of Stress :

- **Primary Stress:** also known as strong stress, emphatic stress, or confirmatory stress. It occurs when the diaphragm presses on the lungs, making the expression more emphatic, and increasing the focus on certain units over others. (NourEl-Dine, p. 114)
- **Medium or Secondary Stress:** this is a normal, steady stress. In this case, the diaphragm pressure is less than in emphatic stress, allowing less air to pass between the vocal cords, resulting in a steady pitch. (NourEl-Dine, p. 307)
- **Weak Stress :** here, the amount of air expelled from the lungs is reduced, as seen when stressing the syllable /س/=s/ in the word "درس" (Daras = lesson).

The Function of Stress:

The function of stress is fundamentally distinctive; it helps to emphasize the pronunciation or unit it pertains to concerning other units of the same type within the same utterance. (Martini, *Principles of General Linguistics*, p. 83)

Stress assists in identifying grammatical units by observing the stressed syllables. For example, in the word "وصل" =wasal = arrive, if the stress falls on the first syllable, it indicates that the word is a verb meaning 'to arrive.' However, if the stress falls on the second syllable, it shows that the و = 'wa' is a conjunction, and the verb becomes صل = sil = connect, implying a different verb. Stress also has a referential function, reflecting meanings such as emphasis and emotional expression.

Stress Patterns:

Researchers have observed that stress occurs in every word. If a word has only one syllable, the stress falls on that syllable. If the word has two syllables, the stress falls on the second syllable. For words with three syllables or more, the stress is determined by looking at the second syllable. If the second syllable is of medium length or longer, the stress falls on it; if not, the stress falls on the third syllable. (Al-Antaki, p. 265)

To identify the locations of stress in an Arabic word, first look at the penultimate syllable. If it is of the second or third type, it is considered the stress location. If it is of the first type, then look at the preceding syllable. If that syllable is of the second or third type, it is the stress location. If the preceding syllable is also of the first type, then the stress falls on the third syllable from the end of the word. Stress is not placed on the fourth syllable from the end except in one case, which is when the three syllables before the penultimate syllable are all of the first type. (Anis, 1971, p. 172)

Intonation:

Intonation can be defined as the variations in pitch that occur in sounds, or words. It is the changes in the musical pitch produced by the vocal cords. In normal speech, we observe that the pitch of the voice is continuously changing. When the pitch rises, we say there is increased intonation; when the pitch is low, the intonation is low; and when the pitch maintains a level path over a while, we say there is balanced intonation. (Jones, 1972, p. 275)

Intonation is the raising and lowering of the voice during speech to indicate negation, sarcasm, questioning, or other functions, (AbdelTawab, 1990, p. 106) (Bishr, p. 163) and it distinguishes between interrogative and declarative statements. (AbdelTawab, 1990, p. 101)

Ibn Jinni made a brief observation on the subject of intonation, stating : "The adjective has been omitted and the situation indicates it, as in what the author of the book reported with the phrase 'وقد سير عليه ليل' = W qad sira aleihi lail = And a night passed over him,' where they meant 'long night.' It seems that the adjective was omitted because the situation reveals its place, as you can sense in the speaker's words the nuances of accommodation, emphasis, and grandeur that substitute for the word 'long' or something similar. You can feel this yourself if you reflect on it, such as when praising someone and saying, 'كان والله رجلا' = kana wa Allahi rajolan = He was, by Allah, a man,' where you intensify the word 'Allah' and extend the ل = /L/, emphasizing that he was an outstanding man, brave, or generous. Similarly, you might say, 'سألنا، فوجدناه إنسانا' = saàlna wa wajadnaho insanan= 'We asked, and we found him to be a man,' where you might frown to imply 'إنسانا لثيما' = insanan laiman = a mean man without directly stating it. (Ibn-Jinni, pp. 370,371)

Intonation is determined by the nature or type of the sentence. For example, a declarative sentence has a steady intonation, whereas the intonation rises in imperative sentences and rises even more in exclamatory sentences. This is evident in spoken language, where it is represented in writing by diacritical marks and punctuation. Intonation also reveals information about the speaker, such as their identity, gender, age, and emotional or physical state. (El-Ibrahimi, p. 83)

Generally, intonation does not form part of the linguistic message itself, but it provides cues about how the speaker interacts with the experience from which the message originates. Intonation can also offer information about the speaker's personality. (Martini, p. 208)

Malberg referred to intonation as "musical stress," stating: "When certain parts of a sentence are emphasized with the help of pitch, this is musical stress or intonation stress. (Malberg, 1988, p. 187). It requires a set of performance habits suitable for various situations, including astonishment, questioning, sarcasm, emphasis, warning, and other emotional contexts. (Shahin, p. 209)

There can be an overlap between the terms "intonation" and "melody," so Dr. Tamam Hassan distinguished between them. He said: "We deliberately differentiate between the terms *intonation* and *melody*. By intonation, we refer to the pitch variation of a single syllable within the entire speech group, which can be described as rising, falling, or level: steady. Melody, on the other hand, refers to

the collection of pitches within the speech group, or the horizontal arrangement of pitches that the model or scale includes, with special attention to the final stressed pitch in this arrangement. The scale is thus broader than melody and encompasses it all in understanding." (Hassan, p. 166)

Based on the above, intonation relies on pitch as its foundation. The variation in pitch can be categorized into two types: tone or pitch, and intonation.

Tone refers to the variation in pitch within a single word. Intonation, on the other hand, refers to the variation in pitch across a sentence. Specifically, "intonations or intonational variations are consistent sequences of different types of pitch across the entire sentence or consecutive parts of it. They describe sentences and parts of sentences, not isolated different words." (Omar A. M., 1976, p. 229)

Function of Intonation :

Intonation has both a semantic and grammatical function. "The intonation and melody of speech vary according to syntactic patterns and context, and this variation helps in understanding the intended meaning. In other words, intonation aids in comprehending the sentence's purpose, whether it is a question, a statement, or something else. For example, the sentence: سقط المطر = saqata almatar = It rained, can take on many patterns: it is a declarative statement if its intonation is steady, interrogative if it rises, and could be exclamatory. **Intonation and musical variation alone can determine the meaning.**" (Khalil, 1987, p. 95)

Intonation can indicate sarcasm, reprimand, agreement, rejection, or surprise and amazement. For example, the word "نعم" = naam= (yes) in Arabic can have different intonations: it can express confirmation if it means "correct, request continuation if repeated during listening, or signify a question if it means "what did you say? Among other meanings derived from the same word with changes in intonation. In this context, Bertil Malmberg says: "There are many languages, particularly in Africa and the Far East, that use tonal differences to distinguish one word from another. In these languages, tone is a fundamental element of the phonetic structure of the word and essentially performs the same role as the phonetic units from which the word is composed. (Malmberg, p. 194)

Both stress and intonation play significant roles and add an artistic touch to spoken language. This touch manifests as an attractive musical rhythm, and the human soul naturally gravitates toward what is attractive and melodious. Rhythm is a form of auditory charm, especially when associated to the language of the Qur'an, which is distinguished by its perfection and completeness,

presenting the most beautiful meanings and structures miraculously and timelessly.

"The sensitivity of Arabic letters to musical qualities is undoubtedly a tangible reality. The Arabic ear distinguishes between the letters *Zā'* (ظ) and *Dād* (ض), between *Hā'* (ح) and *Ġā'* (غ) and *Hā'* (هـ), between *Dhāl* (ذ) and *Dāl* (د), between *Ṣād* (ص) and *Sīn* (س) and *Shīn* (ش), between *Jīm* (ج) and *'Ayn* (ع) and *Ghīn* (غ), and between *Qāf* (ق) and *Kāf* (ك) and *Khā'* (خ). Speakers of other languages rarely make these distinctions. Even if some languages have letters pronounced similarly to Arabic letters, such as the heavy *Hā'* (ف) and *Bā'* (ب), they originate from a single articulation point with varying degrees of emphasis and do not possess the independent musical value of the Arabic letters mentioned. (Martini, p. 208)

Language is nothing more than "a temporal tool that involves a set of segmented sounds whose movements and pauses represent a temporal sequence with a specific meaning. (Abd-El-Dayem, 1993, p. 34) This sequence of movements and pauses creates a rhythm, which "acts as a mechanism or principle comparable to musical instruments that began to spread in the Arab Islamic society in the late Hijri century. This distinction is based on the qualitative and verbal coherence in Arabic, which provides a good structure for poetry and composition, and the interconnection between segments and sounds in the creation of melodies. (Adonis, 1985, p. 19)

The effect of phonetic segments varies depending on the emotion present, but it also differs according to meaning. What pertains to habit or the routine of anticipating a sound is part of the general expectation. (Ayad, 1972, p. 157) The ear is considered a fundamental judge in this context. Richards states: "Visual sensations of words rarely occur in isolation; they are usually accompanied by things closely linked to them, making them difficult to separate. Among the most important of these is the auditory image, meaning the impact of the word's sound on the inner ear." (Richards, 1980, p. 223)

Rhythm is described as: "a systematic repetition of the letters of words, regardless of whether they are harmonious or subject to organized coordination." (Al-Rubai, p. 235) We find much of this in the Quran, where sounds dance, forming a captivating type of music. Music, in essence, combines sound and time, as sound is essentially an auditory effect resulting from a specific movement that gains its musical quality only by being subject to the factor of time it encompasses. "The Quran represents the culmination of vibrant musical models in the timeless structures of the Arabic language...

When the Quran was revealed, the Arabs were astonished and their minds were bewildered. Some considered it poetry, while others regarded it as magic. Even Musaylimah the Liar, in his imitation of the Quran, went to great lengths to craft his expressions and focused on the musicality of the phrases, reflecting the psychological shock provoked by the Quran's music." (Al-Salami, 1980, p. 222)

There is a clear connection between rhythm and metrics and the music of poetry. Scholars of metrics agree that there is no difference between the art of metrics and the art of rhythm, except that rhythm measures time by melody, while metrics measure it by audible letters. "This means that rhythm assesses the time of beats; if the beats are melodic, then the rhythm is musical, whereas if the beats correspond to the letters forming coherent speech, then the rhythm is poetic." (Ibn-Faris, 1982, p. 263)

Rhythm is based on two fundamental pillars: the segmental system of languages and intonation.

Types of Rhythm:

Ibn Fares says: "Rhetorical devices, especially those that are verbal, provide a rhythmic performance as much as they offer a rhetorical performance. Both ancient and modern Arab poets have been aware of this auditory property in some of these rhetorical devices and their musical quality." (Ibn-Faris, 1982, p. 160) Arabic rhythms generally stem from repetitive sound or melody, and this repetition is divided into two categories:

- **Verbal Repetition:** This involves repeating the melody or sound in successive units and is exemplified in figures of speech such as jinas (rhyming), mushakalah (parallelism), and tarsi (intercalation), among others.

- **Literal Repetition:** This involves repeating the melody or sound in successive letters.

By nature, Arabs are inclined towards rhythm. The vast, sprawling desert landscapes create a beautiful and captivating natural scenery. In the shadow of this life, the Arab soul acquires a musical quality. (Al-Salami, 1980, p. 217)

Artificial Intelligence and Linguistics:

Artificial intelligence is considered a new facet of technological advancement that has its impact on various fields of science. It has brought about a significant leap in scientific research due to the precision and speed it offers. Linguistic studies, in turn, have benefited from this aspect, as linguistic research has entered the world of artificial intelligence through what is known as

computational linguistics. This is a specialized scientific field aimed at programming computers to think and solve problems. It is one of the branches of applied linguistics, working to harness computers to study language issues and analyze its phenomena (Al-Jalil, 2002, p. 181). The phonological level is perhaps one of the most prominent aspects that can be subjected to computational analysis due to its physical nature, which makes it flexible and suitable for research and analysis. For instance, we find techniques such as spectrographic analysis, neural network analysis, signal processing, and other elements that enable automatic recognition of spoken language.

Conclusion:

A language student, particularly one studying Arabic, is confronted by a wealth of knowledge and phenomena that, the more they delve into, the more they desire to explore. In conclusion, the research leads to several key findings, the most important being that suprasegmental phonemes are recognized across different languages as a set of secondary phonemes. These phonemes are not part of a word's structure but are observed when they combine with others or when the word is used in a specific form, as seen with the word "نعم" ("yes"), which can be used to indicate questioning, affirmation, or other meanings. Arabic syllables are uniquely utilized in form compared to other languages. Additionally, there is a strong relationship between vowels, syllables, stress, and intonation. The function of stress in languages is distinctive. Speech lacks meaning without intonation, and rhythm is absent without suprasegmental phonemes.

Consequently, we recommend placing greater emphasis on applied phonetic studies, using artificial intelligence outputs to advance Arabic linguistic studies.

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