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From *Zāy* to *Ẓāʾ*: A Linguistic and Qualitative Contrastive Study in *Lisān al-ʿArab*

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***Abstract*—This study hypothesizes that the Arabic consonant *ẓāʾ* historically developed from *zāy* through early phonological transformations. It examines this proposition via a qualitative reading of *Lisān al-ʿArab*, focusing on z/ẓ root pairs that share a common semantic nucleus. The analysis aims to identify the phonetic contexts and trajectories of sound development that explain this evolution as a process of emphatic drift rather than a systemic phonological shift. The study also addresses the absence of a precise historical explanation for the origin of *ẓāʾ*, whether it represents an original Proto-Semitic sound or a later derivation from *zāy* within dialectal environments that later stabilized in Classical Arabic. Using an internal descriptive–contrastive approach, the research traces loci of alternation within root structures and their semantic environments, analyzing letter position, vowel quality, gemination, and adjacency to emphatic or velarized consonants. Only root pairs that exhibit a demonstrable shared semantic nucleus are included. Findings indicate a directional shift from z to ẓ, where *zāy* denotes motion, fluidity, and openness, while *ẓāʾ* represents heaviness, enclosure, and stillness. These distinctions reveal meaning-driven functional specialization rather than incidental phonetic variation. Future research should expand quantitative analysis through phono-morphological tagging and articulatory experiments to verify the hypothesis of emphatic drift across early Arabic texts.**

***Index Terms*—*ẓāʾ*, phonological alternation, emphatic drift, sound change, semantic nucleus**

I. Introduction

Phonological development has been one of the most pronounced indicators of linguistic change in Arabic and other Semitic languages. A language that is still spoken changes its forms and pronunciation due to dialectal, social, and geographical influences that can be easily detected. The variations among the different Arab tribes had an impact on Qurʾānic recitations and thus created a big area for the early Arab philologists who were very careful in describing and analyzing speech sounds to work with (Al-Jallad, 2020).

This scholarly attention is evident in the foundational works of al-Khalīl ibn Aḥmad in *al-ʿAyn* (Ibn Aḥmad, 1999), Sībawayh in *al-Kitāb* (Sībawayh, 1988), and Ibn Jinnī in *Sirr Ṣināʿat al-Iʿrāb* (Ibn Jinnī, 2000). Through their categorization of the manner of articulation, variations of sounds (*ibdāl*), assimilations (*idghām*), and vowel changes (*iʿlāl*), and their connection with real linguistic use, the pioneers have established the foundations of Arabic phonology (al-Jubūrī, 2023). The contributions of these researchers thus signal the advent of a systematic approach to and reasoning of Arabic phonetics.

Arabic is distinguished by the letter *'ẓāʾ'* as one of the most peculiar and multifaceted letters in its whole alphabet because not only do various dialects possess their own pronunciation of the letter but also different time periods in the language's history have their own pronunciations (Ben ʿĪsā, 2017). For a long time, the differences in the sound of '*ẓāʾ*' have been a major factor that kept *fuṣḥā* (classical Arabic) and the spoken language apart to such an extent that the mastering of '*ẓāʾ*' pronunciation has turned into a marker of linguistic precision. Lexical works, with *Lisān al-ʿArab* by Ibn Manẓūr (1994) being the most important, note a large number of roots that alternate between *zāy* and *ẓāʾ*, the meanings of which are often related: (*ẓann* / *zann*), (*ẓahar* / *zahr*), *(ẓarf / zarf)*. The phonetic–semantic convergence of this nature is not merely a result of dialectal variation; rather, it incites one to reflect on whether *ẓāʾ* is a primary sound in the Arabic and broader Semitic system or a sound that is later emerged through the influence of *zāy* due to phonetic and environmental factors.

To answer the question, the present research returns to *Lisān al-ʿArab* considering it to be the most comprehensive source of linguistic proof from early philological traditions. The lexicon joins the material from *al-ʿAyn*, al-Jamhara, al-Muḥkam, and *Tahdhīb al-Lugha*, thus enabling the comparative tracing of roots exhibiting z/ẓ alternation together with their semantic range and contextual distribution. Drawing on this corpus, one can reveal the phonetic and semantic convergence patterns corresponding to the historical sound changes in the Arabic language.

The central hypothesis thus emerges: the letter *ẓāʾ* was a historical offshoot of *zāy* during the gradual transformation of the early Arabic dialects (Chang, 2019). This is supported by the great amount and uniformity of the lexicographical evidence, which proposes that the emphatic *ẓāʾ* was a product of articulatory and semantic intensification of *zāy*, hence a "thickened" variant. This process has been dubbed *emphatic drift*. Comparative Semitic data provide further backing for this interpretation, as the corresponding sounds in the cognate languages (Hebrew, Aramaic, Akkadian) often show

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up as ṣ or ṭ, thus marking an articulatory and acoustic trajectory from lenis to emphatic consonants (ʿAbd al-Tawwāb, 1997).

In the study of phonetics of Classical Arabic, both the consonants were produced from almost the same place inside the mouth. The famous grammarian Sībawayh described to us the position of production of z, s, and ṣ as follows, "between the tip of the tongue and the bases of the upper incisors;" and that of z, d, and th as "between the tongue tip and the edges of the incisors" (Sībawayh, 1988, Vol. 4, p. 433). This articulatory relationship provides a good basis for the interchange. Both consonants are voiced alveolar fricatives which are the same in voicing and place of articulation, the only difference being the degree of pharyngealization or emphasis (Al-Masri & Jongman, 2004; Al-Raba'a & Davis, 2020).

Nonetheless, the two sounds exhibit great differences in their auditory and semantic functions. *Zāy* is a soft, whistling, and fluent sound that is associated with lightness and high frequency, while *ẓāʾ*, a sound produced through pharyngeal constriction and partial occlusion, gives off heaviness, resonance, and intensity (Bunī Bakr, 2016). The heavy sound not only links *ẓāʾ* with grave, solid, and closed meanings but also *zāy* with dynamic, bright, and open ones (Najjār, 2010).

The systematic phonetic differences in accents are linked to the systematic semantic specialization. Words that contain the Arabic letter *ẓāʾ* nearly always carry meanings related to pressure, stability, and completion, while the words with *zāy* convey the opposite ideas of motion, flow, and dispersion. Therefore, the phonetic variation serves as a clear indicator of a "semantic division of labor" functionally rather than just a case of accidental variation. The interaction of different layers in this case is very much what Ibn Jinnī (1952, Vol. 2, p. 158) referred to when talking about *taṣāqub al-lafẓayn li-taṣāqub al-maʿnayn*, "the affinity of sounds mirroring the affinity of meanings." The phonological changes in Arabic have never been seen as arbitrary but rather as an outcome of the essential similarities existing among the features of articulation that are very much like meaning.

Studies on phonetic symbolism back this relationship. The experimental proof (Sidhu & Pexman, 2018; Imai & Kita, 2014; Preziosi & Coane, 2017) suggests that sounds produced in the back of the oral cavity and pharyngealized ones are interpreted as heavier, denser, or more powerful, whereas front and palatal sounds are associated with lightness and fluidity. The Arabic *ẓāʾ* is a very good example of this tendency: it brings the perceptive weight of the word to the point, thus increasing its physical and emotional resonance.

Consequently, the switch between *zāy* and *ẓāʾ* is a phonetic–semantic process that is internally motivated rather than a dialectal irregularity. The phonological system of Arabic considers *zāy* as the sign of movement and openness, while *ẓāʾ* is the sign of reinforcement and sound where the meaning needs it most. The interchange between them illustrates how the sound structure of Arabic incorporates a universal conceptual logic, where phonetic gradation reflects semantic hierarchy.

The present paper has four aims which are closely related to each other and build the base of the study's analytical framework together. The first aim is to carry out a morpho-semantic analysis of the root pairs with *zāy* and *ẓāʾ*. This consists of defining the common meaning of each pair and showing the direction of phonetic and conceptual change between them, namely how the lightness and liquid quality of *zāy* go to the heaviness and solidity of *ẓāʾ*. The uncovering of this linguistic logic through the analysis of the internal alternation of forms represented in the text of *Lisān al-ʿArab* is the goal of the study.

The second goal, in turn, brings up the issue of methodological calibration, which involves the development of clear-cut standards to tell apart the real cases of *ibdāl* (phonetic alternation) from the scribal or writing system variants. This move makes sure that the data set is still philologically correct and the switching of *zāy* and *ẓāʾ* is seen as a real linguistic occurrence instead of being the outcome of transcription error or dialect mixing.

The hypothesis that *ẓāʾ* was originally a variant of *zāy* will be mainly checked through the analysis of distributional frequency and phonetic environments of each sound. The study particularly focuses on instances where the consonant *zāy* is next to the phonetically strong or back consonants as these environments are the most suitable for the articulatory process of *emphatic drift* to take place. The mapping of these occurrences will allow us to decide whether the development of *ẓāʾ* can be understood in terms of assimilation and fortition which are common processes in the phonology of Arabic distinctions.

The main objective is to create a comprehensive explanatory model that integrates this alternation within a wider semantic and phonological framework. The model has established that *zāy* conveys concepts of movement, separation, and rhythmic continuity, whereas *ẓāʾ* signals power, quietness, and containment. This interpretive harmony is supported by the conventional phonological analysis of Arabic as well as by contemporary theories of sound symbolism, thus uniting historical philology and modern linguistic understanding within a shared explanatory structure.

II. Literature Review

The Historical Development of Sounds

The Arabic language has experienced phonological changes right from its beginning, and this is one of the most general features of living languages: the sounds change gradually, and this is done through dialects, time, and environment. The language operates like a social organism that is formed by geography and culture and is constantly adapting to the speakers' experiences (Anīs, 1972, p. 160).

The documentation of tribal phonetic differentiation through poetic practices and Qurʾānic recitation readings was then confirmed by the early grammarians. Ibn Aḥmad (1999, p. 58) developed the first systematic division of articulation areas in *al-ʿAyn*. Sībawayh (1988, pp. 431, 117, 378) allocated separate chapters in *al-Kitāb* to *idghām* (assimilation), *imālah* (vowel inclination), and *hamz* (glottalization). Ibn Jinnī (2000, Vol. 2, p. 203) in *Sirr Ṣināʿat al-Iʿrāb* regarded *ibdāl* and phonological causation as principal analytical tools, establishing a connection between sound change and semantic function. Subsequently, al-Lughawī (1961, Vol. 2, p. 140) in *Kitāb al-Ibdāl* not only reiterated these concepts but also compiled the first exhaustive array of Arabic sound correspondences. As a whole, these scholars laid the foundation for Arabic phonology to be considered as one of the most advanced and fully developed linguistic systems in the medieval world.

Phonological development encompasses a series of changes impacting pronunciation, the nature of the sound waves produced, and the sounds' place or function, respectively, in the structure of the words. As an illustration, one might notice such alternations as *thāʾ* → tāʾ (e.g., thalātha → talāta), qāf → *hamz*ah (qalam → ʔalam), or nūn → lām (ithnān → itnān). Among such changes, the switch between *zāy* and *ẓāʾ* stands out (al-Lughawī, 1961, Vol. 2, p. 140). In several dialects of the Levant, *zarf* is widely accepted in place of *ẓarf*, which means "bag, pouch", thus highlighting the ongoing interchange of z/ẓ as a living phenomenon.

The mentioned alterations are the results of articulatory economy, the natural tendency to pronounce easier, and the interaction with other dialects or languages (Rāḍī, 2020, p. 56). Through Comparative Semitic research, it has been discovered that nonetheless, these changes of sound can be found in other languages besides Arabic, too. For example, the distinction between *sīn* and shīn is made in Hebrew systematically; Aramaic and Akkadian also show gradual divergence via alternations like shamash/shams (Saʿdī, 2020, p. 238).

Additionally, the Arabic *ẓāʾ* has a corresponding sound in the other Semitic languages as it is related to the Ethiopian ṭā and the Hebrew, Akkadian, and Aramaic sounds respectively (ʿAbd al-Tawwāb, 1997, pp. 57, 86; Takács, 2022). This phenomenon in different languages places Arabic besides the other Semitic languages in the development of voiced alveolar consonants going through emphatic articulation in certain phonetic environments.

The pattern is further corroborated by comparative lexical evidence. The lexeme ẓifr ("fingernail, claw") is parallel to Hebrew ṣpr, Aramaic ṭefrā, Syriac ṭefrā, and Ethiopic ṣefr, while Modern South Arabian żefr maintains the Arabic emphatic feature (ʿAbbābneh & al-Zaʿbī, 2014, p. 290). Likewise, *ẓahar*a ("to appear, to become visible") is equivalent to Hebrew and Moabite ṣhr ("noon") and Syriac ṭahrā; ẓūr ("fertility, emergence") has a reflex in Old South Arabian as żwr and in Hebrew as zār ("to approach"), exemplifying different changes from a common proto-root (ʿAbbābneh & al-Zaʿbī, 2014, pp. 455, 458, 593).

Other root pairs indicate a similar distribution between Arabic and its cognates in Semitic languages. The Arabic ẓalla "to stay" or "to give shade" is mapped to the Hebrew's ṣālal "to shadow" and the Nabataean's ṭll "to cover," which means that the Arabic emphatic form always corresponds to the basic meaning of stability, protection, and enclosure. On the contrary, the less stressed form zalla gives a different meaning of movement and deviation "to slide" or "to miss," which is more in line with the ideas of openness and impermanence. Likewise, ẓilf "hard ground" or "covering" correlates with the Hebrew zlp "to crush" and the Aramaic zəlaf "to sprinkle," which shows that the Arabic language is moving from the presence of heaviness and solidity towards the existence of finer, more dispersed actions in cognate languages.

The above-discussed similarities among the meanings of the letters, together with their phonetic and semantic developments in the process of linguistic evolution, ultimately prove again that the Arabic *ẓāʾ* is inclined towards heaviness, enclosure, and blackness, whereas *zāy* is still associated with lightness, liquid, movement, and even dispersion. In the middle of the Semitic continuum, Arabic seems to have created a distinctive ẓ for making meanings stronger or "heavier" while the cognate languages just retained the unmarked reflexes (z, ṣ, ṭ).

The said distribution backs the supposition that *ẓāʾ* in Arabic came from the older *zāy* through a gradual process of lexical diffusion and dialectal variation instead of a sudden systemic change. Arabic probably created an emphatic series in a part of its vocabulary, similar to but different from other Semitic phonological changes.

III. Methodology

A. Research Hypothesis

The phonological theory and modern linguistic analysis provide the basis for the qualitative descriptive-contrastive approach adopted by the study. The principal objective is to ascertain whether the Arabic consonant *ẓāʾ* (ظ) was developed by either *zāy* (ز) or through a slow and overlapping reinforcement that signifies both semantic and phonetic involvement. Internal linguistic proof from *Lisān al-ʿArab* (Ibn Manẓūr, 1994) is the main source for the research, which is a large lexicographic corpus that keeps the linguistic and semantic texture of early Arabic. The hypothesis of this study is that the phonological changes in Arabic are not random but rather the outcome of the relationships between sound and meaning which are operated by rules.

B. Analytical Instruments

The investigation integrates two analytical precepts. The foremost is phonetic proximity, which presupposes that sounds having the same articulatory characteristics, particularly place and manner of articulation, are more likely to be substituted. The latter is semantic coherence, which claims that the change in sound is accepted in the vocabulary only when it represents a distinction that is either functional or conceptual. It is from this point that the interchange between *zāy* and *ẓāʾ* is analyzed as a phonetic event placed within a significant semantic structure.

The analysis was only based on the corpus of *Lisān al-ʿArab*, which was chosen due to its wide scope, the depth of its philological study, and its combination of earlier works such as *al-ʿAyn* (Ibn Aḥmad, 1999), *Tahdhīb al-Lugha* (al-Azharī, 2001), *al-Muḥkam wa al-Muḥīṭ al-Aʿẓam* (Ibn Sīdah, 1996), and *Jamhara al-Lugha* (Ibn Duraid, 1987). The reliance on this corpus, which is a very important one, has guaranteed that the investigation is still connected with the phonological reasoning of the early Arabic period while providing a common framework for comparison. Only those roots that appear in the forms of *zāy* and *ẓāʾ* and share a demonstrable semantic nucleus were considered. The cases that were excluded were done so in order to prevent the mixing up of occasional homonyms with real instances of alternation, in which the meanings were inconsistent or even the opposite of each other.

C. Data Collection and Procedures

Phonetic mapping, semantic naming, and comparative verification were worked out to keep the analysis going. Each root pair was considered within its articulatory context, focusing on the placement of the switching consonant, the adjacent sounds, and the quality of the vowels. Special attention was given to the contexts where emphatic or back consonants such as ṭ, q, and r were present, as these consonants have a historical tendency to promote the spreading of pharyngealization. The next step was to conduct the interpretation of the relationship between the two by means of textual and contextual interpretation. Only those instances were allowed which had a distinct semantic gradient, for instance the gradual change from motion to stability or from brightness to density, for the interpretation.

The work of ʿAbbābneh and al-Zaʿbī (2014) and Brockelmann (1977) included a comparative analysis that consisted of the cognate Semitic languages, namely Hebrew, Aramaic, and Ethiopic, it was this analysis that helped to judge whether the Arabic alternations were indicative of a wider regional articulation tendency or were innovations that were solely internal to the Arabic dialects. The study disclosed that even though other Semitic languages had similar emphatic developments, Arabic had the philosophical use of both the lighter and the heavier variants, which is indicative of a conscious internal differentiation of semantic precision and on the other hand, external borrowing.

The voicing of *ẓāʾ* was subjected to an additional investigation through the lens of classical phonological theory. Sībawayh (1988, Vol. 4, p. 433) placed *zāy* and *ẓāʾ* together at the same location with the only difference being the pharyngeal tension associated with *ẓāʾ*. He drew the line at the upper incisors by the tongue tip. Ibn Jinnī (2000, Vol. 1, p. 23) pointed out that such closeness allows for the interchange of sounds without breaking the phonotactic order, provided that the meaning remains understandable. The results of modern phonetic research (Imai & Kita, 2014) are in accordance with this classical view, as they reveal that pharyngealized sounds create lower formant frequencies and perceptual heaviness, which are typically linked with the meanings of weight and hardness. Hence, the proof grants the support to the interpretation that the metamorphosis from *zāy* to *ẓāʾ* is a case of emphatic fortition, which is an articulatory enhancement that gradually got the semantic value and phonological independence.

Next, a thorough semantic classification was performed to trace the conceptual relationships between the two forms that keep coming up. The researchers found seven main patterns in total, which were movement vs. stability, lightness vs. weight, openness vs. containment, continuity vs. finality, fluidity vs. solidity, brightness vs. density, and externality vs. inwardness. These were the categories that data-based induction brought to light and were the reason behind the strong link between heavier articulation and meanings of permanence, closure, or intensity being revealed. Hence, it seems that in Arabic, phonetic effort and semantic gravity work in parallel, making it possible for sound structure to embody conceptual distinctions.

D. Verification and Reliability

Throughout the entire analysis, strict verification procedures were enforced to ensure that the results obtained were accurate and authentic. The verification process was conducted using the most widely used Arabic dictionaries, and only those roots that were confirmed by two or more sources were accepted. Furthermore, morphological consistency was also taken into consideration in order to eliminate forms that could have resulted from scribal variation or analogical derivation. By combining various sources, it not only became harder for coincidences to happen, but also the dependability of the results was increased. Therefore, the approach of the study integrates linguistic abstraction and philological accuracy together. It views the lexicon as a historical document not only of cognitive and articulatory behavior but also as a meeting point where the descriptive richness of classical Arabic scholarship and the analytical brightness of modern linguistics converge. The study is based on internal textual evidence as opposed to throwing back the phonetic system speculation and thus placing the sound of *ẓāʾ* in Arabic phonological development, revealing how its birth is the result of the interaction of articulation, perception, and meaning. This interpretative model suggests that the sound changes in the Arabic sound system were not random alterations but rather the process of meaning-driven adaptations that gave *ẓāʾ* the quality of being expressive and indefinite in its semantic area thus making it prominently phonetically and conceptually distinguished in the language landscape.

IV. Results and Discussion

The survey of the vocabulary of *Lisān al-ʿArab* (Ibn Manẓūr, 1994) has revealed the existence of a complete set of forty original root pairs that illustrate the phonetic and orthographic interchange between the letters *zāy* (ز) and *ẓāʾ* (ظ).

Each pair contained a semantic nucleus that could be verified, linking together the two forms and, at the same time, their differences reflecting a phonetic-semantic polarity that is consistent rather than random replacement. The sounds indicate that *ẓāʾ* is a marked sound in the semantic field and, therefore, is used to express the maximum, the close, or the stable, whereas the sound *zāy* denotes the opposite by being a-footed in notions of lightness, openness, and motion. The alternation's consistent unidirectionality, from *zāy* to *ẓāʾ*, reinforces the idea of *emphatic drift*, a gradual change that is the result of the prominence given in articulation and the amplification of meaning.

A. From Movement to Stability

The majority of the root pairs show a shift from the meanings of motion or coming into being that are connected with *zāy* to the meanings of stability and completion that are indicated by *ẓāʾ*. To illustrate, the difference between *ẓahar*a and zahara is that the latter expresses "to come out or to be seen," while the former makes clear the meaning "to come out or to be seen with power or light." Ibn Manẓūr (1994, Vol. 4, p. 523) interpreted ẓuhūr as "what has become settled on the top of the visible surface," thus agreeing that the emphatic pronunciation indicates a state of being. The two words ẓalafa and zalafa have the same meaning of closeness but ẓalafa suggests coming near with the enclosure or full, thus changing the movement into the proximately achieved state.

B. From Lightness to Weight

In a number of cases, the switch from *zāy* to *ẓāʾ* is an indication of profundity through stages from light, fleeting meaning to one of density and strength. The zafara verb has the meanings of "to exhale softly" or "to emit a faint scent," but ẓafara means "to triumph or prevail," which is an intensified perception of energy and fulfillment. A similar differentiation can be seen in zilf and ẓilf, the former referring to a soft edge, while the latter connotes thickness or hardness (Ibn Manẓūr, 1994, Vol. 9, p. 97). These illustrations verify that the pharyngealization of *ẓāʾ* brings in both physical and semantic weight.

C. From Expansion to Containment

The data also indicate that roots with *zāy* usually connote openness and expansion, whereas roots containing *ẓāʾ* are associated with confinement and enclosure. Zār denotes "to visit" or "to come near" being, thus, an outwardly directed motion, while ẓār indicates "to press" or "to surround" and hence implying a non-moving action of contained. Similarly, zamma meaning "to gather lightly" gets transformed into ẓamma if it refers to "seizing or enclosing firmly" (Ibn Manẓūr, 1994, Vol. 7, p. 245). This change in form captures the inherent relationship between forceful pronunciation and idea being small in number through the process of being compressed.

D. From Continuity to Finality

Multiple root pairs exhibit a transition away from either a continuous or an iterative action and towards a final and decisive action. The verb Zarra implies "to scatter multiple times," pointing to a free and unending process, whereas *ẓarra* means "to squeeze out grains," a final effort. In a like manner, *zann*a ("to consider or believe") is set against *ẓann*a ("to know for sure"), the movement from presumption to assurance being emphasised. The and louder articulation in *'ẓāʾ'* then signals the end or settling of the meaning, sound physically supportive of the concept of closing.

E. From Fluidity to Solidity

A recurring change, once more, is the change from liquid and temporary states to solid and permanent ones. Zalla refers to "to slip or move lightly," which is a brief and unstable movement, while *ẓalla* stands for "to stay" or "to endure under shade," which carries the meaning of stability and continuity. Likewise, *zulāl* ("clear water") is contrasted with *ẓulāl* ("thick shade"), the latter being a metaphor of the movement from clarity to obscurity. The occurrence of *ẓāʾ* in these cases indicates a process of semantic crystallization where movement is replaced by stillness and form by matter.

F. From Brightness to Density

In rare cases, the switching of terms accentuates the transition from surface shine to deep glory. *Zawʾ* signifies "light or glow," which is a transient characteristic, but at the same time, *ẓawʾ* means "the source or core of light," thus alluding to a light that is kept (Ibn Manẓūr, 1994, Vol. 7, p. 338). Similarly, it is with the words, *zahr* ("flower" or "outer surface") versus *ẓahr* ("back" or "support") where the former refers to the showy aspect and the latter to the utilitarian one. The emphatic consonant, through its greater resonance, actually transforms the aesthetic expression into structural permanence.

G. From External Manifestation to Inner Force

Some roots indicate the change from outside the body expression to inside the spirit. Zakar, which means male, is a physical characteristic, whereas *ẓakar*, in its dialectal and more general meaning, suggests vitality or energetic power and thus, the meaning is transferred from outer to inner. Similarly, *zār*, which means visiting or moving outward, is the

opposite of *ẓār*, which means encircling pressure or influence. The process demonstrates a change in conceptual focus from outer surface to inner substance, in line with the semantic effect of emphatic articulation.

TABLE 1
MORPHO-SEMANTIC CHARACTERIZATION OF (Z / Ẓ) PAIRS

Semantic Domain	Root Pair	Semantic Division	Source (*Lisān al-ʿArab*)
Fullness / Constriction	*kaẓẓ / kazza*	Unified sense of "tightness": *kaẓẓ* = internal congestion and retention; *kazza* = external contraction and closure.	7/457; 5/400
	kaẓama / kazama	Inner restraint contrasted with outward contraction.	12/519; 12/517
Manifestation / Appearance	*ẓahara / zahra*	Substantive emergence and dominance (*ẓahara*) versus brightness and aesthetic radiance (*zahra*).	4/523; 4/331
Proximity / Frontality	*ẓūra / zūra*	Physical nearness or frontal position (*ẓūra*) versus moral or social prominence (*zūra*).	4/529; 4/333
	ẓill / zalal	Stable protective shade (*ẓill*) versus instability or slippage (*zalal*).	11/415; 11/419
	ẓūf / zūf	Comprehensive grasp (*ẓūf*) contrasted with relaxed or light movement (*zūf*).	9/232; 9/142
Release / Displacement	*naẓafa / nazafa*	Achieved purity (*naẓafa*) versus depletion or drainage (*nazafa*).	9/336; 9/325
	malaẓ / malaz	Controlled detachment (*malaẓ*) versus spatial removal (*malaz*).	7/464; 5/412
	raʿaẓ / raʿaz	Fine-grained precision (*raʿaẓ*) versus sharper, more abrupt movement (*raʿaz*).	7/445; 5/354
Direction / Influence	*waʿaẓ / waʿaz*	Persuasion through reasoned guidance (*waʿaẓ*) versus direct command or admonition (*waʿaz*).	7/466; 5/429
Force / Intensity	*bahhaẓ / bahaz*	Oppressive weight or severity (*bahhaẓ*) versus forceful action or thrust (*bahaz*).	7/436; 5/314
Phonetic Thickening	*maẓaʿ / mazaʿ*	Prolonged absorption or tension (*maẓaʿ*) versus rapid dispersion or release (*mazaʿ*).	8/339
	laḥaẓ / laḥaz	Lateral inclination (*laḥaẓ*) versus sharp visual deviation (*laḥaz*).	7/458; 5/404

H. Quantitative and Positional Observations

Among the forty root pairs that are confirmed, thirty-one of them (77.5%) are following the *zāy* to *ẓāʾ* transition which is shown to be characterized by semantic intensification. Five pairs (12.5%) alternate in a neutral way without any semantic differentiation being clear, while four (10%) provide ambiguous results which are probably caused by dialectal convergence or layered etymologies. The pattern of z → ẓ being the most common one reinforces the hypothesis that *ẓāʾ* is a consonant in Arabic that is derived and semantically specialized.

The positional analysis shows that *ẓāʾ* is found mostly in the beginning or in the middle of words, which are the places where the tension of articulation and the spread of emphasis are favored, while *zāy* is still allowed in all positions. This distribution pattern points to the hypothesis that *emphatic drift* began as a phonetic adaptation and later got lexical reinforcement through semantic change.

TABLE 2
QUANTITATIVE DISTRIBUTION AND DIRECTIONALITY OF (Z / Ẓ) ALTERNATIONS

Category	Number of Root Pairs	Percentage	Description of Pattern
Directional alternation (*z* → *ẓ*)	31	77.5 %	Clear progression from light to emphatic articulation, with *ẓāʾ* functioning as a semantically intensified form expressing stability, closure, and permanence.
Neutral alternation (no semantic contrast)	5	12.5 %	Alternations showing phonetic substitution without distinct semantic differentiation, often reflecting dialectal or morphological leveling.
Ambiguous or irregular alternation	4	10 %	Pairs affected by mixed etymology, rare lexical usage, or potential scribal influence; no consistent direction of change identified.
Total	40	100 %	Corpus of verified root pairs extracted from *Lisān al-ʿArab* (Ibn Manẓūr, 1994).

The principal directional alternation (z → ẓ) confirms that in Arabic phonetic means, over the years, the stressing of a word no longer was purely by phonetic and finally by semantic necessity. The very few neutral or ambiguous pairs back the claim that *ẓāʾ* is a marked, context-dependent innovation rather than an inherited Proto-Semitic phoneme.

I. Phonetic and Semantic Correlation

The correlation between pronunciation and semantics is to be seen vividly throughout the roots under investigation. Words that have *ẓāʾ* in their structure mostly refer to force, protection, and seriousness of either moral or physical nature, whereas the ones with *zāy* feature movement, light, and scattering. This has provided support for Ibn Jinnī's (1952) claim that sound similarity is a significant factor in determining the meaning of words, and it is also consistent with modern-day research in phonosemantics which reveals that large sounds are associated with the quality of being solid as perceived (Imai & Kita, 2014; Preziosi & Coane, 2017).

Semantic clustering analysis shows that the roots which are related to physical effort, resistance at a spatial level, or exertive power prefer the phoneme *ẓāʾ*, while those which are linked to light, sound, or the lack of restrictions in movement keep the phoneme *zāy*. This relation supports the view that the Arabic language classifies phonetics and semantics in accordance with a basic characteristic of equal proportion between sound and sense.

TABLE 3
PHONETIC–SEMANTIC CORRESPONDENCE OF SELECTED (Z / Ẓ) PAIRS

Root Pair	Core Meaning	Phonetic Environment	Direction	Functional Shift
ẓahara / zahara	Emergence and manifestation	Open vowel + laryngeal	z → ẓ	Heaviness signals stability and dominance
ẓanna / zanna	Mental assumption and conviction	Nasal environment	z → ẓ	Emphasis expresses certainty and firmness
ẓalaf / zalaf	Nearness and approach	Liquid consonant context	z → ẓ	Closure and semantic compression
ẓilf / zilf	Surface texture or contact	Fricative + vowel cluster	z → ẓ	Transition from light contact to dense cohesion
ẓafara / zafara	Emission versus victory	Labial + open vowel	z → ẓ	From exhalation to strength and conquest
ẓalla / zalla	Shade and stability	Initial emphatic context	z → ẓ	From motion to endurance and continuity
ẓār / zār	Visitation or pressure	Glottal adjacency	z → ẓ	From external contact to inward influence

There is no significant evidence of the reverse alternation (ẓ → z) in the data, which implies that the process was always from the lighter sound to the heavier sound. Such a direction gives *ẓāʾ* the status of an innovatory feature, which has been introduced for lexical and semantic emphasis rather than for phonetic variation alone. The restricted occurrence and specific semantic range of *ẓāʾ* indicate that it is a morphological sign of intensification, while *zāy* remains the neutral, unmarked articulation.

The patterns that were observed completely align with both the classical and the comparative studies. Sībawayh (1988, Vol. 4, p. 433) pointed out that the differences in the utterance of *zāy* and *ẓāʾ* were very close articulatory-wise and he distinguished them by the degree of pharyngealization. Ibn Jinnī (1952) explained the semantic connection of such alternations, while al-Lughawī (1961) recorded them as instances of *ibdāl* based on systematic correspondence. In a comparative way, both ʿAbd al-Tawwāb (1997) and Brockelmann (1977) referred to *ẓāʾ* as a second emphatic consonant that was gradually formed within Arabic to signify a conceptual weight that was not present in other Semitic languages.

The passing of *zāy* to *ẓāʾ* showcased a shift from the unrestrained and the indefinite to the intensified and the restricted, thus changing the articulatory effort into the semantic depth. The whole process of sound change accompanying meaning shift illustrates that the Arabic language had assimilated the association between phonetic weight and conceptual substance, and at the same time, it was still able to articulate them with its sound system that was already built up of the different layers of meaning.

The outcomes of this research support the notion that the interchange between *zāy* (ز) and *ẓāʾ* (ظ) in the Arabic language took place unidirectionally, from *zāy* to *ẓāʾ*. This change in direction is in line with both the way of speaking and the meaning that slowly changed over time. The phonetics of *zāy* would point out that it is a voiced alveolar fricative characterized by holding a neutral and unmarked position of articulation with fluid resonance and easy production as its main features. The production of *ẓāʾ*, on the other hand, brings into play pharyngeal constriction and sublingual pressure which results in a heavier acoustic resonance that is associated with the evolution of the meaning. The transformation is a part of what Brockelmann (1977) and ʿAbd al-Tawwāb (1997) referred to as emphatic fortition, a universal linguistic process in which soft consonants turn into emphatic ones through tension or in situations where the meaning needs to be stressed. The reverse process of *ẓāʾ* to *zāy* was not found as a systematic phenomenon in *Lisān al-ʿArab* (Ibn Manẓūr, 1994), and therefore the hypothesis of a one-way transition from lighter to heavier articulation is further supported.

This phonological development also mirrors a general functional principle of sound change in Arabic: phonemes are going to become stronger when they carry more semantics or emotions. The continuous linking between emphatic articulation and the concepts of hardness, seriousness, or power implies that the speakers unconsciously supported those meanings by using louder sounds with the pharyngeal aspect. Gradually, these emphatic articulations got established as independent word forms, thus changing what was a mere variation in articulation initially into a proper phoneme in the Arabic sound system.

Thus, replacing *zāy* with *ẓāʾ* and vice versa is not a random interchange but on the contrary a system of semantic specialization. In other words, all the words with *zāy* are connected to the concepts of openness, movement, and continuity, whereas those with *ẓāʾ* are connected to solidity, closure, and restraint. This connection exemplifies the doctrine laid down by Ibn Jinnī (1952, Vol. 2, p. 158) regarding the principle of *taṣāqub al-lafẓayn li-taṣāqub al-maʿnayn,* which asserts that sound similarity reflects semantic similarity. The pronunciation of *ʿẓāʾ*, that is a heavy sound, makes the speaker think of the meanings of fixation or confinement, while *zāy*, which is a soft sound, points to the ideas of flowing and moving. The sound change thus reflects the association between sound and meaning in a unified structural polarity of Arabic that is both functional and expressive.

This result corresponds to the modern theory of sound symbolism (Imai & Kita, 2014; Preziosi & Coane, 2017), which connects heavy articulation with gravity perception and cognitive salience. The *ẓāʾ* phoneme's pharyngealization lowers the second formant frequency and creates an auditory impression of thickness and depth, which listeners associate with strength or stability. The semantic transition from dynamic to static, or from superficial to profound, thus reflects an acoustic transition from lightness to density. In this way, *ẓāʾ* takes on the function of a semantic intensifier, representing the embodied perceptions of effort and gravity involved in physical articulation.

Theoretical implications concerning Arabic phonological motivation are quite dynamic in the case of Sībawayh (the famous grammarian) to mention some non-theoretical linguists, Sībawayh (1988, Vol. 4, p. 433) among them, was the first to talk about *zāy* and *ẓāʾ* being adjacent in articulation, having only pharyngealization difference and nothing more. Their closeness managed to keep the historical interchange while increasing the functional differentiation between them when the pharyngealized consonant *ẓāʾ* was accented (theoretically). In most cases of *Lisān al-ʿArab* phonological alternation the phonetic environments consisting of emphatic or velar consonants such as ṭ, q, or r and also *zāy* are directly responsible for the occurrence of alternation through spread of phonological changes. The whole process can hence be viewed as a case of emphatic contagion in which the articulatory characteristics of the neighboring sounds force a partial emphasis on *zāy* that eventually latches onto it and becomes the new sound quality of *ẓāʾ* (Flynn, 2024).

The linguistic viewpoint of evolution is evident through a recognized sequence of events: the close articulation first becomes strong merging, then the meaning is transmitted and finally, the lexical stabilization occurs. This path is a clear indication of the interaction of phonetics and semantics in the formation of Arabic vocabulary. The use of *ẓāʾ* in the meanings connected with solidity, power, enclosure, and authority, is a good example of the Arabic economy of speech which by very subtle phonetic changes creates new meanings without being repetitive. The presence of roots such as *ẓahara/zahara, ẓanna/zanna,* and *ẓalafa/zalafa* signifies not the duplication of words but the splitting of their meanings: the language keeps both forms because each one serves a distinctive expressive purpose within the same conceptual domain.

An examination from a comparative viewpoint supports the inherent reasoning here. In Hebrew and Aramaic, cognates of Arabic roots that have the phoneme *ẓāʾ* are mostly replaced by the sounds of either *ṣād* or *ṭāʾ* (ʿAbbābneh & al-Zaʿbī, 2014, pp. 290–593). The Arabic word *ẓifr* (meaning "claw") is consistent with the Hebrew word *ṣpr* and the Syriac word *ṭefrā*; *ẓahar*a ("to appear") is compared with Hebrew *ṣhr* and Syriac *ṭahrā*. Such relationships across languages show that Arabic is part of a region-wide trend towards the strengthening of emphatic sounds, but at the same time it keeps both *zāy* and *ẓāʾ* forms, which means that the emphatic variant was developed internally, not through

direct inheritance. Consequently, Arabic manifests a new tendency where it goes beyond just giving the same sound to the semantic function but rather enhancing the Semitic pattern into a more sophisticated duality.

The z → ẓ transitions have predominated diachronically with a frequency of 77.5% which gives support to the view that this interchange is a regular development and not an overlapping dialect influence at times. The early dialects might have started the interchange as a phonetic variant that was conditioned by being next to the emphatics or by the stress placement, slowly obtaining semantic weight as the speakers were linking the heavy articulation with the ideas of intensity and permanence. They made the majority of their way through repetition and analogy, which led to these associations being recognized lexically in the canonical sources like *Lisān al-ʿArab*.

Accordingly, the findings are interpretable in terms of the process of functional phonologization, which is characterized by the gradual change from allophonic variation to the separation of meaning and lexemes. What was originally a physiological change in speech became a cultural-provided and widely used indicator of meaning. This transformation brings out the interaction that was taking place among sound, perception, and cognition in the Arabic linguistic system. During the period of language change, the phonetic variation would be perceived as an instrument of semantic precision, and so that it was able to pronounce subtle distinctions through sound itself.

The research from a theoretical viewpoint is in favor of both the classical and modern linguistics views. The assessments of the two Arabian scholars, Sībawayh and Ibn Jinnī, did not only criticize but also laid the groundwork for several concepts in modern cognitive linguistics by linking sound change to functional and semantic factors. Their findings on the average relationship between sounds and meanings are quite a lot like those of the present phonosemantics where it is accepted that sound patterns often signify the same as the given feelings and perceptions. The z/ẓ interchange is an example of 'semantic phonotaxis' where the surprise element in the sound formation is the same as the one in the concept. As a corollary, Arabic could be the case in point of the oldest sound–meaning system that was shaped by both the articulatory and cognitive factors.

The change from *zāy* to *ẓāʾ* at a cognitive level shows the strong inter-connections among articulation, perception, and meaning in a dynamic way. One can link the speaker's extra effort in articulation to the listener's perception of an added emphasis that has been transferred to the semantic weight. This cyclical reinforcement between production and perception gradually becomes fixed and accepted in the language as a convention. Hence, one could see the alternation not only as a phonetic phenomenon but also as a cognitive-symbolic process whereby the physical effort involved points out the conceptual depth. The link between physicality and the communication of thought classifies Arabic as a language that, alongside Somali and some other Southeast Asian languages, taps into universal psycholinguistic mechanisms that allow the noise to function as the meaning's carrier, rather than as its neutral signifier.

To sum up, the study accentuates the deep analytical nature of the traditional Arabic dictionary-making. *Lisān al-ʿArab* (Ibn Manẓūr, 1994) provides not only the listing of words but also the demonstration of phonological and semantic intuitions. The fact that semantically related different roots were grouped under one lexicon was an indication of an early linguistic motivation awareness, somewhat similar to the medieval Arabic scholars' that going in a proto-structuralist framework. The modern-day linguistics helps to look back at such texts and thus, connects the early philological insight and the contemporary scientific method. The change of the letter *ẓāʾ* into *zāy* is not just a sound change example but also a sign of the Arabic language's self-regulation, refining, and creating new meanings. The phonetic change and semantic specialization in Arabic contributed to the development of a close unity between form and meaning that has been very important in the language's claiming to be one of the most systematically expressive ones among the Semitic family.

V. Conclusion

According to research, the correlation of *zāy* (ز) and *ẓāʾ* (ظ) in Arabic phonetics and in meaning was systematic and governed by phonology and semantic considerations throughout history. It was established that the direction of the transformation between these two sounds was from *zāy* to *ẓāʾ* through a qualitative analysis of *Lisān al-ʿArab* utilizing phonetic theory and comparative Semitic evidence. The best explanation for this transformation is the principle of *emphatic drift*, which is the cause of the gradual strengthening of voiced dental sounds under articulatory pressure and environmental factors until they turned into phonemes that are represented in the language with the meanings having and losing.

The results show that the sound *ẓāʾ* emerges as a clear, contextually active sound which stands for semantic strengthening and structural unification, while *zāy* still functions as the unmarked and common base for meanings such as motion, openness, and fluidity. Hence the two phonemes are in a functional complementarity relationship: *zāy* reveals the lively and short-lived, whereas *ẓāʾ* locks the fixed, drawn-out, or entire. This "semantic division of labor" provides Arabic with the capability to take in the possible lexical overlap within a single root field, thus obtaining precision with no redundancy.

The phonological alternation, in a diachronic view, reflects a major phonetic economy of the Semitic languages where not only articulatory ease but also the need of the semantic and the strong reinforcement of the expressive change have their say in sound change. The coexistence of the two forms in the lexicon, with each carrying a meaning that is different yet closely related, is a striking case of the dependency of sound and meaning as the main factor in the morphological process of Arabic.

Ultimately, the study confirms that the relation between *zāy* and *ẓāʾ* is an example of the organic unity of the Arabic language system in which the phonetic and the semantic components are working together and creating a very finely balanced case of the symbolic correspondence in the history of language evolution, the case of the relationship between *zāy* and *ẓā*.

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