

Emphasis Spread in Ḥā'ili Arabic

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Abstract—This article sheds light on the phonological phenomenon of emphasis spread in Ḥā'ili Arabic (HA), a variety of Arabic spoken in the region of Ḥā'il, within the framework of Autosegmental Theory. It mainly focuses on the behavior of emphasis spread, its directionality, and whether emphasis exhibits any preference for one direction over the other across the prosodic word, domain, and the interaction of emphasis spread with opaque segments. The data are elicited by using a digital recording device and an Aduix OM2 dynamic microphone from twenty native speakers of HA. It reveals that the primary emphatic phonemes occur in different vocalic environments and all word positions. The scope of emphasis spread is minimally over the syllable if there is an opaque segment that blocks emphasis spread, and maximally over the entire word if there is no blocker. The results manifest that emphasis spread is not limited to one direction, but it can operate regressively, progressively, or bidirectionally without any restrictions. However, in some cases, it is assumed that opacity appears if a phoneme blocks the emphatic feature. The paper concludes that certain segments can block the spread of emphasis within the phonological word, depending on the position of the emphatic trigger.

Index Terms—emphasis spread, emphatics, Autosegmental Theory, Ḥā'ili Arabic, opaque phonemes

I. INTRODUCTION

Emphasis spread (also referred to as pharyngealization spread) is a hallmark phenomenon in the phonological system of Arabic and its dialects. It is typically described as an assimilatory process in which emphatic (i.e., pharyngealized) consonants extend their secondary articulation to adjacent and, in many cases, non-adjacent segments. While the core articulatory properties of emphasis are relatively well-understood, the patterns of spread, their directionality, domain, and interaction with opaque segments, they remain a locus of significant cross-dialectal variation and theoretical interest.

Previous research has documented both long-distance and short-distance variants of emphasis spread across a range of Arabic varieties. Long-distance spread, whereby emphasis extends over multiple syllables or across word boundaries, has been attested in dialects such as Palestinian Arabic and Cairene Arabic (Younes, 1982, 1993; Davis, 1995; Herzallah, 1990; Zawaydeh, 1999; Youssef, 2014). On the contrary, some Arabic varieties like Qassimi display short-distance spread, where the emphasis feature is confined to adjacent segments within the same syllable in both directions (Alharbi & Alammari, 2022). Arabic studies on Libyan (Algryani, 2014), Jordanian (Jaradat, 2020), Najdi (Almuhaimeed, 2021), and Haswai Arabic (AlTaisan, 2022) further indicate that the emphasis spread process is highly variable across regional dialects regarding both the domain of application and blocking effects.

A particularly fundamental dimension of variation concerns directionality. Some Arabic dialects permit bidirectional emphasis spread, whilst others restrain spread to the rightward direction. Therefore, the directionality of emphasis spread is a language-specific property. Moreover, opaque segments that block the spread of emphasis are not uniformly defined across dialects. It has been reported that certain high front segments (/i/, /j/, and /j/) frequently act as blockers, though this effect is not always symmetrical. Some dialects allow leftward spread but prohibit rightward spread by certain opaque segments (Davis, 1995, p. 472).

Although much of the literature discusses emphasis spread, the phonological aspects of emphasis spread remain unexplored, either descriptively or theoretically, in Ḥā'ili Arabic (HA), an Arabic variety spoken in the region of Ḥā'il, Saudi Arabia. The core of this study is devoted to presenting an important empirical foundation to further refine our understanding of the typology of emphasis spread and its theoretical modeling. Accordingly, this paper offers a detailed account of the phonological behavior of emphasis spread in HA, with special attention to directionality, emphasis domain, and the effect of opacity.

Under the framework of Autosegmental Theory, this study attempts to address the following questions: (i) Does emphasis spread operate productively in HA, and if so, what are its phonological boundaries? (ii) What is the directionality of spread, particularly at word boundaries? (iii) How does emphasis interact with putative opaque segments, and what are the implications for our understanding of blocking mechanisms in non-linear phonology?

The remainder of this paper is organized as follows. Section 2 provides a typological overview of emphasis in Arabic. Section 3 surveys key contributions to the study of emphasis spread in Arabic dialects. Section 4 describes the methodological procedures and participant background. Section 5 presents the empirical findings from HA. Section 6 offers a formal analysis within Autosegmental Phonology. Section 7 concludes the paper.

II. EMPHASIS IN ARABIC

Most modern varieties of Arabic are typologically characterized by a set of coronal phonemes that exhibit pharyngealization, commonly referred to in the literature as emphatics. Emphasis is a salient phonetic and phonological feature in Arabic and other Semitic languages, involving a complex articulatory configuration. It typically entails a primary place of articulation in the dental or alveolar region, accompanied by a secondary articulation involving a lingual constriction in the upper pharyngeal cavity (Card, 1983; McCarthy, 1994; Davis, 1995; Watson, 1999).

Arabic comprises of four emphatic consonants /t^ʕ/, /s^ʕ/, /ð^ʕ/, and /d^ʕ/, each of which corresponds to a plain, non-emphatic counterpart /t/, /s/, /ð/, and /d/. The contrast between emphatic and non-emphatic segments is phonemic, as recognized by minimal pairs such as /ti:n/ 'fig' vs. /t^ʕi:n/ 'mud' (Obrecht, 1968; Trubetzkoy, 1969). Such contradictions underscore the systematic and contrastive status of emphasis in the phonological grammar of Arabic. The secondary articulation of emphatic segments encompasses the backing and lowering of the tongue body which contributes to a distinct acoustic and articulatory configuration. Yeou (2001) observes that this gesture involves retracting the tongue body against the posterior oral cavity, which boosts the pharyngeal quality of the segment and distinguishes it from its plain counterpart.

Diverse feature representations have been proposed to account for the phonological behavior of emphatics. For instance, Chomsky and Halle (1968), under the framework of the Sound Pattern of English, recognize emphatic segments as [+low] and [+back], wherein [+low] represents the tongue body depression and [+back] represents the retraction of the tongue body. Jakobson (1978), under feature geometry model, characterizes emphatics as [+flat], whilst Broselow (1979) presents the feature [+constricted pharynx] to differentiate them. Elgadi (1986) invokes a distinctive feature [+emphatic] to account for spread phenomena, which autosegmentally associates with adjacent segments to enable phonological processes such as emphasis spread. Davis (1993, 1995) proposes the feature [+RTR] (Retracted Tongue Root) and relies on parallels with other pharyngealized languages.

This study adopts Elgadi's (1986) feature specification [+emphatic] as it offers a representational economy that effectively accounts for emphasis spread under the framework of Autosegmental Phonology (Goldsmith, 1979; Van der Hulst & Smith, 1982). This model allows for non-linear representation of the emphatic feature as an autosegment that may spread over adjacent and non-adjacent segments, which can be interpreted based on the phonotactic and dialectal constraints in place. In general, by treating emphasis as an autosegmental feature, this study aims to capture the cross-linguistically attested variability in emphasis spread, while it maintains the internal consistency of phonological representation.

III. PREVIOUS STUDIES ON EMPHASIS

Emphasis or pharyngealization is among the most typologically silent features in the phonological systems of Arabic and other Semitic languages. Its acoustic and articulatory complexity, along with its phonological patterns, has made it a central focus in Arabic phonology. Emphatic consonants are produced with a primary coronal articulation, particularly dental or alveolar, and a secondary articulation involving retraction of the tongue root or dorsum toward the posterior pharyngeal wall (Card, 1983; McCarthy, 1994; Davis, 1995; Watson, 1999). This secondary articulation generates the hallmark acoustic properties of emphasis, specifically a decrease in F2 and an increase in F1, which can differentiate emphatics from their plain counterparts at both phonetic and phonological levels.

Under the aspects of feature geometry, the representations of emphatics have been the subject of extensive analysis. These representational discussions shape directly into the analysis of emphasis spread, a phonological process in which the emphatic feature extends from a trigger emphatic consonant to surrounding vowels and sometimes consonants. This phenomenon varies in scope across dialects. In Palestinian and Cariene Arabic, the spread can extend over several syllables and even across word boundaries. This pattern is known as long-distance spread as reported by Younes (1993), Davis (1995), Zewaydeh (1999), Youssef (2014). By comparison, dialects such as Qassimi Arabic elucidate short-distance spread, where the emphatic feature is restricted to the immediate adjacent segments within the same syllable (Alharbi & Alammar, 2022).

Directionality and opacity have also received considerable attention in literature. Some dialects allow bidirectional spread, while others restrict spread to only the rightward direction. Of particular significance is the presence of certain segments that act as blockers or opaque domains impeding the propagation of emphasis. Davis (1995) states a common asymmetry where the rightward spread of emphasis is often blocked by opaque segments, whereas leftward spread proceeds unimpeded. This phonological behavior has significant implications for phonological theory, specifically the interface between segmental and prosodic structure.

Based on a large number of studies on emphasis spread, Hā'ili Arabic (HA) has not been examined with respect to emphasis spread and its phonological behavior. No previous study has considered a systematic investigation of emphasis spread in HA, nor has any accounted for its directionality, scope, or the interaction of emphatics with blocking segments.

The current study addresses the critical gap by presenting the first comprehensive and theoretically grounded account of emphasis spread in the understudied dialect. Couched within the framework of Autosegmental Theory, this paper not only documents the empirical patterns of emphasis propagation and opacity, but also examines their implications for feature representation and phonological theory. By adopting Elgadi's [+emphatic] feature and investigating the autosegmental behavior, this study contributes a theoretically motivated analysis that merges directionality, transparency,

and prosodic domain sensitivity. Therefore, the findings not only enrich our understanding of Arabic dialectology but also challenge existing assumptions about the universality and locality of pharyngealization processes.

IV. DATA SOURCE AND PROCEDURE

The data were elicited from twenty native speakers of HA: ten males and ten females, whose ages ranged from twenty-three to forty-six years. All participants were born and raised in Hā'il city and have spent their entire lives there to ensure that they are not influenced by any other contemporary Arabic dialects and to maintain the integrity of the dialect's native phonological features. In terms of their educational level, most of the informants hold bachelor's degrees and some of them PhD degrees in various disciplines. This diversity of educational background did not impact the reliability of the data, as all subjects were fluent and active users of HA everyday-life communications. None of the informants reported any history of speech impediments to guarantee that they are able to utter authentic and reliable data. Participation was totally voluntary, and no monetary compensation was offered to adhere to established ethical standards for non-invasive linguistic study.

Prior to data collection, each informant was individually informed about the nature and objectives of the study. The researcher provided detailed information on the procedures and tasks given to ensure consistent elicitation and production across participants. The selection of words is based on emphatic consonant position, vowel type, and the phonological environment being tested.

The audio recordings were undertaken using a digital recording device and an Audix OM2 dynamic microphone in a quiet room. The choice of this equipment was intended to ensure high-fidelity of precise phonetic details, specifically those pertaining to secondary articulation and emphasis spread. A total of 88 tokens were recorded by each participant. To account for intra-speaker variability and phonological sample reliability, each word was elicited three times and spoken loudly in isolation at a natural pace.

After the data collection process, each word was transcribed using the International Phonetic Alphabet (IPA) symbols and analyzed phonologically to determine the presence, directionality, scope, and the opaque segments of emphasis spread. Both broad and narrow transcriptions were utilized. Broad transcription indicated by slashes represent the underlying phonological segments, whereas narrow transcription indicated by brackets represent the surface form of emphasis spread at the word level. Thus, the methodology allowed for a fine-grained analysis of the segmental and autosegmental model which governed emphasis spread in HA and provides a robust empirical foundation for the theoretical analysis advanced in the study.

V. EMPHASIS SPREAD IN HA

HA is similar to many contemporary Arabic dialects in having a group of coronal consonants that are characterized by pharyngealization, commonly referred to as emphatics (Abboud, 1979; Ingham, 1994; Alshammari, 2023; Abalkheel & Al Toreegi, 2025). These coronal consonants are conventionally classified into two categories: emphatics and non-emphatic counterparts. Emphatics include three primary pairs of consonants /tʕ/, /sʕ/, and /ðʕ/ along with their non-emphatic or plain coronal counterparts /t/, /s/, and /ð/. A notable feature of HA is the absence of the voiced alveolar emphatic stop /dʕ/, which has undergone a complete phonemic merger with the voiced dental emphatic fricative /ðʕ/ in HA. For example, the Classical Arabic word /dʕa.ma:n/ 'warranty' is realized as [ðʕa.ma:n], with /dʕ/ systematically replaced by /ðʕ/. Consequently, the phoneme /dʕ/ is no longer part of the HA phonological system.

Accordingly, this study concentrates on the primary emphatic consonants /tʕ/, /sʕ/, and /ðʕ/, which constitute the active set in HA and serve as triggers of emphasis spread. The table below outlines these primary emphatic segments with their description in the dialect under investigation.

TABLE 1
EMPHATICS IN HA

Emphatic consonants	Description
/tʕ/	Voiceless alveolar emphatic stop
/sʕ/	Voiceless alveolar emphatic fricative
/ðʕ/	Voiced dental emphatic fricative

Traditionally, emphatic phonemes in Arabic are recognized to induce the spreading of their distinctive pharyngealized features onto neighboring segments within a given phonological word (McCarthy, 1994; Davis, 1995; Watson, 1999; Bellem, 2007). The process of emphasis spread implies that the segment surrounding an emphatic consonant are not intrinsically specified for the emphatic feature but acquire it through assimilation. Therefore, these adjacent segments undergo phonetic modification conditioned by proximity to an emphatic trigger. Elgadi (1986, p. 23) states that the influenced segments are conditioned allophones that temporarily bear the feature [+emphatic] in the presence of a triggering consonant.

The data analyzed in this study emphasize that the set of primary emphatic consonants /tʕ/, /sʕ/, and /ðʕ/ exhibit a clear phonemic contrast consonants with their respective non-emphatic counterparts /t/, /s/, and /ð/. This contrast is phonologically substantiated by minimal pairs given in Table 2, which exemplify the contrastive distribution carried by the emphatic feature in HA.

TABLE 2
EMPHATIC VS. PLAIN CONSONANTS

Emphatic	Gloss	Plain	Gloss
/tʰa:b/	'to heal'	/ta:b/	'to repent, MS., Past'
/tʰi:n/	'mud'	/ti:n/	'fig'
/tʰu:b/	'bricks'	/tu:b/	'repent, MS.'
/sʰa:m/	'to fast'	/sa:m/	poisonous
/sʰe:f/	'summer'	/se:f/	'sword'
/sʰu:f/	'wool'	/su:f/	'to sponge'
/ðʰil/	'shadow'	/ðil/	'humiliation'
/ðʰa:ʃ/	'got lost'	/ða:ʃ/	broadcast
/ðʰam/	'hugged'	/ðam/	'blamed'

A range of transcription systems has been utilized to represent emphasis spread across Arabic dialects. For instance, Davis (1995) and Watson (2002) adopt a system in which emphatic segments are marked with a dot underneath the segment, whilst segments that undergo emphasis spread are rendered in uppercase letters. In contrast, non-emphatic surface realizations are transcribed in lowercase letters. Other studies have opted for alternative transcription conventions, such as underlining or boldfacing segments affected by the process of emphasis spread in order to provide a visual cue to distinguish between underlying and surface emphatic effects (Huneety & Mashaqba, 2016; Slimani, 2018; Al-Bataineh, 2019).

This study adopts the traditional phonetic transcription system that marks emphatic consonants with a raised voiced pharyngeal approximant [ʰ], added to the base consonant. The diacritic added to the emphatic sound is designated to capture the secondary pharyngeal articulation characteristic of emphatic. The phonemes affected by emphasis spread are consistently underlined throughout the analysis in order to provide a clear and systematic representation of the phonological domain affected by the [+emphatic] feature.

A. Emphasis Spread at Word Level

In Ḥā'ili Arabic (HA), the primary emphatic phonemes /tʰ/, /sʰ/, and /ðʰ/ show systematic phonological behavior, where they occur freely across all word positions: word-initially, medially, and finally. These segments demonstrate consistent co-occurrence with different vocalic environments, further they underscore their phonemic stability within the dialect. By examining the dynamics of emphasis spread at the word level, a set of examples is drawn from monosyllabic, disyllabic, and polysyllabic words, as shown in Table 3. In each case, emphasis is marked by underlining the surface segments affected by the [+emphatic] feature as a result of spreading. This systematic transcription allows for a clear observation of the locality and directionality of emphasis propagation across various prosodic and segmental configurations in HA.

TABLE 3
WORD-INITIAL TRIGGER CONSONANT

Monosyllabic Words	Input	Output	Gloss
	/sʰamy/	[sʰa.my]	glue
	/sʰo:m/	[sʰo:m]	fasting
	/tʰa:h/	[tʰa:h]	he fell down
	/tʰi:n/	[tʰi:n]	mud
	/ðʰulm/	[ðʰulm]	injustice
	/ðʰajf/	[ðʰajf]	guest
Disyllabic Words			
	/sʰa.ba:h/	[sʰa.ba:h]	morning
	/sʰo:rah/	[sʰo:rah]	photo
	/tʰa.bal/	[tʰa.bal]	drum
	/tʰuy.mah/	[tʰuy.mah]	beautiful
	/ðʰu.hu:r/	[ðʰu.hu:r]	appearance
	/ðʰa.rab/	[ðʰa.rab]	hit
Polysyllabic Words			
	/sʰu.ʃu:ba:t/	[sʰu.ʃu:ba:t]	difficulties
	/sʰi.na:ʃa:t/	[sʰi.na:ʃa:t]	industries
	/tʰa.la:ba:t/	[tʰa.la:ba:t]	requests
	/tʰar.ba.gah/	[tʰar.ba.gah]	crumbling
	/ðʰu.yu.tʰa:t/	[ðʰu.yu.tʰa:t]	pressures
	/ðʰu.ru:rah/	[ðʰu.ru:rah]	necessity

As can be seen in Table 3, when an emphatic segment occurs at the left edge of a word, it triggers a progressive rightward spread of the [+emphatic] feature to color the entire word. This phonological behavior is particularly apparent in monosyllabic, disyllabic, and polysyllabic form in HA. For instance, the pharyngealized /sʰ/ in the monosyllabic word [sʰamy] propagates the emphatic feature from left to right and extends to all neighboring segments /a/, /m/, and /y/. The data illustrate that the process of emphasis spread is not restricted to immediate adjacency but rather functions across multiple segments and syllables within a prosodic domain to underscore the assimilatory strength and phonological salience of primary emphatics in HA.

TABLE 4
WORD-MEDIAL TRIGGER CONSONANT

Disyllabic Words	Input	Output	Gloss
	/mah.s ^ʕ ul/	[mah.s ^ʕ ul]	harvest
	/na.s ^ʕ ar/	[na.s ^ʕ ar]	victory
	/ba.t ^ʕ al/	[ba.t ^ʕ al]	hero
	/hu.t ^ʕ u:l/	[hu.t ^ʕ u:l]	heavy rain
	/ʔay.ð ^ʕ ar/	[ʔay.ð ^ʕ ar]	green
	/mah.ð ^ʕ uð ^ʕ /	[mah.ð ^ʕ uð ^ʕ]	he is lucky
Polysyllabic Words			
	/mu.s ^ʕ a:.da.qah/	[mu.s ^ʕ a:.da.qah]	attestation
	/may.t ^ʕ u.t ^ʕ a:t/	[may.t ^ʕ u.t ^ʕ a:t]	manuscripts
	/ma.hat ^ʕ .t ^ʕ a:t/	[ma.hat ^ʕ .t ^ʕ a:t]	stations
	/mah.ð ^ʕ u.ð ^ʕ a:t/	[mah.ð ^ʕ u.ð ^ʕ a:t]	they (FM.) are lucky
	/ya.ð ^ʕ a:.rah/	[ya.ð ^ʕ a:.rah]	goblet

As illustrated in Table 4, when an emphatic consonant occurs word-medially, it initiates a bidirectional spread (rightward and leftward) of the [+emphatic] feature within the phonological word. This phonological behavior is exemplified in the disyllabic form [ʔay.ð^ʕar], where the emphatic /ð^ʕ/ appears to spread bidirectionally affecting the preceding segments /ʔ/, /a/, and /χ/, and the following segments /a/ and /r/. This pattern shows that the domain of emphasis spread in HA is not constrained to linear adjacency alone but operates systematically across syllabic boundaries to enhance the phonological strength of emphatic segments and the permeability of surrounding segments to pharyngealization.

TABLE 5
WORD-FINAL TRIGGER CONSONANT

Monosyllabic Words	Input	Output	Gloss
	/yas ^ʕ /	[yas ^ʕ]	choke
	/hirs ^ʕ /	[hirs ^ʕ]	care
	/ʔe:t ^ʕ /	[ʔe:t ^ʕ]	string
	/na:t ^ʕ /	[na:t ^ʕ]	jumped (MS.)
	/bajð ^ʕ /	[bajð ^ʕ]	eggs
	/ho:ð ^ʕ /	[ho:ð ^ʕ]	sink
Disyllabic Words			
	/ha.ris ^ʕ /	[ha.ris ^ʕ]	eager
	/yaw.wa:s ^ʕ /	[yaw.wa:s ^ʕ]	diver
	/mu.hi:t ^ʕ /	[mu.hi:t ^ʕ]	ocean
	/ba.la:t ^ʕ /	[ba.la:t ^ʕ]	tiles
	/ma.rað ^ʕ /	[ma.rað ^ʕ]	sickness
Polysyllabic Words			
	/ha:.fið ^ʕ /	[ha:.fið ^ʕ]	preservative
	/ta.ra:. ʔi:s ^ʕ /	[ta.ra:. ʔi:s ^ʕ]	licenses
	/ma.ha:.mis ^ʕ /	[ma.ha:.mis ^ʕ]	roasters
	/ʔas.tan.bat ^ʕ /	[ʔas.tan.bat ^ʕ]	he inferred
	/ʔay.t ^ʕ a.bu:t ^ʕ /	[ʔay.t ^ʕ a.bu:t ^ʕ]	octopus
	/mta.na:.gið ^ʕ /	[mta.na:.gið ^ʕ]	contradictory
	/ma.ʕa:.ri:ð ^ʕ /	[ma.ʕa:.ri:ð ^ʕ]	letters

As illustrated in Table 5, when an emphatic consonant is positioned finally within the word, emphasis spread proceeds in a regressive direction to color all preceding segments covering the whole word. For example, in the polysyllabic form [ʔas.tan.bat^ʕ], the final emphatic /t^ʕ/ triggers leftward spread of the [+emphatic] feature to extend across the three preceding syllables. This phonological behavior reveals that regressive assimilation in HA is unimpeded by syllabic boundaries or intervening consonantal material.

In sum, the data reveal that emphasis spread in HA is not unidirectional, rather it can operate progressively, regressively, or bidirectionally, based on the position of the emphatic trigger. Fundamentally, no opaque segments are reported to block the propagation of emphatic features. This indicates that emphasis spread in HA is phonetically unrestricted and phonologically transparent across the prosodic word.

B. Blockers of Emphasis Spread

Table 6 introduces the behavior of segments that act as potential blockers to emphasis spread in Hā'ili Arabic (HA). In phonological theory, opacity emerges when certain segments prevent the propagation of the [+emphatic] feature across adjacent segments. Regarding emphasis spread, many Arabic varieties show asymmetrical behaviors. That is, leftward spread is generally robust, while rightward spread is more frequently subject to phonotactic restrictions. This asymmetry has been reported in a number of Arabic dialects, involving Urban Jordanian Arabic (Al-Masri, 2009), Libyan Arabic (Algryani, 2014), Wadi Mousa Arabic (Huneety, 2015), and Fallaahi Jordanian Arabic (Jaradat, 2020), where segments classified by the features [+high, -back] block the propagation of emphasis rightward (Herzallah, 1990; Davis, 1995; Mashaqba, 2015).

TABLE 6
BLOCKING SEGMENT: HIGH FRONT VOWELS /i/ AND /i:/

Input	Output	Gloss
a. /s ^h i.dam/	[s ^h i.dam]	hit
b. /t ^h a:.lib/	[t ^h a:.lib]	student (MS.)
c. /ð ^h i.ri:h/	[ð ^h i.ri:h]	shrine
d. /mu.s ^h i:.bah/	[mu.s ^h i:.bah]	calamity
e. /t ^h i:.ra:n/	[t ^h i:.ra:n]	drums
f. /ð ^h i:.fah/	[ð ^h i:.fah]	gathering
g. /ð ^h a:.lim/	[ð ^h a:.lim]	unjust

In contrast, other dialects observe unrestrained emphasis propagation in both directions within the prosodic word (Bukshaisha, 1985; Hoberman, 1995; Watson, 1999; Sakarna, 1999). Cross-dialectal variation, Davis (1995, p. 472) assumes that segmental opacity tends to act symmetrically only with rightward spread.

The data from HA accord with this broader typological pattern. Emphasis spread in HA occurs categorically unrestricted in the leftward direction. This confirms that the dialect aligns with those varieties that allow full regressive assimilation. On the other hand, rightward spread exhibits clear limitations. Particularly, the segments /i/, /i:/, /j/, /dʒ/, and /ʃ/ arise as consistent blockers to the rightward spread of the emphatic feature. These opaque segments prevent the assimilation of emphasis beyond their phonological boundary.

Crucially, the blocking behavior is considered position-sensitive. Hence, when these opaque segments co-occur within the same syllable as the emphatic trigger, emphasis surfaces on that syllable without resistance. For example, the segment /j/ in the word /χaj.ja:t^h/ ‘tailor’, although typically opaque, does not inhibit the realization of emphasis on the syllable containing the emphatic /t^h/, nor does it block regressive spread. This motivates the interpretation that opaque segments in HA operate directionally, which prevent only rightward spread across syllables but permit emphasis with shared syllabic domains.

It should be noted that the HA data clearly confirm a directional asymmetry in the spread of emphasis. Leftward spread proceeds unimpeded across the phonological word, whereas rightward spread is subject to segment-specific resistance. This directional pattern shows the vital role of individual segmental features, specifically those associated with high front vowels, post-alveolar, and palatal segments in bounding the domain of assimilation. The behavior of the opaque segments /i/, /i:/, /j/, /dʒ/, and /ʃ/ reflects a systematic phonological constraint on the spread of emphasis. This suggests that phonetic properties such as high tongue position and frontness introduce articulatory conflicts with the pharyngealization gesture.

These results contribute to a more precise and theoretically significant understanding of opacity in Arabic varieties. They not only boost prior claims that progressive spread is more restrictive than regressive spread as reported by Herzallah (1990) and Davis (1995), but also assert that such asymmetry is not arbitrary, rather it contributes a deeper phonological organization where the interaction between emphatic features and the segmental system of a dialect specifies the limits of assimilation. Accordingly, HA conforms typologically to other varieties that enforce directionality and segment-sensitive restrictions. Consequently, Hā’ili Arabic introduces further empirical support for models of feature geometry and autosegmental association that formalize directionality and blocking as essential characteristics of phonological spreading processes. The HA pattern provides the basis for an important datapoint in evaluating cross-dialectal variation and contributes to ongoing theoretical debates regarding the dynamics of assimilation and the phonological representation of pharyngealization.

Table 6 demonstrates that the positional distribution of high vowels influences the course and scope of emphasis spread in HA. Specifically, high front vowels show a bifunctional role depending on their syllabic positioning relative to the emphatic trigger. When these vowels appear adjacent to the emphatic segment within the same syllable, they trigger emphasis which allows the syllable to be pharyngealized along with the preceding syllables. However, when positioned at the onset of a following syllable, high front vowels act blockers to rightward emphasis spread, effectively halting the propagation of the emphatic feature beyond their point of occurrence.

This blocking behavior is exemplified in forms such as [s^hi.dam] and [t^hi:.ra:n], where only the initial syllables are pharyngealized due to their adjacent to the emphatic consonants, yet the rightward spread is terminated at the boundary marked by the high vowels /i/ and /i:/ in the following syllables. Thus, these segments serve as phonological boundaries that restrict the domain of assimilation to within the initial syllable.

A further contrastive example illuminates the segmental identity of this blocking effect. In [ð^ha:.lim] ‘unjust’, the occurrence of /i/ in the second syllable obstructs the spread of emphasis, wherein confines pharyngealization to the initial syllable. By comparison, in form such as [ð^ha.la:m] ‘dark’, where no high vowel intervene, emphasis is free to spread unrestricted across both syllables.

In sum, these patterns suggest that high vowels in HA demonstrate a structural opacity to emphasis spread which conditioned by both syllabic boundaries and vowel quality. This observation supports the conclusion that the spread of emphasis in the dialect is not simply unbounded but is subject to a hierarchy of phonotactic constraints that manifest the interplay between articulatory compatibility and segmental organization.

TABLE 7
BLOCKING SEGMENT: VOICED PALATAL GLIDE /j/

Input	Output	Gloss
a. /sʕa:.jim/	[sʕa:.jim]	fasting [MS.]
b. /masʕ.jaf/	[masʕ.jaf]	summer resort
c. /tʕaj.ja:rat/	[tʕaj.ja:rat]	airplanes
d. /ðʕa.ja:ʕ/	[ðʕa.ja:ʕ]	loss

Table 7 illustrates that the voiced palatal glide /j/ plays a central role in restricting the rightward spread of emphasis in HA. Specifically, /j/ acts as a phonological blocker that halts the propagation of the emphasis feature beyond its position in the word. This phonological behavior is associated with lexical items such as [ðʕa.ja:ʕ], where the emphatic phoneme /ðʕ/ triggers pharyngealization, but its spread is terminated at the segmental boundaries marked by /j/. Consequently, only the immediate adjacent vowel to the emphatic consonant and any other segments within the same syllable are pharyngealized, whereas any following segments after the palatal glide /j/ remain unaffected by the emphatic feature.

This pattern highlights the status of /j/ as an opaque segment in the phonological grammar of HA, thus this segment initiates a directional asymmetry in emphasis spread. The articulatory property of /j/ has a high and front tongue position, which is inconsistent with the pharyngeal constriction required for emphasis, obstructing assimilation across its position. This finding provides further evidence to support the opaque domain in Arabic dialects and confirms the gradient nature of emphasis spread across phonological environments.

TABLE 8
BLOCKING SEGMENT: VOICED POST-ALVEOLAR AFFRICATE /dʒ/

Input	Output	Gloss
a. /tʕan.dʒah/	[tʕan.dʒah]	a city in Morocco
b. /tʕa:.dʒin/	[tʕa:.dʒin]	casserole
c. /ðʕa.dʒi:dʒ/	[ðʕa.dʒi:dʒ]	noise

The data in Table 8 show that the voiced post-alveolar affricate /dʒ/ acts as an opacity trigger that blocks the propagation of rightward emphasis in HA. For instance, in the word [tʕa:.dʒin], the emphatic consonant /tʕ/ fails to span its pharyngealization beyond the initial syllable due to the intervening presence of /dʒ/. Despite the adjacency of the emphatic trigger, the affricate inhibits the emphatic feature from propagation to subsequent segments. This behavior suggests that /dʒ/ behaves similarly to other high and front segments, which is phonetically incompatible with the secondary articulation required for emphasis spread and thus serves as a robust blocker in the phonological grammar of HA.

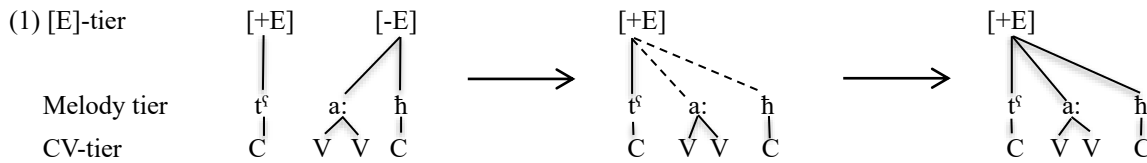
TABLE 9
BLOCKING SEGMENT: VOICELESS POST-ALVEOLAR FRICATIVE /ʃ/

Input	Output	Gloss
a. /tʕa.ba:ʃi:r/	[tʕa.ba:ʃi:r]	chalk
b. /tʕaf.ʃa:n/	[tʕaf.ʃa:n]	bored
c. /ʕatʕ.ʃa:n/	[ʕatʕ.ʃa:n]	thirsty

The data clearly illustrates that the behavior of the voiceless post-alveolar fricative /ʃ/ elucidates an asymmetrical effect on emphasis spread in HA. When /ʃ/ precedes the emphatic trigger, as in [ʃa:.tʕih] ‘unusual person,’ emphasis spreads leftward without restriction, yielding [ʃa:.tʕih]. Likewise, when the emphatic /tʕ/ precedes /ʃ/, as in [ʕatʕ.ʃa:n], the leftward spread proceeds unimpeded, which effectively pharyngealized all preceding segments. However, when /ʃ/ follows the emphatic consonant in forms such as [tʕaf.ʃa:n], the propagation of rightward emphasis is categorically blocked. In this phonological environment, /ʃ/ functions as an opaque segment that blocks the progressive propagation of the emphatic feature beyond its position, despite the proximity to the emphatic trigger. These patterns reassure the directional asymmetry of emphasis spread in HA and highlight the role of segmental characteristics in mediating the scope of emphasis assimilation.

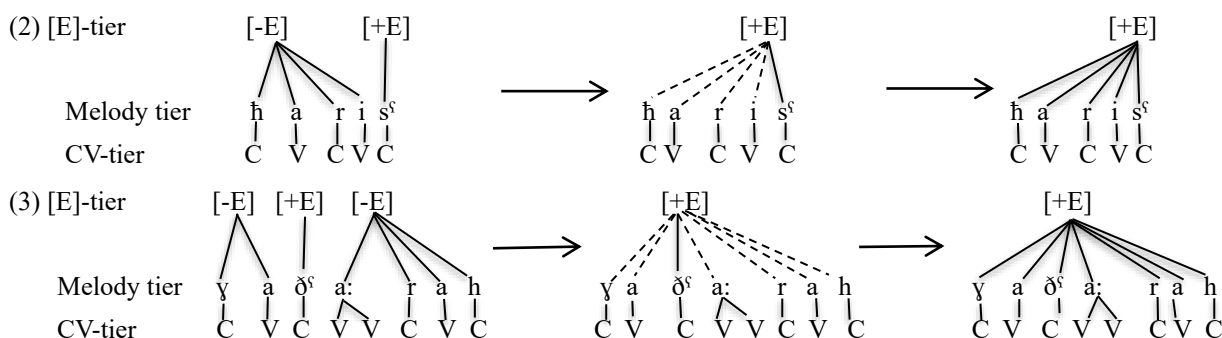
VI. PHONOLOGICAL ANALYSIS OF EMPHASIS SPREAD IN HA

Various studies have been reported to account for emphasis spread within the framework of Autosegmental Theory (Goldsmith, 1976; Van der Hulst & Smith, 1982) on Cairene Arabic, Card (1983) on Palestinian Arabic, Amakhmakh (1997) on Moroccan Arabic, and Sakrana (1999) on Jordanian Arabic, among others. These studies provide an independent tier to represent the emphasis feature. This study adopts the feature [+emphatic] (henceforth, +E) to represent the emphasis feature. In an autosegmental analysis of HA, the feature [+E] will be in a separate tier, thus, [E]-tier. This tier has no access to consonants and vowels. In order to resolve this issue, McCarthy (1986) proposes the principle of ‘Tier Conflation’ which merges the consonants and vowels together onto one unified melody. After applying tier conflation, a given word contains three tiers in an autosegmental analysis: the [E]-tier, the melody tier, and CV-tier. Consider the following representation for the word [tʕa:h] ‘he fell down’ → [tʕa:h] under autosegmental approach:



This presentation displays that the emphatic segment /tʰ/ is linked to the [+E] feature by a solid line which indicates its presence underlyingly. The dotted lines illustrate the spreading of emphasis after applying the principle of tier conflation. The feature [+E] spreads from the trigger emphatic consonant /tʰ/ rightwards to /a:/ and /h/, rendering them pharyngealized segments. Hence, this presumes that the adjacent segments to the emphatic /tʰ/ are not substantially connected to the feature [+E] unless this feature spreads over them in order to surface as pharyngealized phonemes.

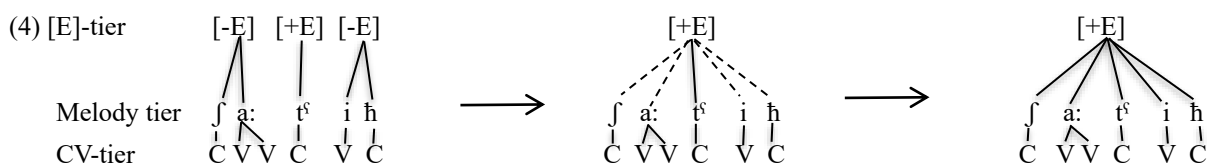
As mentioned earlier, emphasis can freely spread rightward (as can be seen in representation (1)), leftward, or bidirectionally. In what follows, this study provides an autosegmental analysis for the leftward and bidirectional spread of emphasis in HA. Consider the following representations (2) and (3) for the words /ha.risʰ/ ‘eager’ → [ha.risʰ] and /ya.ðʰa:.rah/ ‘goblet’ → [ya.ðʰa:.rah]:



The representation in (2) manifests that the feature [+E] spreads from the underlying emphatic sound [sʰ] leftwards to color all the preceding segments, allowing the syllable to be pharyngealized along with any preceding syllables. The representation in (3) illustrates that emphasis spreads bidirectionally from the underlying emphatic consonant [ðʰ] to target all the preceding and following neighboring segments in the word.

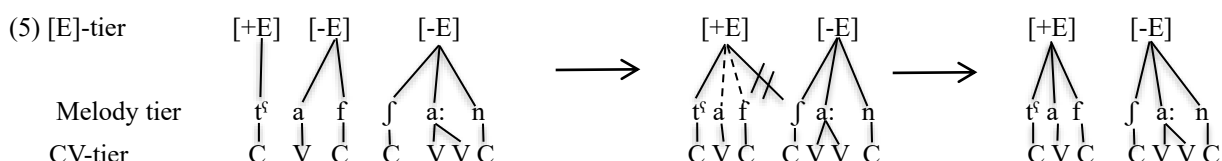
As for the emphasis blockers in HA, emphasis displays asymmetries between leftward and rightward spread in which the emphasis of leftward spread is unbounded, whilst the rightward spread is bounded by certain opaque segments /i/, /i:/, /j/, /dʒ/, and /ʃ/.

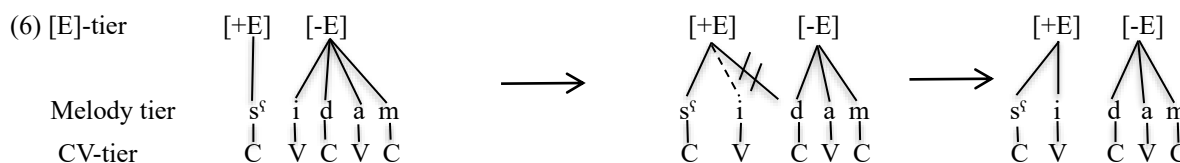
As mentioned previously, leftward spread is absolute in HA even though one of these opaque segments occurs in a word. Consider the following representation for the word /ʃa:.tʰih/ ‘unusual person’ → [ʃa:.tʰih]:



In this representation, the opaque segment /ʃ/ does not block the leftward spread of the emphatic feature [+E]. The reason beyond that is the presence of the voiceless post-alveolar fricative /ʃ/ before the emphatic consonant /tʰ/ in the phonological word.

Under the tenets of Autosegmental Theory, the opaque segments are introduced and how they are acted as robust blockers in the dialect. There are certain phonemes which effectively inhibit the rightward propagation of emphasis. Consider the following representations for the words /tʰaf.ʃa:n/ ‘bored’ → [tʰaf.ʃa:n] and /sʰi.dam/ ‘hit’ → [sʰi.dam], as shown in (5):





In representation (5), the emphatic consonant /tʰ/ spreads leftward its emphatic feature [+E] only to the neighboring segments within the same syllable. However, the emphatic feature fails to spread rightward beyond this syllable due to the presence of the voiceless post-alveolar fricative /ʃ/, which acts as a blocker. Representation (6) illustrates that the second syllable of the word [sʰi.dam] is not associated with the emphatic feature [+E] due to the presence of the high short vowel /i/, which halts the rightward propagation of emphasis in HA.

The present study makes a substantial theoretical contribution to our understanding of emphasis spread in Arabic phonology by offering a comprehensive empirical account of the phenomenon in Hā'ili Arabic (HA), a variety that has not been previously documented in this regard. Building on HA data, the findings introduced offer compelling evidence for the directional asymmetry and segmental conditioning of emphasis spread. These observations not only refine our understanding of the phonological system of Arabic but also manifest broader theoretical approaches about feature spreading, opacity, and the interaction between phonological domains and segmental features.

Significantly, this study establishes empirical confirmation of the bidirectionality of emphasis spread in HA, which aligns with previous studies of Palestinian Arabic (Younes, 1994; Davis, 1995) and Wadi Mousa Arabic (Huneety, 2015). In HA, emphasis spreads both leftward and rightward across syllables, a hallmark that has often been assumed to be typologically rare or subject to strict phonotactic conditions in other varieties. One of the most significant findings about this dialect is that emphasis is not inherently limited to syllable boundaries and can operate over extended domains without the existence of word-level boundaries or morphological constraints. This motivates the notion, originally proposed by Elgadi (1986) that the [+emphatic] feature acts as an autosegment capable of association with multiple segments, which provides rise to long-distance assimilation effects.

Unlike dialects such as Urban Jordanian Arabic (Al-Masri, 2009) or Libyan Arabic (Algryani, 2014), where the emphasis spread is typically unidirectional or subject to categorial blocking by high front vowels, HA reveals a more nuanced analysis of segmental interaction. Specifically, the data provide a clear asymmetry in the sensitivity of rightward versus leftward spread to blocking effects. Rightward emphasis spread is blocked by a subset of opaque segments /i/, /i:/, /j/, /dʒ/, and /ʃ/, whereas leftward spread remains consistently unimpeded. These findings align with Davis (1995, p. 472), who states that Arabic dialects often show symmetrical blocking behavior of rightward but not leftward spread. Thus, HA emerges as a compelling case study of directional opacity, which illustrates how phonological asymmetry is not merely a theoretical abstraction but a concrete, observable property of dialect-internal systems.

Regarding featural representation, this study supports the claim introduced by Elgadi (1986) that emphatic consonants are best analyzed utilizing a unary feature such as [+emphatic], rather than relying solely on acoustic articulatory descriptors such as [+low], [+back] (Chomsky & Halle, 1968) or [+constricted pharynx] (Broselow, 1979). The merit of Elgadi's approach resides in its capacity to model spread by feature association and disassociation, a representation naturally accounted for under the tenets of Autosegmental Phonology (Goldsmith, 1976). While autosegmental representation is not the primary analytic framework of this study, the empirical findings of emphasis in HA provides indirect support to its representational claims, particularly with regard to how emphasis spreads across adjacent and non-adjacent segments, sometimes across multiple syllables.

The role of syllable structure raises important questions about mediating the spread of emphasis. Previous studies (Watson, 1999; Bellem, 2007) have proposed that emphasis spread may be confined to prosodic or metrical boundaries. However, the present findings illustrate that emphasis in HA is not syllable-bound. Rather, spread is gradient and direction-sensitive and conditioned more by phonological properties of individual segments (e.g., [+high], [-back]) than fixed prosodic templates. This motivates the notion that phonological phenomena like emphasis spread are subject to both structural and featural representations, which determine the scope and limits of assimilation.

Importantly, this study provides empirical evidence for the claim that the behavior and restrictions of emphasis spread are dialect-specific. While HA shares several typological features with other Saudi and Levantine dialects such as the presence of emphatics and bidirectional spread, its distinctive treatment of opaque segments, particularly the glide /j/ and the affricate /dʒ/, marks it as a unique phonological system. This confirms the significance of documenting underrepresented dialects and adds a more detailed perspective to deepen our comparative understanding of Arabic phonology.

Finally, the results presented here contribute to broader theoretical foundations on phonological opacity and assimilation. The HA data demonstrate that opacity is not a homogenous property, but rather derives from the complex interplay of segmental identity, syllable structure, and directionality. Accordingly, this study challenges simplistic models that assume symmetry in feature spreading or neglect the role of segment-specific blocking. By illustrating that only certain segments block spread in specific directions, HA introduces compelling evidence that phonological theories must account for directional asymmetries and local interactions between features and segment classes.

In short, this study advances our theoretical understanding of emphasis in Arabic and offers a detailed empirical analysis of an unrepresented variety. The findings support feature-based models of phonological representation, enhance

the reality of directional asymmetry in assimilation, and require a more precise view of opacity in natural language phonology. As such, it makes a valuable contribution to the ongoing refinement of phonological theory and provides a foundation for further inquiry into the interplay of articulatory, acoustic, and grammatical factors in Arabic dialects.

VII. CONCLUSION

This paper has addressed the phonological process of emphasis spread in Hā'ili Arabic in light of Autosegmental Theory. HA has three primary emphatic segments /t̤/, /s̤/, and /ð̤/ which may allow emphasis to propagate over the neighboring segments at the word level. This indicates that adjacent segments are not intrinsically linked to the [+emphatic] until this feature propagates and affects the vicinity of an emphatic segment. It has been shown that the propagation of emphasis in HA can operate leftward, rightward, or bidirectionally. The scope of emphasis spread is minimally over the syllable if there are opaque segments that block emphasis spread, and maximally over the entire word if there are no blockers. It also has revealed that emphasis displays asymmetries between rightward and leftward spread, where the leftward spread of emphasis was unbounded, while the rightward spread was blocked by certain opaque segments /i/, /i:/, /j/, /dʒ/, and /ʃ/. Based on HA data, if these opaque segments occur within the syllable that contains the trigger emphatic phoneme, this syllable remains pharyngealized. Finally, the autosegmental approach has shown a robust analysis of the emphatic features, its directionality within the stem word, and the interaction with opaque segments in HA. As a result, it provides a significant contribution to the ongoing refinement of phonological theory and provides a foundation for further inquiry into the interplay of articulatory, acoustic, and grammatical factors in Arabic dialects.

Although this study has addressed emphatic features, its directionality, and the interaction with opaque segments, further data and a larger number of participants are required to ensure that the observed patterns of emphasis spread represent consistent phonological behavior. Further research could examine other phonemes that only contextually surface emphatic like [b, f, m, l, r] and their effects on neighboring sounds in HA. Furthermore, an acoustic study is recommended to provide additional theoretical insights into the analysis of emphasis spread in HA.

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