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SECONDARY STRESS IN STANDARD ARABIC ANALYSIS

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ABSTRACT

Stress assignment in Arabic has long attracted the attention of philologists; however, the status of secondary stress in Standard Arabic remains controversial. While the placement of primary stress is generally considered predictable and governed by syllable weight and syllable position, the existence and role of secondary stress have received much less systematic treatment. Some scholars have denied the existence of secondary stress in Arabic altogether, whereas others have argued that it may emerge in longer phonological words under specific prosodic conditions (Harms, 1981; Welden, 1980). This study investigates the occurrence of secondary stress in Standard Arabic and proposes a rule-based account of its distribution. The analysis demonstrates that secondary stress is not arbitrary, but rather arises in words containing more than two syllables, especially where prosodic restructuring, morphological expansion, or rhythmic balancing are involved. Drawing on syllable structure, stress theory, and foot-based phonological analysis, the study argues that secondary stress serves as a mechanism for maintaining prosodic regularity in complex word forms. The findings suggest that Standard Arabic employs secondary stress in predictable environments, particularly when a word contains more than one prosodic foot or when primary stress shifts as a result of inflectional or derivational processes. The study therefore contributes to Arabic prosodic theory by proposing that secondary stress, although weaker than primary stress, plays a meaningful role in the phonological organization of Standard Arabic.

KEYWORDS: Standard Arabic, Secondary Stress, Primary Stress, Syllable Weight, Prosody, Phonology.

1. INTRODUCTION

Stress is one of the major supra-segmental features of speech and one of the principal means by which rhythm and prominence are expressed in spoken language. In phonological terms, stress refers to the relative prominence assigned to one syllable over others within the same word. This prominence may be realized through increased **pitch, duration, loudness**, or a combination of these acoustic properties. As Katamba and Stonham (1993) note, stressed syllables are typically more salient than unstressed syllables and therefore occupy a structurally important role in the phonological organization of the word.

A **secondary stress** is generally defined as a weaker degree of prominence than **primary stress**, but one that is stronger than complete unstressedness. In many languages, secondary stress occurs in longer words to preserve rhythmic balance and to avoid long strings of weak syllables. Understanding stress therefore requires a clear understanding of **syllables**, since stress assignment is closely related to **syllable structure** and **syllable weight**.

A **syllable** is a unit of pronunciation centered on a vowel and may include surrounding consonants. Every word consists of one or more syllables, and these syllables may be either stressed or unstressed. In some languages, such as English, stress is **phonemic**, meaning that a difference in stress placement may signal a difference in meaning or grammatical category. For example, the noun *permit* differs from the verb *permit* mainly in stress placement.

In contrast, **Modern Standard Arabic (MSA)** is generally regarded as a **non-phonemic stress language**, since stress placement does not usually create lexical contrasts (Watson, 2011). Instead, Arabic stress is largely **predictable** and follows systematic phonological principles, especially **syllable weight** and **syllable position**. For instance, speakers influenced by local dialects may differ slightly in where they place stress in some forms, yet such variation rarely changes the meaning of the word.

Arabic belongs to the **Central Semitic** language family and is one of the major languages of the world. Although stress assignment varies to some extent across Arabic dialects, the placement of stress in Arabic generally depends on **the weight of the syllable** and **its location within the word** (Watson, 2011). Arabic is therefore often described as a language with **predictable** or **fixed stress**, since the location of primary stress can usually be determined

by phonological rules rather than memorized individually for each lexical item (Alkumet, 2013).

All modern Arabic dialects exhibit **word stress**, and one syllable in a word is usually more prominent than the others. In most cases, primary stress is restricted to one of the **last three syllables** of the word. While primary stress in Arabic has received considerable scholarly attention, the present study focuses specifically on **secondary stress**, a phenomenon that remains underexplored and controversial in the literature.

This study aims to answer the following questions:

1. **Does Standard Arabic exhibit secondary stress?**
2. **If so, under what phonological and morphological conditions does it occur?**
3. **How can its distribution be explained within a syllable- and foot-based phonological analysis?**

The study argues that **secondary stress does exist in Standard Arabic**, particularly in longer words that require additional rhythmic organization. It further proposes that secondary stress is not merely an optional phonetic effect, but a **predictable prosodic phenomenon** that emerges when the phonological word contains more than one stress-bearing domain.

2. LITERATURE REVIEW

Arabic word stress has received extensive attention in phonological theory, and it has arguably been studied more thoroughly than the stress systems of many other languages. Within Arabic linguistics, stress-related phenomena have long been a major topic of investigation.

A number of studies have examined Arabic word stress, including Mitchell (1993), Ryding (2005), and Watson (2011). These studies generally agree that Arabic stress is **predictable** and **weight-sensitive**, rather than lexical or contrastive. Alkumet (2013), for example, argues that Arabic stress is predictable at the lexical level and therefore not phonemic. According to this view, Arabic exhibits three degrees of prominence: **primary stress**, **secondary stress**, and **weak (unstressed)** syllables. Stress placement in Arabic is mainly determined by the syllabic structure of the word, especially the final syllables.

One of the central assumptions in the literature is that Arabic stress is **weight-sensitive**. This means that the phonological "heaviness" of a syllable influences whether it attracts stress. In general, **super-heavy syllables** attract stress most strongly, followed by **heavy syllables**, while **light syllables** are least likely to bear primary stress unless required by the overall structure of the word. This model has

proven effective in explaining the distribution of **primary stress** in Standard Arabic and in many modern dialects.

However, the issue of **secondary stress** remains controversial. A number of influential studies either deny its existence or minimize its phonological significance. Aljarah (2008), De Lacy (1998), Halle and Vergnaud (1987), Hayes (1995), Kenstowicz (1994), McCarthy (1979), and Watson (2002) do not assign a central role to secondary stress in Arabic, and in some analyses, it is effectively absent from the stress system altogether. Buell (1996), for example, describes secondary stress in Arabic as “weak if it indeed exists,” reflecting the skepticism that surrounds the phenomenon.

On the other hand, some scholars have recognized that Arabic may exhibit **more than one level of prominence**. Harms (1981) and Welden (1980), for instance, suggest that Arabic may display an additional degree of prominence in certain phonological environments, particularly in longer word forms. These analyses imply that Arabic prosody may be more structurally layered than many traditional descriptions suggest.

Cross-linguistic evidence also supports the plausibility of secondary stress as a systematic phenomenon. In German, Johannes, Wiese, and Domahs (2011) demonstrate that secondary stress is distributed rhythmically within words and tends to occur in structurally preferred positions. In Russian, Gouskova (2010) shows that secondary stress is closely tied to prosodic constituency, especially in compounds. Even in English, where secondary stress is often optional, it regularly appears in longer lexical items such as *supra-segmental* and *syllabification*. Such findings suggest that secondary stress often emerges when a language requires an additional layer of rhythmic organization beyond a single primary prominence.

Within Arabic, the issue is especially important because the language exhibits rich **morphological expansion** through affixation, cliticization, derivation, and inflection. These processes frequently produce **longer phonological words**, and such words may naturally invite additional rhythmic structuring. If Arabic prosody is sensitive not only to syllable weight but also to **foot formation**, then the appearance of secondary stress in such environments becomes theoretically plausible.

The present study builds on this perspective and argues that **Standard Arabic does exhibit secondary stress**, especially in longer words where prosodic balance cannot be achieved by primary stress alone. Unlike analyses that treat Arabic stress as strictly

single-peaked, this study proposes that certain word forms are better understood as containing **multiple prosodic prominences** organized hierarchically.

3. THEORETICAL FRAMEWORK

This study adopts a **metrical phonology** perspective in analyzing stress assignment in Standard Arabic. Within this framework, stress is not treated merely as an isolated property of individual syllables, but as the result of **hierarchical prosodic organization**. Syllables are grouped into larger units such as **feet**, and feet are in turn organized into **prosodic words**.

A central concept in this framework is **syllable weight**. Arabic distinguishes between **light**, **heavy**, and **super-heavy** syllables, and this distinction is crucial for determining which syllables are eligible to receive prominence. Stress in Arabic is therefore understood as **weight-sensitive**, meaning that structurally heavier syllables are more likely to attract stress.

Another important concept is the **prosodic foot**. A foot is a rhythmic unit typically consisting of one or two syllables, one of which is more prominent than the other. In languages with predictable stress, feet help explain why prominence is distributed in recurring rhythmic patterns rather than randomly. In the present study, secondary stress is interpreted as the prominence assigned to a non-primary foot within the same prosodic word.

Under this analysis, **primary stress** is the strongest prominence in the word, while **secondary stress** is a weaker but structurally significant prominence associated with another foot. Secondary stress therefore becomes especially relevant in **polysyllabic** and **morphologically complex** words, where more than one foot may be required to account for the rhythmic organization of the word.

This theoretical approach allows the study to move beyond a purely descriptive account of Arabic stress and to explain **why** secondary stress appears in certain environments: namely, because Arabic prosody favors **balanced rhythmic structure** and avoids excessively long strings of weak syllables.

4. FORMAT AND DEFINITIONS

In this study, **phonemic transcriptions** are enclosed in slashes, while **syllable boundaries** are indicated by hyphens where necessary. Stressed syllables are marked typographically for clarity in the discussion.

Two consecutive vowels, as in CVV or CVVC, represent either a **long vowel** or a **diphthong**, depending on the lexical item. Similarly, two

consecutive consonants, as in CVCC, may represent either a geminated consonant (orthographically marked by **shadda**) or two distinct consonants.

The term **monosyllabic** refers to words consisting of one syllable, **disyllabic** to words consisting of two syllables, and **polysyllabic** to words consisting of three or more syllables.

In Arabic, **proclitics** are short grammatical elements attached to the beginning of a word, such as the definite article and certain conjunctions and prepositions. These include: /ʔal/, /wa/, /fa/, /bi/, /li/, /la/, /ka/, /ʔa/, and /sa/. For the purposes of stress assignment, these proclitics are generally ignored when counting syllables.

5. METHOD AND SCOPE

This study is descriptive and analytical in nature. It focuses specifically on **Standard Arabic**, rather than on colloquial dialects, and examines a range of lexical and morphologically expanded word forms in order to identify recurring patterns of secondary stress.

The analysis is based on the following assumptions:

- stress assignment in Arabic is **weight-sensitive**;
- primary stress is restricted to the **last three syllables** of the phonological word;
- proclitics are generally excluded from stress calculation;
- secondary stress, if present, must be explained as part of the **prosodic structure** of the word rather than as a random phonetic effect.

The goal is not merely to list examples, but to derive a coherent account of where and why secondary stress appears.

6. RESULTS AND DISCUSSION

6.1. Syllabic Structure

To understand stress assignment in Arabic, it is first necessary to understand the syllabic structure of the language. Arabic syllables can be classified into three major categories: **light**, **heavy**, and **super-heavy**.

1. Light Syllables

A light syllable consists of a consonant followed by a short vowel:

- CV → /ka/, /bi/

2. Heavy Syllables

A heavy syllable consists of either:

- CVV → consonant + long vowel or diphthong

- CVC → consonant + short vowel + consonant

Examples:

- CVV → /baa/, /ʔay/
- CVC → /tab/

3. Super-Heavy Syllables

A super-heavy syllable consists of one of the following patterns:

- CVVC
- CVCC
- CVVCC

Examples:

- CVVC → /nuun/, /yawm/
- CVCC → /ʔabb/, /barq/
- CVVCC → /shaabb/

In Standard Arabic, super-heavy syllables most commonly occur in **word-final position**, where they play a major role in attracting primary stress. Their phonological weight makes them especially prominent in the stress system.

6.2. Primary Stress Rules

Before discussing secondary stress, it is necessary to establish the behavior of **primary stress**, since secondary prominence is always interpreted relative to the main stress of the word.

The placement of primary stress in Standard Arabic follows a hierarchy based on **syllable weight** and **word-final structure**.

Rule 1: Final Super-heavy Syllable

Primary stress falls on the **ultimate syllable** if that syllable is **super-heavy**. This rule overrides all others.

Rule 2: Monosyllabic Words

Monosyllabic words are necessarily stressed on their only syllable.

Rule 3: Disyllabic Words

In disyllabic words, stress falls on the **penultimate syllable**, which is also the first syllable.

Rule 4: Polysyllabic Words with Heavy Penultimate

In polysyllabic words, stress falls on the **penultimate syllable** if that syllable is **heavy**.

Rule 5: Polysyllabic Words with Light Penultimate

If the penultimate syllable is **light**, stress falls on the **antepenultimate syllable**.

These rules confirm that Standard Arabic is a **predictable stress system** in which primary stress is highly constrained. However, they do not fully explain the prosodic behavior of **longer words**, especially those containing several syllables of considerable weight. This is where the notion of secondary stress becomes analytically relevant.

7. SECONDARY STRESS IN STANDARD ARABIC

7.1. The Existence of Secondary Stress

The central claim of this study is that **secondary stress exists in Standard Arabic** and should be recognized as a systematic component of its prosodic structure. Although it is weaker than primary stress, it is neither random nor insignificant. Rather, it emerges when the phonological word becomes sufficiently complex to require **more than one rhythmic center**.

Put differently, **primary stress alone is not always sufficient** to organize the rhythm of longer Arabic words. When a word contains multiple syllables, especially multiple heavy syllables or more than one prosodic foot, Arabic tends to assign an additional prominence to an earlier syllable. This prominence is best analyzed as **secondary stress**.

The role of secondary stress in Arabic can therefore be understood in terms of **prosodic balance**. It helps distribute prominence more evenly across the word and prevents long strings of unstressed syllables, which would otherwise weaken rhythmic coherence.

7.2. General Conditions for Secondary Stress

The analysis suggests that **secondary stress in Standard Arabic is most likely to occur under the following conditions**:

1. The word contains more than two syllables.
2. The word contains more than one potential foot.
3. A heavy syllable appears earlier in the word before the primary stress domain.
4. Morphological expansion shifts or extends the prosodic structure of the word.

These conditions show that secondary stress is not an isolated lexical property, but a predictable result of **prosodic complexity**.

8. RULES OF SECONDARY STRESS

Rule 1: Secondary Stress on a Pre-tonic Heavy Syllable

One of the clearest environments for secondary stress is when a **heavy syllable immediately precedes the syllable bearing primary stress**. In such cases, the heavy pre-tonic syllable tends to receive **secondary stress**.

Examples

Arabic	Transliteration	Syllable Pattern	Gloss
الصفائف	alṣṣāfāt	CV-CVV-CVVC	those lined up in rows
الضالين	alḍḍāllin	CV-CVV-CVVC	the misguided

Arabic	Transliteration	Syllable Pattern	Gloss
الناجين	alnājīn	CV-CVV-CVVC	the survivors
العادين	al'ādīn	CV-CVV-CVVC	the counters

Discussion

In these examples, the final super-heavy syllable attracts **primary stress**, while the preceding heavy syllable receives **secondary stress**. From a metrical perspective, this distribution is expected because the word contains more than one rhythmically prominent domain.

This pattern supports the view that Arabic does not merely assign one isolated stress to the right edge of the word. Instead, it organizes longer words into **prosodic groupings**, allowing a preceding heavy syllable to retain a lower degree of prominence.

Rule 2: Secondary Stress Further Left When Intervening Syllables Are Light

A second recurring pattern appears in longer words where the syllables between the earlier heavy syllable and the primary stress are **light**. In such cases, secondary stress may fall on the **pre-antepenultimate syllable** or another earlier syllable that functions as the head of an earlier foot.

Examples

Arabic	Transliteration	Syllable Pattern	Gloss
مستبقيين	mustabiqīn	CVC-CV-CV-CVVC	racers
يستخفون	yastaxiffūn	CVC-CV-CVVC	they underestimate
مستقيم	mustaqīmūn	CVC-CV-CV-CVCC	straight
كلّمهم	kallimuhum	CVC-CV-CV-CVCC	talk to them
مستطيلان	mustaṭīlān	CVC-CV-CV-CVVC	two rectangles

Discussion

In these forms, the final syllable or final heavy sequence carries **primary stress**, but the word is too long to remain rhythmically stable with only one stress peak. As a result, Arabic assigns a weaker prominence to an earlier syllable, thereby preserving rhythmic symmetry.

This supports a **foot-based analysis**: the word is best understood as containing at least two feet, one of which bears **primary stress** and another **secondary**

stress.

9. SECONDARY STRESS AND STRESS SHIFT

A particularly strong argument for the existence of secondary stress comes from **stress shift phenomena**. In many Arabic forms, the position of primary stress changes when the word undergoes **derivational** or **inflectional** modification. In such cases, the syllable that originally carried primary stress often retains residual prominence. This residual prominence is best analyzed as **secondary stress**.

9.1. Stress Shift in Derivational Forms

When a verb changes form through derivation or stem alternation, the location of primary stress may move. If the previously stressed syllable remains perceptually prominent, it may surface as a site of **secondary stress**.

Examples

Base Form	Gloss	Derived Related Form	Observation
qatala	killed	yaqtulu	stress shifts rightward
ḍaraba	hit	yaḍribu	original prominence may weaken but remain
la'iba	played	yal'abu	earlier prominence may persist
ḥasada	envied	yaḥsudu	stress relocation creates new rhythm

Discussion

This phenomenon suggests that Arabic stress is not recalculated in a way that entirely erases prior prosodic structure. Instead, earlier prominence may remain in reduced form, supporting the idea that Arabic stress is **hierarchical** rather than purely linear.

9.2. Stress Shift with Attached Pronouns

When suffixes such as:

- -tu
- -ti
- -nā
- -tum
- -tun

are attached to verbs, the stress pattern often changes because the syllabic structure of the word changes. In such cases, primary stress may shift to the **penultimate syllable**, while the earlier stressed syllable may retain **secondary prominence**.

Examples

Base Form	Gloss	With Pronoun	Observation
أكل /ʔakala/	ate	ʔakaltu	stress shifts
شرب /šariba/	drank	šaribtum	prosodic restructuring
درس /darasa/	studied	darastun	earlier stress weakens
أعطى /ʔa'tā/	gave	ʔa'tayti	new stress domain emerges

Discussion

This provides strong support for the claim that secondary stress is structurally motivated. It appears not because speakers arbitrarily emphasize a syllable, but because the word's **prosodic architecture** has been reconfigured.

9.3. Stress Shift with the Particle Lam

The addition of the particle **lam** may also alter the stress pattern of the following imperfect verb. In these environments, stress frequently shifts toward the left due to phonological and morphosyntactic restructuring.

Examples

Base Form	Gloss	With lam
yaqraʔu	read	lam yaqraʔ
yastanjidu	ask for help	lam yastanjid
yaqtaribu	approach	lam yaqtarib
yatawāšalu	communicate	lam yatawāšal

Discussion

Such examples are significant because they show that stress in Arabic is sensitive not only to internal syllable weight, but also to **larger prosodic phrasing** and the interaction between morphology and phonology. When the original primary stress is displaced, the previously prominent syllable may continue to bear **secondary stress**.

9.4. Stress Shift with Plural Affixes

Plural suffixes such as **-in** and **-ūn** may also cause the primary stress to move toward the newly added final syllable. When this happens, the formerly stressed syllable often remains prosodically strong enough to receive **secondary stress**.

Examples

Arabic	Transliteration	Gloss
مستجمين	mustaġimmīn	relaxed

Arabic Transliteration Gloss

يستفيدون yastafidūn they benefit

Discussion

This pattern offers especially persuasive evidence for secondary stress because it shows a clear **before-and-after relationship**: a syllable that once bore primary stress becomes secondarily stressed after the word is expanded. This is difficult to explain unless one accepts that Arabic allows **more than one level of metrical prominence**.

10. DISCUSSION

The results of this study suggest that the traditional treatment of Arabic stress as a strictly **single-stress system** is insufficient. While it is true that **primary stress** remains the dominant organizing principle, the evidence indicates that **secondary stress** is necessary to account for the prosodic behavior of longer and morphologically complex forms.

Three major conclusions emerge from the analysis: First, secondary stress is structurally conditioned.

It does not occur freely or unpredictably. Rather, it appears in environments where the word contains enough phonological material to require more than one rhythmic unit.

Second, secondary stress is closely tied to syllable weight and foot structure.

Earlier heavy syllables, especially those outside the immediate primary stress domain, are strong candidates for secondary prominence.

Third, secondary stress becomes especially visible in cases of stress shift.

When morphology causes primary stress to relocate, the previous stress-bearing syllable often remains prominent enough to be interpreted as secondarily stressed.

Taken together, these findings support the view that Standard Arabic exhibits a **layered prosodic system** in which prominence is not binary (stressed vs. unstressed) but **hierarchical** (primary, secondary, weak).

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This does not necessarily mean that secondary stress in Arabic is always as phonetically salient as in English or German. Rather, it means that from a **phonological perspective**, Arabic makes use of secondary prominence when the structure of the word requires it.

11. CONCLUSION

This study set out to investigate whether **secondary stress** exists in **Standard Arabic** and, if so, how it can be explained phonologically. The analysis has shown that secondary stress is not only possible, but also **systematic and predictable** in a range of environments.

The study has demonstrated that secondary stress tends to occur in polysyllabic words, especially when those words involve:

- more than one prosodic foot,
- earlier heavy syllables,
- derivational or inflectional expansion,
- or shifts in the location of primary stress.

These findings challenge the view that Standard Arabic operates with only one meaningful level of word stress. Instead, they suggest that Arabic prosody is more nuanced and that secondary stress plays an important role in maintaining **rhythmic balance, metrical organization, and prosodic coherence**.

The study therefore concludes that **secondary stress should be recognized as a legitimate component of Standard Arabic phonology**, particularly in the analysis of longer and morphologically complex forms.

Future research may strengthen this claim further through **acoustic phonetic analysis**, including measurements of **duration, intensity, and fundamental frequency (F0)** in suspected secondary-stress environments. Comparative work across Arabic dialects may also help determine whether secondary stress is a feature of Standard Arabic alone or a broader property of Arabic prosodic systems.

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