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COMPARATIVE ANALYSIS OF THE ARABIC AND ROMANIAN PHONETIC SYSTEMS: A CONTRASTIVE GRAMMAR APPROACH¹

Abstract: This paper presents an ongoing study that examines the phonetic systems of Arabic and Romanian using a contrastive grammar approach, which is a branch of applied linguistics that compares the grammatical structures of two languages. The focus of the research is on auditory phonetics, particularly how the phonetic differences between Arabic and Romanian affect the learning process for speakers of Romanian who are acquiring Arabic as a second language. This study employs a qualitative case study method, involving Romanian learners of Arabic who have no prior exposure to the language. The objective is to assess their perceptual challenges in distinguishing Arabic phonemes, which are often quite distinct from those in Romanian. By analysing the specific phonetic obstacles faced by these learners, the research aims to provide insights into the unique difficulties associated with learning Arabic phonetics for Romanian speakers. The findings reveal that Romanian learners struggle with certain Arabic phonemes that do not have direct equivalents in Romanian, such as emphatic consonants and sounds produced in the pharyngeal and uvular regions of the vocal tract. These difficulties are attributed to the lack of similar sounds in Romanian, leading to challenges in both perception and production of Arabic phonemes. This study's implications are significant for language pedagogy, suggesting that targeted phonetic training and increased exposure to the unique sounds of Arabic can help mitigate these perceptual challenges. Ultimately, this research contributed to a deeper understanding of the phonetic hurdles in learning Arabic as a second language.

Keywords: contrastive grammar, phonetics, language learning, Arabic language, Romanian language

ANALYSE COMPARATIVE DES SYSTÈMES PHONÉTIQUES ARABE ET ROUMAIN : UNE APPROCHE DE GRAMMAIRE CONTRASTIVE

Résumé: Cet article présente une étude en cours qui examine les systèmes phonétiques de l'arabe et du roumain en utilisant une approche de grammaire contrastive, une branche de la linguistique appliquée qui compare les structures grammaticales de deux langues. La recherche se concentre sur la phonétique auditive, en particulier sur la manière dont les différences phonétiques entre l'arabe et le roumain affectent le processus d'apprentissage pour les locuteurs roumains qui apprennent l'arabe comme une seconde langue. L'étude utilise une méthode d'étude de cas qualitative, impliquant des apprenants roumains d'arabe n'ayant aucune exposition préalable à la langue. L'objectif est d'évaluer les difficultés perceptuelles rencontrées pour distinguer les phonèmes arabes, souvent très différents de ceux du roumain. En analysant les obstacles phonétiques spécifiques auxquels ces apprenants sont confrontés, la recherche vise à fournir des perspectives sur les difficultés uniques associées à l'apprentissage de la phonétique arabe pour les locuteurs roumains. Les résultats révèlent que les apprenants roumains rencontrent des difficultés avec certains phonèmes arabes qui n'ont pas d'équivalents directs en roumain, tels que les consonnes emphatiques et les sons produits dans les régions pharyngale et uvulaire du tractus vocal. Ces difficultés sont attribuées à l'absence de sons similaires en roumain, ce qui entraîne des défis à la fois dans la perception et la production des phonèmes arabes. Les implications de cette étude sont significatives pour la pédagogie des langues, suggérant que des formations phonétiques ciblées et une exposition accrue aux sons uniques de l'arabe peuvent aider à atténuer ces défis perceptuels. En fin, cette recherche contribue à une meilleure compréhension des obstacles phonétiques dans l'apprentissage de l'arabe comme langue seconde.

Mots-clés: grammaire contrastive, phonétique, apprentissage des langues, langue arabe, langue roumaine

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1. Contrastive Grammar

Contrastive grammar, in most cases, is aimed at practical rather than empirical studies. This type of study can be applied to provide linguistic materials for dictionaries, reference grammars, or to facilitate the work of translators or interpreters and their training process. At the same time, contrastive grammar provides materials for automated translation writing programs. Finally, it is very useful in the language teaching process (Rusiecki, 1976: 12).

This article explores contrastive grammar by specifically focusing on the phonetic systems of Arabic and Romanian. These two languages, while distinct in their linguistic roots and phonological characteristics, provide a fertile ground for examining how contrastive analysis can reveal the unique and shared phonetics features that influence pronunciation, phonetic inventory, and phonological rules.

Contrastive grammar is also known as *contrastive linguistics* or *contrastive analysis*, the terms are often used interchangeably. However, they refer to slightly different concepts: the former refers to the discipline, while the latter refers to both the process of comparing languages and the complete result of such study (*ibidem*: 14). This distinction is particularly pertinent when analysing phonetic systems, as it highlights the methodological rigor and specificity required in such studies.

By contrastive grammar, we understand that its purpose is to provide a description of the similarities and differences between two or more pairs or language systems. Comparison is widely used in most linguistic branches to elaborate on a particular feature of human language. For this reason, linguists use explicit or implicit comparative or contrastive analyses of different language forms, where their traits are manifested and mirrored in similar or related systems (Ping, 2019: 4).

Broadly speaking, contrastive linguistics can be classified into micro-contrastive linguistics and macro-contrastive linguistics.

A linguistic system consists of several layers, forming a hierarchy, starting from lower structures containing the smallest linguistic units, to higher structures containing functional segments. These include phonetics, phonology, morphology, lexicology, syntactic structures, pragmatics, or textual descriptions of linguistics. Depending on the levels adopted, contrastive linguistics can be divided into the aforementioned branches (*ibidem*: 8-9).

Micro-contrastive linguistics is the classic, traditional mode of contrastive linguistics. It focuses on language and competency, meaning it is based on a person's ability to understand sentences, especially those containing words or phrases they have never heard before. Its purpose is to compare particular and universal structural properties of human codes. More specifically, it focuses on phonetics, phonology, lexicon, and grammar.

Macro-contrastive linguistics represents a broader perspective of linguistic analysis, providing considerable space for new works in contrastive linguistics. The aim of macro-contrastive linguistics is to compare and understand how people use different languages to communicate with each other. Specifically, it addresses issues from a textual and pragmatic point of view (*ibidem*: 9).

This introductory section sets the stage for a detailed examination of the Arabic and Romanian phonetic systems, illustrating the value of contrastive grammar not only in theoretical linguistics but also in practical applications such as language teaching and cross-cultural communication.

2. Contrastive Grammar and Language Teaching

In the subsequent section, we examine three definitions highlighting the significance of contrastive grammar in foreign language teaching, as delineated in the article *The*

Development of Contrastive Linguistics (Rusiecki, 1976: 13-14). These definitions underscore various facets of the field:

I. Comparative Analysis for Problem Identification: this definition emphasizes the role of contrastive grammar in identifying potential challenges faced by learners of a new language. It suggests that by comparing languages and cultures, educators can anticipate difficulties that learners might encounter, thus allowing for more targeted and effective teaching strategies.

II. Systematic Comparison for Educational Materials: this perspective views contrastive studies as systematic comparisons of specific linguistic structures, not to draw typological or hereditary connections, but to aid educators and textbook authors in developing instructional materials, it positions contrastive linguistics as a practical tool for enhancing the design of language courses and teaching methodologies.

III. Functional Aim in Language Teaching: the third definition frames contrastive linguistics as primarily functional, aimed at improving language teaching methods and outcomes. This approach aligns with a utilitarian perspective, focusing on the application of linguistic insights to optimize the teaching and learning process.

Fries (1945: 5) argues that the most effective materials for language teaching are those based on a scientific description of the language to be taught, compared with a description of the learner's native language.

He relied on the *stimulus-response theory*, which describes learning as the formation of associations between stimuli and responses. A stimulus is something that produces a change or reaction in an individual or organism (in terms of language, this stimulus is communication). A response is the behaviour exhibited as a result to a stimulus, the utterance itself (Ping, 2019: 16-17). By utterance, we refer to a concept related to discourse analysis, what is said by one person before or after another person begins to speak, and it can consist of a single word, a sentence, or more.

Learning entails linking two entities together. Association, or associative learning, denotes the process of acquiring knowledge through the formation of connections or associations, typically between two elements. There are two types of association: association by similarity and association by contrast (*ibidem*: 16-17).

Acquiring a foreign language involves progressively establishing connections in the mind between communicative requirements already familiar in one's native language and the expressions necessary to fulfil those needs in the foreign language (*ibidem*: 17).

3. Phonetic Analysis in Contrastive Linguistics

Phonetics is a linguistic discipline that deals with the study, description, and classification of the sounds of a language. It also studies the physiological aspect of sound production, namely the place of articulation of the sound, its perception, and how it operates in a language. In general, we tend not to actively think about the process. However, delving into phonetics demands a deliberate and methodical examination of the production, characteristics, and comparisons of speech sounds (Hewlett and Beck, 2006: 1).

There are several types of phonetics, including acoustic phonetics, which deals with the physical properties of sound waves generated during speech. It involves analysing the frequency, amplitude, and temporal aspects of these waves, providing a detailed understanding of how sounds are transmitted from speaker to listener (Al-Ġāmidī, 2001: 15). Auditory phonetics oversees the perception of sounds using the human apparatus (the ear). It investigates the physiological process involved in hearing and how the brain interprets these acoustic signals (*ibidem*: 17). Finally, articulatory phonetics studies sounds from the perspective of their production by the human vocal apparatus. It describes how different speech organs contribute to the formation of various sounds (*ibidem*: 14).

The conventional method of teaching phonetics places significant importance on honing skills in "practical phonetics." Essentially, these skills encompass the abilities

phoneticians utilize when analysing speech without relying on technical equipment. Practical phonetics encompasses not only adept listening skills but also proficiency in transcribing auditory input and accurately reproducing a comprehensive range of speech sounds based on transcription or phonetic description. Phonetics practitioners must adopt a more deliberate and analytical stance towards listening and speaking than what is typically required for everyday communication. This ensures that any speech sound, regardless of its familiarity in the listener's native tongue, can be systematically described and transcribed. Such an approach necessitates a notable shift in focus: while the primary objective of listening to speech is typically to comprehend the message conveyed, a phonetic approach to listening demands heightened attention to detail (Hewlett and Beck, 2006: 10).

Phonology and phonetics are primarily independent fields with subject matters that may overlap, yet they approach their study through distinct methods. However, there exists a domain of collaboration between them. Combining the two fields enables us to elucidate language sound patterns using terms that offer increased simplicity, universality, empirical testability, productivity, and alignment (Ohala, 1990: 153).

4. Why is Phonetics Important in Language Learning?

In the context of this study, phonological analysis is crucial for understanding the similarities and differences between the Arabic and Romanian phonetic systems. By systematically comparing the phonemes and their functional roles in these languages, the research aims to identify unique phonological features, such as the presence of specific phonemes, allophonic variations, and phonotactic constraints. Such comparative analysis not only enhances our understanding of the structural and functional aspects of these languages, but also informs practical applications. For instance, it aids in the development of effective teaching strategies for language learners by highlighting potential areas of difficulty such as phoneme contrasts that may not exist in a learners' native language. Additionally, insights gained from this analysis can improve the accuracy of phonetic transcriptions and the quality of automated speech recognition and translation systems. This study, therefore, contributes to both theoretical linguistics and practical applications in language education and technology.

5. Phonological Analysis in Contrastive Linguistics

Phonology, a key subfield of linguistics, examines the abstract and systematic organization of sounds in a language. It focuses on understanding how sounds interact and combine, akin to uncovering the rules of a linguistic game. The term "phonology" can encompass various interpretations, depending on the specific linguistic context in which it is applied. As a specialized area of study, phonology was among the earliest domains to reveal that languages possess inherent structural rules. This field seeks to identify and describe the patterns and regularities in the organization of sounds, both within individual languages and across languages more broadly. Contemporary phonology has expanded to include a diverse range of applications and theoretical approaches (Wiese, 2006: 562).

Phonology has a close but sometimes difficult relationship with another area of study called phonetics. Phonetics looks at the physical aspects of speech sounds. Phonology's job is to help make language understandable and easy to say. While phonetics focuses on the physical aspects of speech like how it is made and how it sounds, phonology deals with more abstract things like patterns and rules that help us understand language. This difference can be seen as very strict or not as important depending on how you look at it (*ibidem*: 562).

A phoneme is defined as a unit of sound that serves to differentiate between words in terms of their meanings and cannot be further divided to create distinct lexical units. Essentially, a phoneme represents a distinct structural element of language, distinct from but related to actual sounds. These phonemes organize into systems within a language based on their contrasts. The idea of phonemes as cognitive entities owes much to Sapir (1933), who



posited that speakers possess mental representations of sounds that are not necessarily identical to their physical manifestations (*ibidem*: 562).

When comparing two languages, we look at their phonemes and not their sounds. If the sound has a certain characteristic which leads to a change in the words of a language, it means that it carries a phonological value. For example, the sounds /p/ and /b/ are different from one another not only in the Romanian language, but also in other foreign ones. The distinction between the two is found in its voiceless and voiced character (Anghelescu, 2007: 45).

In the following sections, we will provide a summarised description of the Arabic and Romanian phonetic systems to establish a foundational understanding of the two languages. It is essential to register the basic phonetic characteristics such as the inventory of consonants and vowels, because they allow us to identify the key differences and similarities found in the two systems, thus, we can highlight potential areas of difficulty for speakers.

6. The Arabic Language¹

Arabic stands as the predominant Semitic language, boasting approximately 300 million native speakers dispersed across the vast expanse of North Africa and the Arabian Peninsula.

The language itself has twenty-eight distinct sounds, with twenty-six consistently functioning as consonants. However, two of these sounds, represented by the sounds /w/ and /y/, possess a dual role as semivowels, acting either as consonants or vowels depending on the context. Generally, the Arabic alphabet aligns with the phonetic sounds of the language, with each sound or letter having its own designation. The shapes of Arabic letters vary due to the cursive nature of the Arabic script, wherein letters within a word are systematically connected. Additionally, the Arabic script does not employ capitalization, eliminating the distinction between uppercase and lowercase letters. Instead, letters are differentiated by their position within a word, whether they occur at the beginning, middle, or end (Ryding, 2005: 10).

There are three primary categories of consonants: stops (or plosives), fricatives, and resonants. These categories are determined by the level of constriction in the vocal tract during articulation. Stops involve complete closure of the vocal tract, resulting in a full obstruction. Fricatives are articulated with a narrow opening in the vocal tract, allowing airflow to pass through and creating turbulent friction. Resonant sounds occur when airflow passes through the vocal tract with an open aperture, producing no turbulent friction (Versteegh, 2006: 596-597).

The concept of “emphasis” in phonetics is characterized by the presence of two points of articulation. The primary point is in the dento-alveolar area, while the secondary point involves the upper region of the pharynx. Various terms have been employed to describe these consonants, with the most prevalent ones being velarized, pharyngealized, retracted tongue root, and emphatic (marked by velarization). In this context, “emphatic” is used to denote the phenomenon of emphasis, which pertains to the manner of articulation of the traditional emphatic consonants found in Arabic /t̤, d̤, s̤, z̤/ (*ibidem*: 599).

As shown in Versteegh’s *The Arabic Language* (2014: 23), we present a phonemic chart of the Modern Standard Arabic consonants:

	Vo	V	N	Ve	L	
La	iceless F	oiced B	asal M	larised	ateral	rill
Int	(ف)	(ب)	(م)			
erdental	(ث)	(ظ)		(ض)		

¹ The following section refers to Modern Standard Arabic and not the varieties of the language.

ntal	De	S (س)	Z (ز)	N (ن)	Ş (ص)	L (ل)	
veolar	Al	T (ت)	D (د)		Ṭ (ط)	Ḍ (ض)	R (ر)
-palatal	Pre	Š (ش)	J /Ġ (ج)				
t-palatal	Pos	K (ك)	Q (ق)				
ar	Vel	Ḥ (ح)	Ġ (غ)				
aryngal	Ph	Ḥ (ح)	Ġ (ع)				
yngeal	Lar		H (ه)				

Table1: MSA consonantal chart

The Arabic vowels are generated with a relatively unobstructed airflow in the vocal tract, while Arabic consonants are formed with either partial or complete obstruction. Vowels are primarily characterized based on auditory qualities and acoustic assessments, whereas consonants are described in terms of their manner and points of articulation. During vowel production, the articulators involved—such as the tongue and lips—do not closely approach each other to create turbulent airflow or to close off the vocal tract. Conversely, when producing consonants, the articulators create a narrow passage within the vocal tract for fricative segments and achieve complete closure for stop segments. Additionally, the movements of the lower jaw play a significant role in the production of speech sounds (Versteegh, 2006: 594).

The vowel system in Arabic comprises three short vowels, /i/, /u/, and /a/, which phonemically contrast with their long counterparts /ī/, /ū/, and /ā/. The short vowels are only noted in the Arabic script to facilitate the learning process or to avoid ambiguity, as there are words that are written the same way but pronounced differently. These signs are called *ḥarakāt* “movements” and can be noted above or below the consonants they precede in pronunciation. The quality of a vowel indicates the position of the tongue in the vocal tract, distinguishing one vowel from another. Conversely, quantity refers to the duration required to produce a vowel (Ryding, 2005: 25).

7. The Romanian Language

Briefly, we will introduce some phonetic information about the Romanian language. Romanian has a total of thirty-three sounds, also known as phonemes. Among these, there are twenty-two consonants, two semi-consonants, two semi-vowels, and seven vowels (Avram and Sala, 2000: 97).

To delve deeper, these seven vowels can be categorized based on their location and aperture. Aperture-wise, they can be classified as open vowels /a/, mid vowels /e/, /o/, and close vowels /u/, /i/, /ɨ/. Regarding their location, we find front vowels /e/, /i/, central vowels /a/, /ə/, /ɨ/, and back vowels /o/, /u/. Notably, Romanian lacks long vowels, indicating that vocalic length does not hold significance in its phonological structure.

As for the twenty-two consonants, they are categorized by both location and manner of articulation. Consonants unique from those in Arabic include bilabial ones /p/, labiodental /v/, dental <ɸ>, prepalatal /j/, and palatals /ʃ/, /ç/. Based on location, we observe bilabial consonants /b/, /p/, /m/, labiodental /f/, /v/, dental /d/, /l/, /n/, /r/, /s/, /z/, /t/, /ts/, prepalatal /c/,

/g/, /j/, /ʃ/, palatal /tʃ/ and /č/, velar /c/, /g/, and laryngeal /h/. Meanwhile, according to the manner of articulation, Romanian consonants can be categorized into plosives /b/, /d/, /g/, /k/, /p/, /t/, /tʃ/, /č/, fricatives /f/, /h/, /j/, /s/, /v/, /z/, affricates /ts/, /č/, /ʒ/, nasals /m/, /n/, laterals /l/, and trills /r/ (Angehelescu, 2007: 175).

In abbreviations and symbols, letter names are used, and they may be pronounced in a way that is different from its original utterance, meaning that it has a different phonetic value (Avram and Sala, 2000: 98-99).

Considering the internal structure of the word and its morphological class, Romanian spelling is usually phonetic. As opposed to Arabic, Romanian is rich in diphthongs and triphthongs. We also find consonantal clusters, constituting of two, three, four or five consonants per syllable (*ibidem*: 106-109).

8. Case Study Methodology

The idea of this specific part of the study came after some students¹ were assigned to transcribe the first twenty seconds of a YouTube video not containing subtitles. The aim of it was to see how they perceived the various sounds of Arabic, non-existent in their native language, Romanian.

The original text is what follows, together with its translation:

- *Ṣadiqatī l-ʿazīzatu Munā, hal yumkinunī ʿan ʿa rifa rʿayaki fī baʿḍi n-niqāṭi l-mutaʿalliqati bi-l-luḡati l-ʿarabiyyati?*

- *Bi-ṭ-ṭab ʿi yā Rīm, fa-ʿinanani ʿuḥibbu haḍā n-nawʿa mina l-ḥiwāri.*

- *Ḥasan², matā ṣaharati l-luḡatu l-ʿarabiyyatu?*

- My dear friend *Munā*, can you tell me your opinion about some points related to the Arabic language?

- Of course, *Rīm*, I really like this type of dialogue.

- Well, when did the Arabic language emerge?

9. Comments

The transcription task revealed a pattern of recurring errors among the participants, notably in their inability to accurately differentiate between long and short vowels, and in confusing certain consonantal distinctions, such as between the voiced and voiceless stops. These findings highlight the necessity for targeted phonetic instruction that addresses the unique difficulties encountered by Romanian speakers when learning Arabic phonology.

Regarding the errors revolving around the inability to distinguish between the short and long vowels, we can see how, in some cases, the vowels were omitted altogether or misplaced:

- (1) *matā* “when” > *mat*, *māt*, *mata*
- (2) *ṣadiqatī* “my friend” > *sadqa*, *sadīkatī*, *sadikati*, *sadiqatī*, *ṣadikatī*, *ṣadiqatī*
- (3) *al-ʿazīzatu* “my dear” > *al-ʿazīza*, *al-zīza*, *al-zīza*, *az-zīza*, *ʿazīza*, *al-ʿazīza*
- (4) *al-ḥiwāri* “the dialogue” > *al-ḥiwari*, *hiwar*, *al-ḥur*
- (5) *Munā* “feminine proper name” > *Muna*, *Mūnā*
- (6) *ʿuḥibbu*² “I like, I love” > *ūāḥību*, *ūhibu*, *ūḥibu*, *ūāḥibu*

Another error made was the omission of the voiceless glottal stop /ʔ/ (ʿ), resulting in various notations for the verb *ʿuḥibbu*: *ūāḥību*, *ūhibu*, *ūḥibu*, *ūāḥibu*. The same applies to the verb

¹ The students had approximately sixty hours of Arabic lessons and no prior knowledge of the language.

² A doubled root Form IV verb, first person singular, imperfect indicative.



'a 'rifa,¹ noted either as 'rifa, ārifa, 'rifa^m or ā'rifa. As for the noun r'ayaki "your opinion", two recordings were observed: rāyki and rāyuki.

The pharyngeal fricative /ʕ/ (ع) was also omitted from words such as:

- (7) ba 'dī² "some" > baḍi, baḍna
- (8) bi-ṭ-ṭab 'i³ "of course" > bi-ṭ-ṭabi
- (9) al- 'azīzatu > al-azīza, az-ziza, al- 'azīza, al-ziza

The last example also showcases the absence of the tā' marbūta, a suffix that marks the feminine nouns in Arabic -at.

Certain emphatic consonants were confused with their non-emphatic counterparts, such as the substitution of the emphatic /ṣ/ (ص) with the non-emphatic /s/ (س) in ṣadīqatī, resulting in sadīqatī. Similarly, in the same word, the substitution of /q/ (ق) with /k/ (ك) was observed: ṣadīqatī became sadīkatī.

Another example of such substitution can be found in ba 'dī, where instead of the emphatic lateral alveolar consonant /ḍ/ (ض), the voiced alveolar consonant /d/ (د) was used, resulting in ba 'dī.

Another aspect, this time regarding the word an-niqāṭi was the failure to recognize the consonant /ṭ/ (ط) as the last letter from the word, resulting in the notation al-niqā, together with the inability to hear the solar consonant⁴ n, which does not lead to the assimilation of the proclitic definite article al- as it should.

10. Conclusions

Following this research, the linguistic concepts of contrastive grammar, phonetics and phonology have been defined, in addition to displaying some information about the Arabic and Romanian languages. Several results from the first phase of this study have been presented, highlighting the difficulties in rendering specific aspects of Arabic phonetics. This may be due to several reasons, one of them being their inability to distinguish between the sounds as the language is still new to them and they do not have enough practice. Another one can be a linguistic phenomenon. People who want to learn a second language (L2) often encounter persistent difficulties in perceiving and producing the specific contrasts of the target language's phonemes. This reduced ability to distinguish non-native phonemes is called "phonological deafness" or "phonological narrowing." The reasons for this difficulty in distinguishing and learning to distinguish non-native sounds in perception and production lie in a difficulty in creating non-native phonological representations later in life, rather than a perceptual problem. However, the reduced ability to distinguish non-native sound contrasts does not seem to be fixed once and for all (Heidlmayr *et al*, 2021: 1). Further investigation into the phenomenon of phonological deafness is warranted to ascertain its potential impact on students' proficiency in understanding the sounds of Arabic. By delving deeper into this area, we aim to elucidate the extent to which phonological deafness influences language learning outcomes and develop strategies to support students in overcoming any challenges related to phonetic comprehension. This exploration holds promise for enhancing language instruction and fostering greater linguistic competence among Arabic learners.

References

¹ A sound root Form I verb, first person singular, imperfect subjunctive, meaning *I know*.

² Determiner

³ The voiceless alveolar velarized stop /ṭ/ (ط) is a solar consonant. When having a definite article *al-* attached as a prefix to the word, the /l/ is assimilated by the solar consonant, and the letter is doubled in strength when pronouncing it.

⁴ Footnote number six defines the meaning of a *solar consonant*.



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