

Semitic Writings and Short Vowels

Alternative Hypotheses in a Renewed View of The *Analytics of writing*

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Abstract. The fact that Semitic writings do not note short vowels in the body of words is an ancient question, which has been repeatedly asked in works on the history of writing, from Marcel Cohen's, James Février's, I.J. Gelb's... onwards, as well as in the field of Semitic studies (G.R. Driver, D. Diringer...).

A first answer—still repeatedly reproduced—mentions the weight of tradition, and assumes that vowels were just not conceptualised, which resulted in what was described, in a factually improper wording, as “consonantal writings”. The latter have been considered as a step in the “history of writing”, i.e., in the “development of the invention of writing” (M. Cohen), the ultimate result of which would have been the ancient Greek alphabet. Such a view can no longer be held, because:

(1) Semitic writings had noted long vowels at the end, then in the body of words from the 13th century B.C. onwards, and


(2) the now prevalent idea is that every writing system is related to the language and culture in which it emerges and develops.

Another ancient hypothesis (Février; M. Cohen), widely taken up by Arab linguists, suggests that Semitic morphological patterns make up for the lack of vowels. We show here that this hypothesis, which only covers a percentage of words, cannot be retained either.

Another hypothesis (Dichy 2017) is discussed: short vowels being subject to dialectal variation, their omission in standard script may result, in a form of partially ‘robust’ writing, featuring a level of abstraction (Vendryes, 1923) that allows it to be shared by a variety of dialects or a-kin languages. This hypothesis should not be considered teleologically: it is a consequence of writing structures, and not a feature Semitic writing systems could have been “devised for”. In assumes in addition that the writing system is a writing-to-sounds process, which is a mistaken view of reading.

General alternative hypotheses are summed up in a renewed conceptual frame. They have been developed in Dichy (1990, 2017, 2019). The general concept is that of the *Analytics of writing*. According to it, the emergence of a writing system stems from the way in which a given culture analyses the structures of its own language in a way that produces:

- finite inventories of phono-graphic units, i.e., of grapheme-segments (or letters), defined through intuitive phonological processes, in relation to the fact

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- that, in Semitic languages (as opposed to Indo-European ones) all syllables start with a consonant, and roots are exclusively consonantal;
- a projection of these letters on a graphic system, which becomes – once instituted—a conventional way of writing;
 - word-form structures, which play a central part in the reading-for-meaning process.

1. Introduction

Another way of putting the question included in the title would be:

- “How could a renewed theoretical approach of writing offer an adequate description of Semitic graphic systems?” and conversely:
- “To what extent does the analysis of Semitic writings affect and enrich the theory of writing”?

In this paper, Semitic writings will be exemplified by their latest-born system, that of Arabic. We present a cognitive view of the phonographic vs. graphic-to-meaning relations. Both aspects are concerned with the production vs. recognition and the writing vs. reading processes, considered in relation to the emergence of Semitic writing systems. This approach will allow us to analyse and describe the emergence and codification of the Arabic writing system, in a renewed synthesis.

2. A Traditional View Calling for a Deeply Renewed Approach (Recall)

The fact that Semitic writings do not note short vowels in the body of words is an ancient and traditional question. It has been repeatedly asked in books on the history of writing, such as Marcel Cohens’s, James Février’s, I.J. Gelb’s, and many others, as well as in the field of Semitic studies (G.R. Driver, D. Diringer...). It still remains repeated in many of today’s books on writings. Ancient Greek and Latin writings have been described as *scriptio continua*, since they did not separate words, and Semitic writings as *scriptio defectiva*, because they allegedly did not note vowels (except as diacritic signs, which were in fact introduced much later).

A first answer to that question—also repeatedly reproduced – mentions the weight of age-old tradition, and assumes that vowels were just not conceptualised¹, which resulted in Semitic scripts being described,

1. In I.J. Gelb’s view, conceptualising vowels is assumed to be a specific ability, which the Semitic peoples would have been unable to develop, due to the weight of

in a factually improper wording, as “consonantal writings” (I.J. Gelb 1963). The latter have been considered as a step in the mythic idea of the “history of writing”,² i.e., in the “development of the invention of writing” (M. Cohen), the ultimate result of which would have been the ancient Greek alphabet. Such a view can no longer be held, because the multiple developments of writings in various cultures are now better known, and because the now prevalent idea is that every writing system is related to the language and culture in which it emerges and develops (see, e.g., J. Lyons, 1968, F. R. Harris, 1986, 1993, N. Catach (ed.), 1988, S.R. Fischer, 2001, F. Coulmas 2002, and, regarding Semitic writings with special reference to Arabic, J. Dichy, 1990, 2019).

3. Why This View Does Not Hold

Factually, it is essential to remember that Semitic writings had noted long vowels at the end, then in the body of words from the 13th century B.C. onwards (these are known as the the *matres lectionis* of the Bible). This fact makes it difficult to go on describing these writings as “consonantal”.

Epistemologically, this view pertains to the illusive idea of the “development of writing”, which goes back to the 18th century (Warburton, 1744). These views can be opposed to the analytic approach of Condillac (1746; 1775) (Dichy, 2017). We cut this discussion short here, in order to base our hypotheses on precise facts from the Semitic and Arabic writing systems.

4. Another Still Current Inadequate Hypothesis

Another hypothesis, initially brought forward by James Février and Marcel Cohen, has been widely taken up by Arab linguists. It suggests that Semitic morphological patterns make up for the lack of vowels.

The main trouble with this hypothesis is that it only covers a percentage of words (for Arabic, see Dichy, 1992). Although all verbs and basic deverbal forms (such as the infinitive, *masdar*, the active and passive participles, *ism al-fā'il wa-l-maf'ūl*, the analogous adjective, *sifa mushabbaha*, etc.) are based on morphological patterns, the choice of the pattern found in a given sentence does not allow in many cases the determination of the vowels, because the same sequence of letters can be shared

tradition. We will see below that this was a factually inadequate observation. One needs to recall these points, because Gelb's synthesis on the development of writing systems still has an impact on a number of linguists.

2. The singular form of “writing” and “invention” is significant.

by various patterns, e.g., the sequence $\text{يعلم} /y^{\text{c}}lm/$ can be instantiated as $\text{يَعْلَم} ya^{\text{c}}lamu$, ‘he knows’ or as $\text{يُعْلِم} yu^{\text{c}}limu$, ‘he informs’, or $\text{يُعَلِّم} yu^{\text{c}}allimu$, ‘he teaches’, to which three other ‘passive-form’ sequences can be added.

In addition, a high number of nouns is not based on a predictable morphological pattern.

5. Remaining Questions: Why and How Are Short Vowels Not Written in Standard Script?

One must note that what is commonly called “unvowelled writing” should be more correctly described as “non-diacriticised” script. *Secondary diacritics*³ essentially include the following signs:

- short vowels,
- consonants doubling (*sbadda*),
- case-ending diacritics for both determined and undetermined nouns
- mute consonant symbol (*sukûn*)...

The key to understanding this issue is the non-symmetrical relation between the reading and the phono-graphic processes. Such processes are related to the fact that writing is a *socio-cultural artefact*, stemming from the institution of norms in a given society. Historically, a language is submitted, after it first appears to a *grammatisation* process (R. Balibar 1985; Sylvain Auroux 1994). In the Arabian culture, such a process occurred in the first three to four centuries after the emergence of Islam, and especially in the first period of the Abbasid dynasty.

6. The Emergence and Development of a Writing System

The general concept is that of the *Analytics of writing* (Dichy, 2017), according to which the emergence of a writing system stems from the way in which a given culture analyses the structures of its own

- produces finite inventories of phono-graphic units and morpho-graphemic structures on the one hand,
- and projects them on the support of writing through a system of codified forms combining letters and word-forms on the other hand.

Let us consider both aspects.

3. *Primary diacritics* are dots added over or under letters of the same shape, to identify the grapheme referred to, such as $\text{ب} - \text{ب} - \text{ب} - \text{ت} - \text{ت} - \text{ت}$, respectively $y-b-t-t-n$. These dots are written with the thick end of the calamus, which shows that they actually belong to the letter, while the secondary diacritics are drawn with the thin end (Dichy, 1990, 2019).

6.1. The Phono-Graphic Perspective, in Relation to the Original Emergence of the System

In the first Western and Southern Semitic writings, the basis of the script was the inventory of the letters, which was later described as an *alphabet*, i.e., a set of grapho-phonemes. The latter are identified through an *intuitive phonology*, which breaks down syllables into smaller units. One then needs to describe the way in which such fundamental units are determined. Two ‘intuitive’ criteria will be highlighted or recalled here, respectively, the phonographic convention and the relation between letters and root-consonants.

6.1.1. *The Phonographic Convention*

As I had extensively shown for Arabic, the phono-graphic convention which resulted in the inventory of letters—i.e., of graphemes noted in the body of words—is essentially rhythmical. The convention can be phrased in very short words as follows:

Write a letter for the initial of every syllable, adding a second letter if the syllable is long (i.e., of the CVC or CVV form, where C is for “consonant”, V is for “vowel” and VV for “long vowel”).

This convention is directly related to the syllabic structure of these languages, the fundamental syllables of which are:

– CV – CVC/CVV *ma – man/maa.*

In addition to these basic syllables, contextually determined ones appear:

– CVCC – CVVC *mart – baab.*

One must remember that all syllables in this family of languages begin with a consonant. One could describe the resulting writing as metric/rhythmic, example:

Samar taaliba سمر طالبة ‘Samar [is] a student’, where *ʕ* is for the final feminine ending, and *A* in the tables below, for the letter *alif*, which notes the second half of the long consonant *aa*. Case-ending are omitted in this example, as in standard speech.

In Table 1, capital transcription letters stand for letters appearing in the body of words in Arabic writing.

The example of Table 1 features the ‘intuitive phonology’ that led to the inventory of letters.

TABLE 1. Rhythmic/metric structure of Arabic writing

Sa	MaR	TaA	Li	Ba	&
Cv	CvC	CvV	Cv	CvC	
Short syllable	Long syllable (ending with a consonant)	Long syllable (ending with the 2nd half of a long vowel)	Short syllable	Long syllable (ending with a consonant)	
1 metric/ rhythmic unit	2 metric/ rhythmic units	2 metric/ rhythmic units	1 metric/ rhythmic unit	2 metric/ rhythmic units	
1 letter	2 letters	2 letters	1 letter	2 letters	
S	MR	TA	L	B&	

6.1.2. *The Relation Between Letters and Root-Consonants*

In addition to the rhythmic indication related to the phonology of Arabic mentioned above, one must note that Semitic roots are always consonantal, while Indo-European languages, including ancient Greek, feature vocalic syllables, which partly accounts for the fact that, upon adopting the Semitic alphabet, ancient Greek has added vowels to its basic inventory of letters⁴.

In Arabic writing, roots strictly remain consonantal, even when they include vocalic consonants *w* (و) or *y* (ي) although these letters are also used for long vowels. The case of *alif* (ا) which only notes the long vowel *â*, as in *bâb* (باب) ‘door’, or *lâ* (لا) ‘no’, is significant: *alif* (ا) is never included in a root (i.e., as a radical). The Arabic alphabet thus only includes consonants, the first letter, which is *alif* (أ), refers in fact to the glottal stop *hamza* (ء)⁵, according to the principle that the first letter of a name of the unit of the alphabet corresponds to the sound denoted by it (this is known as the principle of acrophony). In his comment on the name of the *alif*, Ibn Jinnî (10th/4th century) thus recalled that the name *jim* (جيم) referred to the letter *j* and not, for instance to *m* albeit it includes the sound (Sirr Sinâ‘at al-î‘râb, سر صناعة الإعراب).

In the ‘intuitive morphology’ in consideration, the inventory of letters thus appears to be related to consonantal roots.

4. M. Cohen (1958) suggested that the existence of vocalic roots explained the adding of vowels by the ancient Greeks to their alphabet.

5. The name *hamza* does not belong to the traditional alphabet. The corresponding written symbol (ء) has been added later.

6.2. The Morpho-Graphic Recognition or Reading Perspective

Let us now move to a presentation of the complementary aspect, related to the word-form and the reading perspective.

6.2.1. *The Word-Form Structure*

The complex structure of the word-form in Arabic can be represented as follows: a lexical unit appears at the centre of the word-form, the structure of which includes two sets of grammatical formants positioned right and left of a lexical knot (or stem). These formants appear in two layers. The first one is necessary to the morphological structure of the word-form, and results in what can be described as a *minimal word-form* (D. Cohen, 1961), as can be seen in Table 2.

TABLE 2. Minimal Arabic word-form structure

Layer 1: Minimal word-form			
Word formants	PREFIX	LEXICAL STEM	SUFFIX
Verb, vowels included	Ya	NZIL	uWNa
Translation or grammatical indication	'they'	'go down'	masc., plural
Written form in standard writing	Y	NZL	WN

Arabic word-forms can, in addition to suffixes and prefixes, comprehend proclitic and enclitic formants resulting in what can be called a *maximal word-form* (D. Cohen *op. cit.*), as can be seen in Table 3.

TABLE 3. Maximal Arabic word-form structure

Layer 2: Maximal word-form					
Word formants	PROCLITICS	PREFIX	LEXICAL STEM	SUFFIXES	ENCLITICS
Word-form, vowels included	Wa-Li	Ta	SKUN	uW	HaA
Translation or grammatical indication	'And – so that'	'You'	'inhabit'	masc., plural	'it' (in Arabic, fem., singular)
Written form in standard writing	FL	T	SKN	W	HA

Suffixes and prefixes on the one side, and proclitics and enclitics on the other, strictly belong to a *word formant grammar*. The inventory of

formants included in the fields positioned right and left of the lexical stem is, of course, limited⁶. This results within the reading process in a very structured word-form recognition set of operations.

6.2.2. *The Structure of the Lexical Stem and of Word-Forms Recognition*

Better to understand the above recognition process, one must remember that the lexical stem of the word-form can be analysed into ROOT and PATTERN in 100% of verbal forms, and a high percentage of nouns (Dichy 1990; 1992).

The word-form grammar is composed of rules relating the suffix, prefix proclitic and enclitic formants. It also includes rules linking these formants to the lexical stem⁷. It is to be noted that the enclitic formants include complement pronouns, cliticised to verbs, but also to nouns (the construct-state of which includes a pronoun in the second position).

Word-form recognition therefore involves the process of identifying the grammatical formants situated right and left of the stem. Every lexical stem is associated with *grammatical specifiers* combining the formants which can come right and left of it. For instance, transitive verbs accept complement pronouns as enclitics; some nouns accept the relative noun-adjective suffix *-iyy* (يِّ) etc. These grammatical specifiers belong to the lexical features of the stem and are subsequently included in the word-form recognition process⁸.

6.2.3. *The Graphic Structure of the Word-Form and the Reading Process*

The final form of letters, which occurs in a small number of them in Aramaic and Hebrew, has been generalized in the writing system of Arabic. Word-Forms, which were usually separated by dots in ancient Semitic writings, are consequently recognizable in Arabic, where their borders are rendered visible by the final form of letters. These are systematically followed by a space in modern scripts and are often recognizable in ancient manuscripts.

6. A summary of the word-form grammar has been presented in (Dichy 1997), the complete rules of which have been developed in my 1990 work (chap. 10).

7. A limited number of stems are grammatical, such as *wa-ʿinna-bumâ* (وإنهما), “and-that-two of them”. A specific word-form grammar has been devised for them.

8. In the first half of the 1990’s, 129.000 Arabic lexical stems have been associated with their word-form grammatical specifiers (after Dichy 1990) in the DIINAR (DIctionnaire INformatisé de l’ARabe) project, in a collaboration between Lyon and IRSIT (Institut de Recherche en Sciences Informatiques et des Télécommunications), a high-level Tunisian centre (Dichy, Braham, Ghazali & Hassoun 2002; Dichy & Hassoun 2005).

In addition, Arabic script, following Syriac writing, organizes words along a thick line, which is interrupted by the final form of letters, further identifying⁹ word-form boundaries.

Example, ʾImruʿu l-Qays’s verse:

فما شئت من شعرهن اصطنيت	تخيرني الجن أشعارها
<i>tukbayyiruni l-jinnu ʾasbʿarabā</i>	<i>fa-mā sbiʿtu min sbiʿribinna STafaytu</i>
<i>The Djinnns allow me choice between their rhymes,</i>	<i>Whichever verse I choose I may retain.</i>

This word-form structure entails a ‘contour’ reading of words in Arabic (Grainger, Dichy et al., 2003) as well as in Hebrew (Frost, Forster & Deutsch, 1997, 2000). Words are subsequently recognized in a different process than the one we know in Latin character writings, where a word becomes recognizable after the second, third or fourth letter in most cases. Of course, Latin character writings combine contour and letter-by-letter recognition, as opposed to Semitic writings, which are fundamentally based on the contour recognition and the analytic processes of the word-form.

7. Is Unvowelled Writing a ‘Robust’ Abstraction With Regards the Reading Process?

Another hypothesis has been brought forward (Dichy, 2017).

J. Vendryes (1923) opposed the idea that writing should be a mirror image of phonetic realisations on the basis of the fact that pronunciation varies, sometimes strongly, from one region to another within the same language. He considered that writing needed to reflect a type of phonological abstraction shared by speakers whose pronunciations varied. We have seen above the abstraction based on intuitive phonology that Semitic writings reflect.

Considering the level of variation of ancient West-Semitic languages (Phoenician, proto-Hebraic, Eblaite, etc.), it is highly probable that the realisation of many short vowels differed. An additional hypothesis could then be that the intuitive phonology underlying the writings of these Semitic languages resulted in “robust” scriptural systems, i.e., in writing systems featuring a level of abstraction allowing them to be shared by a variety of dialects or a-kin languages.

This hypothesis nevertheless encounters two general objections:

9. Four letter forms interrupt the line in the middle of the word. These are *dāl*, *wāw*, *alif*, *rāʾ* (د، و، ا، ر), to which *dhāl* (ذ) and *zāy* (ز) must be added. This question is related to the history of the writing system of Arabic (Dichy 1990).

1. It only concerns a part of the writing data, since the diacritisation system of Arabic includes, as mentioned above, other symbols than that of short vowels.
2. It remains based on a mistaken view of the reading process, which should not be considered as a writing-to-sounds, but as a reading-to-meaning activity.

One must also add that this feature of the writings systems in consideration should not be considered teleologically, being a consequence of the processes presented above, and not a feature these writings could have been “devised for”.

8. A Summarized Answer to the Short Vowels or ‘Scriptio Defectiva’ Issue

The answer to the so called ‘*scriptio defectiva*’ issue, in other words to that of the short vowels in Semitic writing, based on the above short presentation of the structure of Arabic writing, includes the following complementary answers:

1. Due to the phonological structure of Semitic languages, according to which all syllables begin with a consonant, the phono-graphic inventory of letters is based on an intuitive metrical/rhythmical analysis of spoken utterances. This results in Arabic in the notation of long vowels in the body of words and the omission of short vowels,
2. The fact that all Semitic roots are consonantal can be considered as a complementary reinforcement of the above phono-graphic structure.
3. The word-form structure, which we have described above as entailing a contour recognition of word-forms, involves a recognition process that does not call on the mediation of sounds for reading, in addition to information related to the syntactic structure and the context.
4. The reading process in Arabic proves to allow the understanding of written texts at the same level of efficiency as one encounters, say, in English¹⁰. Native Arabic speakers do not consider the short vowel issue as an impediment for either writing or reading Arabic texts. They often refuse a systematic notation of the short vowels and other secondary diacritics, except in religious or ancient literary and poetic texts.

10. On the other hand, correct reading aloud of Arabic texts is more difficult than the actual reading-for-meaning process. In teaching Arabic both as a national and foreign language, education programs as well as teachers still most often mix up reading-for-meaning and reading aloud, which may result in inefficient teaching of the written language.

5. The idea that unvowelled writing systems could be considered as 'robust' with regards to dialectical variation, does not present us with an explicative hypothesis, albeit it may partially be retained.

9. Conclusive Remarks

Taking up the question put forward in the first lines of this work, about whether the analysis of Semitic writings exemplified by Arabic could affect and enrich the theory of writing, one can observe that:

- (1) The writing system of Arabic features strong reading-for-meaning processes, essentially based on the structure of word-forms, the centre of which is—except for grammatical words—a lexical unit.
- (2) These lexical units—or stems—are associated with morpho-lexical specifiers that relate them—through a *word-form grammar*—to the other formants encompassed in the word-form.
- (3) Word-form boundaries are rendered visible by the final form of letters that interrupt the line along which letters are drawn within the word-form.
- (4) Semitic writings can by no means be reduced to "consonantal" scripts devised by peoples that did not come to the level of conceptualization reached by the ancient Greeks (who added vowels to their alphabets). These writings included, from the 13th cent. B.C. onwards, long vowels.
- (5) The inventory of letters included in Semitic alphabets stemmed from an intuitive phonology that can be described as rhythmical/metrical-sensitive, due to the structure of syllables that always start with a consonant system, in addition to the fact that the roots of these languages are exclusively consonantal.

The features presented in this paragraph and the previous one illustrate the way in which the concept of the *Analytics of writing*, which considers the analysis of spoken utterances through an 'intuitive phonology' leading to an inventory of letters (in the case of Semitic conventional graphic system). These analytics include the identification of lexical units and their projection on written realisations. In Semitic writings, which have always visually represented word-form boundaries, this results in a word-form recognition process, which we have recalled for Arabic.

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