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# Origin and development of the Paleohispanic scripts: the orthography and phonology of the Southwestern alphabet<sup>1</sup>

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## A B S T R A C T

The first attested indigenous writing system in the Iberian Peninsula is the so-called “Southwestern script”. I argue that this system is of Phoenician inspiration and simultaneously offer an explicative model for its development as an alphabet, later on also the source of the Iberian semi-syllabary. This account, made primarily from a linguistic standpoint, ultimately intends to disclose orthographic rules of the script and phonological features of its underlying language.

## R E S U M O

O primeiro sistema de escrita indígena da Península Ibérica documentado é a designada “Escrita do Sudoeste”. Aqui, defende-se que este sistema é de inspiração fenícia e, simultaneamente, oferece-se um modelo explicativo para o seu desenvolvimento como alfabeto, constituindo posteriormente a raiz do semi-silabário ibérico. Este ensaio, realizado sobretudo de uma perspectiva linguística, tem como derradeiro propósito averiguar regras ortográficas da escrita e características fonológicas da língua subjacente.

## 1. Introduction

Three major writing systems were used in the Iberian Peninsula in protohistorical times — that is, from the end of Bronze Age down to the early moments of Roman occupation of the territory — to write local Pre-Roman languages. They are referred to generically as Paleohispanic scripts. These were the so-called “Southwestern script” and Southeastern and Northeastern Iberian.

With two varieties, the Iberian script has been thus named in reference to an Iron Age archaeological culture that is associated to a bulk of Pre-Roman *populi* broadly known as “Iberians”. Its Northeastern variety (henceforth NE Iberian) was used in an area that roughly corresponds to the Spanish Levant, which is the reason why it is also referred to as “Levantine”. Although NE Iberian has been deciphered, its underlying language — also known as “Iberian” — still largely defies trans-

lation. On the other hand, the Southeastern variety (henceforth SE Iberian) remains for the most part incomprehensible. While some texts appear to be in the same language, it seems it was also used for something other than Iberian. Even though it is difficult to establish chronological limits to the use of SE and NE Iberian, most scholars would agree to place them between the fifth and the first centuries BC, i.e. in the Iron Age II. The NE Iberian semi-syllabary was later adopted by the Celtiberians of the hinterland, who adapted it to their Indo-European language. Apart from these, it is also worth mentioning the existence of Greco-Iberian, an Ionian-based alphabet used to write the Iberian language. For their geographical distribution, see Map 1.

The script known as Southwestern (henceforth SW) has also been dubbed “South-Lusitanian”, “Tartessian” or “Bastulo-Tartessian” among other designations that appeal to ethnic and ethno-geographic boundaries. Since the ethnolinguistic situation of the protohistorical Iberian Peninsula is still poorly known, here I make use of the conventional geographic-based designation. The corpus of SW comprises today nearly one hundred inscriptions, the vast majority of which were found in southwest Portugal (thus its designation) in the regions of Baixo Alentejo and Algarve. Some, however, had their find-spots in the neighboring Spain, namely in the area located between Extremadura and Western Andalusia (Map 2).

The chronology of this script is troublesome. Despite the existence of some graffiti on pottery, most of the texts were inscribed in stone-made stelae whose funerary nature is recognized but these are usually found taken from their original context and reused as constituents of later tombs, often being broken for that purpose. But their original function can be surmised, and not just based on how frequently they turn up in necropoles. The stele from Abóbada I (Fig. 1), for instance, was divided into two main functional sections. The lower part of the block was shaped to the purpose of being inserted on the ground, allowing the stele to stand vertically. The remaining section functioned as the surface where the written message and the iconographic motif were carved. The same logic applies to the stele of Mestras (Fig. 2). Raising written and decorated funerary stelae was, of course, a cross-cultural practice in the Iron Age Mediterranean – in addition to Syria and Anatolia, it was also present in the Aegean and Italy, among other regions – but in the Iberian Peninsula it need not to be taken as a case of diffusion<sup>2</sup>.



Map 1 Distribution of the Paleohispanic scripts.



Map 2 Approximate find spots of SW inscriptions up to 1996 (Correia, 1996, p. 162, Fig. 15).



Fig. 1 Stele of Abóbada I / text no. 48 – 35 x 40 cm (Correia 1996, p. 118).

The direction of writing is not stable: it may be leftward or rightward and often follows the *boustrophedon* technique. Text was frequently inscribed within straight lines, called *cartelas* (roughly translatable as “bands”). In the stele of Abóbada I, for instance, the inscription consists of two sections, written leftwards and rightwards, and only the left-oriented portion of the text is contained in a band (Fig. 1). Word-dividers are very rare; text no. 35 from Mestras (Alcoutim, Portugal) is an exception: words are separated by vertical strokes.

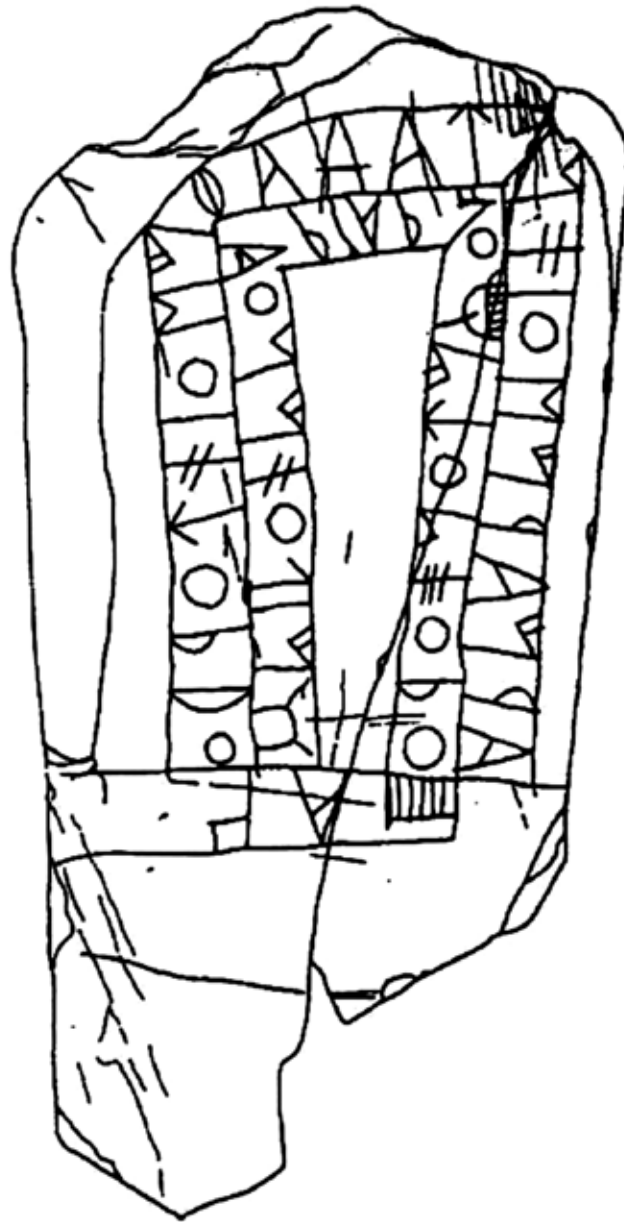


Fig. 2 Stele of Mestras / text no. 35 – 85 x 62 cm (Correia, 1996, p. 105).

Hence any approach seeking to separate lexemes can only rely on distributional analysis, that is, one can only identify the limits to possible words by looking for repeated sign-groups in different inscriptions. The script yields one good example of how this method can be applied to undivided texts. There is a sequence of two lexemes which is repeated in a considerable number of inscribed stelae, accordingly christened as “funerary formula”. I present below instances of sign groups from some (not all) texts where those two lexemes can be identified and distinguished from the rest of the content. In one instance (text 48, Abóbada I), one of the sign groups occurs alone. The underlining and vertical dividers are an artificial creation of mine, meant to highlight the lexemes in question. For the sake of simplicity here I strictly present the signs rightwards:

- Text 9: ...MH<sub>0</sub>|ξΑΡΟ|ΜΑΥΚΟΜΥ
- Text 13: ΜΗΔΗ|ΜΡΟΑ|ξΑΡΟ|ΜΑΥΚΟΜΑΥ
- Text 15: ...Μ|ξΑΡΟ|ΡΟ
- Text 17: ...ΟΑ|ξΑΡΟ|ΜΑΥΚΟΜΥ
- Text 38: ...Η<sub>0</sub>|ξΑΡΟΞΑ|ΜΑΥΚΟΜΦ
- Text 47: ...ΑΜΗ<sub>0</sub>|ξΑΡ[Ο]ΞΑ|ΜΑΥΚΟΜΦ
- Text 48: ΜΡΡΑΓΗΗΦΜ<sub>0</sub>|ΜΑΥΚΟΜΦ|ΦΡ...
- Text 54: Φ|ξΑΡΟΞΑ|ΜΑΥΚΟΜΦ

This example is quite informative, as we are able to isolate two possible stems which frequently appear in connection and, in addition, show traces of suffixation and even some agreement i.e. whenever stem 1 appears with suffix X, stem 2 usually (not always) comes next with ending Y:

- Stem 1: ξΑΡΟ- > ξΑΡΟ-ΞΑ
- Stem 2: ΜΑΥΚΟΜ- > ΜΑΥΚΟΜ-ΦΜ

Some authors, reading ΚΟΜΥ and ΚΟΜΦ as *konii* and *konti*, respectively, have connected these presumed words with the ethnonym *Conii* ~ *Cynetes*, the name of a Pre-Roman people known from Classical sources that abided in the southern areas of modern-day Portugal. Distributional analysis, however, shows that they are in reality part of two larger lexemes and very likely unrelated to that ethnonym.

Some stelae were retrieved from funerary contexts in archaeological excavations. Archaeologists who studied the materials dated those contexts in which they were found to between the seventh and fifth centuries BC (Mederos & Cabrero, 2001, pp. 101–103, with references) but because the stelae in question had, as a rule, been taken out of their original positions and reused to build new funerary structures, we know that they are necessarily earlier. For this reason, it is difficult to establish the timeline of the writing system contained therein.

There is presently no holistic edition of the corpus. With 81 inscriptions, Correia (1996) was the last most complete corpus published. In this article I follow the text numbers given in his work (Correia, 1996, pp. 167–168), while presenting subsequent inscriptions according to their provenance, i.e. by modern place-name.

Among the inscriptions, one quite singular object stands out: the so-called Signary or Table of Espanca, found in the municipality of Castro Verde, in Baixo Alentejo, Portugal (Correa, 1990, p. 132). It has no archaeological context and is undated. The table (48 x 28 x 2 cm) is a two-line writing exercise that includes twenty-seven signs engraved in the upper row and less regularly repeated in the lower line. For this reason, it is often admitted that the first and upper row ductus corresponds to the standardized system as presented by a master scribe to his student, whose less impres-

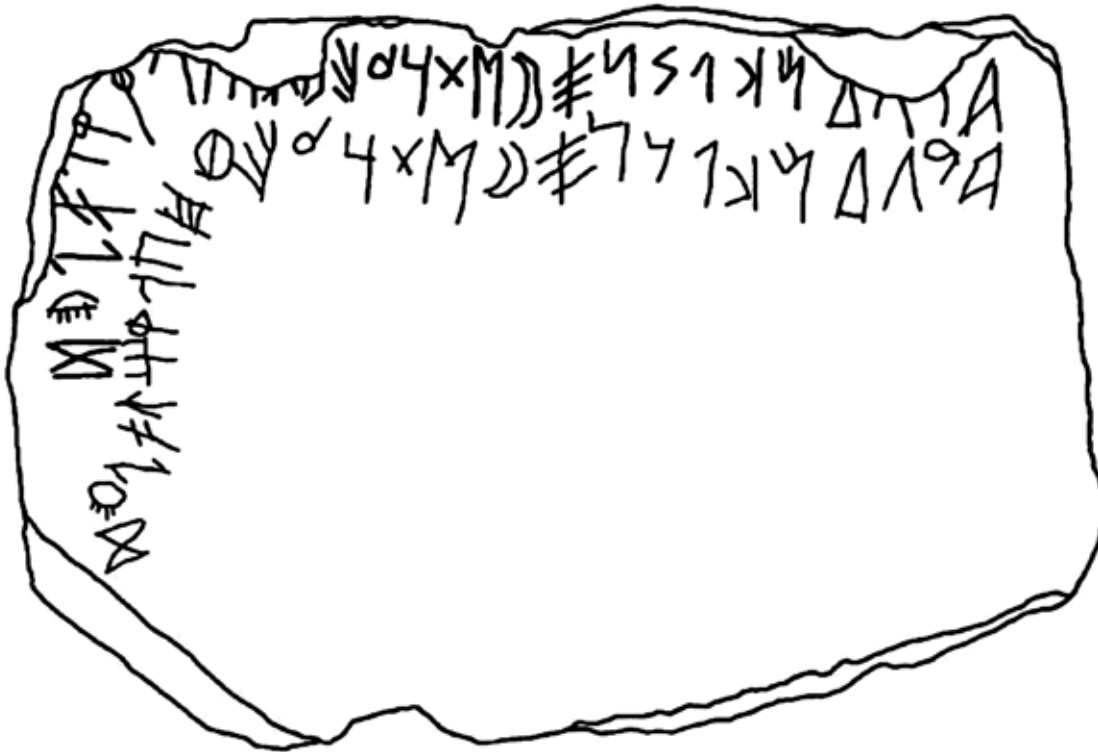


Fig. 3 The Table of Espanca (Correia, 1996, p. 22).

sive lettering lies below. The outstanding character of this object makes it of paramount importance for the understanding of the SW script — even though the absence of some signs present in the stelae from its set of letters clouds the nature of their relationship. The number of signs in the table and the presence of vowels show that the system represented therein can only be alphabetic, whereas the order of the first thirteen letters closely reflects that of the West-Semitic alephats.

The direct Phoenician derivation of the script is widely accepted (De Hoz, 1996, p. 201; Rodríguez, 2000, *inter alia*), even though some proposals that reject it and favor a Greek role (Schulten, 1940; Untermann, 1985, 1997) — or both Greek and Anatolian role (Beirão, 1990, p. 118; Gomes, 1997, pp. 11–12; Silva & Gomes, 1998, p. 163) — in its design have been offered<sup>3</sup>. The source of the writing system will be the focus of section 2.

Even more consensual is the notion that all Paleohispanic scripts are ultimately interrelated and it has always been assumed that they have a common southern origin (Correia, 1996, p. 8). In other words, it is admitted that the SW script might have developed into SE Iberian, which then gave way to a NE variant.

Regarding the decipherment studies on the script, many scholars seem to endorse the view that the SW signs match those of Iberian, not just in shape but also phonetically. The decipherment of Iberian, namely its NE variant, was accomplished from the 19<sup>th</sup> century onwards mostly with basis on coinage and inscriptions assumedly bearing onomastic elements known from later Greek and Latin sources, as well as other epigraphic material bearing bilingual or quasi-bilingual Latin-Iberian texts. The result was a curious mixed-system of semi-syllabic nature with syllabographic signs for stops and alphabetic (i.e. phonemic) ones for other consonants and vowels (Mederos & Cabrero, 2001, p. 97). This system was advanced in the works of Gómez Moreno (1922, 1943) and eventually became consensual. The history of decipherment and the list of works deal-

ing with the nature of Paleohispanic writing systems are long: I submit the reader to the detailed account of Mederos & Cabrero (2001, p. 97), with respective bibliography.

With particular respect to the work on the SW script, the current state of affairs derives from the publication of Gómez Moreno's last major work in which he considered every protohistorical script of the Peninsula as the same semi-syllabic system (Gómez Moreno, 1961, p. 187). Around the same time another scholar, Schmoll, arrived at similar results: he postulated a 25-sign system in which the 5 vocalic signs matched those of SE Iberian (Schmoll, 1961, 1962). Furthermore, Schmoll added another peculiar detail by noting that after each sign that matched an Iberian syllabogram, a letter with the corresponding vocalic value followed – e.g. *tu-u*:

<i>Southwestern</i>		<i>SE Iberian</i>	
Δʰ	<i>tu-u</i>	Δ	<i>tu</i>

Indeed, Correa (1990, p. 136) points out how surprising it would be for signs of both the SW script and the Iberian semi-syllabaries to yield exactly the same phonetic values and defends resorting to internal analysis as a medium to establishing differences. One of the adjustments he advocates is Schmoll's observation that syllabograms are always followed by alphabetic signs with the corresponding vocalic value: e.g. *ta*, *ti* and *tu* are always followed by *a*, *i* and *u*, respectively. Even if one assumes – as some seemed to do – that this is some sort of *scriptio plena* mechanism (similar to that of Ancient Near Eastern cuneiform systems) used to represent long vowels (i.e. *tā*, *tī*, *tū*), the result is a bizarre situation in which the underlying language only allowed stops in front of long vowels(!). This “vocalic redundancy”, as per Correa (1990, p. 136), is “a surprising and exclusive trait” of the script.

<i>Vowels</i>		<i>Syllabic (stop) signs</i>		
		<i>B</i>	<i>K</i>	<i>T</i>
<i>A</i>	Α	ξ	Λ	XΞ
<i>E</i>	○	Ϟϙ	κ	Ϟ
<i>I</i>	ϙ	↑	φ	⊕
<i>O</i>	ϙ	⊐	ϙϙ	Δϙ
<i>U</i>	ʰ	Ϟ	ϙ	Δ

Fig. 4 Most consensual table of values for the syllabic stop series and vowels (Rodríguez, 2000).

Regarding methodology, the abovementioned idea that there is a complete or near complete correspondence between the SW script and the Iberian systems is debatable. Most readings published in the literature, namely that of stops signs (*bV*, *kV*, *tV*), are direct calques of the Iberian conventional transcription (Fig. 4) and tacitly insinuate that the language had a full phonological correspondence with Iberian.

The preconception that it must be so due to their mere formal resemblance and recognized relationship is simply untenable. We know of numerous cases that counter this assumption but I will content myself with one (which was incidentally put forward by J. de Hoz in the *10<sup>th</sup> International Colloquium on Paleohispanic Languages and Cultures*, Lisbon 2009). This is the case of Mycenaean Linear B, deciphered in 1952 by Michael Ventris. Given its genetic relationship with the Cypriot

syllabary (decoded since the 19<sup>th</sup> century), which we know today ultimately derives from Minoan Linear A, scholars initially attempted to read Linear B with basis on the Cypriot values. That turned out unfruitful. In fact, although related, the Cypriot syllabary and Linear B shared only eleven signs that match in form and only eight or nine that are equivalent in form and phonetic value (Valério, 2008, p. 62). Apart from the fact that the Cypriot syllabary most probably notated a different language, this was certainly caused by the geographical and chronological gap between the scripts. The point to retain here is: the less close two genetically-related scripts are in space and time, the less fruitful their comparison will be. This advises caution in the approach to the development of different writing systems in the Iberian Peninsula.

Bearing in mind the problems here introduced, this article sets out to advance solutions for issues relating to deciphering approaches to the SW script, their methods and their readings. The first point needing clarification is the precise source of the SW script: Phoenician or Greek? Then, the foreseeable alphabetic origin of the system engenders one further problem: the outcome of Iberian as a semi-syllabary lacks a logical justification. Such a development might seem “unnatural” as a syllabary represents a less flexible system when compared to the alphabet. I am, of course, not claiming that writing is absolutely progressive. I merely assert that, in comparison to syllabaries, alphabets allow to express individual phonemes and a higher number of phoneme sequences (namely consonant clusters, fairly common, for instance, in Indo-European languages) with few more than twenty letters, much less than those of a syllabary. We cannot forget, however, that the choice of a particular type of script is largely dependent on the inherent features of the language beneath<sup>4</sup>, and thus there are some examples of world languages whose sound system prompted the shift from an alephat/alphabet to a syllabary. This will be important to the analysis here presented.

In dealing with the gradual transition from the source alephat or alphabet to the semi-syllabic Iberian, I will discuss a solution to the problems raised by the current interpretative model(s) of the SW script; and, in doing so, I will also advance new readings to some SW signs. I will rely on both internal and external analysis (i.e. comparison of sign values in both the source and descendant scripts), as also outlined in Rodríguez (2000). To understand what structural modifications occur in a given script when a writing system is transferred from one language to another, one must take in consideration the eventual differences in their phonetic inventories. In our case, knowledge of the structures of the donor and recipient script and of the phonology of the recipient language will prompt the reconstruction of the recipient language’s phonology<sup>5</sup>. Therefore, the most important methodological point in my approach is the appeal to a linguistic framework, which I believe has not been fully explored yet.

## 2. The source of the Southwestern script

This section addresses the question of the origin of the SW script. I have acknowledged above that Phoenician is the most consensual candidate for its source among scholars, whereas Greek is the alternative of a minority. The starting point of the present analysis, however, intends to be *tabula rasa*.

### 2.1. The paleographic evidence

The first analytical parameter is the alphabetical order of the script’s signs. The arrangement of the Table of Espanca closely reflects that of the Phoenician alephat, albeit *tāw* comes before *wāw*



(Fig. 3) – a trait often given in the literature as a Greek feature. The order of the letters, however, is a very conservative and enduring aspect of alphabetic writing systems: the arrangement of West-Semitic alephats was already established in the Ugaritic cuneiform alephat of the second-millennium BC and did not change much up to our days. Because in Ugaritic /w/ came after /t/, Rodríguez (2002, p. 193) fairly suggests that the position of *upsilon* in Greek might be inherited from a heterodox Semitic signary that followed the Ugaritic order. And in any case, the change of positions between two neighboring letters in the Table of Espanca is non probative – especially when we must conclude that the abecedary in this table and the SW script in general are possibly not representative of the same script.

More significant conclusions can be drawn from the inspection of the morphology of the letters. In general, their linearity and verticality (cf. e.g. **A** and **M**) would suggest a Greek rather than West-Semitic origin. However, it is symptomatic that three letters, those cognate to Greek *beta*, *iota* and *tau*, are much closer to their Phoenician counterparts than any corresponding early Greek form (Sass, 2005):

SW Table of Espanca (undated)	Phoenician Kulamuwa orthostat (late 9 <sup>th</sup> century BC)	Early Greek Dipylon jug (mid 8 <sup>th</sup> century BC)
9	𐤑	not attested (β elsewhere)
4	𐤒	ι
X	𐤓	τ

The final but essential aspect is the vocalic system of SW. We have seen that the most consensual scheme presented in the literature, and based on the comparison with the later Iberian scripts (see below for discussion), is that of a pentavocalic system with the following readings:

A	○	ϣ	ϣ	ϣ
a	e	i	o	u

Proponents of a Greek origin must assume a different configuration, necessarily interpreting ○ as /o/ or a similar vowel. From a nihilistic viewpoint, one can make an important observation: ϣ, the obvious cognate of Greek *epsilon*, behaves in the SW script not as a vowel but as a consonantal sign (this will be demonstrated specifically in section 3). Another point to be addressed below (see 3.2) regards internal (besides external) evidence suggesting that ○ represents a front/high vowel (*e*) and ϣ writes a back/rounded one (*o*), as predicted in the table above.

It is accepted that the five-vowel scheme is an innovation of Greek (even though vowel signs have emerged independently in other writing systems of Semitic origin across the world), whereas the West-Semitic alephats were by nature consonantal. However, the source of vowel letters can be traced back to them. Ugaritic, Phoenician and Aramaic scripts all made use of a special device called *matres lectionis* (which incidentally led to the creation of vowel signs in other Semitic-derived

scripts of the world). This consisted in the use of some consonant and semivowel (more accurately, approximant) letters to represent true vowels, namely in the rendering of foreign onomastics. Particularly, the Phoenician alephat made limited use of this mechanism to write Luvian names in Cilicia (Sass, 2005, p. 139), where the local Indo-European Anatolian language (written in Anatolian hieroglyphs) was spoken alongside Phoenician. It should be noted that Early Iron Age Luvian had only three vowels, /a/, /i/ and /u/, notated in the following manner:

Letter	Phoenician	matres lectionis ( <i>Luvian onomastics</i> )
'āleph	/ʔ/ (glottal stop)	/a/
yōdh	/y/ (semivowel)	/i/
wāw	/w/ (semivowel)	/u/

Greeks, who possibly borrowed the Phoenician alphabet in Cilicia itself or in the neighboring Pamphylia<sup>6</sup> and had forehand knowledge of the *matres lectionis*, picked these three West-Semitic letters and their secondary vocalic values, adding *e* and *o* (later on two more letters, for the corresponding long vowels):

Letter	Phoenician	Greek
'āleph	/ʔ/ (glottal stop)	/a/
yōdh	/y/ (semivowel)	/i/
wāw	/w/ (semivowel)	/u/
hē	/h/ (voiceless glottal fricative)	/e/
ʕayin	/ʕ/ (voiced pharyngeal fricative)	/o/

This point is fundamental. The SW script contains the same basic vowel letters used in the Phoenician *matres lectionis*, but the signs assumed for *e* and *o* do not coincide with the Greek ones (Rodríguez, 2000, p. 26)<sup>7</sup>:

SW	Phoenician	Greek
○ = /e/ <	ʕayin	> ○ = /o/
⚡ = /o/ <	'āleph (?)	no cognate

In short, the same ʕayin that became *omicron* in Greek might have developed into *e* in the Iberian Peninsula, whereas it is not clear what the source of *o* was. Rodríguez (2002, p. 192, n. 10) ingeniously suggests that *o* is derived from a rotated 'āleph, citing a parallel choice in the design of the Yiddish script. Moreover, Phoenician hē, which yielded Greek *epsilon*, had a different fate as a

consonantal sign in Iberia (see section 3). Together with the shapes of letters, this significant vowel divergence corroborates the commonly-shared view that the script is of Phoenician inspiration — all we need to assume is that it underwent independent verticalization, a process not unseen in writing systems of the world:

Phoenician	'aleph	'ayin	yodh	'aleph (?)	wāw
	𐤀	𐤁	𐤂	𐤃	𐤄
SW	<i>a</i>	<i>e</i>	<i>i</i>	<i>o</i>	<i>u</i>
	A	○	𐤅	𐤆	𐤇

## 2.2. The archaeological evidence

Archaeology supports the conclusions drawn from the paleographical analysis of the script. The adoption of writing in the Iberian Peninsula is part of a process of “Mediterraneanization” increasingly intensified since the Bronze Age. Because the SW script is attested with security from the 7<sup>th</sup> century BC on, it must necessarily date from that time or earlier. This coincides with the arrival of Phoenician (namely Tyrian) traders and settlers to the Peninsula, placed by scholars consensually in the 9<sup>th</sup> century BC or shortly after.

Arruda (1999–2000, p. 259) conceives that “populations of eastern origin” were settled in the area of the Gibraltar Strait from the beginning of the 9<sup>th</sup> century. The appearance in the Spanish territory of pottery of Syro-Palestinian typologies, namely amphorae, dated equally to the eighth or seventh-centuries BC is probative; the indigenous settlement of El Carambolo (Camas, Seville) yielded (levels D-IV and C-III) plates of thin rim and eastern features, with Cypriot parallels, also found at the site of Castillo Doña Blanca and traditionally dated to at least the mid-8<sup>th</sup> century BC (Mederos & Cabrero, 2001, p. 106, with references).

In the Iron Age I, the existence of settlements in the southwestern areas of the Iberian Peninsula which are interpreted by archaeologist as Phoenician, based on the predominance of material culture of eastern character and on architectural remains with parallels in the Syro-Palestinian coast in sites like Santa Olaia, Abul, Almaraz and Cerro da Rocha Branca, contrasts with a small number findings of Aegean pottery such as the fragment of a *kratēr* or *pyxis* from Calles de Palos (Huelva), dated to either the Late Geometric I (760–730 BC) or the Middle Geometric II (800–760 BC), or a fragment of an Euboean (?) *skyphos* dated to the third quarter of the eighth-century BC from Calle del Puerto 9, also in Huelva (Arruda, 1997, pp. 39–40, 44, 58–59).

It is nonetheless consensual that effective Greek colonization of the Iberian Peninsula shores was undertaken later. We know that Greeks, Ionians in particular, preferably established themselves in the Levantine coast of the Peninsula<sup>8</sup>, where they left behind well-documented and archaeologically attested settlements such as *Emporion* (modern-day Ampurias), *Rhodē* (Rosas) and *Mainakē* (Málaga), among others. This was the motivation for a strong Hellenic influence in the culture of Iberians from the sixth-century on, manifest in such phenomena as the emergence of a Graeco-Iberian alphabet of Ionian base (Iron Age II). It was furthermore the trigger to some modifications in the NE Iberian semi-syllabary (see section 3). Evidently, the Spanish Levant was a natural tactical choice, since Phoenicians (later followed by Carthaginians in the sixth century BC) were already well-

-established in the south and southwestern shores ahead of the Aegean colonizing impetus. In short, Phoenician, not Greek, was at hand to be borrowed by local populations of the southwestern Peninsula in Iron Age I.

In the aforementioned Calle del Puerto (no. 6), in Huelva (interpreted by archaeologists as an “indigenous” settlement with roots in the Late Bronze Age and not as an exogenous emporium), one amphora with a graffito was found that deserves consideration in this section. The amphora was recovered from level IIa (= c. 650–600 BC) and belongs to the type Vuillemot R-1 (= Trayamar 1). These are considered the typical western Phoenician amphorae of the first moments of the colonization, and were used for transporting wine. Regarding the graffito, from a sequence of at least three, possibly more signs, one can unfortunately read with safety only the final one due to the condition of the object. This last sign has been interpreted as a Phoenician *yōdh* in the literature (Mederos & Cabrero 2001, p. 105, with references), but, in reality, it is unmistakably akin to the *i* of any of the Paleohispanic scripts.

While the shape of the letter alone would not allow discerning whether this was SE Iberian or the SW alphabet, the former may be excluded with basis on the chronology of the artifact. One can imagine a 7<sup>th</sup> century trading vessel arriving at a port of southwestern Spain with a cargo of dozens of amphorae containing wine and other provisions. Possibly, there was some intermediary entity operating at the port of Huelva that was responsible for the redistribution of products among the indigenous world. Inscribing a personal or place-name on the containers would be a suitable manner of distinguishing which one was meant for whom or where. This is a procedure attested throughout history and cross-culturally. Ultimately, I think this item is of utter importance: while it is not direct evidence of the role played by Phoenicians in the design of the local script, it is a proof of early contacts between West-Semitic merchants and users of the SW alphabet.

Therefore, independent evidence (the sum of the paleographical and archaeological data) supports the already consensual view that Phoenician was the source of the SW script.

### 2.3. Additional signs

The alphabet of the Table of Espanca and the SW script as presented in the stela include not only a basic core of signs taken from the Phoenician alephat but also a set of additional letters that are not of West-Semitic fashion. They are presented in the Table as follows:

Ψ ↑ ≠ ↓ ⊕ ⊗

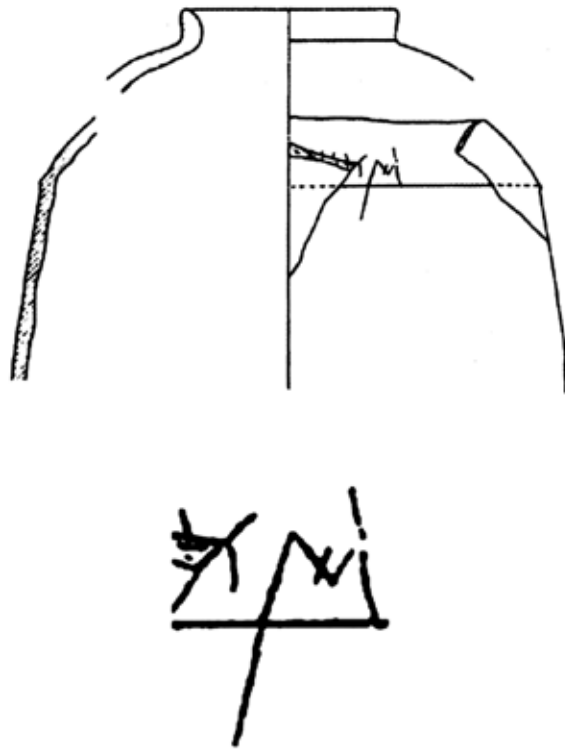


Fig. 5 Graffito on amphora of the type R-1 from Calle del Puerto 6, Huelva (Fernández Jurado & Correa, 1988–1989, p. 131, Fig. 2/1) and detail with the readable sign.

These signs, used to cover phonological gaps left by the Phoenician letters, could be 1) the product of indigenous design; 2) back-formations from Phoenician letters; 3) inspired by other writing systems. We have seen that in the case of *o*, also present in this extra set, the second possibility is probably the correct one.

It will be examined which of these possibilities apply to which extra letters, but while this topic would belong in here, it must be postponed to sections 3 and 4, where important points that relate to it will emerge from the discussion formulated there.

### 3. From an alephat to an alphabet and from an alphabet to a semi-syllabary: internal reconstruction of SW

#### 3.1. The Iberian language and the development of its semi-syllabary

After perceiving how the Phoenician alephat was adapted to a full alphabet with vowels in the Iberian Peninsula, we need to clarify the motivation behind its later adaptation to a semi-syllabary was. The key-point is Iberian itself. Understanding how this script related to the phonological features of its underlying language provides important information.

The Iberian semi-syllabary is considered as such because it possesses thirteen individual (phonemic) signs for vowels and most consonants, but three series of syllabograms for stops – bilabials, velars and dentals (Correa, 1994, p. 268). The NE variety even developed graphic variants (marked with one extra stroke) of the syllabograms of the *k* and *t*-series to represent their voiced counterparts (note that Iberian had voiced and voiceless velar and dental stops but only a voiced bilabial):

𐌀	<i>ba</i>	𐌁𐌁	<i>ka (ga)</i>	𐌃𐌃	<i>ta (da)</i>
𐌂	<i>be</i>	𐌄𐌄	<i>ke (ge)</i>	𐌅⊗	<i>te (de)</i>
𐌃	<i>bi</i>	𐌆𐌆	<i>ki (gi)</i>	𐌇𐌇	<i>ti (di)</i>
𐌄	<i>bo</i>	𐌈𐌈	<i>ko (go)</i>	𐌉𐌉	<i>to (do)</i>
𐌅	<i>bu</i>	⊙	<i>ku (gu)</i>	𐌊𐌊	<i>tu (du)</i>

On the other hand, the script was not equipped to express sequences of the type stop + consonant + vowel (SCV). Of course, this could well be not the reflex of an actual feature of the language but rather a limitation of the writing system (Correa, 1994, pp. 278–279). But, again, why would the script acquire a less practical form and misrepresent traits of the language that a plain alphabet could accommodate? In reality, SC clusters are absent even from texts written in the Greco-Iberian alphabet (i.e. the use of the Ionian alphabet to write the Iberian language), fit to embody such consonantal clusters.

Indeed stop + consonant sequences were missing in Iberian, as patent in the transcription of foreign names with such clusters with CV syllabograms whose vocalic value reflects either a dead or an epenthetic vowel:

<i>Latin</i>	>	<i>Iberian</i>	
<i>Flaccus</i>		<i>bi-l-a-ke</i>	(§4.7.3)
<i>Fabricius</i>		<i>ba-bi-r-ki</i>	(E.7)
<i>Gaulish</i>			
<i>Blandus</i> (* <i>blandos</i> )		<i>ba-l-a-n-de</i>	(B.1.125)
<i>Celtiberian</i>			
* <i>Segobriga</i>		<i>še-ko-bi-r-i-ke-s</i>	(A.89)

From a phenomenological point of a view, it is worth analyzing typological parallels. There are some languages in the world today that likewise have no such consonantal sequences, like Japanese and some Polynesian tongues. The Japanese phonetic inventory, for instance, is based on syllabic sets. Apart from five vowels (*a, i, u, e, o*) and the nasal sound (*n*), all other syllables in the language are consonant + vowel. Consonant clusters in loanwords are always broken up with vowels and words containing a final consonant other than *n* are added an echo-vowel, often *o* or *u* (Kay, 1995, p. 69). Note the examples below, with special emphasis on the treatment of clusters of the type stop + consonant:

<i>English</i>	>	<i>Japanese</i>
fax		fakkusu
Christmas		Kurisumasu
club		kurubu
present		purezento
stress		sutoresu

Conveniently, Japanese came to use two syllabic writing systems (apart from the Chinese characters – *kanji*) called Hiragana and Katakana, the latter being used mostly for words of foreign origin (Akiyama & Akiyama, 2002). The basic core of Hiragana is made of 55 syllabograms.

The case with Iberian is less dramatic because the language only disallows clusters of the SCV (stop + consonant + vowel) type; SVC (stop + vowel + consonant) sequences are allowed. In other words, while Japanese consists almost entirely of open syllables (cf. *Na-ga-sa-ki*), Iberian has also closed ones with non stop consonants in syllable-final position. For instance, a word like *a-bar-ki-s* (text C.4.1) contains two consecutive sequences of that kind (V-SVC-SVC), which means that two consonants may come together across syllable boundaries (*abaRKi-s*) and form heterosyllabic clusters<sup>9</sup>. Unlike Japanese, then, Iberian was written with a system containing syllabograms for stops alone (i.e. SV signs) and individual (i.e. phonemic) letters for consonants (C), since these could be followed by both vowels and other consonants. This system, a semi-syllabary, was the best-fitting for the Iberian language.

This framework unveils the motivation for a semi-syllabary in its last formative stage, but we still need to clarify how the change operated between the borrowing of the Phoenician-inspired alphabet and the shaping up of SE and NE Iberian. That “intermediary stage” needing elucidation is the SW script itself.

### 3.2. The formation of Southwestern script

As already noted by Rodríguez (2000, p. 29), what SW has is a series of signs derived from Phoenician stop letters but, without exception, always followed by vowel signs:

Phoenician		SW script			NE Iberian	
letter	value	sign	ante (vowel)		syllabogram	value
◁	<i>d</i>	Δ	𐤃	<i>u</i>	Δ	<i>tu</i>
⊕	<i>t</i>	⊕	𐤄	<i>i</i>	⊕	<i>te</i>
×	<i>t</i>	×	𐤅	<i>a</i>	×	<i>ta</i>
∧	<i>g</i>	∧	𐤆	<i>a</i>	∧	<i>ka</i>
Ʒ	<i>k</i>	κ	○	<i>e</i>	<	<i>ke</i>
φ	<i>k</i>	φ	𐤄	<i>i</i>	<b>no cognate</b>	

We observe that the SW script has a whole set of signs descendant from the Phoenician dental stop letters, each used always before a particular vowel: thus T+A, T+I, T+U (where T = dental). On the other hand, the same signs became syllabograms of the *t*-series in Iberian, a fact that, as we have seen, led scholars (who believe that those signs had identical values in both scripts) to assume “double spellings” of the type *ta-a*, *ti-i* and *to-o*. These are phonologically difficult to account for and, in fact, unnecessary.

I suggest that the motivation for this phenomenon is the same as in Iberian. Apart from these combinations of stop signs and vowels (S+V), the SW script uses individual phonetic signs for all other consonants (*n*, *m*, *l*, *r*, *s*, etc.) which may occur before any sign. It is plausible, then, to assume that, like Iberian, the language written with SW lacked SCV sequences.

Because only three stop series exist (conventionally transcribed as B, K and T as seen above; Fig. 4) we may also hypothesize that the language had no voice or aspiration contrast, thus containing only plain voiceless stops (/k/, /p/, /t/) in its inventory. This is supported by Iberian: despite writing a language with both voiced and voiceless dental and velar stops (/k/ and /g/, /t/ and /d/), the semi-syllabary had originally no voicing distinction<sup>10</sup>, the abovementioned voiced variants of syllabograms being a later innovation<sup>11</sup>:

SW Language	Writing	>	Iberian Writing	Language
/p/	*P	>	B	/b/
/k/	*K	>	K	/k/ ~ /g/
/t/	*T	>	T	/t/ ~ /d/

If we assume that the sound system of the language spoken in the southwest of the Iberian Peninsula included only /k/, /p/, /t/, we conclude that, as they imported the Phoenician alephat, its abundance of stop letters (*d, t, ṭ, k, g, ḳ, b, p*) became redundant. Instead of dropping the additional signs, the recipients of the script would then have decided to use all of them for the same purpose, placing each of them before one vowel.

There is strong structural evidence to support this if we attempt a sort of internal reconstruction of the Paleohispanic scripts. Let us take the example of the Phoenician dental letters (*dālet, tēth* and *tāw*): in accordance to the present hypothesis, they would have become redundant because only one type of dental stop (/t/) needed to be represented. It followed that each of them was connected to a single distinct vowel, in a clear attempt to avoid anarchy in the script – an important principle of writing. Thus:

Δ	𐤕	<i>t + u</i>
⊙	𐤔	<i>t + i</i>
X	𐤁	<i>t + a</i>

To prove that this development is not farfetched, we may compare the Greek alphabet which imported the three sibilants of the West-Semitic alephat: *šade* (/š/), *samekh* (/s/) and *šin* (/ʃ/). These represented different phonemes in the West-Semitic languages but because Greek possessed only /s/ (Brixhe, 2007b, p. 26) the new Hellenic alphabet winded up with three redundant signs for a single sibilant. Thus *šade* became the letter *san*, used in some variants of the Hellenic alphabet before disappearing, and *samekh* was used with *khi* or *kappa* in the compounds XΞ or KΞ that represented the cluster /ks/, in time merely abbreviated to the letter *ksi* (Ξ); only after centuries did *sigma* (< *šin*) became the sole Greek sibilant letter.

So far we have accounted for three stop-vowel combinations. Of course, two other vowels existed that needed to be represented. And so we find that Δ (evidently derived from Δ) occurs before 𐤕, i.e. /o/ (texts 11, 19 and 62). Even this has a logical explanation: a graphic variant of the stop-sign connected to *u* was used for *o* because these two vowels are similar in nature, both being back and rounded vowels. Similarly, a graphic variant of the stop letter used before *i* was developed for *e*, and these two are front and high vowels<sup>12</sup>. The sequence ⊙⊙ appears in texts 11, 20, 35, 48 and possibly on the newly found inscription of Sabóia<sup>13</sup>. Thus we find that the script was adapted based on a logic phonological scheme:



<b>Front/high vowels</b>	⊕	<i>t (+ i)</i>	>	D	<i>t (+ e)</i>
<b>Back/rounded vowels</b>	Δ	<i>t (+ u)</i>	>	⋈	<i>t (+ o)</i>

Through this mechanics, a full dental stop syllabic series emerged:

XA	<i>ta</i>
D○	<i>te</i>
⊕ꞑ	<i>ti</i>
⋈ꞑ	<i>to</i>
Δꞑ	<i>tu</i>

With this in mind, instead of assuming double spellings, as other scholars uphold, I suggest the simpler transliteration *ta* (i.e. *t-a*), representing /ta/ in terms of sound performance.

Rodríguez (2000, p. 25, 2002, pp. 189–190) mentions in passing the interesting parallel of the Ge'ez script (incidentally also descendent from a Semitic alephat: South Arabian), the writing system of Semitic languages of Ethiopia, most notably Amharic and Tigrinya. Ge'ez consists of 26 basic consonantal signs and a set of 7 diacritical vowels, which are combined to form the composite signs. Each of those main signs represents a consonant + vowel (CV) combination and each unmarked consonantal symbol can be combined with any of the seven vowels. Word-final consonants and consonant clusters are denoted with the consonant sign plus the diacritic of the vowel *a*, functioning as an anaptyctic vowel (Comrie, 2009, pp. 614–616). Rodríguez (2000, p. 25) mentioned this system only to note that “the vocalic signs are [progressively] absorbed as appendices by the consonantal one to the point where combined signs are configured, making this script look syllabic”. Unfortunately, what this scholar did not further unveil (to my knowledge, at least in this article of his) is that once more this system is intimately related with the phonological nature of the language. Not surprisingly, Tigrinya has a rich phonetic inventory whose syllables may, however, only form CV or CVC sequences. When three consonants or one double consonant and a simple one come together in words, clusters are broken up with the insertion of an anaptyctic vowel *a*; likewise, when two consonants or a double one would turn up in word-final position, *i* emerges after them; finally, if this is caused by a suffix, the same anaptyctic *a* is inserted before it (Rehman, 2007). Amharic, on the other hand, allows C+r/l clusters in word-initial position as in *gra* ‘left’ and *blen* ‘pupil of eye’, but even these may be understood as *gi-ra* and *bi-len* (Comrie, 2009, p. 596).

One may also compare Kharoṣṭhi, a Gandharian script of Aramaic origin that consisted of a core of consonantal characters to which diacritical vowel signs were appended. The vocalic diacritics were appended to consonants in specific positions, which reveals that the inventor(s) of the system had some knowledge of phonology: thus *e* and *i* (front vowels) are placed on the top of the consonantal sign and *o* and *u* (back vowels) are affixed below it (Glass, 2000, p. 13). This logic finds a direct match in the SW design of the dental series.

It is important to stress, at this point, that the Ethiopian and Indian scripts are *not syllabaries* like the two Japanese *kana*, nor even *semi-syllabaries*: vowels, albeit connected to consonantal signs, are still identifiable as independent from them as in any *alphabetic* system. This same principle applies to the SW script.

The reorganization of the stop signs here proposed is confirmed by the other two series. We have seen that West-Semitic *g*, *k* and *ḳ* gave way to the combinations *k+a* and *k+e* and *k+i* in SW.

Then, with the same scheme seen above for the *t*-series, the predecessor of Iberian *ko* (which appears in the Table of Espanca but is of obscure origin) is always used before /o/, while a graphic variant of it forms the combination *k+u*:

Phoenician		SW script			NE Iberian	
letter	value	sign	ante (vowel)		syllabogram	value
𐤀	<i>g</i>	𐤁	𐤂	<i>a</i>	𐤃	<i>ka</i>
𐤄	<i>k</i>	𐤅	𐤆	<i>e</i>	𐤇	<i>ke</i>
𐤈	<i>ḳ</i>	𐤉	𐤊	<i>i</i>	—	—
—	—	𐤋𐤌	𐤍	<i>o</i>	𐤎	<i>ko</i>
—	—	𐤏	𐤐	<i>u</i>	—	—

As we may observe,  $\Phi$  was not present in NE Iberian anymore (it did exist in SE Iberian, but there its value is uncertain). There is probably a good reason for this. We know that later on  $\Lambda$  evolved to  $\text{P}$  in Iberian, becoming identical with the *r*. The latter then had to be disambiguated and was changed into  $\text{D}$ . Since this new shape was now similar to  $\Phi$ , it is possible that the sign had to be replaced to avoid confusion. For some obscure reason,  $\text{K}$  had no continuation as well.

The most poorly understood SW series is that of the bilabial stops – which I will transcribe as *p+V* in accordance with the working hypothesis here endorsed. Only two signs have a candidly identifiable evolution from Phoenician, which is only natural because two is the number of bilabial stops represented in that alephat (West-Semitic languages did not have an emphatic bilabial \*/p/). Thus the signs derived from Phoenician *beth* and *pe* yielded *p+e* and *p+o* (Correa, 1990, Fig. 3; Rodríguez, 2000, p. 31) respectively:

Phoenician		SW alphabet		
letter	value	sign	ante (vowel)	
𐤁	<i>b</i>	𐤂𐤃	𐤄	<i>e</i>
𐤅	<i>p</i>	𐤆	𐤇	<i>o</i>

Moreover, NE Iberian syllabogram  $\square$  (*bu*) is the descendant of *p+o*. Regarding shape, it appears that the rectangular SW *po* was formed when it became muddled with the lower row of the bands of the stelae (Rodríguez, 2000, p. 27).

One tricky case in the diachrony of the Iberian writing systems is  $\text{𐤁}$ . On the one hand, this a priori is the descendant of West-Semitic *be*. On the other hand, the homomorphic sign in SE Iberian has been interpreted by Faria (1992, p. 41) as *be* on the basis of the presumed identification of two Iberian personal names, *bersir* and *bekor*, on two inscriptions (Untermann, 1987, pp. 293, 299–300, 306) as well as the supposed similarity with sign *bi* (De Hoz, 1976, p. 300). Moreover, coins from Alcácer do Sal (SW Portugal) dating to the second and first centuries BC contain the following inscription in the SE variety of Iberian (Faria, 1992, p. 39):

𐤁𐤀𐤁𐤀𐤁

Faria reads, from the right to the left, *be-u-i-bu-m* (even though he seems to hesitate between *m* and *n* in the last sign). This would be an indigenous place-name that, like so many in the southwestern areas of the Iberian Peninsula preserved in Roman sources, ends in *-ipo* (cf. *Olisipo*, *Sisipo*, *Collipo*, etc.). In reality, the reading *-i-pu-n*, or even *i-po-n*, is more likely as it conforms to the form of the suffix known through Latin transmission — note that SE Iberian probably wrote not Iberian but another language in Western Andalusia. I take the last sign of the inscription to be a variant of *n*, not *m*, which is feasible on morphological grounds.

Thus the evidence of SE Iberian confirms the reading of SW  $\square$  as *po* and, most importantly to the point, substantiates the idea that its own  $\text{𐤁}$  is *be*. Based on formal resemblance, some authors would not hesitate to attribute the same phonetic value to its SW predecessor. The sign does behave like a stop letter, but it always occurs before *a* (texts 19, 48, 67, 75), not *e*, and so in all likelihood it fills the gap of *pa* — a solution which is in harmony with its later SE Iberian value<sup>14</sup>. In this case, the recipients of the script simply gave a new use to a sign that had none (i.e. the language had no sound equal or close to a voiceless glottal fricative), using it to fill in a gap in the most defective series. Note that in the Table of Espanca  $\text{𐤁}$  does not appear in its original Phoenician position: it has been moved forward, closer to the set of additional signs.

As for *pi*, it might be represented by the hapax  $\text{𐤁}$ , which precedes *i* in text 35 (Fig. 2). In Rodríguez (2000, p. 44, S-306), the sign is given as:

$\text{𐤁}$

The fact that it appears horizontally and the scratches in the inscribed stone prevented this scholar from identifying this sign with the one in the penultimate position in the Table of Espanca ( $\text{𐤁}$ ), which appears vertical. It should be noted that this is one of the extra signs in the Table of Espanca. I will not insist on this proposition, however, since the only two points in favor of it are the remote affinity to some instances of NE Iberian *be* (see table below) and the need to eliminate an empty slot in the bilabial series.

Presently, I also cannot offer a solid proposal for *pu*. The creative logic of the other two series of stops would suggest a graphic variant of  $\square$ . Indeed we have similar characters like  $\text{𐤁}$  and  $\text{𐤁}$ , but these do not seem to behave like stop signs (see section 4). So I leave the hole in the series unfilled for the moment being:

SW			SE Iberian		NE Iberian	
𐤀	A	<i>pa</i>	𐤁	<i>ba</i>	𐤁	<i>ba</i>
𐤁	o	<i>pe</i>	𐤁	<i>be (?)</i>	𐤁	<i>be</i>
𐤁	𐤁	<i>pi (?)</i>	uncertain	uncertain	𐤁	<i>bi</i>
𐤁	𐤁	<i>po</i>	uncertain	uncertain	𐤁	<i>bo</i>
?	𐤁	<i>pu</i>	𐤁	<i>bu</i>	𐤁	<i>bu</i>

The table above suggests SW *pa* and *pe* switched places in SE Iberian, even though the motivation to this change is not clear. In any event, the data seem to support the readings here argued for the SW signs.

Still with regard to the bilabial series, this model contrasts with the work of Rodríguez (2000, p. 36), who proposes that  $\xi = ba$  and  $\uparrow = bi(?)$ . His analysis entails two problems. Unlike those SW signs whose Phoenician predecessors and Iberian successors have assured stop values, these two letters are not used exclusively before one vowel:  $\xi$  occurs not only before *a* (several times, in the so called “funerary formula”) as Rodríguez claims, but also before *e* (text 64); and  $\uparrow$  before *a*, *e* (text 35) and *i* (texts 11, 25, 42, 64, 75). This principle has been largely ignored in previous approaches possibly because scholars are attached to the idea that stop signs have themselves a CV value. In any event, when applied to the SW signs, the model here presented is productive and proves to solve some reading difficulties.

With respect to  $\xi$ , alternative readings put forward in the literature define it as a sibilant (e.g., Gomes, 1997, p. 12). One of the points in favor of it is the fact that NE Iberian has a homomorphic sign with the value *s* (Siles, 1979, p. 81). A sibilant would be a good solution for a sign that is followed by different vowels in the corpus. On the other hand,  $\xi$  is also the best candidate for *m*; Correa (1990, Fig. 3) made a similar proposal. And since /m/ is a recurring phoneme in languages of the world, it is not likely that the script would lack it. The decisive argument is provided by the Table of Espanca, where the sign placed in the position of West-Semitic *mem* is similar to that same letter (Fig. 3), which seems to confirm its value of a labial nasal.

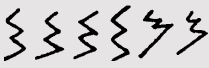


Of course, this presents one obstacle: the discontinuity revealed by the homomorphic sign that is a sibilant in NE Iberian and the different-looking sign for *m* in the same script.

NE Iberian	
<i>s</i>	<i>m</i>
𐤁	𐤁

We must not expect NE Iberian to show full continuity (and we know it does not) because certainly the phonetic inventory of the Iberian language (Iron Age II) was different from that of the

SW script language (Iron Age I). One good example of this is the replacement of  $\circ$  for  $\nabla$  as the sign for *e*, which certainly happened due to the influence of the *epsilon* of the Greek alphabet. NE Iberian developed in the modern-day Catalonia around the 5<sup>th</sup> century BC when (as discussed in section 2) several Greek settlements had been installed in the region. On the whole, the NE Iberian semi-syllabary was under strong influence of the Greek alphabet, so both its *e* and *s* may have been inspired by *epsilon* and *sigma*.

In short, everything supports the reading *m*, ultimately confirmed by the West-Semitic precursor of the sign:

Phoenician <i>mem</i>	SW ( <i>stelae</i> )	SW ( <i>Espanca</i> )
		

As per  $\uparrow$ , it is clear that it is also a consonant other than a stop. I will for that reason discuss it in section 4.

### 3.3. Two possible exceptions?

I wish to close this section by addressing two inscriptions of the corpus that appear, at first sight, to defy the rule of stop + vowel combination which I have advocated. These are the stelae of Alcalá del Río (from Seville, Spain; text 75) and Benafim (Loulé, Portugal), the latter published (Gomes, 1997) after the holistic edition of Correia (1996). According to the *editio princeps*, the stela from Benafim includes twice the combination  $\square \nabla$  in accordance with the orthographic rule. But then a strange sequence ( $\mathbf{A} \Phi \square \mathbf{P}$ , fourth row) and a hapax legomenon ( $\nabla$ , first row) are documented in the drawings and photograph (Gomes, 1997, figs. 2–4). The case with the hapax legomenon may be solved upon a closer inspection of the photograph provided:

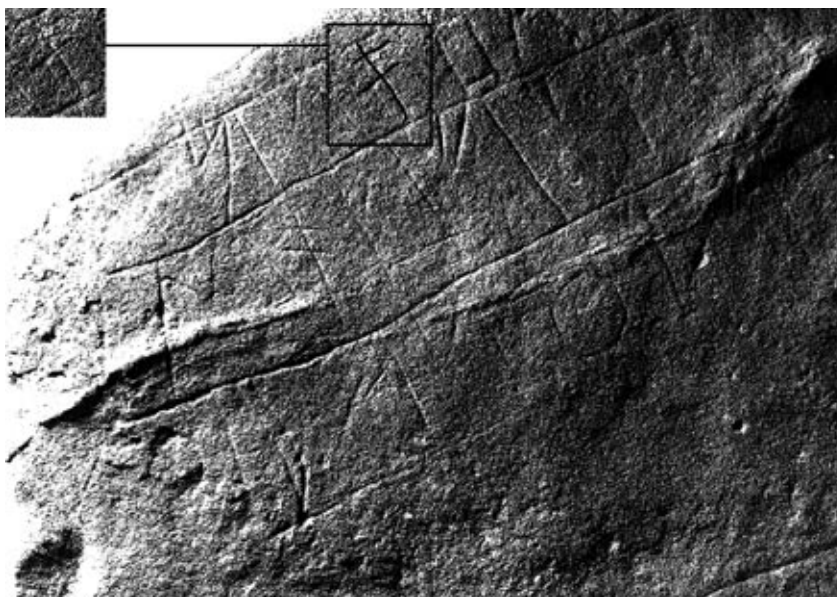


Fig. 7 The first rows of the stela from Benafim (Gomes, 1997, Fig. 3) and a detail of the doubtful sign.

The hapax † appears to be actually a badly eroded ‡ – this is also the reading proposed by Faria & Soares (1998, p. 156). The difficult sequence in the fourth row is more problematic due to the condition of the written surface of the stone. In my opinion, regardless of the bad condition of the inscription at this point, one may read it as \*AP†H, which would not be inconsistent with any rule of the script:



Fig. 8 The fourth row of the stele and the problematic sequence (following Gomes, 1997, Fig. 2).

In any case, however the reading of this text may be dubious, it is also, in my opinion, insufficient to discard the extreme regularity of the rest of the corpus.

The only graphic testimony of the other problematical text (75) which I could find is 1961 drawing of Gómez Moreno (with no scale) in the work of Correia (1996, p. 145):



Fig. 9 Text 75 from Alcalá del Río (Correia 1996, p. 145, according to Gómez Moreno, 1961).

As we may see, perfectly regular sequences are present in the text ( $\Delta^P$ ,  $\Xi^A$ ,  $\Phi^M$ , etc.) but some others are intriguing: e.g.  $\aleph$  appears before a stop sign in one instance and once it is even isolated (!). Despite some problems in the drawing of Gómez Moreno – for instance, the sequence  $\Delta^M$  can only be a mistake for  $\Delta^P$  – there are some features which are not easily explained. Nonetheless, this inscription, as the one above, still includes a considerable number of regular sequences that conform to the rules outlined in this section and in ultimate analysis none of the two endangers their validity.

### 3.4. From the SW script to the Iberian semi-syllabaries

I hope to have demonstrated in this section that three sets (dental, velar, bilabial) of S+V sign combinations were used as a rule in the SW script. It was the existence of stop signs with identical consonantal values but being used in combination with different vowels that paved the way to the devising of the Iberian semi-syllabary. Very likely, the adaptors of the SE Iberian syllabary spoke also a language lacking stop + consonant sequences – this script was assuredly used for Iberian in a later stage but we do not know yet what language it wrote in the earliest stages. By then, they must have found that it had become purposeless to keep adding vowel signs to the stop ones. To be sure, the syllabic value had already become intrinsic to them. That is, it was already evident to the reader that the cross-like letter was *ta* without the actual vowel next to it. It is possible that the inscription nr. 81 conventionally attributed to the SW corpus but found in Cañamero (Cáceres, Spain), is a token of this transitory phase, if not already one of the first examples of the SE Iberian syllabary:

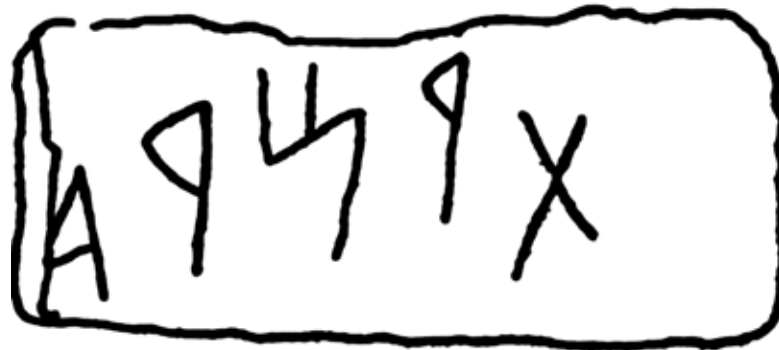


Fig. 10 Inscription no. 81 (Correia, 1996, p. 151, with references).

## 4. Non-stop consonant letters

The SW sign that derives from Phoenician *ḫēt* (a voiceless pharyngeal or velar fricative – the two Canaanite phonemes merged in Phoenician; Woodard, 2008b, pp. 86–87) has a great number of graphic variants (given as S-201–205, S-308 and S-309 in Rodríguez, 2000) with different kinds of extra strokes. All in all, the sign precedes a number of different vowels and is attested before a consonant only in the problematical text from Alcalá del Río. Even so, it does not behave like a typical stop sign and therefore it must stand for another type of consonant. A voiceless velar fricative (/x/, which I will transcribe as hypothetical *h*) or a similar sound is possible, taking into account the value of the original Phoenician letter. Since one of the fifteen signs in the three series of stops, *pu*, is still unidentified, it needs to be verified whether a graphic variant of  $\square$  – which would have

become ambiguously similar to the letter in question – was used as such. In any event, the plentiful variations of the sign are worth examining:

𐌆 +	<i>e</i> (text 34, 47, 54, 60, 61), <i>o</i> (text 75), <i>u</i> (texts 9, 27)
𐌇 +	<i>e</i> (text 15; Sabóia), <i>u</i> (41, 48, 71)
𐌈 +	<i>a</i> (text 15, 25, 35), <i>e</i> (text 15), <i>o</i> (text 51), <i>u</i> (51)
𐌉 +	<i>e</i> (texts 10, 26)
𐌊 +	<i>e</i> (text 9), <i>o</i> (text 17)
𐌋 +	<i>a</i> (text 23)

Most of the variants occur with more than one vowel and all of them seem to be forms of a single sign. In all likelihood, 𐌆 is a non stop consonantal sign that underwent exceptional stylization when inscribed in stelae. This is corroborated by the new (yet unpublished) stela from Mesas do Castelhinho (Almodôvar, Portugal). This new item contains the longest text found up to the date (nearly 90 signs), but it contains rather unusual and highly stylized variants of well-known signs. One must still await for the *editio princeps* but, since I had already the privilege to inspect the stone in the Almodôvar Southwestern Script Museum, I may report that it contains the following embellished variant of 𐌆 before *u*:

𐌆

Apart from it, the text also includes 𐌉 before *u*, *e* and *a*, which reassures the hetero-vocalic character of the letter.

Another problematic sign is 𐌌 which, following other scholars who compare it to a similar sign in Iberian, I take to represent (possibly) some sort of liquid, transcribed as *r̄* – only to distinguish it from *r*, just as 𐌍 and 𐌎, who must have represented two different sibilants, are transliterated *s* and *ś*, respectively.

A letter that also deserves comment is 𐌏, which we have seen is a non-stop consonantal sign. This arrow-like letter has a parallel in Phrygian, where an homomorphic letter represents the palatalized or affricate (*tʃ* or *tʃʰ*) that resulted from *\*/ke/* ~ *\*/ki/* and accordingly appears in front of *e* and *i* in the whole of Phrygia (Brixhe, 2004, pp. 26–27; Adiego, 2004, p. 302). This Phrygian letter continued in later Anatolian alphabets: the same sign in Lydian is transliterated as *c* and probably stands for a non-palatalized dental affricate */tʃ/* (Yakubovich, 2009, p. 45); in Carian the sound written with this sign (transliterated as *τ*) is “some kind of coronal obstruent, probably an affricate” but its precise value is still unknown (Woodard, 2008a, pp. 57–58, 66). It is acceptable today to think that Greek was the source of the Phrygian alphabet – and thus all Anatolian alphabets – because they share the same vowel scheme (i.e. *epsilon* and *omicron* from Phoenician *he* and *ayin*), even though the latter is attested at least at the same time, if not earlier (see note 3). Evidence today suggests that the Greek alphabet probably first emerged in southeastern Anatolia, from where it would have been transmitted to Phrygian areas (see also above). The arrow-like letter was a Phrygian innovation and I now think, as Craig Melchert suggests to me in a personal communication, that this innovative Anatolian sign was inspired by the Luvian hieroglyph *zi/a* because local Anatolians needed to represent a sound absent from Greek, whose alphabet was the model for theirs. Indeed, findings of Paleo-Phrygian alphabetic inscriptions (Brixhe & Lejeune, 1984) and Luvian hieroglyphic ones (Hawkins, 2003, pp. 142–143, map 4) overlap in some areas of south-central Anatolia.



Since Phoenician presence is also attested in Cilicia, where monumental bilingual Luvian-Phoenician inscriptions like the one from KARATEPE were erected, it is possible, though very difficult to prove, that they were aware of the existence of such a sign. If there is any relationship between this sign and the Anatolian one, a sort of voiceless palatalized (/tʲ/) or affricate (/tʰ/) dental is possible. It is, in any case, suggested by its appearance in an element of the so-called funerary formula, 𐎎𐎠𐎡𐎢𐎣𐎤𐎥 = *naʹrken*𐎦𐎧 (text 42). Since this is a rare occurrence, it may be a spelling variant of 𐎎𐎠𐎡𐎢𐎣𐎤𐎥𐎦 = *naʹrkenti* (texts 13, 31, 38, 47, 48, 54), i.e. the sign may represent the outcome of earlier \*/tyV/. But even this is of doubtful validity, since we have seen in the Introduction that 𐎎𐎠𐎡𐎢𐎣 = *naʹrken-* is a stem that may take different suffixes. I will transcribe this as hypothetical *z* but, due to the fragility of this proposition, I will not insist on it.

While there is an evident morphological similarity between some of the last signs of the Table of Espanca (𐎦, 𐎧, 𐎨 and 𐎩) and some letters of the Anatolian alphabets (apparently all later than SW except for Phrygian), their compatibility in terms of sound is undeterminable – correspondence is much more overwhelming at both levels between the basic core of the script and Phoenician. And one should bear in mind that when such basic and linear shapes are in question, they often can emerge independently in different writing systems.

### 5. Rare letters, hapax legomena and graphic variants

There is also a number of hapax legomena and rare signs that must be graphic variants of other signs, lapidary errors, misreadings or have yet another explanation. Otherwise the amount of signs would surpass that of a regular alphabetic system. So these difficult signs need to be explained:

■ S-105 𐎦 and S-303 (inverted 𐎦)

S-105 is attested on text 26. These must be graphic variants of 𐎦.

■ S-121 𐎫

Either a mistake or a variant of 𐎡.

■ S-301 ☆

This occurs in text 38, where it appears to function as some sort of word-divider (see Fig. 12). The important section of the inscription may be read: *poti \* anakerto...* and so on.



Fig. 12 Detail of the inscription no. 38, Mealha Nova I (Correia, 1996, p. 108).

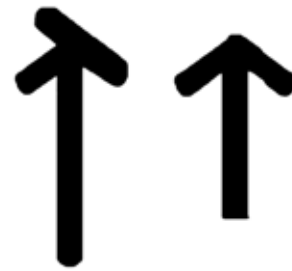


Fig. 11 Anatolian hieroglyph \*376 zi (left) and its likely alphabetic successor (right).

S-302 𐌆

A doubling of 𐌕?

S-304 𐌖

It appears to be an error in text 59, where perhaps it was meant to be 𐌖:



Fig. 13 Detail of text 59, from Gavião (Correia, 1996, p. 129)

S-311 𐌗

This sign occurs in text 67, between *a* and *e*. Might it be the result of an ill-oriented 𐌛 that became double when the sculptor attempted to amend it?

S-312 𐌖

It appears only on an inscription found near the Paleochristian basilica of Mértola, Portugal (Faria, 1994), before *e* – it is preceded by one vowel and followed by two. A sequence of four vowels would be rather unlikely so it must be a consonant. We find that the shape of the sign and the following *e* guarantee it as a variant of 𐌕, *k(e)*.

S-305 𐌖 and S-313 𐌖

S-305 occurs in text 64 and S-313 is used twice in the inscription from Mértola. It appears always before *i* and is possibly that it is a doublet of 𐌕 (which is mostly attested before this vowel).

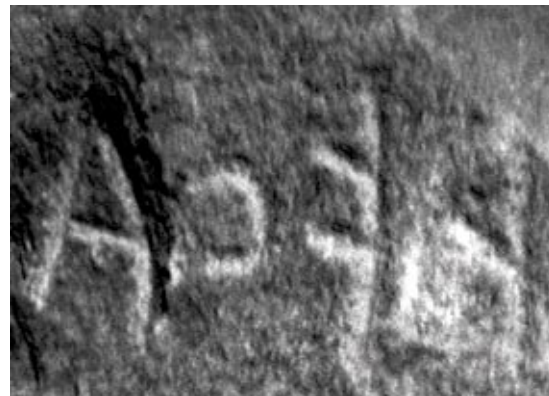


Fig. 14 Detail of the inscription of Mértola (photograph of the author).

S-314 𐌖

The one instance of this sign is in text 28. A close inspection of the inscription reveals that this is actually 𐌕 and the extra “leg” in the drawing is actually part of a scratch in the stone. The line in question thus reads: ]uarb<sup>(2)</sup>oli<sup>[15</sup>, which is a sign-group repeated in text 17. We cannot ignore, however, that 𐌖 is indeed attested in the Table of Espanca. This is connected to the question of whether the Table of Espanca represents a different writing system (since it lacks some SW signs), a problem which remains unsolved.



Fig. 15 Inscription no. 28, Ameixial III (Correia, 1996, p. 98).

## 6. Final considerations

Along these pages answers to questions raised in the introductory section were sought. Although we departed from a tabula rasa starting point, our first inquiry in reality concerned a consensual idea requiring confirmation: we conclude that all evidence discussed above, paleographic and archaeological, supports a Phoenician origin of the Southwestern script.

<i>Phoenician</i>	<i>hēt</i> 𐤇𐤃	<i>šin?</i> 𐤑	<i>sāmekh</i> 𐤑	<i>nun</i> 𐤎	<i>mēm</i> 𐤌	<i>lāmedh</i> 𐤋	<i>reš</i> 𐤕
<i>SW</i>	<i>h(?)</i> 𐤇𐤃	<i>ś</i> 𐤑	<i>s</i> 𐤑	<i>n</i> 𐤎	<i>m</i> 𐤌	<i>l</i> 𐤋	<i>r</i> 𐤕

<i>Phoenician</i>	<i>gīmel</i> 𐤂	<i>kaph</i> 𐤀	<i>kōph</i> 𐤁	<i>hē</i> 𐤄	<i>bēth</i> 𐤁	<i>pē</i> 𐤂	<i>tāw</i> 𐤃	<i>tēth</i> 𐤄	<i>dāleth</i> 𐤅
<i>SW</i>	<i>k(a)</i> 𐤀	<i>k(e)</i> 𐤀	<i>k(i)</i> 𐤁	<i>p(a)</i> 𐤄	<i>p(e)</i> 𐤄	<i>p(o)</i> 𐤂	<i>t(a)</i> 𐤃	<i>t(i)</i> 𐤄	<i>t(u)</i> 𐤅

It had been assumed previously that because SW was pentavocalic, it was necessarily derived from Greek rather than Phoenician. In reality, however, we know that Semitic alephats were the source to writing systems that developed vocalic components independently in different regions of the globe such as Ethiopia and India. As already noted by Rodríguez (2002), this has been greatly ignored, perhaps because of a somewhat prevailing Eurocentric view that focuses mainly on the history of writing from the Canaanite alephat down to the Latin alphabet.

Consequently, we realize that SW added two vowels to the three basic and universal vocalic signs of the Phoenician *matres lectionis*, and the selection criteria for those two letters is completely divergent from the Greek options. Besides five vocalic letters, the system of SW contained twenty-four consonantal signs, fifteen of these representing the special category of stops (one is still unidentified). These fifteen signs belonged to three different series that corresponded to velar, bilabial and dental stops. Each series had five signs, one used always and exclusively in combination with one of the vowels in the system: this laid the foundations of later Iberian stop syllabic (CV) signs. The remaining nine consonant signs that did not denote stops were used freely before any sign. The result is the following 29-sign system:

<i>Vowel signs</i>		<i>Non stop consonant signs</i>			
Λ	<i>a</i>	⌘	<i>s</i>	Ϛ	<i>n</i>
○	<i>e</i>	Ⓜ	<i>ś</i>	Ϛ	<i>m</i>
Ϛ	<i>i</i>	↑	<i>z</i> (?)	Ϛ	<i>l</i>
⌘	<i>o</i>	Ⓜ	<i>h</i> (?)	Ϛ	<i>r</i>
Ϛ	<i>u</i>	Ϛ	<i>ř</i> (?)	—	—

<i>Stop signs</i>					
ΛΛ	<i>ka</i>	⌘Λ	<i>pa</i>	ΧΛ	<i>ta</i>
κ○	<i>ke</i>	ρ○	<i>pe</i>	Δ○	<i>te</i>
ϚϚ	<i>ki</i>	⌘Ϛ	<i>pi</i> (?)	ⓂϚ	<i>ti</i>
⌘⌘	<i>ko</i>	Ⓜ⌘	<i>po</i>	Λ⌘	<i>to</i>
⌘Ϛ	<i>ku</i>	(?)	<i>pu</i>	ΔϚ	<i>tu</i>

As a rule – and we have seen good examples of that – writing systems are devised to conform to as much as possible to the phonological profile of the languages they express and thus there is, to a great extent, a relationship between typology of language and typology of script. But even when one system is adapted to write a new language that is genetically and typologically unrelated to the original one, which necessarily leads to adaptations, the new adapted form of the script will inevitably preserve certain traits that denounce the previous state of affairs. This has been the principle applied here and, in the case of SW and subsequent Iberian semi-syllabaries, it led to the inference of some phonological features that accounted for exceptional orthographic rules in these systems. This strategy yields a sort of “script internal reconstruction”.

In our case, this exercise leads us to the conclusion that voice and aspiration were not distinctive in the language of the SW script, which would have possessed only three plain unvoiced stops: /k/, /p/, /t/. This means, on the one hand, that different stop signs from the Phoenician alephat were reorganized in only three basic stop sets (velar, bilabial and dental); on the other hand, it justifies the effort of Iberian to mark laryngeal features (i.e. voicing) in the velar and dental syllabic signs, which culminated in the (re)creation of graphic pairs for voiced and voiceless syllabograms which had been lost in SW.

Moreover, the alignment of stop signs with individual vowels reflects the inexistence of clusters of the type SC in the language of SW. The latter had prominent constraints on syllable structure and tautosyllabic consonant clusters must have always been broken up with an anaptyctic vowel; nevertheless, as in Iberian, heterosyllabic clusters are possible: cf. the aforementioned *nar'ken-* or *uarman* (here in transliteration), another much repeated sign-group (texts 11, 25, 51, 61, 63).

Such phonological features (lack of voice contrast and heterosyllabic clusters) are important to our knowledge of the language, especially because they suggest a non-Indo-European language and resemble our picture of Iberian<sup>16</sup>. But for the moment being we must be cautious with such considerations, because these traits are not straightforward indication of genetic affiliation. Such features could be developed independently, sometimes resulting from areal contact between unrelated languages. Thus some Indo-European languages, like Persian, lack tautosyllabic clusters; and it has been proposed that Hittite, another Indo-European language, had no voice distinction but merely allophonic voicing (Kloekhorst, 2008, pp. 21–25), possibly due to substratum influence.

Finally, I would like to underline that the system I propose is not much different than that already advocated by Rodríguez (2000, 2002) – whose work I came across when the writing of this text was already ongoing. Our proposals diverge, however, with respect to the strictness of the orthographic rules and the distinction between stop and non-stop consonant letters which, as a consequence, produce different readings for some signs. The most solid case is the “serpentine” sign, which I read as *m* based on solid independent evidence: 1) the shape of Phoenician *mem*; 2) the position of the sign in the Table of Espanca; 3) its use before more than one vowel; 4) its ability to solve the problem of absence of a labial nasal in the script. None of the other proposals meets these criteria. Moreover, I offer a working hypothesis that justifies and substantiates, from a linguistic standpoint, the rare (but not unseen) development of writing in the Iberian Peninsula, with its gradual, partial “syllabification” – an account that has been missing so far. Nevertheless, I am satisfied by the many points of convergence between what I present here and the work of previous scholars because, evidently, the validity of one’s readings is strengthened when independent approaches have led to similar results.

These readings need, of course, additional confirmation, which would correspond to subsequent stages in deciphering work: i.e. exposing the language hidden in the script in terms of phonology, morphology and syntax, achieving, at the same time, the highest possible compatibility between the texts and elements (namely personal and place-names) known by indirect sources, namely in Greek and Latin transmission. The purpose of this essay was solely to provide a set of accurately defined and regular orthographic rules and phonetic readings according to a sound methodology, hopefully paving the way for the second step.

## NOTES

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- <sup>1</sup> This long-thought article could only take shape thanks to the incentive of many people, friends and colleagues. I am greatly indebted to Rodrigo Banha da Silva (City Museum of Lisbon), Mário Varela Gomes (New University of Lisbon), Ilya Yakubovich (University of Chicago) and Mário Gouveia (New University of Lisbon) who, apart from discussing and reviewing late drafts of this paper, provided important references and material. José Malveiro, Paulo Alexandre Monteiro and Alexandre Fernandes (New University of Lisbon) also supplied me with important literature. I am further thankful for the patience of Carlos Simões, Edgar Fernandes, Filipe Oliveira and Joana Bruno (New University of Lisbon), who read different drafts of this article, discussed them with me and supplied important opinions or ideas. Finally, I am grateful for the precious conceptual help of Brent Davis (University of Melbourne). I am, nevertheless, the sole responsible for the final views upheld here. Furthermore, I have attempted to give due credit to every idea contained herein which is not originally mine. However, due to the spectacularly large number of works produced on the subject in the last century and my impossibility to access many of them, I apologize in advance for any possible omissions.
- <sup>2</sup> Actually, such practice cannot be disconnected from the local reality. There was a widespread Late Bronze Age (c. 1200–800 BC) tradition of erecting what appear to be tombstones with depictions of goods, mostly weapons but also luxury objects (fibulae, mirrors, combs, etc.) and, occasionally, representations of pugnacious or hunting scenes. Those iconographic motifs have sustained the idea that the monuments in question celebrate dead warriors or members of a belligerent aristocracy. A considerable number of these LBA stelae have been retrieved from the regions of Beira Baixa (Portugal) and Extremadura (Spain), but also in other areas to the south (see Cardoso, 2002, pp. 392–396 for a summary of the topic). It is suggestive that, at least in one case, a LBA stela was reused in Early Iron Age and inscribed with the SW script (text 80, from Capote in Higuera la Real, Badajoz, Spain). The possibility of some sort of continuum in the tradition of erecting decorated gravestones with a strong component of symbolic power in the southwestern regions of the Peninsula is not to be overlooked, especially if we take into account the depiction of an armed warrior at the center of the stela of Abóbada I (Fig. 1).
- <sup>3</sup> Any proposal connecting, even partially, the writing systems of the Iberian Peninsula with the Aegean-Cypriot pre-alphabetic syllabaries (Linear A, Linear B, Cypro-Minoan or Cypriot syllabary) as the one suggested e.g. in Tovar (1951) and Pérez Rojas (1986) is totally unfounded and must be discarded on chronological and paleographic grounds.
- <sup>4</sup> The success of the alphabet is in part “accidental” as it is associated with the extensiveness of Phoenician and Hellenic maritime trade in Iron Age Mediterranean, where Indo-European languages proliferated. Likewise, the expansion of Indo-European languages from Western Europe in the modern world dictated by History justifies the predominance of Latin-derived alphabets today.
- <sup>5</sup> For a more complete exposition of this theoretical framework one may see Stephens & Justeson, 1978, pp. 275–276.
- <sup>6</sup> Here I do not follow Naveh’s (1973, 1982) view that the Greek alphabet derived directly from the Canaanite alephat at a very early date (mostly based on the fact that like Greek, early Canaanite showed some linearity in the shapes of its letters).

Instead, I adhere to the more consensual thesis of a Phoenician origin (starting with Carpenter, 1933; Sass, 2005, with references). Today, evidence that the Hellenic alphabet was invented somewhere in south-eastern Anatolia (Pamphylia or Cilicia) is gaining adepts (Yakubovich, 2007, p. 218). On the one hand, it can be argued that the presence of Greek-speaking settlers in Pamphylia goes back to the Late Bronze Age (Yakubovich, 2008, pp. 190–195, with references). On the other hand, Phrygian, which like other subsequent Anatolian alphabets must be a descendent of Greek (because of the choice of vowels), is first attested on graffiti on pottery from Gordion today dated to “beginning of the eighth century, or a full fifty years before the first assuredly Greek documents” (Brixhe, 2007a, p. 278). The conclusion is that the earliest Greek inscriptions may still be waiting to be found in southeastern Anatolia, where Greek-speaking populations must have been in contact with Phrygians.

- <sup>7</sup> Given that Greek had no glottal fricative, the name of the letter *he* would have been “heard” (i.e. perceived) as /e/ by Greek ears, thus motivating its borrowing as the letter *epsilon*, as Brixhe (2007a, pp. 284–285) points out. The same scholar argues that the *‘ayin* may have been used for /o/ with basis on the acrophonic principle: the sign is a graphic depiction of an “eye” (= *‘ayin*) and all three Greek words for ‘eye, eyesight’ begin with an *o* or *ō* (ὄφθαλμός, ὄμμα, ὄψ).
- <sup>8</sup> Proponents of the Hellenic origin of the script also put emphasis on Classical authors who report Greek expeditions beyond the Strait, such as Herodotus, who narrates (I. 163) how Ionian sailors from Phocaea reached a semi-mythological kingdom named Tartessos (Ταρτησός) beyond the Columns of Heracles (i.e. the Gibraltar Strait), thus in the Iberian Peninsula. The Tartessian king, Argantonius, invited the Phocaeans to settle in his territory and, when they denied, he still offered them gold to build walls around their polis in Asia Minor. Tartessos is traditionally identified (Strabo III, 1, 6 and 2, 11) with the territory around the basin of the river Guadalquivir, where in historical times Latin sources place an indigenous people named *Turdetani* or *Turduli*. On a side note, it seems that to a stem \**Tṛtē-* the Romans added two native ethnonymic suffixes, *-tani* and *-uli* (which are equivalent; cf. another ethnonym, *Bastetani* and *Bastuli*), which Herodotus on his own adorned with the Aegean toponymic ending *-σσος*, quite frequent in the Aegean coast of Anatolia (cf. Halikarnassos, the Greek author’s own hometown in Caria). The association by some of this semi-mythological indigenous people with the SW script is the basis to some of the latter’s alternative names, despite the fact that the vast majority of the corpus comes from the Portuguese region of Baixo Alentejo, not from the area of the Guadalquivir in Spain.
- <sup>9</sup> We do find instances of word-final stops in Iberian through Greek transmission: e.g. *gaibigait* and *śalirg* (Michelena, 1979, p. 25). Once again, Japanese is elucidative from a typological viewpoint. Despite the syllabic nature of the Nipponese language, sometimes *i* and *u* are not pronounced between voiceless consonants. They also disappear in word-final position when stress is on the penultimate syllable: e.g. *ikimasu* ‘go’ (present tense) is pronounced /ikimas/; likewise *ikimashita* ‘went’ is pronounced /ikimaʃta/ because stress is on the antepenultimate syllable. It is possible that word-final stops in Iberian are also the result of accent-driven loss of final vowels: *śalirg* < \**śA-liṛ-gV*. Nevertheless, syllabic scripts were still “appropriate” for both languages.

- <sup>10</sup> We may compare Linear B which, regardless of the fact that Mycenaean Greek had voiced distinction, inherited and used unique *k* and *p*-series for six different Greek phonemes: /k/, /g/, /k<sup>h</sup>/ /p/, /b/ and /p<sup>h</sup>/. One may presume that, Linear B being an adaptation of Linear A, the Minoan language did not have voiced or aspirated velar/bilabial stops.
- <sup>11</sup> This means Iberian had to reinvent signs for voiced consonants that had once been available in the original borrowed script (Phoenician). One may compare the evolution of velar signs in alphabets from Greek to Latin alphabet. The Greek alphabet possessed *gamma* and *kappa* (for /g/ and /k/) but when Etruscans borrowed and adapted that system they kept only one sign (derived from *gamma*) for /k/, C, because their language had no voiced stops. Later on, Romans developed their own alphabet with basis on the Etruscan one and were forced to use that letter for both /g/ and /k/, since Latin had voice contrast. C was used ambiguously for centuries before a graphic variant, G, was devised specifically for the voiced stop.
- <sup>12</sup> Contra Correa (1990, Fig. 3) and Rodríguez (2000, p. 31), who propose  $\aleph$  to be *te*. On this sign see below.
- <sup>13</sup> I thank José Malveiro, who kindly provided me with a picture of the inscription.
- <sup>14</sup> Likewise, Correa (1990, p. Fig. 3) has proposed the hypothetical reading *p(a)*.
- <sup>15</sup> The reading ]*uarpoli*[ is also possible.
- <sup>16</sup> This resemblance regards, *a priori*, only the exclusiveness of tautosyllabic clusters in both languages, but it has been suggested that Iberian also had no voice contrast and that the graphic variants of stop signs were used for allophonic voiced stops – even though this does not seem likely given the exclusive use of *beta* (and not *pi*) in the Greco-Iberian inscriptions.

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