CONTACTS LINGUISTIQUES EN GRÈCE ANCIENNE

DIACHRONIE ET SYNCHRONIE

sous la direction d'Alcorac Alonso Déniz, Julián V. Méndez Dosuna, Enrique Nieto Izquierdo et Gilles van Heems

MOM éDITIONS

CONTACTS LINGUISTIQUES EN GRÈCE ANCIENNE. DIACHRONIE ET SYNCHRONIE

LITTÉRATURE & LINGUISTIQUE // 5

Quinze spécialistes de langues anciennes abordent dans le présent volume des questions variées sur la phonologie, la morphologie, la syntaxe, le lexique, l'onomastique, et la diffusion de systèmes d'écriture dans des contextes d'interrelations linguistiques. Leurs contributions explorent, d'une part, les influences du grec ancien sur d'autres langues et *vice versa*, et, d'autre part, les mécanismes qui déterminent les relations entre les divers dialectes du grec ancien. Ces deux regards complémentaires élargissent le panorama des études sur les contacts linguistiques dans la Méditerranée antique, en ouvrant de nouveaux sentiers de recherche par rapport à deux phénomènes qui sont fondamentalement parallèles.

Fifteen scholars of ancient languages address in this volume different questions on the phonology, morphology, syntax, lexicon, onomastics, and the diffusion of writing systems in the context of linguistic contacts. Their contributions explore, on the one hand, the influences of Ancient Greek on other languages and vice versa, and, on the other hand, the mechanisms that govern the relations between the various dialects of Ancient Greek. These two complementary perspectives broaden the panorama of studies on linguistic contacts in the ancient Mediterranean and open new avenues of research concerning two phenomena that are fundamentally parallel.

Maison de l'Orient et de la Méditerranée Jean Pouilloux
Fédération de recherche

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Greece and Cyprus

Regional approaches to the development of writing systems, traditions and practices

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University of Cambridge

This paper poses the question of what graphic diversity – i.e. variation in the features of writing systems – has to do with linguistic diversity and contact. The differing features of the Archaic regional Greek alphabets, for example, have overwhelmingly been studied in terms of palaeographical variation, and attempts to reconstruct the relationships between them have focused mainly on sign repertoire and sign shapes. We may assume that the dialectal diversity of Archaic Greece would map onto this picture of graphic diversity, and perhaps to some extent motivate it, but the distribution of features tells quite a different story. A further question revolves around the ways in which different writing systems may interact with each other: what is involved in such "graphic contact"? Can we think of it as operating in similar ways to language contact or not?

Cet article pose la question de savoir ce que la diversité graphique – c'est-à-dire la variation des caractéristiques des systèmes d'écriture – a à voir avec la diversité et le contact linguistiques. Les différentes caractéristiques des alphabets grecs régionaux de l'époque archaïque, par exemple, ont été étudiées essentiellement en termes de variations paléographiques, et les tentatives de reconstruction des relations entre ces alphabets se sont concentrées principalement sur le répertoire et la forme des signes. Nous pouvons supposer que la diversité dialectale de la Grèce archaïque correspondrait à cette image de la diversité graphique, et la motiverait peut-être dans une certaine mesure, mais la distribution des caractéristiques raconte une tout autre histoire. Une autre question tourne autour de la manière dont les différents systèmes d'écriture peuvent interagir les uns avec les autres : qu'est-ce qui est impliqué dans un tel « contact graphique » ? Pouvons-nous penser qu'il fonctionne de manière comparable au contact linguistique, ou non ?

1. Introduction

This paper looks at writing in Greece and Cyprus during the first half of the first millennium BC, as a way into the possible relationship(s) between writing system variation and linguistic contact.[1] The

1. This research is part of the CREWS project (Contexts of and Relations between Early Writing Systems), which has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation program (grant agreement no. 677758). I would like to thank the organizers for their invitation to speak at the CoLiGA conference, and the attendees for their helpful discussion and feedback. I am also particularly grateful to Julián V. Méndez Dosuna for his helpful comments on my paper, and to Natalia Elvira Astoreca for our discussions of many relevant issues and her permission to cite her doctoral work.

writing systems of this area and period display very well attested high levels of variation, usually of quite a consistent nature such that it is possible to speak of "local scripts", especially when it comes to the Greek alphabets of the Archaic period (*LSAG*; Parker, Steele 2021). There also appears to be some correspondence with dialectal variation across the Greek-speaking area. But while the distribution of varying graphic features is in general well understood, the processes that led to the distribution are not, and remain a matter of continued discussion usually hinging on epigraphic/palaeographic approaches – e.g. which sign shapes along with their values are closest to each other, where were they in use and how do we imagine they were transmitted from place to place? In this paper, I intend more or less to ignore the minute palaeographic details of variation, and to consider instead how the distribution of sets of variant features in writing systems maps on to the contemporary linguistic situation. In other words, what does graphic diversity have to do with linguistic diversity and contact?

A second question on the agenda relates to the nature of contact between writing systems, since this may also help us to understand feature distribution, as well as highlighting some differences between the ways that writing systems and languages behave. Popular methodology would often place writing systems into familial relationships akin to those reconstructed for language families, but it is questionable whether this is a helpful way of envisaging writing system relationships. It is also possible that writing systems that are not usually seen as "genetically" related may have contact with each other and share features by means other than inheritence or the direct borrowing of a whole system. By considering the nature of such possible examples of "graphic contact", we can reach a better understanding of how we may be able to define and identify this phenomenon. We will begin with these theoretical questions before moving on to the case studies.

2. Graphic relationships

Writing systems have long been subjected to studies that are primarily linguistic in nature, seeking to understand the ways in which language is encoded in the signs of a given writing system and its orthographic rules. Despite growing interest in more contextualised studies of writing (e.g. materiality and agency studies), these linguistic approaches remain at the forefront of many areas of writing systems research. It is not surprising then that ways of visualising relationships between writing systems tend to be modelled on visualisations of language relationships, in particular the influential "family tree" approach. The illustration in *fig. 1*, for example, has become a popular online reference for the relatedness of a selection of historical and contemporary writing systems across the world precisely because of the way in which it visualises those relationships, with an added aesthetic quality compared to the stark lines of the traditional family tree. The tree in *fig. 2* is of the more traditional kind, laying out the possible relationships between the linear scripts of the Bronze Age Aegean and Cyprus. The methodology used here and in similar exercises is of more interest than the precise details, as the act of placing writing systems into such a schema is highly interpretive (and thus immediately open to question) and necessitates starting out with certain assumptions about each system and about the types of relationship that may be possible with other systems. Firstly, each system is considered to be a discrete entity. Secondly, it is placed in a series of relationships that are presented as "genetic" ones, with any system acting as an ancestor and/or descendant of other systems. Interestingly, any one system can only have one direct parent system, in a direct departure from the basic concepts of biological heredity, though it can "beget" any number of new systems. These are in essence the same rules (and, in some ways, the same shortcomings) that apply to language family trees.

The family tree, or *Stammbaum*, has been an important tool of the historical linguist's arsenal since the 19th century (Schleicher 1853) and is strongly associated with structuralist approaches to linguistics and dialectology. In order to build the tree, we search for shared innovations between languages/dialects in order to prove a close relationship and place them onto the same branch, while shared retentions are considered unhelpful as they could surface in any member of the wider family. As the above description

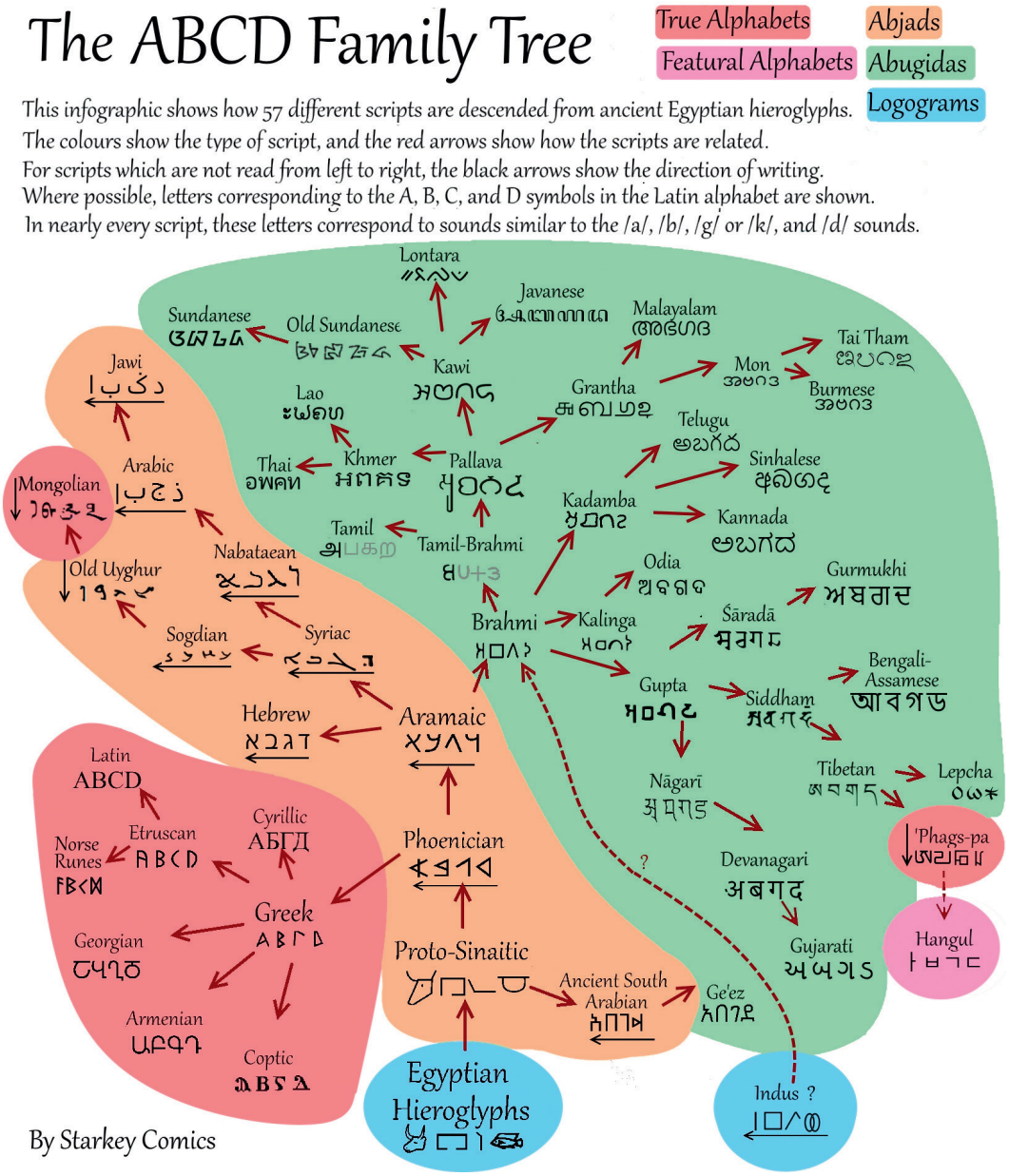

Fig. 1 – Family tree of the world's writing systems by Ryan Starkey @ Starkey Comics (image courtesy of R. Starkey, used with thanks).

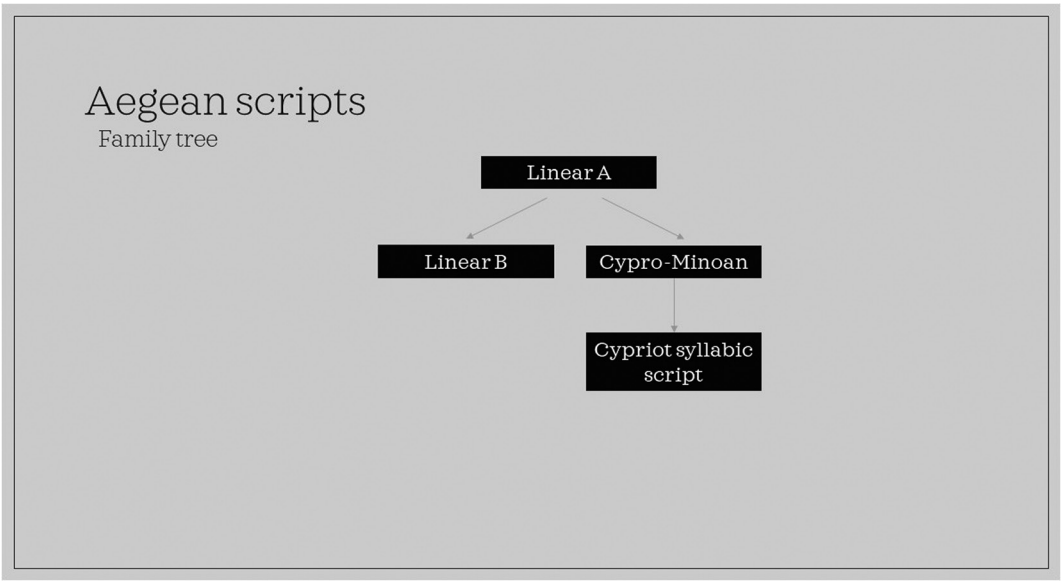

Fig. 2 – Possible tree of the Aegean linear scripts (image by P.M. Steele).

for the "rules" governing the family tree implies, this necessitates that the linguistic data are categorised in neat divisions. It is helpful, for example, if the sharing of innovative features between two dialects is seen as a complete and momentary event – it would be far less convenient if it took a long time or did not run to completion. It would also be inconvenient if different members of the tree had prolonged periods of sustained contact with each other, or if individual features could spread independently of whole language varieties. But of course these are exactly the sorts of patterns that we do see when linguistic contact is observed "on the ground".

It has long been established that there may be better ways of trying to understand and visualise the results of language contact, and indeed the "Wave Theory" or "Wellentheorie" has been around almost as long as the family tree model (Schmidt 1872). While arguably far closer to the messy reality of language contact and change, one of the problems with the wave model is that it is much harder to create a readable or clearly meaningful visualisation of the relationships between languages or dialects – a challenge that persists despite advances in computational methods of presenting linguistic data e.g. through phylogenies and network analyses. Such visualisations also tend to lack any clear implications for diachronic stages of language/dialect development, a feature much loved in the family tree. In essence, the wave theory provides a far better descriptive mechanism for understanding language/dialect contact and change, but – in this linguist's opinion at least – that does not mean that the "convenient fiction" of the family tree model has no interpretive value. I have no intention of turning this paper into a consideration of these very well worn concerns in linguistic reconstruction, however, and will dedicate the rest of the paper to the question of how writing systems behave and how we should try to understand variation and contact across systems, using Greek-speaking areas of the Mediterranean in the first half of the first millennium BC as a test case.

2.1. Graphic change

Structuralist approaches to linguistic reconstruction are inextricably bound up with the seminal Neogrammarian regularity hypothesis, by which the majority of sound changes are assumed to be regular: it is the assumed regularity and completeness of the changes that allows them to be used as building blocks in constructing a family tree, which in turn relies on the shared features being analysed as innovative or archaic. It follows that family tree models devised for sets of writing systems bring with them some perhaps unintentional, but nevertheless largely false or unwarranted, implications for the nature of graphic change. This is exacerbated by the fact that writing system inventories do offer important evidence for phonological features of languages, especially in corpus languages where the written record is the primary evidence available, and it is not unusual for a phonological feature to be referred to by the name of a grapheme used to represent it (think of the *digamma* in Greek linguistics, or the far more widely used *schwa* whose name is originally derived from a Hebrew *niqqud* sign). It should nevertheless be remembered that it is quite common for writing systems not to map completely and precisely onto the phonological inventories of recorded languages, and indeed to show imbalance in the degree to which different phonological features of a language are encoded.

Writing systems are not languages, and they do not behave in the same way. Perhaps the most important point to make is that writing systems have a greater range of social entanglements that go beyond linguistic and sociolinguistic context, including for example technical skill, tool use, material requirements, visual standards (e.g. information arrangement and layout, text size, etc.) and social attitudes towards the practice of writing (Boyes, Steele, Elvira Astoreca 2021). Some of these aspects require training in order to proliferate a particular type or style of writing, and writing may be relatively restricted depending on the uses to which it is put and social attitudes concerning who can and should write and what they can and should write about. These entanglements with other areas of everyday life, and the likelihood that training, whether formal or informal, will be involved in the proliferation of writing traditions, make it more likely that at least some changes in writing systems will be deliberate or conscious responses to changes in practice as well as to other aspects

like language use. This is not only a practical point but a cognitive one, as writing involves a greater range of cognitive processes than speaking (see Malafouris 2012; and more broadly, Malafouris 2013; Overmann 2016; Overmann 2021; Steele 2020).

In seeking to define a concept of "graphic change", there are several different types of processes that could potentially count as examples. The most drastic might be a deliberate creation of a new writing system, in circumstances that may be more or less historically documented, for use in a particular linguistic and social setting (for instance, variously, Cyrillic, Hangul or Cherokee). Similarly, there are limited documented examples of top-down, deliberate change from one writing system to another within a particular society, the change from the Arabic to the Roman alphabet for Turkish under Atatürk in 1928 perhaps being the most famous (though, given the very low literacy rates before the reform, this may have come as a new introduction of writing to many Turkish speakers). Other kinds of graphic change might be viewed as complex products of changes in practice including but not limited to the use of new writing implements/media: for example, the striking development of cursive Phoenician writing following its "lapidary" stage has to be understood in terms of the use of ink and brushes but also in terms of scribal innovation and proliferation (Lehmann 2019, pp. 80-87). Sometimes changes to whole systems can be predominantly determined by visual preferences/characteristics, as for example in the early 90-degree turn of signs in cuneiform that must be related to a wider cognitive shift alongside developments in text layout, sign symmetry and the abstraction of signs from earlier pictorial representation (see Powell 1981; Englund 1998, pp. 56-72; Studevent-Hickman 2007).

Perhaps a more obvious and pervasive notion of graphic change is to be seen in smaller adaptations as writing systems develop, including the addition or loss of graphemes and changes in sign shape and sign value, which often involve an element of linguistic accommodation. For example, a writing system borrowed by speakers of one language from speakers of another may undergo change in order to represent the phonological inventory of the target language more closely (as in the development of dedicated vowel signs in the adaptation of Greek alphabetic writing from a Semitic model), although this may also partially be achieved by orthographic rules (such as the various different sets of diacritical signs for different languages using the Roman alphabet today). A writing system put to use for multiple different languages is very likely to develop new features to aid orthography, and whether we then call them new writing systems or variants of the original writing system is very much a question of perspective – and not so different perhaps to the old problem of distinguishing a dialect from a language, the latter famously being the one whose social context makes it important enough to categorise as a separate entity ("A language is a dialect with an army and a navy", as popularised by M. Weinreich). We tend to say, for example, that a number of languages around Europe and elsewhere use the Roman alphabet even though there are differences in the repertoire of signs and especially in the set of diacritical marks used alongside the basic signs; but the addition (and/or indeed the reduction) of features in a writing system can also lead to it being thought of as a new system, especially if it is associated closely with some sort of cultural or political entity (e.g. the Phoenician alphabet > the Greek alphabet > the Etruscan alphabet > the Roman alphabet).[2]

From a theoretical perspective, one helpful way of looking at writing systems is as complex entities composed of not only a script (a series of signs, the "graphic system") but also a notation system and language system that are in constant interaction with the script (see Elvira Astoreca 2021, pp. 25-30). Where we have evidence for the inventory and even the sequence of signs as the system's users saw it, we can sometimes see snapshots of such changes, as for example in the Etruscan abecedaria which progress from a Greek-looking inventory to one that omits unnecessary signs (ΑΒΓΔΕ… > ACE…), while Greek abecedaria are sadly less helpful because of their patchy preservation (see further Pandolfini, Prosdocimi 1990; Bagnasco Gianni 1999; Elvira Astoreca 2021, pp. 44-46).

2. Although the arrows are intended to indicate development from one alphabet to the next, we must acknowledge that the relationships between even these well documented systems are far from straightforward.

2.2. Graphic "heredity"

We mentioned above that a quirk of family tree models is that individual members of the tree always have a single parent. Whether or not this is a useful way of thinking about languages, it could be argued that this is a fair way of visualising many graphic relationships that involve a straightforward borrowing of another system, followed perhaps by a set of innovations or adaptations that make the new system distinct from its "ancestor": the Etruscan alphabet as derived from a "red" Greek alphabet, for instance, or Linear B from Linear A, or the original derivation of Japanese characters from Chinese ones. However, there are undoubtedly some writing systems that cannot be explained purely in terms of development from a single earlier existing system. For the ancient world, an important case in point is alphabetic cuneiform in the 14th-13th centuries BC, used mainly for Ugaritic: while the composition of its signs and many aspects of its usage are heavily dependant on syllabic cuneiform as used for Akkadian and other languages, its inventory (including some sign shapes) and the phonemographic principles underlying it clearly owe their origins to the linear alphabet whose contemporary attestations (Proto-Canaanite/Proto-Phoenician) are limited but whose outcome was the Phoenician alphabet of the first millennium BC. In other words, alphabetic cuneiform can only be understood through the input of two different writing systems and traditions, from which its users drew different aspects of their new system. The complexity of this writing system's associations with social and linguistic identity is an important aspect of its usage and existence (Boyes 2021).

While some writing systems may be best understood as having mutliple inputs, as in the case of alphabetic cuneiform, others may be better understood as the result of ongoing contact with multiple systems, for example Anatolian alphabets of the first millennium BC whose users may have had knowledge of not only other Anatolian alphabets but also the Greek alphabet and, especially for those on the southern coast, perhaps also the Cypriot syllabary. However, these are relatively poorly attested systems where it is not easy to judge the motivations for particular sets of features. For example, are the inventories of the Carian and Sidetic alphabets in some sort of creative conversation with the ubiquitous Greek alphabet, or an unintended consequence of cursivisation on media that are unlikely to survive to the modern day (Neumann 1978; Adiego 2018)? The earlier relationship between the developing Phrygian and Greek alphabets with vowels and the Semitic vowelless alphabet on which they were modelled is a further contested issue that remains difficult to resolve despite growing evidence and continuing debate.

Another possible kind of relationship is more distant, involving not the borrowing and adaptation of a system but rather some kind of indirect inspiration. Such a motivation is difficult to prove, but often suggested for systems with particularly idiosyncratic characteristics that otherwise seem unlikely to be isolated *ex novo* inventions of writing. The runic and ogam alphabets are two northern European writing systems surfacing in the early centuries of the first millennium AD that seem unlikely to have been developed without some knowledge of alphabetic writing (Roman and perhaps also Greek) to the south, but whose inventories feature innovative sign shapes (especially ogam) and alphabetical order that differs from that of the Mediterranean alphabets. Similarly the Cretan and Anatolian "hieroglyphic" writing systems, not attested before the second millennium BC, seem unlikely to have grown up in a vacuum without knowledge of earlier and contemporary writing to the east (cuneiform) and/or south (Egyptian). It is important to remember in this case, however, that while the degree of iconicity in Cretan and Anatolian hieroglyphs might put us in mind of Egyptian writing, these are systems featuring very different types of language notation, meaning that any possible degree of "inspiration" would have to be primarily visual while the method of language encoding would presumably have to develop independently: Cretan and Anatolian hieroglyphs (which could perhaps have some relationship with each other though the evidence is limited) are open-syllabic systems where each sign represents a vowel or consonant + vowel combination while Egyptian hieroglyphs primarily represent single, double and triple consonant combinations. While such distant potential relationships between writing systems are difficult to force into a visualisation such as a family tree,

they should nevertheless be seen as an important part of the spread of writing as a concept, skill and technology, which relies on wider networks of human interconnection and knowledge sharing (on networks of cuneiform scholarship, for example, see Robson 2019).

3. Graphic diversity in the Geometric and Archaic Greek-speaking world

3.1. Greece

In mainland Greece and in the islands and colonies, the earliest evidence for Greek alphabetic writing dates to the mid-8th century BC – although slightly earlier discoveries in other closely related alphabets like Phrygian (whose first attestations belong to the earlier 8th century or arguably to the 9th century: see Brixhe 2004)[3] suggest that the earliest surviving Greek alphabetic inscriptions may not represent the very first phase of adoption of alphabetic writing. The most prevalent trend in scholarship has been to look for a single locus and time of creation of "the" Greek alphabet, a point when its Phoenician model was taken and adapted to include dedicated vowel signs (see for instance Wachter 1989; Wachter 2021; even more extremely, Powell 1991; for a recent review of scholarship, see Elvira Astoreca 2021, pp. 1-18, with references). But what is most striking is that, from its earliest appearances, there is already a considerable degree of diversity present in Greek alphabetic writing, sufficient to trace features of what would become fixed regional variants associated with local political and cultural spheres by the Archaic period. Each local alphabet had its own repertoire, with distinctive shapes and/or values for some of its signs, and the repertoires were so well established that their features have long been used in scholarship as a reliable method of provenancing inscriptions. Traditional terminology categorises the regional alphabets into colour-coded groups of red, green and light and dark blue following Kirchhoff's famous distribution map (Kirchhoff 1887).

Any search for the nature and origins of the so-called *Uralphabet*, the hypothesised single model originally derived from Phoenician, perhaps unintentionally places those regional alphabets into a sort of family tree relationship with their "parent", precisely because it is built on the assumption that we begin with a single entitity and the later regional alphabets are the result of divergence and diversification from that original model. However, as we will see, there are reasons to suspect that this is an unhelpful way of thinking about the development of the regional variants. The first point to make is that regionalism and diversity are already features of Greek alphabetic writing in even its earliest attestations in the mid-8th century, which should surely impose an extra burden of proof on those who would argue for the existence of an earlier single alphabet. Yet again we may see similarities with and influence from the methodologies employed in historical linguistics, where divergent branches of a language family are traced back to a reconstructed and hypothetical ancestor. Another issue is that previous studies attempting to reconstruct the earliest stages of Greek alphabetic writing (whether arguing strongly for a single *Uralphabet* or not) have typically employed palaeographic approaches based on the distribution of signs and their shapes, alongside their values, along with their similarity to sign shapes in different stages of attested Phoenician. The results of such studies have varied massively, leaving such a huge range of possible times and places for the origin of the Greek alphabet, as argued by different scholars, that we must suspect that there are some serious problems with not only the methodology being employed but also perhaps even the fundamental questions being asked (see Elvira Astoreca 2021, pp. 19-22).

3. I am grateful to Benjamin Sass for sharing a yet unpublished work on this debate.

3.2. Cyprus

Cyprus is seldom brought into discussions of Greek-writing developments at this time because of the very different nature of writing systems found on the island. Back in the Late Bronze Age, Cyprus used a syllabic writing system ("Cypro-Minoan") derived from Linear A, just like in Crete and mainland Greece where Linear B had a similar derivation. Cypro-Minoan was used for one or more languages present on the island at the time but its inscriptions remain undeciphered even though we can make some progress with assigning approximate sound values to many of the signs (e.g. Valério 2016). There is no evidence that the Greek language was spoken on the island before the turn of the first millennium BC, with the quite controversial inscription on a bronze *obelos* from Palaipaphos bearing the name *o-pe-le-ta-u*, /*Op*^{h}*eltau*/ (with a characteristic Arcado-Cypriot form of the genitive). Whether or not that somewhat isolated inscription is written in Cypro-Minoan or in a later "descendant" writing system usually termed the Cypriot syllabary is a somewhat academic question that adds little to the overall picture of writing system developments despite some quite intense interest in recent scholarship (Steele 2018, chap. 2). Either way, definite examples of the Cypriot syllabary appear in force by the 8th-7th centuries, and it is perhaps no accident that they become quite visible in the archaeological record at around the same time as the "alphabetic explosion" seems to be happening around the Mediterranean.

Just like the Greek alphabet, but on a smaller scale, the Cypriot syllabary features well established diversity. It has two main variants that are distributed geographically: the Paphian syllabary in the southwestern area around Paphos (reads left > right, angular ductus) and the common syllabary around the rest of the island (reads right > left, curved ductus), each featuring some differences in its repertoire and sign shapes. Although we have fewer variants here, the nature of local attachment to local writing systems and their established properties is quite reminiscent of the situation we see with the more widely distributed Greek alphabetic variants. We again face a question of how the two variants of the Cypriot syllabary became established, and in this case it is in fact possible to see that in the later stages of Cypro-Minoan some of the features of both syllabaries were beginning to surface. It is telling that some early Cypriot syllabic inscriptions from the 8th century, as well as the Opheltau inscription itself, seem to "mix" features of the Paphian and common variants: this gives a hint that we are not dealing with a single ancestor and two diverging systems, but rather with a series of pre-existing choices about sign shape and repertoire that became more fixed over time, with the eventual outcome that people living in different areas became attached to a particular repertoire that they saw as their local property. I have suggested elsewhere that this may also give us some hints about the way in which Greek alphabetic variants develop over time (Steele 2019).

Language diversity is also present as both Greek and "Eteocypriot" (an unidentified language, most of whose attestations are found at Amathus on the south coast) are written in the Cypriot syllabary, and there was also a significant contingency of Phoenician speakers in Cyprus, linked primarily with Phoenician settlements such as Kition in the southeast, and using the Phoenician alphabet.

4. The regional Greek alphabets and linguistic diversity

Making progress with the big questions about the development of the regional Greek alphabets has proved somewhat impossible while those questions have revolved around an assumption of diversification following an early innovation, and while the methods employed have been overwhelmingly epigraphic/palaeographic. I would like to draw attention to a recent study that departs from some of these old problems by using graphematic theory to examine the distribution of signs across the Greek alphabets as a reflex of linguistic phenomena (or rather, linguistic phenomena alongside other driving factors) [Elvira Astoreca 2021].[4] This

4. The original work on which Elvira Astoreca's monograph is based was conducted under my supervision and under the aegis of the CREWS project.

involves starting from the phonological inventory of the Greek language, which was subject to dialectal diversity, to consider the set of signs in each alphabet as a set of "graphic solutions" to what are often but not always linguistic problems.

Looking at the Greek alphabets from this different perspective does not get us any closer to reconstructing a shared ancestor script, nor should it. It rather helps us to appreciate the kinds of diversity on display across the attested regional alphabets. That diversity was undoubtedly felt in the ancient world, where each alphabet was strongly associated with a geographical area, and often also with state usage in a polis. These social and political links are vital to understanding the distribution of the regional alphabets, and the construction of such ideological bonds is again strongly associated with the formation and maintenance of local identities – as has been pointed out by a number of scholars (e.g. Luraghi 2010; Luraghi 2021; Johnston 2012).

Similarly, the regional Greek dialects also map onto this situation, although the relationship between a dialect and its usual alphabet is not necessarily, as we will see, a straightforward one. The regional alphabets do differ in ways that represent dialectal differences – perhaps the most obvious example would be the value of *eta* in some psilotic dialects, where it tends to represent a long vowel, vs non-psilotic dialects, where it represents the aspirate. However, they also differ in ways that are not aligned to dialectal variation, with other potential motivations such as confusability of sign shape or desired distinctiveness from features of other nearby alphabets. The following subsections attempt a summary categorisation.

4.1. Alphabetic variations bearing no relationship with dialectal diversity

The Greek sibilant signs are perhaps the best example of graphic variation that has no obvious underlying linguistic motivation. The graphic variation appears in two forms. Firstly, each alphabet has selected one of the two sibilant signs inherited from the Phoenician alphabet so that it uses *sigma* or *san* but not both; only in the Etruscan alphabet, representing a language with two distinct sibilant phonemes, do these two signs continue to be used side-by-side in the same tradition of writing. It is not impossible that some sort of phonetic variation drove the choice of *sigma* or *san* for each alphabet, depending on perhaps different qualities of the sibilant in the local dialect, but this would be a hypothetical supposition lacking in direct attested evidence and one that would not sit perfectly with the distribution of dialectal features as we know it (see *LSAG*^{2}, p. 33; Ruijgh 1997, p. 564; Elvira Astoreca 2021, pp. 95-103). By the time the dialects are better attested in the Archaic period, there is certainly no obvious reason to assume that the sibilant sound represented by *sigma* or *san* is different. A second kind of variation can also be found in the shape of *sigma*, which most often has either three or four bars; *san*, on the other hand, is much more consistent in its shape.

The case of the sibilants, however, cannot be discussed without also factoring in the distribution of *iota*, which maps closely onto the sibilant distribution. Crooked *iota*, whose shape is usually identical or nearly identical to three-barred *sigma*, tends to exist in alphabets that use *san* for the sibilant, while alphabets with *sigma* usually have straight *iota*. Crooked *iota* is usually assumed to be the older form because it is arguably closer to the Phoenician *yod* from which it is derived than the straight *iota*, but the existence of straight *iota* in the Phrygian alphabet should perhaps be taken as an indication that straight *iota* was a very early development. The motivation for alphabets with *sigma* (especially three-barred *sigma*) to use straight *iota* is obvious, namely the potential confusability of *sigma* and crooked *iota*, which can be identical or almost identical in shape. Note also that one of the earliest surviving Greek alphabetic inscriptions, the Dipylon oenochoe of the later 8th century, features both *sigma* and crooked *iota*, suggesting that the distribution attested across the majority of inscriptions grew and changed dynamically over time. It is also worth mentioning that the shape of *mu* again has a distribution that complements the distribution of *sigma*/*san* and straight/crooked *iota*: in alphabets

with *san*, *mu* tends to have a long tail and at least five bars, owing to the similarity between *san* and four-barred *mu*, whereas in alphabets with *sigma* there is no issue of confusability with the four-barred *mu*. These quirks of distribution apparently have very little to do with linguistic diversity and a lot more to do with practical concerns.

There are numerous other signs whose variation in shape seems to have little if anything to do with dialectal diversity, including the way *lambda* points, whether *gamma* is more of a hook or a chevron, the presence of a line or a cross in the centre of *theta*, tailed and tailless *rho*, the number of arches in a *beta*, and so on. The blatant shape-swapping of the Corinthian alphabet, with its *beta*-shaped *epsilon* and corresponding open/deconstructed *beta*, is a case in point showing that the users of local alphabets were just as aware of the other writing traditions around them as they were of their own (Luraghi 2021, pp. 43-44).

4.2. Alphabetic variations bearing a partial relationship with dialectal diversity

The sets of supplemental letters in each alphabet – i.e. the presence/absence of signs used for *phi*, *chi*, *psi* and their shapes – have often been seen as one of the most characteristic ways of grouping the regional alphabets and were central to Kirchhoff's presentation of colour-coded categories. But the set of supplementals in any given alphabet also interacts with other issues, especially whether that alphabet has a *samek* derivative for /ks/ or not, and the orthographic rules for representing aspirated consonants, which in turn depend on whether there is a separate sign for the aspirate (*eta*), a sign-value combination generally only appearing in alphabets that represent non-psilotic dialects.[5] So even though the relationship with dialectal differences is indirect, it nevertheless plays a role in the distibution.

When taking a range of graphic choices into consideration, rather than only the sets of supplementals in isolation, we begin to see the problems with Kirchhoff's categories that have been so influential in the way the regional alphabets have been studied (for discussion see Elvira Astoreca 2021, pp. 124-126). The dark blue alphabets including Corinthian and East Ionian, for instance, share the following features: presence of a *samek*-derivative *xi* Ξ for /ks/, use of Φ for /p^h/, X for /k^h/ and Ψ for /ps/. But it is worth noting that the Corinthian and East Ionian alphabets differ in other features, including the sibilant (the former uses *san*, the latter *sigma*). The light blue alphabets are similar except in that they do not have separate signs for /ks/ or /ps/, using digraphs instead. Red alphabets have Φ for /p^h/, but in their other supplementals they have a completely different arrangement from the blue alphabets: they use X to represent /ks/ (and do not use a *samek* derivative at all, losing it from the inherited alphabetic sequence)[6] and Ψ for /k^h/, and lack any separate sign for /ps/. Finally, green alphabets such as Cretan and Theran share with each other the lack of separate signs for the aspirated consonants /p^h/ and /k^h/, but they differ in their orthographic strategies for representing these sounds, which do exist in both dialects: Cretan (which is psilotic and does not have *eta* for /h/) uses *pi* and *kappa* and so fails to distinguish them from their unaspirated counterparts, while Theran (which is not psilotic and does have *eta* for /h/) uses digraphs of *eta* with *pi* and *kappa*/*qoppa* respectively.

There is clearly a great deal more going on here than graphic choices driven by dialectal differences, and indeed many of the differences between regional alphabets seem to have complex relationships

5. We must also bear in mind that an alphabetic sequence may preserve signs that are not used by the associated dialect, i.e. as "dead letters".

6. The early Etruscan abecedaria, however, show the presence of a *samek*-derivative letter in its original position in the sequence in what is presumably, in some sense, a red alphabet with X for /ks/; they also have both *san* and *sigma* in the sequence. The implications for the development of the alphabetic sequence and the relative chronology of additions and reductions are, however, far from straightforward: see further Steele 2019, pp. 131-133.

with issues such as sign availability, sign confusability and overall system balance. The presence of any one sign can have a knock on effect on other signs and their values, and it is extremely difficult to pick apart this tangle of features that have complex codependencies with each other.

4.3. Alphabetic variations bearing a close relationship with dialectal diversity

The graphic choices that have the closest relationship with dialectal diversity are to be found in the representation of long vowels, as Elvira Astoreca 2021, pp. 70-82 and 86-88, has discussed at length. The situation is complicated by the fact that different dialects have different outcomes for certain sound changes (compensatory lengthening and vowel contractions), resulting in different long vowel inventories for different dialects; however, the efforts to distinguish between them in many alphabetic traditions makes clear that the concern was primarily with vowel position/quality, and that the marking of length was a secondary concern. The sets of signs chosen relate to both the inventory of signs in a given alphabet (e.g. whether it has *eta* available for a long open e-vowel or whether it uses it for /h/) and also orthographic conventions (e.g. what is denoted in some regional alphabetic traditions by the digraphs EI or OY).

All the Greek dialects had at least one long e-vowel and one long o-vowel, but there were some that had a larger inventory depending on the results of sound changes and system balancing over time (potentially /ɛː/, /æː/, /eː/, /ɔː/ and /oː/). The creation of new graphemes or strategies to represent differences in the quality of long o-vowels is particularly regionally differentiated and includes the adaptation of *omega* from a variant of *omicron*, the addition of central dots or circles to *omicron* and the digraphic spelling with OY. Meanwhile, the representation of long e-vowels had a more complex relationship with the potential value or values of *eta* in a given alphabet, meaning again that different dialectal features such as psilosis/non-psilosis and the long vowel inventory could interact in the sign inventories of regional alphabets.[7]

Although again issues such as sign availability, sign confusability and system balance are relevant to understanding the choices made in each regional alphabet, the representation of the long vowels gives a clear example of alphabetic differences motivated by linguistic factors, showing that dialectal diversity has something to do with graphic diversity even if the relationship is far from straightforward.

5. Cyprus: a case of graphic contact?

The two main variants of the Cypriot syllabary (the Paphian and the common) feature differences that seem to have little to do with linguistic diversity: they mainly relate to sign shapes, while the overall inventory (i.e. the set of sounds encoded) is otherwise more or less identical. It may simply be that there was not enough regional differentiation within the Cypriot Greek dialect to trigger the sorts of graphic differences seen across the regional Greek alphabets, and/or that script usage across Cyprus was fairly standardised despite some established regional differences in sign shapes and writing direction. Even its use for a different language, Eteocypriot, does not seem to have motivated any particular changes in the Cypriot syllabary, with the basic common syllabary used for most of its surviving inscriptions (Steele 2013, chap. 2): apart from a couple of small quirks of sign shape at Amathus (e.g. the use of one horizontal bar at the base of the signs *o* and *so* rather than two), there is no reason to think that there was ever anything like a separate "Eteocypriot signary" (Egetmeyer 2010b),

7. Consider also more complex examples such as non-psilotic Boeotian, where the sign Ⱶ had the value /eː/.

which is perhaps unsurprising if Eteocypriot was a descendant of an earlier Cypriot language that was written in the "ancestor" Cypro-Minoan script anyway.

It is also important to note that the Greek alphabet was not in common use on Cyprus until hundreds of years after its first appearances elsewhere: the earliest alphabetic texts found on the island (late 7th-6th century) are probably imports, followed by isolated examples in the 6th and 5th centuries, and it is only in the 4th century and following that there is any consistent usage, particularly just before and then during the Ptolemaic administration (Steele 2018, pp. 219-241). This strongly militates against any idea that Cypriots were involved in developing the Greek alphabet, as they certainly showed no interest in using it; meanwhile the Cypriot syllabic script became strongly associated with Cypriot identity and with the written manifestation of the Cypriot dialect. The Cypriot syllabary may however provide us with one intriguing case of contact between unrelated writing systems that can motivate change in one or the other.

It has been argued that the Greek alphabet could have been developed by someone with a knowledge of the Cypriot syllabary, primarily because the presence of the *samek*-derivative *xi* for /ks/ in the core repertoire of some Greek alphabet variants has been seen to indicate it is an early feature of Greek alphabetic development, a feature difficult to explain in isolation, which could in turn have been motivated by the existence of signs for the /ks/ cluster in the Cypriot syllabary, a feature that is obviously more highly motivated in a writing system representing open syllables being used for a language with lots of consonant clusters (see at length Woodard 1997; Woodard 2021; also Schwink 1991 on the writing of /ks/ and/ps/ clusters across these systems and Linear B). There are however some problems with this reasoning. Firstly, we should be wary of the assumption that using a *samek* derivative for /ks/ is a "core" feature of the creation of Greek alphabetic writing, given that only dark blue variants have this feature at all, and given that examples of using a single sign to represent /ks/ are very limited in the first decades of the alphabets' attested existence anyway (see Elvira Astoreca 2021, pp. 118-121). Secondly, not only are the x-series signs *xa* and *xe* quite rare features of the Cypriot syllabary that are not attested before the 6th century, they also have no obvious derivation from signs in Cypro-Minoan, unlike the majority of Cypriot syllabic signs. In other words, the surviving evidence strongly points towards the partial x-series being a late Cypriot syllabic signary addition, which in turn suggests that Greek alphabetic graphic solutions for the complex sound /ks/ had been established before, and independently of, the development of signs for the same sound in the Cypriot syllabary.

This may indeed prompt us to question whether there could still be some link between the development of signs for /ks/ in both systems, but operating in the other direction. I would like to argue that this could be an important example of graphic contact between systems otherwise seen as "genetically" unrelated.

Although *xe* is the better attested of the two known x-series signs, used most often at word end to represent a final /-ks/ with a dummy e-vowel but also sometimes word-internally, there are good possible linguistic motivations for the creation of *xa* too, for example in the presumably quite frequent endings of sigmatic aorists, even though they are hardly attested in the surviving corpus; meanwhile, any motivation for the creation of *xi*, *xo* or *xu* signs is more difficult to rationalise and it is likely that these signs never existed (Egetmeyer 2010a, pp. 222-223, § 245). The *xa* sign is as yet attested in only one surviving example in the common syllabary but probably should have existed in the Paphian signary as well; its scarcity is perhaps not so troubling given that examples of the sequence /ksa/ are rare in the Cypriot corpus anyway.[8] But neither sign is necessary given that plene spelling with *kV-sV* is always possible and indeed continues to be used (particularly word-internally) even when the x-series signs are in common usage. Such plene spelling using dummy vowels was common

8. All examples are word-internal, sometimes featuring a morpheme boundary between the /ks/ and following vowel as in *wa-na-ka-sa-ko-ra-se* /*Wanaksagorās*/, or *pa-ra-ka-sa-to-ro* /*Prāksandrō*/. The sequence /-ksa/ at the end of a word is only attested in this one inscription featuring the sign *xa* (see also Masson 1983, p. 56).

practice for other consonant clusters, and it is unclear why the /ks/ cluster should be seen as needing special treatment, which itself calls into question any underlying linguistic/orthographic motivation for the creation of the x-series signs (e.g. reducing the need to spell a final /-ks/ with two separate signs involving a dummy vowel?). However, an encounter with another writing system that did have a single graphic solution for this consonant cluster could perhaps have provided an impetus for their creation. The situation may be somewhat similar to that of the "labialised" signs in Linear B, presumably triggered by the existence of *nwa* in Linear A but then being extended to other clusters involving /w/ even though there were other spelling strategies for rendering them, i.e. *dwe*, *dwo*, *twe*, *two* (see Meissner, Steele 2017, pp. 109-111; Judson 2020, pp. 59-72).

Schwink 1991, p. 125, dismissed a Greek alphabetic derivation for the x-series signs on the grounds that the Cypriot syllabary is "otherwise extremely conservative", making the possibility of its modification unlikely – but this is unhelpful reasoning given that the x-series appears to be a late modification of the signary whatever its motivation, and it is hardly the only change to have happened in several hundred years of the script's usage (on earlier developments, for example, see Steele 2018, chap. 2). Even the shape of the *xa* sign in particular could perhaps be inspired by X in certain Greek alphabets,[9] although with only one Cypriot example of the sign it is impossible to conduct any kind of serious palaeographic comparison (for the shapes of the x-series sign, see *fig. 3*).

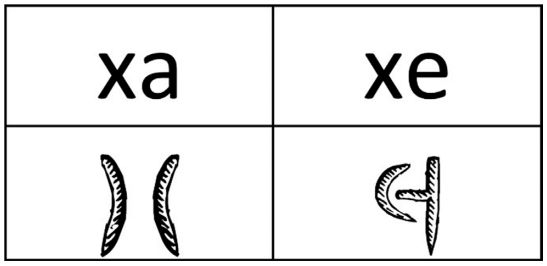

Fig. 3 – Sign shapes of Cypriot syllabic *xa* and *xe* (traced by P.M. Steele).

The earliest identifiable example of an x-series sign is the *xe* appearing in a digraphic inscription from Golgoi, a situation involving direct contact between Cypriot syllabic and Greek alphabetic writing. The inscription is situated on the capital of a funerary stele decorated with two lions facing away from each other, with text in the Greek alphabet (KAPYΞEMI, with *samek*-derived *xi* for /ks/) reading left-right on the left side, balanced by text in the Cypriot syllabary (*ka-ru-xe-e-mi*) reading right-left on the right side (*fig. 4*). The variant of Greek alphabet used here looks closest to that of Rhodes, the Greek island closest to Cyprus even if it is still quite a long way to the west. The syllabic half of the text observes normal Cypriot spelling rules (e.g. spelling *e-mi* separately rather than using the dummy vowel of the *xe* to begin the verbal form: **ka-ru-xe-mi*), and seems to display familiarity with local Cypriot writing.[10] We may very well see in this inscription an example of a Cypriot engaging and experimenting with Greek alphabetic writing, and although the brevity of the text prevents us from reading any more into the possible origins of the author, there is at least some proof here that the Greek alphabet was known in Cyprus by this time and so could potentially be a source of graphic inspiration (Masson 1983, p. 56). Following this inscription, the earliest examples of x-series signs are found in the Idalion Bronze in the mid-5th century, and other datable examples are 4th-century or later (survey based on vol. 2 of Egetmeyer 2010a). The sign *xa* is attested in just one inscription of the late 4th century, again from Golgoi (*fig. 5*).

9. I am grateful to Julián V. Méndez Dosuna for this observation.

10. Keeping *e-mi* visibly separate was the preferred orthography despite the likelihood that it was an enclitic as in other Greek dialects, such that, in speech, what is represented in writing as *ka-ru-xe e-mi* would have been one phonetic word. On this general issue, see Crellin 2021.

Fig. 4 – Digraphic capital from Golgoi, 6th century BC (photograph by P.M. Steele).

Fig. 5 – Inscribed limestone pediment fron Golgoi, after 325 BC, featuring the sign *xa*, i.e., the sign at the left-hand end of the line of text (public domain image, New York Metropolitan Museum, www.metmuseum.org, accession number 74.51.2317, the Cesnola Collection, purchased by subscription, 1874-76).

The fact that the 6th-century digraphic Golgoi inscription is overtly one that incorporates Greek alphabetic writing may simply be a convenient if tantalising indication of Cypriot knowledge of the alphabet, and it probably does not represent the very earliest usage of an x-series sign in the Cypriot syllabary unless it is an unusually lucky find. But it seems to me quite plausible that the otherwise unexplained introduction of signs for the cluster /ks/ could indeed be motivated by the existence of dedicated graphic solutions for this cluster in variants of the Greek alphabet, whether in the form of the *samek*-derivative *xi* or the supplemental X (see J. Méndez Dosuna, this volume).

6. Concluding thoughts

This paper set out to consider the relationship(s) between graphic variation and linguistic diversity, as well as the possible phenomenon of graphic contact, using Greek-speaking areas of the Mediterranean in the first half of the first millennium BC as a test case. The regional Greek alphabets and the Cypriot

syllabary have provided some intriguing but complex evidence for graphic features that may relate to linguistic diversity and/or to other ways in which writing systems might display diversity or develop new features through contact with other writing traditions. Tantalising though their diverse features are, the regional Greek alphabets and their series of graphic choices cannot be unpicked to reveal the history of early developments in alphabetic writing – those who search for the time and location of the creation of a single *Uralphabet* will never find their Holy Grail because their search begins from misguided principles. Like the carpenter's cup in *Indiana Jones and the Last Crusade*, the "truth" of the early stages of alphabetic development may have been an altogether more mundane series of changes and choices that later crystallised into the fixed regional alphabets that were so embraced by the Archaic period. I hope the discussion here has shown that there is more to be gained from trying to understand each feature as a product of diverse linguistic and/or practical motivations – and there is a further implication, namely that thinking about these regional alphabets as having straightforward "family tree" or "genetic" relationships with each other is effectively pointless. Meanwhile, our potential Cypriot example of graphic contact points towards the same conclusion: here we may see a kind of relationship between signs in distinct writing traditions that defies any kind of "genetic" categorisation, and that apparently operates independently of any other link between the systems.

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