Writing around the Ancient Mediterranean

Practices and Adaptations

Edited by
Philippa M. Steele and Philip J. Boyes

CREWS

Contexts of and Relations between Early Writing Systems Vol. 6

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Front cover: Silver-gilt bowl from Dhali, Cyprus, c.725-675 BC, with Cypriot syllabic inscription and decoration including Egyptian hieroglyphs. The Cesnola Collection, Purchased by subscription, 1874–76.
Back cover: Seal of Tarkasnawa, King of Mira, c. 1220 BC. Walters Art Museum, CC BY-SA 3.0.

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Acknowledgements

This volume presents the proceedings of a conference, 'Writing around the Ancient Mediterranean: Practices and Adaptations', which took place on 18 and 19 November 2021. We had originally hoped that, like the previous two CREWS conferences, we would be able to hold this as an in-person event at the University of Cambridge; however, the continuing global pandemic stymied these plans and in the end it had to be an online event. Nevertheless, some of the presenters chose to come to Cambridge for these days and we are grateful to the Faculty of Classics for providing space from which they could access the online presentations, and to our CREWS Project Administrator Sarah Lewis for all her hard work behind the scenes making this conference (like the others before it) a success. We also wish to thank all the presenters and participants who helped to make this such a stimulating set of discussions, as well as the peer reviewers who gave their time to improve this publication of the papers. It was particularly gratifying that, despite the online platform and all the awkwardness that usually entails, we managed to capture some of the warmth and collegiality of our in-person conferences.

This conference, like the CREWS project as a whole, has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 677758). We are very pleased to gratefully acknowledge their support in facilitating this research and these fruitful collaborations.

Pippa Steele would like to thank her partner, James, and her mother, Anne, for keeping her going with their love and kindness over this whole period. Philip Boyes would like to thank his wife, Jennie, for all her love and support during the preparation for the conference and the production of this book.

Chapter 1

Introduction: approaches to the study of writing, and the development of the CREWS project

Philippa M. Steele

I hope the reader will indulge me in writing this perhaps unusual introductory chapter, which will focus on contextualising the present conference volume as a contribution to the research output of the CREWS project (*Contexts of and Relations between Early Writing Systems*). I suppose most readers will pass it by, especially those who have come to the volume following a trail of references to track down just one of the papers – that is the fate of most conference volumes eventually, after all. However, as the CREWS project draws to a close, with this as its penultimate published volume, I hope it will be of interest to some to offer a few reflections on what CREWS has been about and what we have tried to contribute to the study of writing. Since this conference was always intended as a culmination of the CREWS project, at which we would present the research of the core CREWS research team and wider CREWS family, this is also a useful opportunity to explain how the papers in this volume and their authors have fitted into (and in other ways expanded) the project's remit.

Back in 2015 I submitted an application for funding to bring a quite abstract idea in my head into reality, an idea revolving around the ways I had originally learnt to talk about writing systems and the quite different ways I had started to think about writing systems as I began to conduct my own research. I was used to the old narrative that grouped writing systems in terms of their linguistic properties, labelling them as alphabets if they encoded each sound with a separate sign, syllabaries if they encoded whole syllables, abugidas or semi-syllabaries if they did something between the two, and so on. These are helpful designations to be sure, but it often felt that the people doing the writing and the place of writing activities in society had gone missing somewhere. Can you really understand the way a writing system represents language completely in isolation from questions surrounding its users and usage? A second problem also preyed on my mind, after spending many years working on the

syllabic systems of the Bronze Age Aegean and Cyprus: what exactly do we mean when we say that two writing systems are related to each other? We might sometimes talk about 'families' of writing systems, but is the quasi-Darwinian terminology we apply in historical linguistics (language families, ancestors and descendants, etc.) really appropriate here? Writing system developments are the product of complex and socially contextualised motivations and changes, and there are no 'sign laws' or 'letter laws' in the same way that we assume there are sound laws, no regularity in writing system changes such as that hypothesised for sound changes. But if those traditional approaches originating from linguistic research are not the best ways of approaching such questions, then what methods should we use? And what about other kinds of interactions between writing systems and the people and societies using them? And on the back of these sorts of questions, the idea for the CREWS project came about. The project was funded in 2016, and over the last six years has developed in some ways that I had hoped for, and a whole range of other ways I had not expected.

Contexts and relations, practices and adaptations

I have to admit that the choice of the words 'practices' and 'adaptations' in the title of this book and the conference preceding it may not have been entirely unrelated to the desire to find a nice acronym. But more seriously, I was thinking of 'practices and adaptations' as an interesting proxy for the words 'contexts and relations' that have been enshrined in the title of the CREWS project from the beginning. For example, studying context very often involves thinking about the ways and places in which something was done, *i.e.* its practice, and writing systems and practices tend to undergo adaptation both at the point of their borrowing from one group by another and throughout their lifetimes, creating relationships between different traditions in different situations.

We have talked in more detail in the previous CREWS conference volume about some of the different ways in which writing can be approached, whether the perspectives are structuralist or culturally driven, or whether they stem from linguistic, (social-)archaeological, anthropological or other disciplinary backgrounds (Boyes *et al.* 2021). Those reflections stemmed from our efforts both to try to approach writing from new and interesting angles, and to bring some of those different angles together to gain deeper insights into the way writing works. Some of those efforts originate from the direct research of the core CREWS research team (on which more below), but they were also bolstered and inspired by interactions with other scholars working on a range of ancient writing systems, including CREWS Visiting Fellows (the 'CREWS family', many of whom contributed to this volume) and other friends and colleagues who participated in our conferences and other events.

The core CREWS research team consists of four researchers, each pursuing a different case study situated somewhere around the eastern half of the Mediterranean: Natalia Elvira Astoreca, Philip Boyes, Robert Crellin and me as PI. Natalia took a novel,

graphematic approach to the diversity of the epichoric Greek alphabets of the Archaic period, an archetype example of a set of systems whose properties have usually been discussed as if the individual systems had diverged from an unattested common ancestor; she viewed their differences not in terms of their palaeography (which has been the focus of most previous studies) but rather as a series of potential different solutions to linguistic problems, teasing apart different motivations for different types of variation and presenting what have traditionally been referred to as 'local scripts' as fully independent writing systems (Elvira Astoreca 2021). Philip took a social-archaeological approach to the practice of writing at Bronze Age Ugarit, seeing writing as intrinsically and dynamically bound up with a whole range of other ideas and practices, and establishing how we might pursue more holistically an 'archaeology of writing'; by studying the wider social and political context of writing, this made it possible to explore the people and places involved in its practice (Boyes 2021a). Robert, following a first stage of research on the phenomenon of vowel writing in different systems (*e.g.* Crellin 2020 focused on Neo-Punic), contributed a monograph comparing the practice of word division in Greek and Northwest Semitic writing and its relationship with prosody and orality; although ostensibly dealing with linguistic analysis of orthography, the results help us to understand the design and context of these writing traditions as they point strongly towards features being motivated by a desire to make what is written easier to read aloud (Crellin 2022). My own research as PI has drawn together some of these strands, among others, to attempt to establish an integrated approach to writing, using the syllabic systems of the Bronze Age Aegean as a test case (Steele forthcoming, presaged in Steele 2020) – since this research is not yet published, I won't venture to comment on what it may contribute to the field of writing studies just yet.

The combination of the specificity of the case studies, alongside the much wider applicability of the methodological approaches pursued, matches the original aims of the CREWS project well: to contribute to the fields of research on particular ancient writing systems while pursuing methodological innovation that helps us to rethink the ways writing works and the ways we talk about it. Along the way this involved a lot of group discussion, bringing together different material and different approaches and trying to identify overlapping areas of interest and common ground, as well as having fun with some very revealing practical experiments that helped us to understand the experiences of ancient writers. Rather than pointing towards commonalities between different writing traditions, this helped us to appreciate the extent to which writing in any one society can only be understood fully on its own terms and within its own unique context.

The CREWS Visiting Fellowship scheme gave an opportunity to expand the CREWS remit both in terms of methodology and especially in terms of the range of writing systems and societies in focus. Most Visiting Fellows have contributed a major piece of their CREWS-related research to this volume, on which see further below. However, there were some colleagues from the CREWS family who were unable to contribute to

the conference and/or this volume: Brent Davis (who had visited in 2020 while working on syllabotactic analysis of the Aegean linear scripts), Giorgos Bourogiannis (whose own project, Cypriot Connectivity in the Mediterranean from the Late Bronze Age to the end of the Classical Period [CyCoMed], has been closely affiliated with CREWS) and Kathryn Piquette (who gave us a conference paper on her research on embodied practice and early Egyptian writing).[1] Our previous two conferences also expanded our outlook considerably and were an only partially expected source of inspiration for our core research: *Understanding Relations Between Scripts II: Early Alphabets*[2] (Boyes and Steele 2019) and *The Social and Cultural Contexts of Historic Writing Practices* (Boyes *et al.* 2021).

This volume and the CREWS family

The conference title, *Writing around the Ancient Mediterranean: Practices and Adaptations*, was not intended to be prescriptive, but it does encapsulate quite nicely how the research of the CREWS core team and wider family has revolved around questions of the contexts and relatedness of writing systems and traditions.

We begin with Csaba La'da's paper, demonstrating that a writing system can also act as a sort of cultural artefact, taking on uses beyond the notation of language – most obvious in the various alphabetic systems that have a fixed order of signs, and so have structural properties that can be lent to other areas of society. Such 'secondary uses' of writing include numerical notation, other ways of encoding and decoding information, musical notation and, perhaps the most prevalent and widely successful to this day, the ordering of information by alphabetical order (which was indeed the prompt for this paper in looking at some of the earliest examples of the phenomenon). Michel de Vreeze then looks at some of the more short-lived alphabetic traditions of the Levant, focusing on what we can reconstruct of their usage to try to understand their initial vitality and then their ensuing loss. He argues for relatively restricted contexts of use, particularly ritual ones, and considers how they were negotiated against a background of other social phenomena and wider developments across the region.

Although Cyprus was never specifically intended to provide case studies for the CREWS project (particularly given that I have already written rather a lot about it!), this materially rich island at the heart of the eastern Mediterranean has come up again and again, and with good reason. The next chapter, by Cassandra Donnelly,[3] focuses

[1] The video of Kathryn's conference paper can be viewed on our YouTube channel here: https://youtu.be/2_Y2xiLSszQ.

[2] You may be wondering why this is a volume II. It was a thematic sequel to an earlier volume, *Understanding Relations Between Scripts: The Aegean Writing Systems* (published with Oxbow in 2017), which arose from a 2015 conference before the CREWS project started up.

[3] Cassie also worked on another topic during her visit in 2019, namely the inscriptions found on bronze bowls of the Late Bronze to Early Iron Age around the eastern Mediterranean, again a subject with Cyprus at its heart.

on the elusive single-sign inscriptions of Bronze Age Cyprus, usually dismissed as 'potmarks' or similar that do not count as proper inscriptions, and their relationship with two-sign inscriptions more usually included in the corpora. While the single sign inscriptions may present numerous problems in any attempt to incorporate them into our understanding of the Cypro-Minoan writing system and its repertoire, they do however help us to understand writing practices and especially the use of acrophonic abbreviation more widely. Martina Polig's chapter also looks at the practice of Bronze Age Cypriot writing, approached through a groundbreaking 3D documentation of sign shapes. By looking at the minute details of sign composition, she shows that sign shapes and ductus are closely linked with networks of writing practice that include elements of design and embodied tool use – allowing observations that are all the more important for a writing system whose exact repertoire (in terms of both individual signs and their variation in shape) remains only partially established.

The chapter by Philip Boyes takes a trans-regional approach, looking at the relationship between writing and the practice of magic across Egypt and the Near East, where we see some cultural influence and exchange in operation, as well as similar phenomena that may have arisen independently. Rather than seeing writing as having an inherent mysticality, especially to the illiterate, this considers writing as an important component of magical practice in different societies. Willemijn Waal then offers a chapter on writing in Bronze Age Anatolia, where a localised 'hieroglyphic' writing system co-existed for some time with Hittite cuneiform but was used largely in different spheres. She uses aspects of the arrangement of Anatolian hieroglyphic text, alongside other evidence, to reconstruct a writing tradition on wood for which direct attestations have inevitably been lost, positing reflections of this tradition in writing on other media such as stone.

Moving to the first millennium BC, Rostislav Oreshko's chapter looks at the rarer letters of the Phrygian alphabet and the puzzle of their phonetic values and their origins. This involves consideration of not only the other Anatolian alphabets but also the closely related Greek alphabet, shedding light on their different paths of development. The Archaic regional Greek alphabets are also the subject of Natalia Elvira Astoreca's paper, which uses the computational methodology of Natural Language Processing (NLP) to measure the similarities and differences between them. Despite the challenges of a relatively small and imbalanced dataset, these methods offer the advantage of processing data in such a way as to point out patterns that have not previously been identified.

Beatrice Pestarino's paper again focuses on ancient Cyprus, this time looking at the first millennium BC and the late arrival of the Greek alphabet on an island whose writing traditions were dominated by the local syllabic system. She sees the earliest attestations of alphabetic writing in the sixth century BC as being bound up with the attempts of Cypriot elites to harness aspects of visual culture, aiming to establish their authority through connections with the wider Greek-speaking world. Robert Crellin then uses another cosmopolitan island, Sicily, to investigate the development

and types of word division in Latin and Greek. The evidence from the Imperial era shows prosodic word division in Greek continuing later than expected, with signs of influence and exchange with word division in Latin.

Perhaps the most striking aspect of all these papers is that the concepts of adaptation and practice are never encountered entirely separately from each other; they are very much bound up in the same activities and developments as writing traditions in and across different societies grow. Much the same could be said of the concepts of the 'contexts' and 'relations' embedded in the CREWS project remit, which may have begun as separate sets of research questions but soon turned out to be contributing to a much more integrated outlook on how writing works and how it developed in ancient societies.

The final paper in the volume is something of a departure from the others. Charles 'Pico' Rickleton is an art director and designer, who contacted me some time ago with an idea that was to have a considerable influence both on the CREWS project and on my own research. His starting question was simple: what if the Cypriot syllabic writing system, so characteristic of Cypriot writing during most of the first millennium BC, had survived to the present day? After spending a great deal of my research career thinking about this writing system and the way it dwindled and disappeared from the archaeological record during the Hellenistic period, the question rather blew my mind. And so began an exciting collaboration, which invited reflection on why and how writing systems maintain vitality, and the possible alternative universe conditions in which Cypriot syllabic writing might have survived and subsequently changed over the last 2,000 years. I hope that Pico's paper, and more generally his 'Speculative Syllabic' project, will be as stimulating and exciting to others as it has been to me.

The CREWS legacy

As the CREWS project draws to a close, I would like to think that it has done something useful in the world of writing systems research, and perhaps more generally. It will be for others to judge the project's success and the effectiveness of our research will only unfold (I hope!) as time goes on and the wider field engages with it.[4] But I will finish this (already slightly self-indulgent) chapter by mentioning some of my own favourite legacies of the project.

The CREWS family of Visiting Fellows, has itself become symbolic of the spirit of collaboration that I hope has marked the operation of the project. It has been a huge pleasure to welcome this group of individuals to Cambridge, with their different research areas and yet often similar or overlapping interests, and it has been highly stimulating to engage in discussion with them. I have learnt so much from our conversations.

[4] CREWS publications have all been released with open access. You can find them here: https://crewsproject.wordpress.com/crews-publications/

Fig. 1.1. Clockwise from top left: Illustration from Writing in the Ancient World, created for us by Katie Idle; one of Pippa's experiments with writing Cypro-Minoan on modelling clay; the CREWS display case at the Fitzwilliam Museum in 2018; Philip's (edible and delicious) Phaistos Discuits.

The CREWS blog website (along with our Twitter feed) has proved to be very enjoyable to run, especially in the way it has engendered interaction with a much wider group of interested individuals, some in academia and many outside of it.[5] I am particularly pleased with the interest in following some of our practical experiments, which have been an important feature of CREWS research from the beginning, and which have occasionally produced edible results.

Outreach has always been an important aspect of CREWS, and over the years we have been involved in many different events both in person and online, producing materials and blog content that we hope will help the wider public to engage with the ancient societies and writing systems we work on. This has included writing a lot of blog posts, playing with quite a bit of Lego (in the name of research!), producing worksheets to show people how to write their name in an ancient writing system and exploring links between what we do and other areas of popular culture. In 2018 we also collaborated with the Fitzwilliam Museum and British Museum (with thanks to

[5] https://crewsproject.wordpress.com/, https://twitter.com/crewsproject

Anastasia Christophilopoulou and Thomas Kiely) to put on a display of ancient writing systems in the Fitzwilliam's Leventis Gallery.

Stemming from all our outreach work, in 2020 we worked on a pedagogical initiative, *Writing in the Ancient World*, which involved the creation of free videos and teaching materials aimed primarily at children aged 7–11 (for which most of the hard work was done by Philip).[6] The feedback we have had from this initiative has been a joy to receive, showing the CREWS project making its mark in all sorts of unexpected ways on people across the world.

It only remains for me to thank everyone who has been involved in the CREWS project at all levels for making the last six years so fruitful, stimulating and, above all, so much fun.

[6] *Writing in the Ancient World* received some extra funding from the University of Cambridge's Arts and Humanities Impact Fund. You can access the free materials here: https://crewsproject.wordpress.com/writing-in-the-ancient-world/

Chapter 2

What is an alphabet good for?[1,2]

Csaba A. La'da

When we talk about alphabetic writing, we tend to think immediately of its primary function: recording the spoken language phonetically, using the letters of the alphabet. This is of course understandable as it was the first and main aim of developing this type of writing. Recording the spoken language in a material form that can be transmitted both spatially and chronologically is the fundamental function of any writing system whatever its underlying system. However, we should not forget that writing could be used for other purposes as well, which over time assumed increasing importance even

[1] I would like to thank Dr Philippa M. Steele, leader of the CREWS project, and the entire staff of the project for the award of a partial CREWS Project Visiting Fellowship and for their kind invitation to me to take part in and present a paper at this conference. It was a great pleasure and honour for me to participate in this conference as a member of the CREWS family. I am very grateful to Dr Philip Boyes and Dr Robert Crellin for their advice about ancient Northwest Semitic languages and writing systems.

[2] Abbreviations:
BE = *Bulletin Épigraphique*
BM = British Museum
dem. = demotic
O. = ostracon
P. = papyrus
PSI = Papiri della Società Italiana
SB XXIV = Rupprecht, H.-A. (ed.) (2003) *Sammelbuch Griechischer Urkunden aus Ägypten*, Vol. XXIV (Nr. 15875–16340), Wiesbaden.
SEG = *Supplementum Epigraphicum Graecum*
SGDI = Collitz, H. *et al.* (1884–1915) *Sammlung der griechischen Dialekt-Inschriften*, Vols. I-IV, Göttingen.
P.Tebt. I = Grenfell, B.P., Hunt, A.S. and Smyly, J.G. (eds) (1902) *The Tebtunis Papyri*, Vol. I, London.
P.Tebt. IV = Keenan, J.G. and Shelton, J.C. (eds) (1976) *The Tebtunis Papyri*, Vol. IV, London.
Tit.Cal. = Segre, M. (1952) *Tituli Calymnii*, Annuario della Scuola Archeologica di Atene e delle Missioni Italiane in Oriente 22–23, N. S. 6–7 (1944–1945), Bergamo.
Vindob. = Vindobonensis

if not rivalling its first and foremost function. The alphabetic script was particularly suitable for being used for such other, I would call secondary, purposes and so in this regard too the idea of alphabetic writing had important consequences for intellectual developments in the ancient eastern Mediterranean.

What are these secondary functions of ancient writing, particularly of alphabetic scripts, that we see in the sources available to us currently? Without any intention of exhaustiveness,[3] a quick count of the most important of these secondary functions of the scripts of the ancient eastern Mediterranean basin comes to five. However, it is important to bear in mind that not every script demonstrates all five (or more) secondary functions: some writing systems show some while other scripts demonstrate other such secondary functions. In this paper I intend to offer a brief survey, *exempli gratia*, of these various secondary functions and then to concentrate on one of them, the one that forms the subject of my own research.

Let us now look at these secondary functions briefly one by one. The order in which I shall discuss these is to some extent arbitrary and is in no way a reflection of the chronological order in which they arose or of any other, such as causal, relationship between them.

Numerals

The first such secondary function I would like to mention is that of using the elements of the alphabet as numerals. This idea may seem alien to us who have been accustomed to using separate characters for numbers for many centuries but this function of writing was widespread in the ancient Mediterranean world. Two main such systems developed across time and cultures: the first is generally called acrophonic and the second alphabetic.

The best-known example for such numeral systems is that of ancient Greek, in which both the acrophonic and the alphabetic systems were used. The acrophonic system in Greek, which is also called Herodianic after the second-century AD grammarian Herodianus who described it, is mainly attested in Attica, and was used in Greece from the seventh century BC until the beginning of the Roman Imperial period (in Attica from the mid-fifth century until about 95–90 BC). From the fifth century BC onwards it was gradually replaced by the alphabetic numeral system, which essentially supplanted it in the Greek world by the Roman Imperial period although there are sporadic examples of its survival from as late as the first and second centuries AD. The acrophonic system consisted of six simple characters for 1, 5, 10, 100, 1000 and 10000 and four compound signs. As the system's name itself

[3] It is not my intention at all to provide here an exhaustive list of such secondary functions of the scripts of the ancient eastern Mediterranean as this topic would in itself merit a detailed examination and would far exceed the space available to me here. I mention only briefly some of the most widespread secondary uses of these scripts as mere examples to illustrate my point about the importance of such secondary functions.

says, the numerals are actually the first letters of their Greek names, except for the unit, which was a straight vertical line. Thus, *delta* represented 10 from the word *deka* and *chi* 1,000 from *chilioi*.

The other main numeral system that enjoyed widespread popularity in the Greek world and that eventually became the most widely used is the alphabetic system. It essentially means that each letter of the alphabet is given a numerical value in alphabetic order. Thus, *alpha* equals 1, *beta* equals 2, *gamma* equals 3 and so on.[4] The 24 letters of the classical Ionian alphabet were supplemented by three archaic letters, all ultimately derived from the Phoenician alphabet: *stigma* (or *digamma*) with the value of 6, *qoppa* with the value of 90 and *sampi* with that of 900. Thus, the full system consisted of 27 letters.

The alphabetic numeral system had the advantage of being economical, needing a maximum of three characters to represent any number under 1000,[5] whereas the acrophonic system, albeit using fewer characters, needed several more. The alphabetic system became the dominant numeral system in Greek from the Hellenistic period onwards and was used all over the Greek-speaking world that, thanks to Alexander the Great's conquest, came to include the whole of the eastern Mediterranean, Egypt and the Near and Middle East as far east as Afghanistan and northwest India. Its use was continued by the Greek-speaking administration of the eastern half of the Roman Empire that came to replace the Hellenistic states in many of these regions. Thus, the rich papyrological sources from Hellenistic, Roman and Byzantine Egypt supply plentiful evidence for the widespread use of the alphabetic numeral system for over a thousand years (Tod 1911–12; 1926–27; 1936–37; 1950; Dow 1952; Threatte 1980, 110–117; 1996, 278; Cook 1990, 267–268; McLean 2002, 58–64; Folkerts 2002, 670–676 [= 2006, 887–889], with the earlier works cited in these publications).

Where did the idea of using the letters of the alphabet for designating numerals come from? The alphabetic system of numerical notation clearly relies on a fixed order of the letters. This fixed order must be widely known to those able to read, write and count, otherwise the system simply cannot function. As is well known, the Greeks originally borrowed and later adapted the idea of alphabetic writing, as well as most letter forms, letter names and the order of the letters from the Phoenicians. Thus, it seems tempting to assume that the idea of using the letters of the alphabet for numerical notation in Greek also goes back originally to the same Northwest Semitic practice possibly via Miletus where the Greek system may have been developed (Swiggers 1996, 261; Folkerts 2002, 675 [= 2006, 888]; Paz and Weiss 2015, 54). It is theoretically possible that the Greeks adopted the idea of using letters of the alphabet for numerical notation at the same time they borrowed the idea of alphabetic writing as part of the same package, so to speak, including the basic idea

[4] For handy tables of the numerical value of the letters of the Greek alphabet, see, for example, Pestman (1994, 319) and Threatte (1996, 278).

[5] For example, 527 = φκζ: φ = 500, κ = 20, ζ = 7.

of alphabetic writing, letter forms and names and their fixed order as well as the secondary function of the letters as numerals.

It also seems possible, however, that this secondary function is the result of a subsequent borrowing by the Greeks from the Phoenicians, which could be supported by the fact that the alphabetic system of numerical notation seems to appear and becomes dominant in Greek later than the acrophonic system. The long-standing contacts between the Greeks and Phoenicians in the eastern Mediterranean would easily allow such a secondary borrowing to take place in a later, but probably still pre-Classical, period (cf. Tod 1950, 137–138; Threatte 1980, 117 on a Locrian inscription of 460 BC). Whenever we hypothesise the transmission to have taken place, it is clearly a testimony to the closeness of cultural contacts between Greece and the Levant.

An alternative scholarly theory argues the exact opposite, namely that the alphabetic system of numerical notation was in fact invented in Greece, probably in Miletus before the end of the eighth century BC, and that this Greek invention then spread to the Levant and other parts of the Near East (Larfeld 1914, 293–297; Najock 1975; Healey 1990, 60; Pettersson 1996, 803).

Needless to say, the non-alphabetic writing systems of the eastern Mediterranean basin were less suitable for such a secondary use of their characters. In Egypt, for example, the hieroglyphic, hieratic and demotic writing systems, all of which consisted of a mixture of logograms (or ideograms), consonantal phonograms and semographic determinatives (see, for example, Ritner 1996a), employed specific characters for writing numbers. However, as soon as the Coptic alphabet is developed in the early Roman period from the Greek alphabet with the addition of six or seven uniconsonantal demotic signs (cf., for instance, Ritner 1996b), employing letters for numerical notation becomes very easy and this practice is then used widely in Coptic on the model of the Greek system. The same is the case with Syriac, even though there the influence of the Greek alphabet is less obvious and direct than on Coptic (Healey 1990, 60; Al-Jadir 2006 [2009], 7–8). Clearly, the influence of Greek literate culture had become so pervasive in the eastern Mediterranean by the Roman period that most, if not all, scribes of other languages were familiar with Greek practices as well and adopted these wherever the possibility and need arose.

Cryptography

The next secondary function of alphabetic scripts of the ancient eastern Mediterranean that I would like to mention and briefly describe here is that of cryptography or cipher, that is, a secret system of writing that prevents the uninitiated from understanding the text. Again, Greek supplies an excellent example, an example that had a great deal of influence on a variety of other alphabetic scripts in the ancient Near East. This cipher is often referred to as the AΘBH system. It is based on the numerical value of the letters of the Greek alphabet assigned to these according to the alphabetic system of numerical notation that I have just described. As we have seen, under this system the

24 letters of the Greek alphabet plus three archaic signs were each given a numerical value ranging from 1 to 900 that corresponded to their order in the Greek alphabet.

The AΘBH cipher was created by dividing the 24 letters of the Greek alphabet plus the three archaic signs that the alphabetic system of numerical notation included into three groups of nine letters each and then by assigning to these the letters of each group in the reverse order.[6] Thus, within the first group of *alpha* to *theta*, *alpha* was paired with *theta*, *beta* with *eta* – hence the name of this cipher – and so on. The interesting thing is that the total of the numerical value of each pair of letters in the first group of nine letters is 10. The total of the numerical value of each pair of letters in the second group of nine letters is 100, while that in the third and final such group is 1000. Thus, for a perfect such cipher, one needs 27 letters. It is interesting to note that the central letter of each group: *epsilon* of the first, *nu* of the second and *phi* of the third, is each paired with itself, in other words, they are left unsubstituted in the cipher as the double of the numerical value of each yields the required total, 10 in the case of the two *epsilons*, 100 in the case of the two *nus* and 1000 in the case of the two *phis*. Thus, in this cipher that this code creates, these three letters, that is, *epsilon*, *nu* and *phi*, remain undisguised. Although this system requires and is based on 27 letters, three groups of nine, in actual fact only the 24 letters of the Greek alphabet are used in the code as the archaic letters of *stigma* (or *digamma*), *qoppa* and *sampi* were not normally used in late classical and later Greek texts.

The encoding worked by the scribe writing not the letters required but their corresponding pairs according to the cipher. This method of encoding created a simple secret writing system that enjoyed a great deal of popularity in antiquity and the Middle Ages. Its earliest attestation to date is found in a visitor's graffito carved into the Memnon colossus in Western Thebes and dated most probably to the second century AD although an earlier date for it cannot be ruled out completely. The cipher remained popular among Byzantine scribes and is attested as late as the mid-sixteenth century. In antiquity it appears to have been used in graffiti, a magical papyrus but even in an ordinary private list of clothes and victuals. Some scholars have recently speculated that the cipher might already have been known to the traveller and versatile intellectual Sextus Julius Africanus, who lived approximately between AD 160 and 240. In the Byzantine period it was used by scribes of manuscripts for writing colophons.

The popularity of this cipher in Greek is also reflected by the fact that it was adopted by scribes of other languages as well quite early on. The same idea of coding underlies a popular Syriac cipher that is attributed to the Parthian sage Bardaisan, a contemporary of Sextus Julius Africanus, and is often referred to as the 'Alphabet of Bardaisan' (Paz and Weiss 2015, 51–54, 63–65). The two intellectuals personally met in the court of King Abgar the Great of Edessa and so it is possible that the basic idea of

[6] This part of my paper draws heavily on Paz and Weiss (2015, 54–59, 63–65).

this cipher was transmitted to Bardaisan there, and then on to Syriac scribes. Be that as it may, Syriac scribes used the cipher widely for the same purpose as Byzantine scribes, that is, writing colophons at the end of manuscripts they copied. The practice in Syriac is documented to have continued even later than in Greek, with one of the latest Syriac examples being found at the end of a manuscript dated to 1831.

The idea of the Greek AΘBH cipher was also adopted into Coptic (Paz and Weiss 2015, 59–65). So far the earliest known attestation of this Greek cipher is found in Nag Hammadi Codex VIII, below the subscript title of the first tractate, entitled *Zostrianos*, contained by the codex. The codex is dated to the fourth century AD. What is surprising about this three-line cryptogram is that, although it is written with Coptic characters, the text that appears when decoded is actually Greek. It is therefore clearly the work of a bilingual scribe who was familiar with both languages and who was able to adapt the underlying idea of the Greek cipher to the Coptic script.

It has been suggested that the Greek AΘBH cipher was transferred into the Coptic scribal tradition by learned bilingual scribes of the circle of Hieracas of Leontopolis, an influential ascetic and versatile intellectual of the last third of the third and the first half of the fourth centuries AD (Guillaumont 1991). Once adopted by Coptic scribes, this cipher was widely used mainly in colophons in manuscripts and in graffiti on walls of monastic structures such as cells for well over a thousand years. However, because the cipher was developed in Greek and was thus most suitable for writing Greek, some of the earlier apparently Coptic secret texts written with the letters of the Coptic alphabet, once decoded, actually reveal Greek formulae. Nevertheless, later on Coptic scribes made attempts at adapting the cipher to encoding Coptic texts as well. The most obvious of the difficulties they faced was structural: the Coptic alphabet consisted of the 24 letters of the Greek alphabet and six or, depending on the dialect, seven demotic letters whereas the Greek cipher was based on 24 plus three letters. Further, the demotic letters had no numerical value in the Coptic system, something which caused additional problems by not fitting into the decimal principle of the Greek cipher. So Coptic scribes attempted to solve these difficulties in a variety of different ways, the simplest of which was to leave the demotic letters unencoded. This, however, did not solve the problem completely as the Greek cipher was based on three times nine, that is, 27 and not 30 or 31 letters.

The cipher was used by Coptic scribes for well over a millennium for encoding texts that fall in essentially the same genres as those found in the Greek and Syriac scribal traditions: colophons in manuscripts, graffiti, magical formulae, titles of esoteric texts and medical treatises. The reception by and integration of this Greek cipher into the Coptic and Syriac scribal traditions therefore clearly demonstrate the close contacts between scribes and intellectuals working in different languages and between the scribal traditions in these different cultures that developed over time in the eastern Mediterranean.

The next secondary use of ancient alphabets in the eastern Mediterranean that I would like to draw attention to and discuss briefly here actually reverses the

process that we have just been discussing: it involves decoding instead of encoding. The pervasive influence of the originally Greek AΘBH cipher is demonstrated by the fact that it was adopted by Babylonian Jewish religious scholars most probably from the Syriac scribal practice around the fifth or sixth centuries AD.[7] Later tradition attributed the cipher to the otherwise unknown Jewish sage R. Hiyya b. R. Hanina and so it is possible that he was involved in mediating it from Syriac scribal culture to Babylonian rabbinical scholarship. However, in classical Babylonian rabbinical literature, instead of encoding, it was actually used for decoding the to them no longer intelligible Greek word *manon* (probably from μηνύων), a Biblical hapax occurring in a verse of *Proverbs* (29:21). In order to make sense of this to them obscure word, they borrowed this cipher from east Syrian scholastic culture where the Syriac adaptation of the Greek cipher to a 22-letter alphabet was widely used. Thus, Babylonian rabbinical scholars used the AṬBḤ cipher to decode the word *manon* as 'witness' in Aramaic and thus to make it intelligible to themselves. By this they reversed the process: they used the Syriac adaptation of this cipher originally devised in Greek to decode an unintelligible word rather than encode intelligible writing into a secret text. This cipher, with one major modification by R. Nathan of Rome in the eleventh century AD, remained in use in rabbinical literature as an exegetical tool for interpreting the Hebrew Bible for centuries.

Musical notation

The penultimate secondary function of the alphabet that we have space here to mention briefly is the use of letters for musical notation.[8] Again, the Greek world offers an excellent example. At least from the middle of the third century BC an agreed system of musical notation was employed by professionals, which remained in use until the late third century AD. In this system the pitches of notes were indicated by letter symbols. The origins of the system seem to go back to the northeast Peloponnese before the middle of the fifth century BC. The letter shapes seem to derive from the late Archaic local script of Argos. Later, in the late fifth or the fourth century BC a new version of the system was developed, keeping the principles of the old system but using the Ionic alphabet. The two versions of musical notation became specialised in function: the older was henceforth used for instrumental while the newer for vocal music. These versions, circulating in conjunction, were further refined and extended in the course of the centuries by the devising and adding of a variety of signs, for example, for rhythmic and articulatory notation but the basic essentials of this system of musical notation were well established at the latest by the middle of the third

[7] My brief discussion is based on Paz and Weiss (2015, 45–51, 63–65).

[8] I am grateful to an anonymous participant of the conference for reminding me of the importance of this secondary function. Although this function is relatively rare in the surviving evidence, was probably restricted to a narrow circle of professionals and although the interpretation of some of the symbols is still debated among experts, it was a highly important secondary use of the alphabet.

century BC. The latest papyrological evidence for this system dates from the latter part of the third century AD, after which it seems to disappear from general currency (West 1992, 254–273; Zaminer 2000 [= 2006]; see also Pöhlmann and West 2001).

Alphabetisation

Let us now look at the fifth secondary use of alphabets in the ancient eastern Mediterranean, a use that I would like to discuss in greater detail here as my own research focuses on it. As in the case of the previously mentioned functions of the alphabet, this particular secondary use also depends on the fixed order of the letters although the letters' actual numerical value is irrelevant to it.

This particular function we may call alphabetisation, that is, arranging textual information in the order of the alphabet. The best documented example of this type of use of the alphabet in the eastern Mediterranean is found in Greek, particularly in papyrus documents from Egypt, but this method of arranging textual data is also known in the Hebrew Bible[9] and, perhaps surprisingly, in Egyptian in the hieroglyphic, hieratic and demotic scripts, not to mention the later scripts of antiquity influenced by Greek and Greek scribal traditions such as Latin and Coptic.[10]

In a nutshell, this practice involves arranging words in lists in the order in which their letters appear in the alphabet. It greatly facilitates processing and retrieving information and this revolutionises bureaucratic practices. The great utility of this method is demonstrated by the simple fact that millennia after its invention we still use it today, every day. However, this method is not as simple as it may sound at first hearing, as words obviously consisted of not just one letter. As the evidence in Greek shows us the most clearly and in the greatest detail, initially for hundreds of years scribes used this method in its simplest form, that is, alphabetising according to the first letter of words only. In Greek it took intellectuals and bureaucrats several centuries to refine this practice and develop the method of full alphabetisation. Whereas the earliest traces of alphabetisation in Greek are probably found in inscriptions from the southeastern Aegean in the early and mid-third century BC, on our current evidence the first fully alphabetised texts start to appear only as late as the Roman Imperial period, the second century AD, to be more precise (Daly 1967, 30, 32, 34–35, 85 and 95).

[9] See, for example, alphabetic acrostics used in various parts of the Hebrew Bible such as *Nahum*, *Lamentations*, *Psalms* (for instance, Psalm 119) and *Proverbs*. On alphabetic acrostic Psalms, see, for example, Freedman and Geoghegan (1999). On alphabetic acrostics in the *Book of Lamentations*, see *e.g.* Assis (2007). Cf. also the non-acrostic alphabetic parts of the Hebrew Bible: for example, Freedman and Miano (2005).

[10] See, for example, section VIII a. 'Alphabetisch geordnete Wörterlisten' in Hasitzka 1990, 151–171, especially nos. 226 (eleventh century AD), 227 (tenth–eleventh century AD), 229 (tenth–eleventh century AD), 231 (date uncertain), 232 (date uncertain), 233 (tenth–eleventh century AD), 236 (date uncertain), 237 (date uncertain), 242 (eighth century AD?), 243 (tenth–eleventh century AD) and 245 (eleventh–twelfth century AD). For no. 238, see Huys and Schmidt (2001). I am most grateful to Dr Monika Hasitzka for her advice.

Where did this simple but ingenious and, in cultural and practical terms, hugely impactful method originate from? Its widespread use and some comparatively early evidence in Greek could easily mislead us into thinking that it was an internal Greek intellectual invention. Indeed, the current scholarly consensus among classicists is that the method of alphabetisation in Greek was invented or at least first put to effective use by Callimachus of Cyrene (c. 310–c. 240 BC), the famous Hellenistic poet, scholar and librarian of the Great Library of Alexandria active in the first half and the middle of the third century BC, for the purpose of accomplishing the monumental task entrusted to him by King Ptolemy Philadelphus (285–242), the second Ptolemaic ruler of Egypt, of cataloguing the vast holdings of the Library (Daly 1967, 22–25). This monumental catalogue, entitled the *Pinakes* or, with its full title, *Tables of Those Who Have Distinguished Themselves in Every Form of Culture and of What They Wrote* (Πίνακες τῶν ἐν πάσῃ παιδείᾳ διαλαμψάντων καὶ ὧν συνέγραψαν), consisted of 120 books and its content is reported to have been arranged alphabetically. Whilst the idea of the method of alphabetisation having been invented by Callimachus or by another intellectual in Alexandria is not impossible, some theoretical considerations and the multilingual evidence suggest the need for caution.

First, the history of writing across ancient civilisations tends to show that it was everyday practical needs that generally spurred on innovation in this field, such as the requirements of accounting and record keeping for economic and administrative purposes rather than intellectual or literary ideas. Further, as we have seen, it is from the Phoenicians that the Greeks adopted the idea of alphabetic writing, the letters' names, their fixed order and many of the basic letter shapes. In addition, it seems possible that the idea of assigning numeric value to the letters of the alphabet was also borrowed from the Levant (see above). The notion of using the fixed order of the letters of the alphabet for arranging words in such a sequence does not lie far from fixing the letters' order or from assigning numeric value to them. Thus, it appears entirely possible, perhaps even likely, that the practice of alphabetisation in Greek goes back to the Northwest Semitic models, the same sources that gave the Greeks alphabetic writing and its basic features and functions.

Indeed, the documentary evidence that we have, albeit admittedly meagre and patchy, does seem to support this conclusion. First, we need to remember that a number of alphabetised Greek inscriptions are known from the third century BC, the earliest of these, SGDI 3761 (from Phoinix in Asia Minor opposite Rhodes), perhaps from the first half of the third century, that seem to be contemporaneous with or, in the case of SGDI 3761, perhaps even predating Callimachus's work in the Great Library of Alexandria.[11] We should not fail to notice that the earliest of these inscriptions

[11] See *e.g.*:
- Blümel (1991, 31–32, no. 102) = SGDI 3761, cf. Daly (1967, 20) – Phoinix; the dates assigned to this inscription range from the first half of the third to the beginning of the second century BC;
- SEG 48.1098, cf. SGDI 3626, cf. Daly (1967, 20) – Kos, c. 240 BC;
- SEG 32.450 and 38.377, cf. Daly (1967, 20–21) – Akraiphia, Boeotia, late third to early second century BC;

all come from the southeastern Aegean region, more specifically from Phoinix in the Rhodian Peraia and from Kos, a region that lay on the main sea route from the Levant to Greece and that was thus ideally placed to receive and mediate, further to the west, eastern cultural influences.

In addition to the Greek epigraphic evidence from the southeastern Aegean and later from Boeotia, we also have Greek papyrological sources from Egypt which prove that alphabetisation had become an established practice in the Greek administration of Egypt by the first half of the second century BC. The unpublished P.Vindob. G 60514–60518, an extensive Greek list of names, patronymics and figures from the first half or the middle of the second century BC, shows that the scribe was very familiar with the method of alphabetically arranging textual information according to the first letter of words (La'da 2011). Even earlier, in the early second century BC, a shorter Greek document, an account of payments, now kept in the Yale papyrus collection, also shows this same method at work (P.CtYBR inv. 4635, published by Connor 2018). Our evidence for alphabetisation in Greek papyri increases in the penultimate decade of the second century BC when four documents appear using this method.[12]

But even if we accepted the current scholarly consensus that alphabetisation in Greek was invented by Callimachus or another intellectual in Alexandria or that it emerged in the southeastern Aegean as the epigraphic sources seem to suggest, we cannot deny the fact that the evidence for alphabetisation in some other cultures of the ancient eastern Mediterranean and the Near East which by the third century were in close contact with Greece – Egypt and the Levant – is earlier than the Greek evidence.

Egypt in particular seems to have played an important, perhaps even a key, role in the emergence and early development as well as the transmission of this method although it cannot of course be ruled out that we are merely being misled by the abundance of evidence from Egypt and its comparative paucity from elsewhere.

- SEG 48.1103 – Kos, c. 200 BC;
- Tit.Cal. 88 = SGDI 3593, cf. Daly (1967, 20) – Calymna, c. 180 BC: Tit.Cal. pp. 133–134, Habicht 2000b, 312–314; 2004, 62–63);
- Pugliese Carratelli (1963–1964, 183–201, no. XXVI) = SGDI 3705 + 3706, cf. Daly (1967, 18–20) – Kos, c. 185–175 BC: SEG 50.752, 54.736, and 54.748);
- Pugliese Carratelli (1963–1964, 175–176, no. X) = SGDI 3734, cf. Daly (1967, 20) – Kos, undated but the script, which is similar to that of SGDI 3706 (see SGDI Vol. III.1, 404 and Paton and Hicks 1891, 292), and prosopographical considerations (see Pugliese Carratelli's comment on ll. 12–15) suggest a date in the first half of the second century BC;
- Pugliese Carratelli (1963–1964, 165–175, no. IX) – Kos, c. 180–175 BC: SEG 50.757);
- Segre (1993, ED 235) – Kos, c. 180–170 BC: SEG 50.764 and BE 2001.323).

See also Pugliese Carratelli (1963–1964, 176–177, no. XI) (Kos), which, on the basis of prosopographical and palaeographical considerations, probably comes from the first half of the second century BC: see Habicht (2000a, 297–298) and Crowther (2004, 28).

[12] P.Tebt. IV 1128.27–80, 86–118 (115/114 BC), SB XXIV 16229.2–107 (114/113? BC), P.Tebt. IV 1105.1–57 + I 93.1–54 (113 BC) and P.Tebt. I 94.1–35 + IV 1107.36–193, 223–274, 280–344 (112 BC).

Until recently the earliest evidence in Egyptian was most probably from the fourth century BC,[13] although we should be aware that this text, as well as other, later, texts of the same nature, may have followed earlier models (cf. Smith and Tait 1983, 211–212). To date the earliest relatively securely dated Egyptian text that demonstrates the application of the method of alphabetisation is demotic papyrus Carlsberg 425 most probably from the fourth century BC, which, as we have just seen, is approximately a century earlier than the earliest Greek sources from the middle or perhaps from the first half of the third century.[14] Demotic papyrus Carlsberg 425 contains an alphabetically arranged list of personal names (see also O.dem.Saqqara 19), which is exactly the same function as that of the hitherto earliest Greek examples of alphabetisation. A number of other, albeit quite fragmentary, alphabetised Egyptian texts are known from subsequent centuries of the Graeco-Roman period until Coptic replaces the traditional scripts of Egypt.[15]

The most surprising feature of these alphabetised Egyptian texts is that, as Joachim Quack (1993; 1994; 2003) demonstrated, the order of the alphabet they follow is that of the ancient South Arabian or South Semitic, more specifically, Minaean alphabet, also called *halaḥam* from the order of its first four letters. At first sight this would mean that at a late stage in their history the ancient Egyptians would have adopted a foreign, ancient South Semitic or South Arabian cultural invention from a distant and relatively small and isolated civilisation. Whilst this is not theoretically impossible, it is certainly unexpected and surprising. It would therefore seem tempting to assume that the sequence of transmission of this cultural invention was in fact not from the Minaeans to Egypt but that both cultures borrowed it from a common source. Indeed, the *halaḥam* sequence is attested among the Ugaritic alphabetic tablets, which are dated between the mid-thirteenth and the early twelfth centuries[16] and also in a cuneiform tablet from Beth Shemesh near Jerusalem that has been dated to the thirteenth century BC.[17] As is well known, during exactly this period, called in Egyptian

[13] P.dem.Carlsberg 425: Zauzich (2000), esp. 33–34 with footnote 21. To the same text belong also P. BM EA 10852+10856 (Bresciani 1963, 15–18, pls. VI–VII) and P. Strasbourg D 182+300 (unpublished, cf. Kaplony-Heckel 1974, 231–232; information kindly provided by Joachim F. Quack).

[14] Other Egyptian texts of the same nature that may come from the fourth century are P.dem.Saqqara 27, published by Smith and Tait (1983, 198–213): fourth–third century BC (Smith and Tait 1983, x; Quack 2003, 165) and O.dem.Saqqara 19, published by J.D. Ray (2013, 86–91) and dated to the fourth century BC (with a question mark in brackets).

[15] For lists of such texts, see Zauzich (2000, 27–30); Quack (2003, 164–166); Gaudard (2012, 69–70, footnote 12) and Haring (2015a, 194). To the relevant texts listed in these works, add now the hieroglyphic-hieratic P. Carlsberg 7 + pBerlin P 29006 + PSI Inv. I 10 (Tebtynis, second century AD): Quack (2020), and the demotic P. Carlsberg 595 + PSI inv. D 63 (Tebtynis, second century AD) and P. Carlsberg 43 + PSI inv. D 64 (Tebtynis, second century AD): Ryholt (2019), especially 408–411, nos. 36–37. I am most grateful to Joachim F. Quack for information on these texts. Cf. also Quack (2021).

[16] Bordreuil and Pardee (1995; 1998; 2001), Gzella (2013, 5) and Haring (2015a, 193–196), with the previous literature mentioned in these works.

[17] See Loundine (1987), Gzella (2013, 5) and Haring (2015a, 193–196), with the earlier literature cited in these publications.

chronology the late Eighteenth, Nineteenth and early Twentieth Dynasties of the New Kingdom, some of the Levant, particularly its south, lay firmly within the Egyptian sphere of influence and domination, which greatly facilitated the exchange of ideas and goods. Thus, it would seem possible to assume that, rather than borrowing the idea of a fixed order of sounds and perhaps also that of arranging words according to such a fixed order from a distant and relatively small and internationally uninfluential civilisation at a very late stage in their cultural development going back millennia, the Egyptians borrowed these from the Semitic civilisations of the Levant that had been familiar with the idea of the alphabet and had been using it from the Late Bronze Age onwards, the same source that the South Arabian Minaeans may have adopted it from. The lack of any Egyptian evidence for a fixed order of sounds or for alphabetisation earlier than the fourth century BC, however, presented a serious problem for this theory.

The sensational discovery and publication in 2015 of a new hieratic-hieroglyphic ostracon found in the course of the excavations of Theban Tomb 99 of Sennefri by the Cambridge Theban Tombs Project has given research a valuable new impetus. The tomb has been dated to the mid- or late fifteenth century BC as its owner Sennefri lived under Thutmosis III (c. 1479–1425), who conquered the largest foreign empire for Egypt of any pharaoh, stretching from as far north as northern Syria to as far south as the fourth cataract of the Nile. The ostracon, a small piece of flat limestone, carries seven lines of hieratic and hieroglyphic writing on its obverse and six on its reverse. Some of the lines are quite damaged or partially lost. The text has been dated palaeographically to the late fifteenth century BC by its editor Ben Haring: 'The most likely date of the ostracon is the late fifteenth century BC; it would thus be older than the cuneiform tablets from Ugarit and Beth Shemesh'.[18] If the editor's dating and interpretation of this text are correct, and there appear to be good reasons for accepting these, in this remarkable ostracon from Thebes in Upper Egypt we have the earliest attestation of the *halaḥam* sequence of sounds and of any fixed order of sounds in the ancient eastern Mediterranean basin and the Near East at all. Further, this ostracon offers us by far the earliest evidence for the use of alphabetisation, that is, the application of a fixed sequence of sounds for the purpose of arranging textual data, not just in Egypt but also in the whole of the ancient eastern Mediterranean and the Near East.

These facts are highly noteworthy not just in themselves but also because they lead to two important conclusions: first, that the idea of fixing the order of consonants appears to have been an indigenous Egyptian invention rather than a foreign import either from the Levant or from South Arabia (cf. similar prior conclusions by Kammerzell 2001 and Ray 2011) and, even more importantly for our present topic, that the idea of alphabetisation did not arrive into Egypt from a Semitic culture of

[18] Haring (2015a, 195). On pages 189–191, Haring argues on palaeographical grounds for a date 'not later than the late Eighteenth or early Nineteenth Dynasty' and 'not earlier than the early Eighteenth Dynasty'.

the Levant or South Arabia but, on the contrary, it was most probably invented in Egypt and exported to these Semitic civilisations.

This ostracon also shows that the method of alphabetisation had been known and used in Egypt for approximately a millennium before the arrival of Alexander the Great, the foundation of the Great Library of Alexandria and the activities of Callimachus, whom classical scholars have hitherto credited with the invention of, or at least with being the first to put to effective use, this principle in Greek. Our Egyptian and Semitic evidence shows that native Egyptians and the inhabitants of the Levant had been familiar with this method and had widely used it well before the arrival of the Greeks. Thus, although we currently still lack evidence for direct borrowing, the weight of the evidence increasingly suggests that alphabetisation in Greek was not invented by the Greeks themselves but merely adopted and adapted by them to their own particular linguistic, scribal and cultural needs from a Near Eastern civilisation: Egypt or the Northwest Semitic cultures of the Levant.

As a final summary, returning to the general topic of this paper, I hope that, despite the limited space available to me here, I have been able to demonstrate how important these various secondary functions of ancient scripts were and how much they can tell us about cultural and intellectual contacts between the ancient civilisations of the eastern Mediterranean and the Near East. In some cases, they perhaps reveal even more than the scripts themselves. They show us clearly how close cultural contacts between the ancient civilisations of this region were and how easily and widely intellectual inventions could spread from one people to the other. By this I hope that I have also successfully shown how informative and indeed instructive studying from a comparative perspective this aspect of ancient writing systems can be, still somewhat underappreciated and neglected as it is, and how much potential it holds for future research.

Chapter 3

The 'death' of alphabets at the end of the Bronze Age: how does the Deir ʿAlla alphabet fit the picture?

Michel de Vreeze

Introduction

In this article, I will examine the social role of alphabetic writing in the Bronze Age (southern) Levant while referring to three main sites connected to early alphabetic writing: Deir ʿAlla, Lachish and Ugarit. The first case-study focuses on the unique Deir ʿAlla script, representing one of the local Late Bronze Age alphabetic traditions (van der Kooij 2014; de Vreeze 2019). This alphabetic tradition was contemporary to a second important attestation of a unique alphabetic tradition, the cuneiform alphabet, as used at Ugarit (Pardee 2007; Boyes 2019a; 2021a). At the same time, the linear alphabetic inscriptions in the Shephelah region (focusing on Lachish), attest to a hub of alphabetic writing during the Late Bronze Age (Finkelstein and Sass 2013; Na'aman 2020; Höflmayer 2021). Two of these alphabetic traditions disappeared without a trace at the end of the Late Bronze Age, whereas linear alphabetic writing (proto-Canaanite) continued into the Iron Age, eventually to be replaced by more formal alphabetic writing traditions that must have evolved from this linear proto-Canaanite script (Sass and Finkelstein 2016).

The questions raised in this paper are twofold. What was the social context of alphabetic writing during the Late Bronze Age, and how might this context have caused the 'death' of some of its more unique alphabetic traditions? I will examine these questions using three main principles based on the case studies offered in this paper: first, I will advocate for the cultic component that alphabetic writing had since its first invention, and how that component is perhaps downplayed but crucial to understanding alphabetic writing in the following Late Bronze Age. By using case studies from Deir ʿAlla and Lachish, I will go on to show that this cultic context primarily involved local temples that were instrumental in teaching and using alphabetic writing during the Middle to Late Bronze Age. Alphabets were

an important way of expressing local identity in a multi-cultural and multi-script environment. This is a more adequate social 'venue' for early alphabetic writing than seeing it as a bureaucratic practice equivalent to hieratic and cuneiform Akkadian writing practices in the region. It will be argued that the particular social context of alphabetic writing must thus be placed in a *different environment* than hieratic and cuneiform Akkadian writing practices in the Southern Levant, whereas Ugarit might have become an exception to this rule.

Secondly, this cultic context of alphabetic writing and literacy was not necessarily widespread but likely concentrated in the hands of a few scribes. This is a more useful approach to the absence of writing than to implicitly assume conservation problems.

Thirdly, the particular social environment and limited extent of use of the Deir ʿAlla and cuneiform alphabet (at Ugarit and a few other sites) might have rendered them 'fragile' systems, rather than robust alphabetic traditions that could withstand large scale social upheaval. Despite a well-established alphabetic tradition at Ugarit, even this tradition came to an end, whereas the alphabetic tradition attested at Lachish proved more 'robust' against social changes (borrowed from Roux 2008). To understand what happened to these alphabetic traditions, it becomes important to look at the changing cultural connotation that these alphabets as mediators between local communities and Imperial power might have played. For the Southern Levant, this particularly involved the role of the Egyptian court and local factions and elites within the various settlements (Greenberg 2020).

Early alphabetic writing in the Levant

Alphabetic writing has recently been argued to be a quintessential 'Canaanite' invention (Greenberg 2020, 222–224; after Goldwasser 2016). The invention of the alphabet, its location (or locations!) and social context, form part of ongoing debates beyond the scope of this paper (Sass 1988; Goldwasser 2006; Haring 2015b; 2019; Höflmayer 2021). The consensus suggests that alphabetic writing was adopted from Egyptian hieroglyphic and hieratic writing practices in a Middle Bronze Age context (Hamilton 2006; Haring 2019). In the centuries that followed its invention, there is an uncomfortable 'alphabetic' silence in the archaeological record, up to the Late Bronze Age (c. 1600/1550–1200/1140 BC), when forms of alphabetic writing are still sporadic but more widely attested. Sporadic alphabetic inscriptions are found in the Southern Levant, though many of them remain poorly dated (Finkelstein and Sass 2013). A problem with understanding the actual scope of alphabetic writing and literacy is the absence of evidence for writing that could have occurred on perished documents (Na'aman 2020, 34; see also Boyes 2021, 43 discussing the complexity of the issue). Arguably, the physical preserved evidence of alphabetic writing should not be part of the argument about the extent of literacy and role of alphabetic writing, as we are dealing with a heavily depleted record. However, I argue that the absence of evidence should not become an implicit assumption that alphabetic writing was

rather widespread but poorly preserved, and believe that the archaeological evidence from the Southern Levant in particular is substantially rich enough to start drawing some more nuanced picture of early alphabetic writing. Recent research has shown that extensive literacy in alphabetic writing should not be assumed before the Iron Age period (Faigenbaum-Golovin *et al.* 2016). Although early alphabetic inscriptions using paint or chalk (such as at Lachish and Luxor/Thebes) suggest clearly that other media could have been written on, the widespread use of papyrus or parchment is not immediately apparent (Richelle 2016). Accepting that not all evidence for alphabetic writing is preserved in the archaeological record, I would still argue that alphabetic writing in the Southern Levant remained limited in terms of the people practising it. As will be argued based on the case studies presented in this paper, precisely the consistent but still sporadic nature of alphabetic writing in the Southern Levant is crucial in understanding its social role.

The 'death' of writing systems

It is not easy to understand how writing systems died out, and what caused the 'death' of a writing system. Some recent discussions have focused on this topic, using both archaeological and historical case studies (see Baines *et al.* 2008; also Boyes 2021a, 262–271). What caused the end of a certain writing practice relates to our perception of literacy itself in antiquity, which cannot be assumed to be widespread at the time, and nuances into who would actively read and write, or participated more passively in recognising writing but not actively writing it (Baines 1983; Boyes 2021a, 263). Also, the end of a script should be decoupled from the end of using a language itself (Boyes 2021a, 262; after Baines *et al.* 2008). Languages themselves can continue but with a changing script, or even no attested script at all. Working with extensive timeframes, depleted archaeological records and time-resolutions which are often lacking definition, it is not always possible to understand when a script really came to an end.

Houston (2008, 231) identifies several reasons why writing scripts can cease to be used, be it a 'diminished usage of script' linked to obsolete knowledge (including ritual), or physical demise of script users from the effects of war or disease (Houston 2008, 231). That this process is not necessarily abrupt is demonstrated by Houston (2008; see also Boyes 2021a, 265–269 regarding Ugarit), but could be a process with many 'small deaths', as Houston (2008) aptly described it. Regarding the end of the Late Bronze Age, which has been categorised in terms of a 'collapse' (see below), the physical demise of script users, and thus the script, would seem a rather straightforward case of a cultural phenomenon ending with the last vestiges of Late Bronze Age cultural practices. However, I will argue that the reasons for the 'deaths' of the Deir ʿAlla script and alphabetic cuneiform alike, which occurred quickly and contemporaneously, should be sought first in the changing social role of alphabetic writing and the 'script community' (after Houston 2008, 232). The eventual 'death' of the Deir ʿAlla alphabet was seemingly abrupt, but likely preceded by changing society,

which saw a culmination at the end of the Late Bronze Age. The possible changing way that 'script communities' were perceived at the end of the Late Bronze Age is a crucial factor in whether alphabetic traditions survived or not.

The alphabet as a bureaucratic tool?

The development of the alphabet has been strongly related to its bureaucratic usefulness (Millard 1991; 2007; Na'aman 2020). The implicit assumption is that a large body of evidence has seemingly not been preserved (Millard 1986, 394; 1991; 2001; 2008; Zamora López 2006; 2007). Millard (1986, 394) might have summarised this view on the alphabet developed out of bureaucratic use best when stating: 'Picture a Canaanite scribe in a mercantile centre, trained to write Egyptian with pen and ink on papyrus, aware of cuneiform and, maybe, other scripts. None of them really suit his native language; all are quite complicated to write.' The supposed usefulness as a bureaucratic tool, and the assumed ease of learning to write alphabetic script with its relatively limited number of characters, became the leading arguments for the adoption and spread of the alphabet, although insufficiently tested as hypotheses – and inherited into the discussion of later alphabetic development and even finding its way into popular literature (see Diamond 1994). I agree with Boyes (2021a, 65) that the danger of this reasoning is using the complete lack of evidence for such early alphabetic 'bureaucratic' texts as evidence to prove the point. I think it is fair to take the limited extent of alphabetic writing in the Southern Levant at face value. Furthermore, I would argue that this bureaucratic association does not follow from the archaeological evidence at places such as Deir ʿAlla and Lachish and is badly placed in the particular social dynamics of the Late Bronze Age period. To fully develop this argument, I want to quickly revisit the 'birth' of alphabetic writing and argue how it had a strong cultic component from its very onset.

Early alphabetic writing as a cultic expression: Hathor and the alphabet

Despite Goldwasser (2006) re-stressing that the wish to express religious ideas was crucial in the development of the alphabet, the ritual purpose of writing within a sacred context, is still contested (see a further discussion by Boyes 2021a, 43). This despite the ritual, magic quality of writing often being stressed in literature, both in historical and anthropological works (Frankfurter 2015; Graf 2015; see Boyes this volume). Part of the 'magic of writing', for instance, associated with hieroglyphic script has been related to misconceptions about its use and came from the inability to read hieroglyphic script. However, unmistakably, writing in ancient Egypt and Mesopotamia also had a strong sacred component (Liverani 2006; Regulski 2016).

For the invention (or adoption, depending on one's stance towards Egyptian precursors in alphabetic signs), discussions have revolved around questions of literacy and the illiterate (Goldwasser 2006; 2011; 2012; 2016; Greenberg 2020), and the involvement of Egyptian (elite) elements (Na'aman 2020). Yet, the distinct sacred nature of the alphabet to write dedicatory inscriptions to Baʿalat associated with a

temple dedicated to Hathor at Serabit el-Khadim, with possible Canaanite origins (Wimmer 1990; Bietak 2022), was clear since the first early alphabetic inscriptions were deciphered (Albright 1916; Goldwasser 2006). The fact that early alphabetic inscriptions were also found in contexts perceived to be non-cultic (the mines at Serabit el-Khadim) does not preclude the initial development of alphabetic writing in ritual context, in association with places such as the temple at Serabit el-Khadim that served both for the Egyptian and local (Canaanite) cultic purposes. Along these lines, the contemporary early alphabetic inscriptions from the Wadi el-Hol are also relevant (Darnell *et al.* 2005; Darnell 2013). These alphabetic inscriptions, on cliffs along a route leading from Thebes through the desert, could again be taken as distinctly non-sacred in context. However, Darnell (2013, 4) argues that the location was used for ritual festivities associated with Hathor. This association with Hathor, an important deity in intercultural negotiations between Egypt and Canaanites (or people from the Levant in more general terms), as we will see further below, is perhaps not coincidental. A thoroughly discussed Late Bronze Age alphabetic inscription on an ostracon was found in tomb 99 in the Valley of the Queens (Haring 2015a). This and other possible alphabetic inscriptions from Thebes might suggest that within Egypt, Thebes – and particularly the workers' village of Deir el-Medina, which was partially inhabited by non-Egyptian (Levantine) workers (Lesko 1994; Meskell 2002) – shows a marked concentration of evidence for writing, both hieratic (Haring 2019; 2020) and alphabetic (Thebes 99; *Valley of the Queens* Ostracon: Sass 1988; Goldwasser 2016). In relation to hieratic texts, Haring (2020) considered whether exceptional preservation is responsible for this higher degree of attested literacy, or if the Thebes area might be seen as special. Besides the question of 'chance' preservation, the attestation of alphabetic writing, both on ostraca and at the Wadi el-Hol, could also argue for the latter.

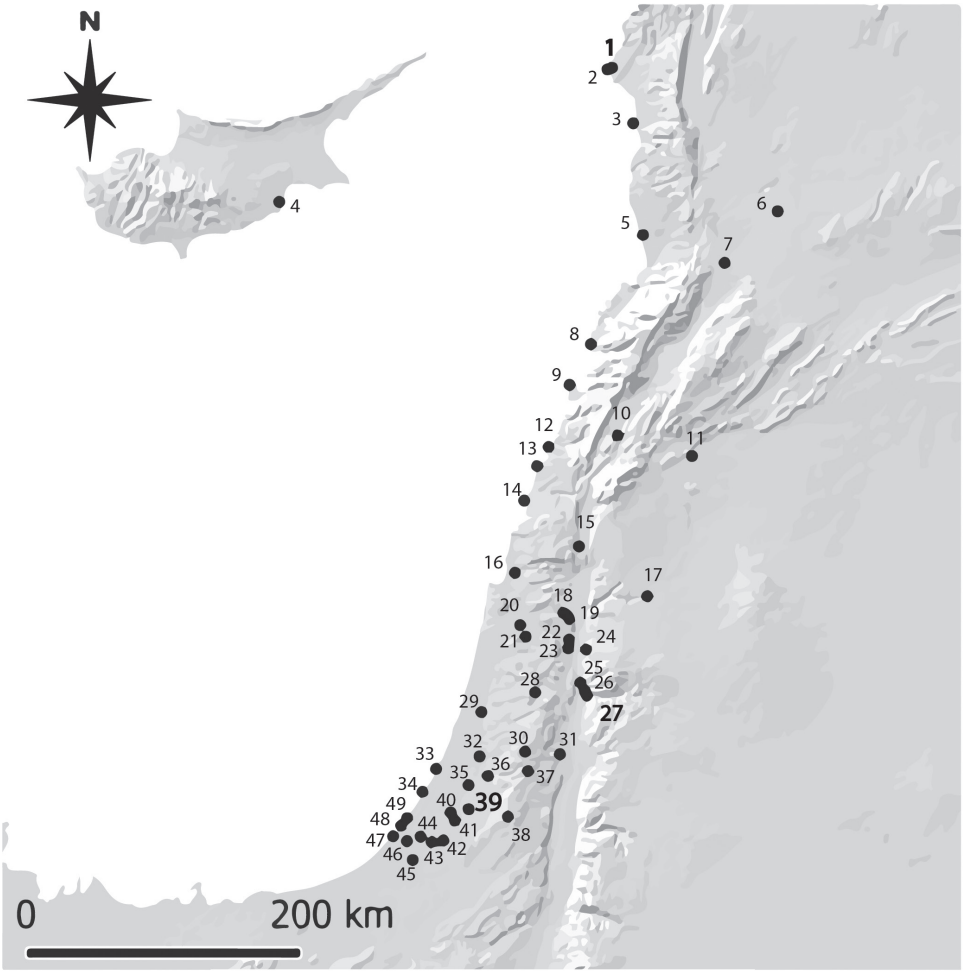
It is significant that among the temples built at Deir el-Medina was one dedicated to Hathor, built by Seti I for the workers of Deir el-Medina (Gobeil 2015). Furthermore, close to the tombs in the Valley of the Queens, where the workers from Deir el-Medina might have been working, a cave sanctuary to Hathor is located (Černý and Desroches-Noblecourt 1969–1970, plan 22). I would argue that both Serabit el-Khadim and the Thebes area (Deir el-Medina and Wadi el-Hol) thus reflect the similar symbiosis of Egyptian and Levantine presence including shared cultic practice as an instrumental part of cultural negotiations. Both for Serabit el-Khadim and Thebes/Wadi el-Hol, one can argue that non-Egyptian scribes developed and used the alphabet under influence from Egyptian writing practices. Rather than arguing that early alphabetic writing was purely religious in nature, the cultural context of temples and places of cultic gathering might have formed the fertile cultural grounds in which the alphabet initiated. Hathor (equated with the Semitic 'Baʿalat') was a primary goddess associated with these places. That the first sentence of the newly discovered alphabet was translated to invoke a goddess (Baʿalat; Hathor) is less a coincidence than a result of temples and sacred places functioning as strong intercultural environments.

Bringing this argument to bear on the Late Bronze Age Southern Levant, it is significant that Koch (2017, 73; 2021) has argued for the role of the cult of Hathor in the more widely attested phenomenon of 'cross-cultural' translation, where local deities were associated with attributes of foreign ones. This phenomenon is also very well-known from Byblos, dating back as far as the Old Kingdom and still in place during the Amarna period (Diego Espinel 2002; Rainey 2015). For the Southern Levant, Koch (2017, 73) singles out Hathor in relation to Lachish, and refers to Serabit el-Khadim in passing (see further below). Temples and their deities (be it Hathor or others) played a particularly strong role in mediating cross-cultural connections, exchange, and mediated tension arising from political dominance (de Vreeze and Badreshany forthcoming). If the alphabet itself was born in this process of cultural mediation and translation, I would suggest based on the case studies presented here, that for the remaining Late Bronze Age in the Southern Levant, one if its primary focuses remained this cultic environment.

The curious case of the Deir ʿAlla script

Deir ʿAlla is a modestly sized tell (approximately 250 × 200 m; 5 ha and 30 m high) representing a substantial multi-period settlement in the central Jordan Valley ('Zerqa triangle') (van der Kooij 2006; see Fig. 3.1). It is one of several settlements known from the Late Bronze Age (c. 1550–1200/1140 BC) in the Jordan Valley and is located on an important trade route through the Jordan Valley, and into the western highlands (via the Wadi Far'ah) and Jordanian Plateau (the Wadi Zerqa route).

In a heavily burnt phase E, dating to the Late Bronze Age III (c. 1200–1140 BC), 15 rectangularly shaped clay tablets were found so far, of which seven yielded inscriptions of varying length (Kafafi 2009; van der Kooij 2014; de Vreeze 2019; Fig. 3.2). These tablets were found in three main contexts, the temple, a public pillared building, and in the southern quarter of the Late Bronze Age settlement (van der Kooij 2014; Fig. 3.3). The script is no longer in use in subsequent Iron Age periods at the site. I have argued elsewhere for interpreting the tablets (and fragments) with written text as representing an alphabetic system, suggesting some tentative readings if we were to supply values based on likeness with signs in other Northwest Semitic alphabets and assume they are written in a related language (de Vreeze 2019). Any conclusions drawn remain preliminary and would ideally be tested by novel tablets being found in future expeditions. Based on this suggestion, the Deir ʿAlla tablets represent an alphabet that was written in a unique linear script written from left to right, with at least 27 identified signs (so far identified), plus a sign for the word divider (van der Kooij 2014; de Vreeze 2019). These signs are consistently present on several inscribed tables, including the two most recently discovered tablets with longer texts (de Vreeze 2019, 454–455, fig. 1a–b; van der Kooij 2014). The number of signs identified so far is in line with alphabetic writing systems such as alphabetic cuneiform (up to 30 graphemes) and also with ancient South Semitic and Arabic (28 graphemes) and



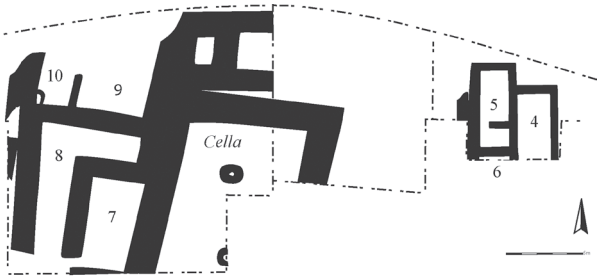
1: Ugarit	AC; CU; AM	17: Tell Ashʿari	AM	33: Ashdod	CU
2: Ras Ibn Hani	AC; CU	18: Tell el-Mukharkhash	AM	34: Ashkelon	CU; AM
3: Tell Sukas	AC	19: Nahal Tavor	AC	35: Tell es-Safi	AM; HIER
4: Hala Sultan Tekke	AC	20: Megiddo	CU; AM	36: Beth Shemesh	AC
5: Tell Kazel	AM; CU	21: Taʿanach	AC; CU	37: Jerusalem	CU; AM
6: Qatna	AM; CU	22: Beth Shan	CU; AM	38: Hebron	CU
7: Tell Nebi Mend	AC; CU	23: Reḥov	AM	**39: Lachish**	AL; AM; HIER
8: Byblos	SYL; CU	24: Pella	CU; AM	40: Tell Hesi	CU; AM
9: Beirut	CU	25: Tell es-Saʿidiyeh	-	41: Tell Nagile	AL
10: Kami del-Loz	CU; AC; AL	26: Tell Mazar	-	42: Tell Seraʿ	HIER
11: Damascus	AM	**27: Deir ʿAlla**	AL	43: Tell Haror	HIER
12: Sidon	AM	28: Shechem	CU; AM	44: Qubur al-Walayda	AL; HIER
13: Sarepta	AC	29: Tell Aphek	CU	45: Tell Farʾah S.	HIER
14: Tyre	AM	30: Tell en-Nasbeh	CU	46: Tell Jemmeh/Yurza	AM
15: Hazor	AM; CU	31: Jericho	CU	47: Deir al-Balah	HIER
16: Tell Keisan	CU	32: Gezer	AL; CU; AM	48: Tell ʿAjjul	AL
				49: Gaza	AM

Fig. 3.1. Sites with different script attested in the Late Bronze Age: AL: (Linear) alphabetic; AC: Alphabetic cuneiform; CU: Cuneiform; AM: Amarna correspondence; HIER: Hieratic. SYL: Byblos syllabary Ugarit, Deir ʿAlla and Lachish are in bold.

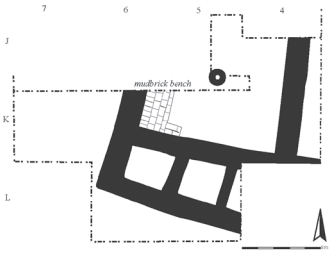
might suggest the presence of common consonants in Semitic language also used at Deir ʿAlla that converged in shorter alphabets such as ancient Hebrew (22 graphemes). Of these signs from the Deir ʿAlla script, 22 might be tentatively identified and would argue that the script was developed from ancestral early alphabetic traditions (proto-Sinaitic) and shared novel developments with contemporary linear alphabetic Canaanite scripts. Several hands can be recognised in the various tablets, suggesting they were written by at least several different scribes (van der Kooij 2014; de Vreeze 2019). The Deir ʿAlla alphabet might show some remarkable similarities in rendering accented (pseudo-) vowel signs similar to the cuneiform alphabet at Ugarit (de Vreeze 2019). The assumption that the alphabet represents a Northwest Semitic language is supported by the identification of many identified roots and grammatical patterns, which seem to show that the language reflected in the tablets is what we might ultimately call Canaanite (discussions on linguistic dialects aside). The content of the tablets, based on very preliminary readings that are in dire need of further study, would suggest texts in the domain of cultic activity, prophesies, and exclamations, perhaps partly reflecting an oratorical tradition; suggesting the tablets might have been read aloud (de Vreeze 2019). This moves away from the notion that these tablets served a bureaucratic need of recording (Franken 1964; 1992; Greenberg 2020, 327).

Fig. 3.2. Tablet 3542 found in the southern public pillared building. It was fragmented and the fragments differently fired in the conflagration. It contains script on five sides, including the final short side, and is one of the longer inscriptions known from Deir ʿAlla (photographs courtesy of Gerrit van der Kooij).

The contexts of the tablets at Deir ʿAlla are very relevant. Eleven of the 15 tablets were found in association with auxiliary rooms of the temple on the northern side of the tell, with partly squashed clay tablets suggesting that writing practices took place here (Franken 1992; van der Kooij 2014). This temple edifice, of the category that Greenberg (2020, 284) would categorise as an informal rural temple, albeit a relatively large one, had a cella with a size of at least 10 × 10m, comparable to the Fosse Temple at Lachish (see below;



Deir ʿAlla Temple phase E



Deir ʿAlla public/pillared building phase E

Fig. 3.3. The temple and public pillared buildings, with similar features, where alphabetic inscriptions were found at Deir ʿAlla (adapted from van der Kooij 2014).

Fig. 3.4), and several smaller buildings surrounding it for storage of foods and gifts, and other activities (van der Kooij 2006; 2014). The Late Bronze Deir ʿAlla temple was substantial in size and fulfilled an intermediary role in the exchange network through the Jordan Valley, at the crossroads into the western and eastern Jordan highlands. Gift exchange with Egypt and Mesopotamia is attested by finds such as a faience vessel of Tausret (Groot 2011). Although this vase gifted to the Temple serves as evidence of Egyptian contact, the precise context of its gifting is not known but was likely part of Egyptian efforts to appease settlements within its imperial sphere (Franken 1992; van der Kooij 2006; Groot 2011). Direct Egyptian involvement at Deir ʿAlla on a state level is not attested. The nearest Egyptian garrison, and monumental Egyptian inspired temples associated with a ruling elite, are at Beth Shan (Higginbotham 2000, 71, 87; Morris 2005; Mazar 2011; Mullins 2012, 130). Beth Shan gives evidence of Egyptian inspired ceramic practices (Mazar 2011, 174; Mullins 2012, 130), and hieratic writing (Na'aman 2020, 34). Petrographic analysis of Amarna tablets suggests cuneiform Akkadian was written locally (Goren *et al.* 2004, 323). However, no Late Bronze Age alphabetic texts have been found here, despite it being a larger site and having been extensively excavated.

Three more partial or complete tablets with longer texts on four sides of the elongated tablets, were found in a partially excavated monumental, pillared building (van der Kooij 2014; de Vreeze 2019). The building featured mudbrick benches and likely served for communal gatherings, and its similar design would suggest it is another temple building of the same category as the larger one on the northern side of the settlement (Fig. 3.3). One further tablet was found in the south, in what is considered an industrial quarter of the settlement (van der Kooij 2006; 2014).

The Deir ʿAlla alphabet is unique to the site, and not (so far) attested at other contemporary sites nearby (despite having similar preservation contexts, such as burnt layers). Considering its strong association with the temple, and the second public building/temple, I have argued (2019) that the number of scribes was limited. Palaeographic analysis demonstrates several hands (at least three distinct ways of incising the signs into clay), but the amount of actual literacy at Deir ʿAlla might have remained low at any point during the Late Bronze Age. A further argument supporting the selective nature of writing at Deir ʿAlla, in terms of medium used, is that the alphabet is not attested on any of the contemporary clay medium (such as ceramics), in contrast to the contemporary linear alphabet in use at sites such as Lachish. Though future excavations cannot exclude this possibility, for now it supports the limited number of scribes at Deir ʿAlla, and their strong cultic connection. Considering the precise date, although the tablets were found in its latest phase (LBIII; twelfth century BC) it is not clear if the alphabet has any earlier antecedents at the Deir ʿAlla itself, though elements of its sign repertoire would suggest so (de Vreeze 2019). The Deir ʿAlla temple might not only have preserved writing practices, but also curated the objects themselves representing this script. This is clearly attested for other objects in the Temple context, such as Egyptian scarabs and Mycenaean imports clearly heirlooms within later contexts (Franken 1992, 76, 78, fig. 5.4.1; van Wijngaarden 2002, 102; van der Kooij 2006, 219).

Lachish as a hub for Alphabetic writing

Lachish seems to be one of the prime locations for the use of the linear alphabetic script during the Late Bronze Age (Höflmayer 2021, 12). The 7 ha site located in the southern Shephelah has yielded consistent evidence of alphabetic writing throughout the Bronze Age. It is crucial to mention that Lachish itself did not feature an Egyptian Garrison, and these were rather located nearby at Tel el-Hesi, Tel el-Seraʿ, Tel Farʾah South, and on the coast (Gaza) (Morris 2005; Higginbotham 2015; Na'aman 2020). That is not to say that local Egyptians were not present at Lachish, as hieratic inscriptions from the site suggest their presence. The earliest attestation of alphabetic writing could date to the Middle Bronze Age period, in the form of the 'Lachish dagger' with a short partially pictographic inscription (Tufnell 1958, 128, 254; Sass 1988, 53–54; Hamilton 2006, 390–391; see Table 3.1). Six alphabetic inscriptions have been identified at the site, in various contexts, with the most recent example provided with

Table 3.1. Various contexts in which alphabetic script was found at Lachish.

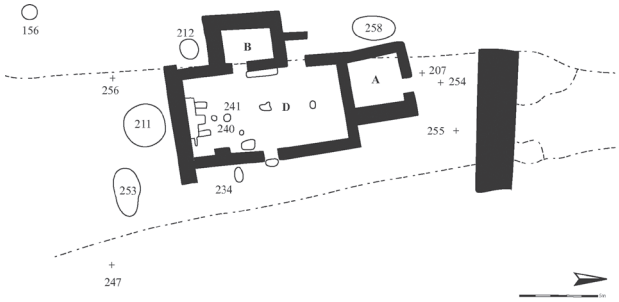
Site	*Object*	*Context*	*Nature of context*	*Date*	*Text*	*References*
Lachish	Lachish dagger	Tomb 1502	Grave deposit. Grave *ritual*	Middle Bronze Age	Incised in copper alloy object. Not read: four signs; partly pictographic	Tufnell 1958, 128, 254; Sass 1988, 53–54; Hamilton 2006, 390–391
Lachish	Lachish Ewer	Deposited in pit associated with the Fosse temple	Pit associated with Fosse temple III. Favissa; *Ritual*	Late Bronze Age IIB (1300–1200 BC)	Painted on a stand. Devotional text. Gift to 'Elat'/ Goddess	Tufnell *et al.* 1940, pl. 30, no. 6; Sass 1988; Koch 2017, 69 fig. 3
Lachish	Lachish inscription painted Cypriot bowl	Deposit close to city wall (West). Possibly near public building (pillared building: 100)	Possible non-ritual context but close to public pillared building and Lachish bowl from pit (3852)	Late Bronze Age Ib	Painted on a Cypriot Milk Bowl. Early (proto-Canaanite). Not read	Ussishkin 1983; Ussishkin 2004; Höflmayer 2021
Lachish	Lachish Bowl	Tomb 527	Tomb deposit. *Burial (Ritual?)*	Late Bronze Age	Inscribed text in chalk? on bowl	Finkelstein and Sass 2013, 153
Lachish	Lachish bowl	Pit (3852) close to pillared building (area S)	Pit associated with pillared public building. Possible installation (cup-marks and channel). Constructed pit. Possibly *ritual*	Late Bronze Age III (Level VI).	Text in ink on bowl. Undeciphered text	Ussishkin 1983, 113 fig. 8, 115, 155–157; Ussishkin and Barkay 2004
Lachish	Lachish jar fragment	Deposited in room of Northeast Temple	Room of temple. Possibly *ritual*	Late Bronze Age III (Level VI).	Incised on shoulder of storage jar. Not readable	Sass *et al.* 2015; Weissbein *et al.* 2020

Table 3.2. Various social contexts of writing alphabetic and hieratic script at Lachish, suggesting different scribal communities and direct vs. indirect association with Egyptian colonial influence.

Building	*Phase*	*Public use*	*Writing practices*	*Reference*
Fosse Temple	Late Bronze I–II	Local informal temple; Egyptian influence	Alphabet: Lachish Ewer	Tuffnell 1940; Koch 2017
Public building; pillared hall	Late Bronze III (phase VI)	Local, informal	Alphabet: inscribed bowl	Ussishkin 1983, 115, 155–157; 2004
Public building (100); nearby	Late Bronze I	Local, informal	Alphabet: Cypriote bowl sherd	Höflmayer 2021
Northeast Temple	Late Bronze III (phase VI)	Local. Formal temple	Alphabet: Inscribed shoulder of jar	Sass *et al.* 2015; Weissbein *et al.* 2020
Acropolis Temple	Late Bronze III (phase VI)	Formal. Ruling elite; Strong Egyptian influence	Hieratic bowls. Tax payment. *Possible ritual deposit*.	Goldwasser 1984; Singer 1988; Greenberg 2020, 325

a clearly dated context radiocarbon dated to the latter part of the fifteenth century BC (Höflmayer *et al.* 2021; see Table 3.1). This painted alphabetic inscription on a sherd of a Cypriot style bowl, is relevant as it clearly demonstrates the presence of alphabetic writing in this earlier Late Bronze phase (fifteenth century BC), rather than the idea that it was adopted during the latter part of the Late Bronze Age (fourteenth century BC) (Sass 2004–2005: 157; Na'aman 2020; Höflmayer *et al.* 2021). The consistent, yet sporadic, presence of alphabetic writing at Lachish becomes even more interesting when we look at the associated contexts, particularly in relation to hieratic writing (Table 3.1; Table 3.2).

We know of three temples at Lachish: The Fosse Temple in the west, the so-called 'Acropolis Temple' on the summit, and a Northeast Temple on the northeastern slope of the settlement (Ussishkin 1983; 2004; Koch 2017; Weissbein *et al.* 2020). Furthermore, monumental buildings are attested in area S (building 100) and a later pillared hall (Late Bronze III phase), which likely fulfilled a public function too (Ussishkin 1983, 115; Barkay and Ussishkin 2004; Höflmayer 2021; Fig. 3.4). The long room design with central pillars is reminiscent of the temple and 'public building' at Deir ʿAlla and could have represented a similar social context. Besides the two inscriptions found on objects deposited in tombs (the Lachish dagger and a bowl with chalk inscription (Table 3.1), two other inscriptions are clearly associated with temples, and the other two with monumental (public) buildings. Most striking is the 'Lachish Ewer' dedicated to a deity (ʿElat) found in the Fosse Temple (Tufnell *et al.* 1940, pl. 30, no. 6; Sass 1988; Koch 2017, 69, fig. 3). An alphabetic inscription was recently found in association with the Northeast Temple (Sass *et al.* 2015; Weissbein *et al.* 2020) and a bowl with an alphabetic inscription was found in a pit deposit close to a monumental, pillared hall that likely served a public function (Ussishkin 1983, 115), very similar to both the temple and



Lachish. Fosse Temple

Lachish Public building Level VI. Area S

Fig. 3.4. Temples and public buildings from Lachish discussed in relation to alphabetic writing (adapted from: Tufnell et al. *1940; Ussishkin and Barkay 2004, 354, fig. 835).*

second monumental building at Deir ʿAlla (see above). The most recently discovered inscription is in the same area (S), and found next to the defensive wall, although near an earlier monumental (public) building (Building 100) that might have preceded the later pillared hall in this area (Höflmayer 2021). I would argue that at least five of these six cases, a ritual function of writing in the form of dedicatory inscriptions can be argued, together a strong association with temples and public buildings.

Even more relevant is that the Fosse Temple, as sketched above, was a local 'informal' shrine starting out in the LBI and reformed under influence of Egyptian religious practices (Koch 2017; 2021; Greenberg 2020, 281, 324; Fig. 3.4). The temple clearly played a part in the cultural negotiations between the Lachish inhabitants and Egyptian powers. A similar function can be suggested for the other temples and public buildings on the outskirts of the tell (northeast building; building 100; pillared hall), which all could have functioned as public spaces for activities and ritual practices serving a particular section of the settlement.

Built in the twelfth century BC (LBIII: 1200–1140 BC), the 'Acropolis Temple', displaying clear Egyptian influence, seems to have directly served the ruling (royal)

elite (Weissbein 2020, 25). It is significant that in the vicinity of the 'Acropolis Temple' bowl (fragments) for votive purposes with hieratic texts related to grain taxes were found, rather than alphabetic inscriptions (Gilula 1976; Goldwasser 1984, 85; Sweeney 2004; Greenberg 2020, 325). These fragments were found out of original context, but are, except for one sherd, from area D where the Acropolis Temple stood (phase S-3: Sweeney 2004, 1601; Goldwasser 1982). These bowls have been associated with the acropolis area, where the Acropolis Temple and possible palace stood (Singer 1988; Sweeney 2004, 1601). Goldwasser (1984) argued these were votive bowls associated with the Acropolis Temple and show a strong relationship between the Lachish elite and Egyptian court. Bowls with hieratic inscriptions were also found at several sites such as Deir el-Balah, Tell esh-Sharia^{c}, Qubur el-Walaydah and Tel Haror (Greenberg 2020, 302), with Qubur el-Walaydah attesting to alphabetic writing too (Greene 2017), and the other sites mentioned in close vicinity to alphabetic writing. Based on the evidence at hand, Lachish might show these writing systems operated in different social niches, both on an intra-site level, and even within a single site. Careful further review of the contexts of these hieratic inscribed bowls, and the possible overlap with alphabetic writing practices, should be evaluated for the other sites. This could argue for the different social role alphabetic writing played, with state sponsored hieratic (and cuneiform Akkadian) writing more directly associated with the ruling elite, and alphabetic writing with smaller (informal) temples at places such as Lachish serving the general population and hinterland.

All these buildings in Lachish were destroyed at some point, although not at the same time. The latest phase of the Fosse Temple (Fosse III) was likely destroyed already around the thirteenth century BC, whereas the public building in area S, and the Northeast Temple saw a final phase of altered non-public activity (Ussishkin 2004, 71; Weissbein 2020) preceding destruction. The Acropolis Temple was sacked and destroyed at the end of the LBIII (Ussishkin 2004, 71; Koch 2017; Weissbein 2020). Greenberg (2020, 325) is likely right in arguing that the Acropolis Temple and its associated social group (he calls it a 'faction') took over at the expense of the Fosse Temple, after its thirteenth-century demise. The Fosse Temple had served as a local temple that promoted interaction with 'non-urban' elements and was a central part of the interregional interaction, over time also being incorporated in Egyptian religious interaction (Koch 2017; 2021). The Acropolis Temple is seen to have served the ruling faction with strong cooperation with the Egyptian court.

The case of Ugarit

I will use the case of Ugarit (and alphabetic cuneiform) as a comparative case in developments during the Late Bronze Age, using insight from recent work by Boyes (2019a; 2019b; 2021a). Boyes has argued that the adoption of alphabetic cuneiform in the thirteenth century BC at Ugarit must be seen as a push by the local elite to distinguish itself from external powers, principally the Hittite empire. This is a

more plausible narrative than the suggestion that this 'vernacularisation' occurred in response to Ugarit's contact with Mesopotamian culture (Sanders 2004; 2009). I would argue it is the same argument that reasons against the 'bureaucratic' adoption model of alphabetic writing in the Southern Levant. The cuneiform alphabet as an adaption of cuneiform writing was a conscious creation, with inspiration from already existing (linear) alphabetic traditions (Pardee 2007; Boyes 2021a). Whereas alphabetic cuneiform writing in Ugarit certainly had cultic components, both in genre (mythical texts), temple contexts and material culture (votive objects, stelae and liver model for divination), it was not limited solely to the cultic sphere (Boyes 2019a; 2021a). Nevertheless, here also a strong ritual component exists (Boyes 2021a, 154). What the evidence of the cuneiform alphabet at Ugarit shows is a model where alphabetic writing was used for a wider set of topics, from literature to trade, yet did remain limited largely to Ugarit itself, and several selected other settlements. As a prestige script, alphabetic cuneiform remained focused on local purposes whereas logosyllabic cuneiform, as in the Southern Levant, was used for interregional diplomacy and bureaucracy (Boyes 2021a, 269). Nevertheless, it would be erroneous to assume this extent of literacy for linear alphabetic writing in the Southern Levant based on the presence of certain inscriptions (votive, personal names) but the absence of bureaucratic texts, as Zamora López (2006; 2007) seems to suggest. Rather, I would take it to illustrate exactly the opposite; where the cuneiform alphabet at Ugarit forms the exception, alphabetic writing in general remains practised in less formal (state driven) domains.

The social role of writing

In a recent paper, Na'aman (2020, 29) suggests that 'the adoption of the alphabetic script in the Levant in the LB II–early Iron Age is best explained by the scribal activity of the Empire's representatives in the Egyptian centres of government and by the display of artefacts written in the hieroglyphic script in these centres.' Relating to the Late Bronze Age concentration of alphabetic writing in the Shephelah, Finkelstein and Sass (2013, 201) also stress the possible relation between hieratic writing and the use of the alphabet, although they suggest the exact mechanism is unknown. Na'aman (2020) reiterates the idea that the alphabet was 'borrowed' by an 'illiterate elite' of Semitic workers to obtain prestige in using the alphabet for dedications (Gardiner 1916, 15–16; Goldwasser 2006, 151; Na'aman 2020, 29). The problem with this characterisation is that it downplays the use of the alphabet to an undefined 'illiterate' group that only saw the worth of writing in emulating the Egyptian elite. Here, writing is strictly as an act of elite prestige adopted to enhance prestige among the local Semitic workers. However, I would argue that, despite many questions remaining (Boyes 2021a, 43) one of the crucial elements of these early alphabetic inscriptions was the fact that the earliest inscriptions were largely *dedicatory* in nature and had a strong religious connotation, suggesting that rather than serving general 'elite emulation', the earliest

alphabets (plural intended) were developed at least partially for their ritual role, to be able to express praise in a sacred environment, and writing itself was also very much seen as a sacred act. As Boyes (2021a, 43) already argues, many questions about the exact role of 'prestige and writing' within Bronze Age communities such as at Serabit el-Khadim remain 'opaque'. What also remained problematic is the perceived chronological gap between the invention of the alphabet around the Twelfth Dynasty (twentieth to eighteenth century), the consistent, but still sporadic attestation of the alphabet in the Late Bronze period, and its eventual rise to prominence in the Iron Age. Rather than focusing on preservation issues (such as papyrus and wood), and chance of finding actual alphabetic scripts (Richelle 2016; Boyes and Steele 2019b; Boyes 2021a, 43, 64), I would argue that one reason for this elusive nature of early alphabetic writing in the centuries that follow is its restricted social context in terms of who was writing and where. The consistent but sporadic nature of various Late Bronze Alphabets in the Southern Levant can be explained by looking at the social context in which alphabetic writing might have been preserved during its initial stages of development in the latter Middle Bronze and Late Bronze Age period.

In terms of chronology, we know that Na'aman's (2020) idea that alphabetic writing was adopted as late as the Late Bronze II is erroneous, because of the clear attestation of alphabetic writing in an earlier context at Lachish (Höflmayer *et al.* 2021). Höflmayer and colleagues (2021) clearly advocated against the position taken by Na'aman in this regard. However, even before the find of this *in situ* and well-dated alphabetic inscription, there were cues that this chronological argument did not hold, as several alphabetic inscriptions from the Southern Levant could be argued to be earlier but poorly dated (Finkelstein and Sass 2013). Foremost among these is perhaps the Lachish dagger, featuring a short inscription with a partially pictographic stage of alphabetic inscription resembling that known from Middle Bronze Age alphabetic writing at Serabit el-Khadim and the Wadi el-Hol, already arguing for an earlier date of alphabetic writing in the Southern Levant (Tufnell 1958, 128, 254; Sass 1988, 53–54; Hamilton 2006, 390–391; Höflmayer *et al.* 2021, 11). By arguing for the Late Bronze Age II adoption of alphabetic writing in the Southern Levant, there remains an even more markedly uncomfortable absence of alphabetic writing from its first attested occurrence (twentieth–eighteenth century BC) to its supposedly eventual use in the Late Bronze Age II–III (fourteenth–twelfth centuries BC). This absence is then implicitly argued to relate to lack of preservation or finding such alphabetic texts in clear archaeological contexts.

The attested informality of linear alphabetic writing and its local versions, together with the unique alphabets attested at Deir ʿAlla and Ugarit, argue against a widely dispersed alphabetic tradition throughout the Levant. This patchwork of alphabetic scripts rather shows, in developmental terms, the relatively isolated pockets of alphabetic writing (starting with Serabit el-Khadim and the Thebes area themselves) that were locally used, within socially limited contexts (cuneiform alphabetic as used in Ugarit perhaps becoming the Late Bronze exception). Greenberg (2020, 224) also

reminds of us of the absence of bureaucratic alphabetic texts. Were the alphabet used in recording exchange and procurement of products (as visible logosyllabic cuneiform Akkadian and Hieratic writing), unique alphabetic developments such as at Deir ʿAlla become hard to explain, as there would be no clear need for yet another script to function in bureaucratic practices that surely connected these various settlements. Rather than seeing Late Bronze Age alphabets as inspired by scribal activity associated with state sponsored bureaucracy, I would argue that for the Southern Levant, alphabetic writing inhabited a distinctly different social environment than that attested for the more formal bureaucratic scripts (hieratic; cuneiform Akkadian). Ugarit might thus have been the exception in adopting an alphabet for bureaucratic purposes, unlike in the Egyptian-dominated areas of the Southern Levant, where hieratic and cuneiform Akkadian sufficed. Much more fruitful to examine is the special role writing could have in society, particularly one imbued with ritual significance and the expression of local identities. However, we must first tackle another idea, that ritual and profane activity are clearly separate things in past societies.

In an important contribution, Bradley (2015; after Brück 1999) has argued against the dichotomy between profane and ritual in Prehistoric Europe. They rather suggest that everyday activities were imbued with ritual significance. This also strongly applies to the Bronze Age Levant, where temples played an important role in daily life, which encompassed many areas we would nowadays consider as mundane, such as food processing, procurement, and distribution. When arguing that alphabetic writing was particularly strongly associated with temples, this does not preclude its use in other contexts, including other ritual spaces (ceramic vessels and daggers in tombs, storage vessels with inscriptions). Rather, the reverse should be argued, namely that ritual significance of writing extended beyond the venues we would argue for as ritual in nature per se. This is not an argument to label all alphabetic writing as sacred in nature, but to suggest that since its incipience, its cultic significance was clear, and more importantly, that temples played a vital role in curating alphabetic scripts during the proceeding Bronze Ages.

The role of temples in the Late Bronze Age Levant

To understand the developments of alphabetic writing in the Bronze Age Levant (c. 1550–1140 BC), and the eventual disappearance of some of its more unique forms (cuneiform alphabet (Ugarit); Deir ʿAlla alphabet) we must understand the social context of alphabetic writing. To do so, it is important to evaluate how Late Bronze Age Canaanite life was organised and what institutions were relevant in daily life. A full account of Late Bronze Age social organisation is beyond the purpose of this paper, and a thorough review of the cuneiform alphabet and its place in society has been recently offered (Boyes 2021a). However, for the Southern Levant, and the context of alphabetic writing at Deir ʿAlla and Lachish, it is important to draw on some important characteristics that defined society. Greenberg (2020, 272)

has recently characterised the Late Bronze Age Southern Levant as displaying a settlement configuration surviving from the Middle Bronze Age, but with a general decline in population, with towns exhibiting 'palatial and ritual centralization, dominating little islands of cultivation in a poorly developed countryside, leaving the intervening regions to non-integrated sectors of society that are nearly invisible in the archaeological record'. It is noteworthy that cultic buildings seem to have formed a particular agent in both processes of continuity and change during the Middle–Late Bronze Age transition (sixteenth century BC). During this Late Bronze I (c. 1600–1400 BC), local 'informal' shrines proliferate (Greenberg 2020, 279–280, 282). Significant is that the Late Bronze Age attests to a drastic reduction in settlements compared to the preceding Middle Bronze Age (Greenberg 2020, 282–284). In a changing world with fewer towns, temples formed a continuing and primary focus in the landscape (Greenberg 2020, 284). There is however an important nuance in temple architecture that displays two levels of engagement with the hinterland and continuing power structures at the larger sites. There are two models of cultic architecture associated with the transitions of the Late Bronze Age Southern Levant. These consisted of newly built 'rural' shrines that stressed the accessibility of these buildings as places for gathering and ritual activity, thus intended to serve the hinterland and inextricable part of the make-up of small-scale societies. Secondly, there are temples displaying clear continuity from their Middle Bronze (in-antis style) ancestors, serving as 'formal cult centres' at the larger sites such as Hazor, Megiddo, Pella and Shechem. Not coincidentally, all these latter sites also feature in the Amarna correspondence (Rainey 2015). Greenberg (2020, 284) sees these formal cult centres as crucial to continuation of the 'ruling order' of their respective sites that helped 'weather the storm' of the social unrest and changes taking place in the mid-second millennium BC. In contrast, the rural shrines were often raised in areas without previous cultic connotations and seem to have been part of negotiating changing relationships with the hinterland and the 'invention of new traditions' (Greenberg 2020, 284–285). This nuance is important as one of these cultic settings can be particularly pinpointed as the venue for alphabetic writing to be cultically curated. In this framework the development of a unique alphabet, such as attested at Deir ʿAlla, but also at the more informal shrines at Lachish (Fosse Temple) should also be seen as part of the activities.

Cultic curation of alphabetic writing

If alphabetic writing was indeed much more widely attested and practised, forms of local alphabets such as the Deir ʿAlla alphabet should have been encountered in nearby contemporary sites with extensive excavation histories (and burnt archaeological layers to preserve said inscriptions too – both burnt and unburnt tablets were found at Deir ʿAlla). This would particularly be the case if the argument is that alphabetic writing developed in emulation of Egyptian writing practices, either hieratic or cuneiform (Akkadian). However, other extensively excavated Late Bronze Age sites,

such as Pella and Beth Shan, are also known to have been among the sites where correspondence was sent during the Amarna period (Rainey 2001, 659; 2015), despite being extensively excavated, have not yielded evidence of large-scale alphabetic writing during the Late Bronze Age. Rather, the Deir ʿAlla tablets argue for localised alphabetic writing flourishing under the shadow of, but removed from, direct Imperial Egyptian rule, with a strong cultic component (cultic curation); and that writing was not widespread but rather in the hands of a few scribes. The Deir ʿAlla alphabet illustrates the different social context of alphabetic writing in the Southern Levant, away from more state-driven writing practices attested at nearby Beth Shan, and other larger settlements such as Pella (Bourke *et al.* 2006).

In this framework of strong cultic presence in the Levantine landscape, as sketched above, and visible both in formal and informal temples at many sites including Deir ʿAlla and Lachish, one can logically envision these temples and their personnel as the continuing factor in the use of alphabetic writing inherited from the Middle Bronze Age, and the development of novel (derived) forms of alphabetic writing during the Late Bronze Age. There is an important nuance to add here. It is at these smaller towns, such as Deir ʿAlla, with more informal temples that integrated wider social encounters that local versions of alphabets might have been in practice. As I have argued for Lachish, whereas the more formal temples and palaces and their associated local rulers might have provided the venues for interregional bureaucracy, as attested most clearly in the Late Bronze Age IIA Amarna correspondence (Moran 1992; Rainey 2015), the smaller informal (rural) temples, such as at Deir ʿAlla and Lachish, seem to have been the foremost venues for using the alphabetic scripts expressing local identities and interactions and formed the regionalised hubs of this interregional network. I would thus argue that the early alphabet inhibited a different social space from writing practices associated with the bureaucracy of interregional politics. The question becomes: to what extent did these worlds collide?

In fact, a large part of social life of early alphabets could be argued to have been part of 'temple societies' (Silver 1985; Wengrow 2013). In the Near East, temples played a plethora of roles, as locations of learning (and writing), redistribution of goods, festivities and worship (Silver 1985; Susnow 2021). Susnow (2021) has recently reiterated the importance of Canaanite temples in the Middle and Late Bronze Age Levant and argued for archaeology to focus on the activities that took place in the temples and their courtyard, as places of communal gathering and ritual sacrifice. In itself, the use of alphabetic writing could have been a practice strongly linked to religious movements facing colonial encounters, as attested ethnographically (Guillaume-Pey 2021).

Colonial encounters

A second argument important for the role of alphabetic writing in the Southern Levant, and development towards the end of the Late Bronze Age, is that much of

the interaction in the Southern Levant is seen within the framework of 'colonial encounters' (Higginbotham 2000; Morris 2005; Bourke 2014; Cohen 2014; Fischer 2014; Koch 2017; 2021; Na'aman 2020). Large parts of the Southern Levant fell under the influence of the expanding Egyptian Empire, through the tactical placement of garrisons that played a decisive role in cultural trajectories of sites and their hinterland (Higginbotham 2000; Greenberg 2020, 272; Na'aman 2020). It is through this archaeological framework of the latter part of the Late Bronze Age Levant that the use of the alphabet must also be reviewed. Writing, as a cultural expression, was very much part of the negotiations between local populations and Egyptian overlordship but played out on different social levels. A similar argument has already been made for the role of the cuneiform alphabet and local identity and negotiating colonial (Hittite) power (Boyes 2019a; 2021a). Similarly, I argue that the use of the alphabet must not be primarily related to the bureaucratic use of writing (as attested for hieratic and Akkadian during the Amarna period; Late Bronze Age IIA), and recently reiterated by Na'aman (2020). Rather, the situation at Deir ʿAlla and Lachish discussed here suggests a strong localised development in the use of alphabetic writing that expressed local identities and worship stressing the sacred, ritual aspect of writing.

State bureaucracy, temples and alphabets

We know that during the fourteenth century BC, several towns in the Levant were engaged in writing cuneiform Akkadian (or rather Canaano-Akkadian – see von Dassow 2004) as part of the Amarna correspondence (Goren *et al.* 2004; Rainey 2015; Vita 2021). This included several sites in the Southern Levant that either attested to alphabetic writing during the period itself or were at least in close geographical proximity. The scribes involved with using Akkadian to write the correspondence between the rulers as attested in the Amarna correspondence might have been few and were assumed to have been schooled in a bureaucratic system sponsored by the rulers for which the writing served (Goren *et al.* 2004; Na'aman 2020). That at least several scribes were active in the Southern Levant, although travelling scribes servicing multiple towns are not excluded, is attested in the local petrographic and chemical origin of some of the Amarna tables analysed (Goren *et al.* 2004). However, it is far from certain that these scribes were also actively engaged with alphabetic writing. What the evidence for writing in the Southern Levant clearly suggests is that there was a lively overlap in writing practices, including hieratic and Akkadian (Horowitz *et al.* 2002; see Fig. 3.1). Where I differ from current interpretations (such as recently offered by Na'aman 2020) is that these forms of writing inhabited the same social contexts. Rather, based on the evidence discussed, I would argue that alphabetic writing fulfilled a distinct local niche, which from its incipience was strongly tied to expression of local identity, particularly strongly connected to the sacred environment.

The Late Bronze Age 'collapse'

One of the central questions this paper tries to answer is how these different alphabetic writing systems went through what is known as a 'Late Bronze collapse' (Cline 2014). The end of the Late Bronze Age (twelfth century BC) has been seen as a 'collapse' taking the form of a 'perfect storm' (Cline 2014, 11), a catastrophic combination of local and more widespread environmental changes: many earthquakes, erupting volcanoes, and resulting population movements across the eastern Mediterranean (Nur and Cline 2000; Kaniewski *et al.* 2010; Cline 2014). The idea that a kind of 'butterfly effect', perhaps triggered by abrupt climate change, led to a widespread system collapse of the heavily connected Late Bronze Age world is tantalising (Langgut *et al.* 2013). However, scholars have rightly been arguing for more detailed analysis of regional trajectories (Knapp and Manning 2016; Greenberg 2020, 341–342) showing that there were a variety processes at work, including abandonment of sites throughout the thirteenth and twelfth centuries BC, and we should be cautious looking for (single) causes and effects, but rather a wider set of challenges, including climatic and social-political developments, which where tightly interrelated but had distinct local outcomes. However, we still often lack precise chronological frameworks to do so. Despite the ongoing debate about the causal connection between climatic events, regional trajectories and catastrophic events at the end of the Late Bronze Age, the fact is that at this time of massive transformation (perhaps with the span of a few years), at least two local Late Bronze alphabets – alphabetic cuneiform (primarily at Ugarit), and the Deir ʿAlla alphabet, disappeared, never to be written again. The end of the Late Bronze Age functioned as an evolutionary 'bottleneck' event where an unknown number of alphabets used in the region died out, and of which only one alphabet derived from the coastal proto-Canaanite branch, attested most clearly in the Shephelah (Lachish) survived to flourish in the Iron Age (the ancient South Arabian alphabet is another crucial survivor beyond the scope of this paper). This brings us to the final question: why did certain alphabetic forms die out (Deir ʿAlla; Ugarit), whilst the Lachish/Shephelah branch continued?

The 'deaths' of the alphabets

To understand how writing traditions end, understanding their social position is crucial, and writing practices and languages must be decoupled (Baines 1983; 2008; Boyes 2021a). To understand what happened to alphabetic writing during the latest phase of the Late Bronze Age (LBIII) and how the Deir ʿAlla alphabet and cuneiform alphabet came to their demise (but not the linear alphabet practices around Lachish), it is important to realise in what social context the alphabets were used, what 'script communities' they represented and what changed regarding the context of writing and these script communities in the Early Iron Age period.

Throughout the Late Bronze Age, temples played a role in negotiation of power between the Egyptian court and local rulers (Koch 2017; 2021; Greenberg 2020; see Rainey on the role of Baʿalat Gebal/Hathor at Byblos). Furthermore, temples were the prime location for negotiating local identities and religious ideas as settings for communal ritual practices, within the buildings and associated spaces (courtyards) (see Susnow 2021). As argued in this paper, for both Deir ʿAlla and Lachish temples and their vicinity were particular focal points for writing practices and use of alphabetic script.

Based on the evidence summarised in this paper, I would argue that besides possible natural calamities such as earthquakes and drought that had plagued the Late Bronze Age for some time, the social upheaval at the end of the Late Bronze Age became large scale and was focused on the institutions that were seen as responsible: elite residencies (palaces) and temples that were seen as instrumental in the existing power structures and Egyptian dominance. Alphabetic traditions and the script communities that curated these forms of script might have fallen victim to these processes. Rather than pointing to external forces (such as Sea Peoples), local elements and factions likely played a role, as also suggested by Kreimerman (2017). This is clearly demonstrated by new results from Jaffa, an Egyptian Garrison town, where the influence of local elements in the resistance to Egyptian rule and associated destruction must not be underestimated (Burke *et al.* 2010; 2017). How could these events have played out at Deir ʿAlla and Lachish, in comparison with Ugarit, and how did it affect the alphabetic scripts that were used there?

Deir ʿAlla

Deir ʿAlla also attests large scale destruction by conflagration during the Late Bronze Age III (Phase E), including its temple and second pillared public building, which yielded many of the tablets. This destruction has often been ascribed to an earthquake (Franken 1992), however, evidence for this earthquake is not unequivocal, and might relate to later earthquakes shifting the archaeological layers. It is traditionally dated with a terminus post quem of 1186 BC provided by the faience vase of Tausret found in the Temple. Traditionally this date is used to date the destruction of phase E (Franken 1992; van der Kooij 2006). However, it is not unimaginable that the destruction is placed closer to 1140–1130 BC as attested for Beth Shan and Lachish, though these destruction levels do not necessarily have to fall within the same timespan.

These events might have been a culmination of social tension building in Late Bronze Age society, perhaps even attested in the tablets themselves (de Vreeze 2019). At least parts of the conflagration could possibly be ascribed to non-natural agents. There is good circumstantial evidence for this. Kreimerman (2017, 190, fig. 9.4) looked at some of the details of site destruction and suggest a cluster of sites in the western highlands and Jordan valley that fell victim to internal unrest that seemed to have targeted public buildings, among which were Yinʿam, Megiddo, Beth Shan and Shechem (Kreimerman 2017, 189, table 9.4). The latter two sites are particularly

relevant, as Beth Shan is the closest site to Deir ʿAlla with an Egyptian garrison and Shechem was on the way to the highlands, might have been connected to Deir ʿAlla through the Wadi Farʾah and might have controlled the area for certain periods of the Late Bronze Age (Franken 1992; Finkelstein and Na'aman 2005; Finkelstein 2006; van der Kooij 2006, 201).

As argued, alphabetic literacy at Deir ʿAlla was highly local, representing a script community that had strong ties to the temple institutions, and expressed a local identity initially developed in the face of imperial writing forms which secured its use and survival. However, this limited use also made it a 'fragile system' (Roux 2008). With script communities of only a few scribes per generation knowing and using the alphabetic script, it died out with the final calamities recorded in the Phase E destruction. When considering the role of temples as intermediaries in negotiating access to goods and power relations with Egypt, whether directly or more indirectly, one could see how these institutions also became targets of local social unrest, partly held responsible for the problems. Beyond natural causes, the alphabet might have fallen victim to the particular social niche it was used in, which became unfavourable at the end of the Late Bronze Age. It is important to compare this situation with what happened at Ugarit and Lachish. If the role the temples played in the events at the end of the Late Bronze Age became problematic, perhaps alphabets that were initially developed out of 'resistance' became seen as alphabets of 'colonial compliance'.

Ugarit

Ugarit also fell to violent upheaval (Yon 1992; Boyes 2021a, 239). Again, it may be argued that violence is not solely attributable to external forces ('Sea People') and that the downfall of Ugarit might have involved a longer process of socio-economic change coupled with political instability and a move from the particulars of Late Bronze Age exchange networks that came to profit a particular segment of society (Liverani 2014; Greenberg 2020; Boyes 2021a, 240–241). This is in line with the picture from the Southern Levant, as offered above. Boyes (2021a, 262) rightly argues that a destruction of a town such as Ugarit does not automatically imply that it was wholly abandoned and that its unique alphabetic cuneiform writing system had to come to an end. Like Deir ʿAlla, an argument can be formed where the alphabet has been seen to serve a certain social position, which became tenuous towards the end of the Late Bronze Age. For alphabetic cuneiform to become a socially contested practice, one would also need social change, or the changing role of cuneiform alphabetic writing giving it less clear purpose. Particularly valuable is Boyes' (2021a, 264; after Houston 2008) focus on the practice of writing and the idea of 'script communities', which could teach writing across generations, and could come to an end even if the language used still continues (as was the likely case for Deir ʿAlla). In the end, Boyes (2021a, 269–270) suggests that the official use of alphabetic cuneiform for official purposes was a very top-down process initiated by the urban elite in Ugarit. With the destruction of the city of Ugarit, so Boyes (2021a, 270) argues, there may have

been a change in attitudes towards alphabetic cuneiform among surviving literate communities, relating perhaps to a rejection of the old urban elites, their bureaucracy and urban creation myths. However, we are still far from understanding the way Ugaritic and the use of its unique script fell out of use exactly. I would argue that one strong reason, as with the Deir ʿAlla script, is that the association of these script with social elements that no longer seemed to serve the larger (rural) population, made it part of the elements that were targeted for change after the settling down of civil unrest as documented in the archaeological record.

Lachish

Lachish also attests destruction by fire and abandonment around 1130 BC (Carmi and Ussishkin 2004, 2511). However, as also hinted at by Kreimerman (2017), destruction might have been targeted at segments of the settlement as both the Northeast Temple and Acropolis Temple were eventually targeted for destruction at the end of the Late Bronze Age III (Ussishkin 2004, 71; Koch 2017, 183; see above). The Acropolis Temple at the summit, likely serving the ruling families, was sacked and the public building (pillared hall) along the western slope was re-used in domestic context, perhaps by people flocking from the surrounding landscape, prior to the destruction of the town (Ussishkin 2004; Weissbein 2020, 22). During the following Iron Age, linear alphabetic writing saw continuation on the southern Shephelah coast (Finkelstein and Sass 2013), though shifting attention to other upcoming sites. Crucially, linear alphabetic (Canaanite) writing traditions at Lachish and other related sites in the Shephelah could have been primarily used in informal temples and public buildings, becoming more widely shared with a larger group of people throughout the countryside. The script and its community had been strongly affiliated with the social niche of cultic dedication and expressing local identity of these groups both on site and in the surrounding landscape, rather than serving the direct interest of the Egyptian state and its subservient elites such as associated with the Lachish Acropolis Temple (and the use of hieratic here in cultic context). One can argue that, when social unrest started to rise to the boiling point, this social niche, which was conceptually more distant (relatively) from direct Egyptian rule and its local ruler representatives, made it possible for the linear alphabetic script to be actively renegotiated to express new identities (and religious beliefs) after the Late Bronze upheaval, coming to represent new script communities within a newly configured social landscape (Byrne 2007; Finkelstein and Sass 2013; Koch 2016).

Conclusion

Since its invention(s) one of the main social contexts of writing was related to the sacred environment, foremost surrounding temples. It is particularly its cultic relevance that kept alphabetic writing traditions alive and continuing through the Middle and Late Bronze Age in its various alphabetic guises. This context was different from the more bureaucratic use of logosyllabic cuneiform Akkadian and hieratic,

at least in the Southern Levant. Here, writing was still practised within a limited social group and this context is crucial to understanding the initial developments and history of the alphabet during the Bronze Ages, and the developments that took place during the final Late Bronze Age. At some places, such as Deir ʿAlla and Ugarit, the supposed, but understudied, local social unrest might have targeted exactly these institutions involved with the alphabetic script, seen as partly responsible for the widespread troubles that occurred during the twelfth century BC. One alphabetic tradition, primarily known from Lachish and its environments, got away from this climactic period of upheaval, being more clearly distinguished from Egyptian rule and local elite representatives and having already 'escaped' the limiting social context, and in use among a wider part of the population. This alphabetic tradition became a novel medium to express local identity and faith in a newly negotiated Iron Age world.

Thoughts for the future

Despite much work to be done, I hope this article has successfully argued for the specific ritual role that writing must have played during the Bronze Age in the Southern Levant, and how it might have influenced the individual histories of alphabetic forms written during this period. What is obvious is that more detailed and nuanced analysis of settlement histories (including destruction), and the associated writing practices are necessary. More careful consideration of the context of early alphabetic writing is necessary, taking the evidence for its consistent but sporadic presence at face value, and moving away from the default assumption that absence of alphabetic evidence is related solely to preservation and archaeological recovery; although it cannot be neglected, and strongly accounting for the role of writing as a ritual practice, in a Late Bronze Age Levantine world with rich archaeological evidence for the role of cult and temples. The role of temples, particularly 'informal' or rural temples as primary institutions that curated alphabetic script needs further investigation. For places such as Lachish, and Deir ʿAlla, yielding the largest body of alphabetic texts from the Late Bronze Age, the hope of finding new (well contextualised) inscriptions might help us further understand what role alphabetic writing had and what was written (de Vreeze 2019). Although likely ever as rich evidence that cuneiform alphabetic writing practices have offered about Late Bronze Age life at the city and its environment, they do hint at some of the insights these alphabetic scripts from the Southern Levant might still offer.

Acknowledgements

Many thanks to Pippa Steele and Philip Boyes for organising the conference and providing such a lovely venue for discussions on ancient scripts. I would like to thank the reviewers for their thorough job and the way they helped improve this paper. Many thanks to Gerrit van der Kooij for sharing crucial information and documents on the Deir ʿAlla tablets.

Chapter 4

Cypro-Minoan and its potmarks and vessel inscriptions as challenges to Aegean scripts corpora[1]

Cassandra M. Donnelly

Single-sign and multi-sign texts

The earliest lists of Cypro-Minoan texts, from the first compiled in 1916 by Markides to Olivier Masson's 1957 list, included single-sign texts. Most of the single-sign texts were on vessels, referred to in Cypro-Minoan literature as 'potmarks'. The current authoritative lists of Cypro-Minoan texts, Olivier's 2007 *HoChyMin* and Ferrara's 2013 *CM II*, exclude single-sign texts, including potmarks. The distinction both Olivier and Ferrara make is between multi-sign texts whose signs are approximately contiguous and on the same plane, which they count as 'inscriptions' and include in their lists, and single-sign texts, which are not inscriptions and thus excluded. The reasoning here is that contiguous multi-sign texts necessarily record writing in the form of polysyllabic words; by contrast, single-sign texts may or may not be writing as they could record non-phonetic marks adapted from the script into a marking system. This distinction is adhered to in all Aegean script corpora except for the most recent one, Karnava, Perna and Egetmeyer's 2020 *Inscriptiones Graecae* corpus of Cypro-syllabic texts. The presence of single-sign texts in the Cypro-syllabic script speaks to a diachronic dimension of Cypriot scripts that is obscured when single-sign texts are excluded from the lists of Cypro-Minoan inscriptions. Olivier describes his choice to exclude single-sign texts from *HoChyMin* as a matter of convenience, for to have done the opposite 'would have forced me to include hundreds of isolated signs on vases' – AKA potmarks – 'which was materially impossible' (*HoChyMin*, 16; original in French, translation my own).

[1] Abbreviations:
HoChyMin = Olivier, J.-P. and Vandenabeele, F. (2007) *Édition holistique des textes chypro-minoens*, Pisa.
CM I = Ferrara, S. (2012) *Cypro-Minoan Inscriptions: Volume 1: Analysis*, Rome.
CM II = Ferrara, S. (2013) *Cypro-Minoan Inscriptions: Volume 2: The Corpus*, Rome.
ICS = Masson, O. (1961) *Les inscriptions chypriotes syllabiques: recueil critique et commenté*, Paris.

Ferrara excludes them on the grounds they are a probably not writing, including only four single-sign texts in her corpus, one of which she believes 'safely' records a phonogram, two identical texts that she thinks may record a logogram, and one text that she includes for its interest (*CM I*, 18).

A person consulting either *HoChyMin* or *CM II* cannot readily understand the magnitude and variety of single-sign texts nor that they may record phonograms. Although Ferrara states that her goal was never to assemble a traditional corpus of inscriptions, 'not aspiring to be a conventional corpus *stricto sensu*', but to 'outline the anatomy of Cypro-Minoan objects by developing a narrative of their archaeological life'. Her decision to call her list of inscriptions a 'corpus' nevertheless has the effect of canonising her list of inscriptions, as a traditional corpus does (*CM II*, v). The boundaries that Ferrara and Olivier have erected between the single-sign texts and the multi-sign texts create the impression that single-sign texts are irrelevant for the study of the Cypro-Minoan writing system and its underlying language or languages. But the function of single-sign texts is far from resolved. As will be argued in this paper, the line between single-sign and multi-sign Cypro-Minoan texts is a blurry one. In what follows, I argue for specific instances in which two-sign texts do not record polysyllabic words but abbreviations and make a generalising claim about the single-sign and two-sign vessel texts, arguing that both text types contain phonetic abbreviations with the same referents.

For ease of discussing and comparing multi-sign and single-sign vessel texts, I will do away with terminology of 'potmark' to denote a single-sign vessel text and 'inscription' to denote a multi-sign text. The terminology of potmark and inscription are non-descriptive in the idiosyncratic application in Aegean scripts studies, where an inscription is any text of two or more signs regardless of whether the text is incised (*i.e.*, a literal inscription) or painted (technically, a dipinto). Instead, I will use the terms single-sign vessel texts to refer to the potmarks and multi-sign text to refer to inscriptions. I use the term 'single-sign text' to refer to single-sign texts on any writing media. Single-sign vessel texts (aka 'potmarks') are a subset of single-sign texts. The term 'text' is used in the contemporary sense of 'text message', which includes letters, numbers, all manner of other signs and even pictograms (viz., emojis).[2] Single-sign texts from Cypriot contexts contain both script and non-script signs. Multi-sign texts usually, but not always, contain script signs. Unless otherwise specified, the multi-sign texts under discussion are written in the Cypro-Minoan script.

In Cypriot contexts, single-sign texts appear on a wide range of objects, including tools, ingots, anchors, architectural stones, loomweights, and more. These single-sign text remain understudied. By 'Cypriot contexts' I mean contexts both within and outside of Cyprus where Cypriot material culture and/or Cypro-Minoan writing has been found. This includes the Uluburun and Gelidonya shipwrecks, where single-sign

[2] Thank you to Paula Perlman, who suggested to me the terminology in question and the definition of text used here.

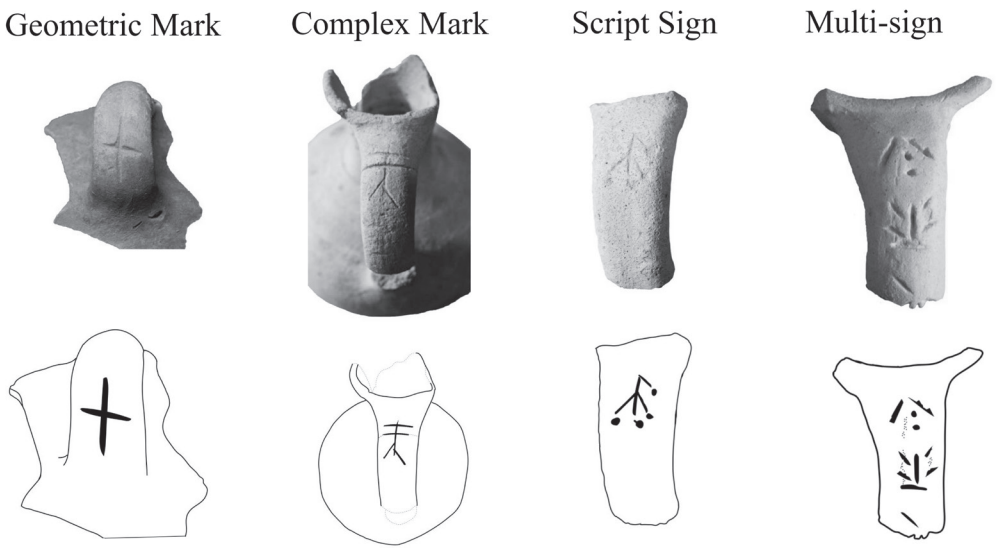


Fig. 4.1. Types of vessel texts. Photographs and drawings by author. From left to right: CM 1948/222; CM 20.199, T1907_193; CM 1962_99; ##119 ENKO Avas 012, CM 930. Thank you to the Cyprus Museum for access to the materials and permission to replicate them.

ingot and vessel texts were found alongside Cypriot mercantile goods, and Tiryns and Ras Shamra, which have produced both single-sign and multi-sign Cypro-Minoan texts alongside local, non-Cypriot and Cypriot artefacts. Single-sign vessel texts are by far the most numerous single-sign text type. They number around 1000–1500. The single-sign vessel texts contain a mix of signs borrowed from the script, complex non-script signs, and simple geometric non-script signs (see Fig. 4.1). The vast majority of texts are made post-firing, whether incised or painted on the vessel surface.[3] The precise function of the single-sign vessel texts remains unknown, but the most reasonable interpretation, proposed by Hirschfeld, is that the texts are linked to mercantile activity, whether to the distribution of the vessels, their contents, or their handlers (Hirschfeld 1999; 2008). There is no apparent difference in the uses of single-sign vessel texts with script and non-script signs. The texts appear on the same types of vessels, are made with the same methods, and appear on the same parts of vessels.

Phonetic abbreviations are a potential throughway linking single-sign and multi-sign texts. Axel Persson was the first to argue that Cypro-Minoan single-sign vessel

[3] The post-firing nature of the single-sign vessel texts is not entirely assured as there is, as yet, no way to verify the after-firing nature of either incised or painted texts. In the case of incised vessel texts, there is no objective criterion for assessing whether a text is made after-firing or before-firing at the 'leather hard' or drying stage. There is also currently no method for testing the paint used to make vessel texts. See Hirschfeld (1999, 33) for a discussion of the difficulties. The lack of objective criteria aside, scholars who have undertaken prolonged autopsy of vessel texts all believe them to be post-firing, present author included.

texts were phonetic abbreviations (Persson 1937, 613). Persson based his suggestion on his belief that the signs appearing in single-sign texts were often word-initial signs in multi-sign texts. Persson's observation focused on a small number of signs and was not based on a thorough analysis of all known texts. The signary that Persson was working with in 1937 was significantly different than the ones in place today and refers to a few examples of signs no longer included in the signary. His specific claims about abbreviations are therefore no longer relevant, but his general suggestion to compare the repertoire of single-sign texts to the word initial signs in multi-sign is sensible. It has, however, not been taken up by subsequent scholarship. Work on the vessel texts has been restricted to analyses of the archaeological and material features of the texts but not the content of the text themselves.

Hirschfeld, Sherratt and Steele have approached the vessel texts through their material features. Each argued that the single-sign vessel texts probably contain phonetic abbreviations, recording the same content as the multi-sign texts. Hirschfeld does not explicitly compare the single-sign and multi-sign texts to one another but treats them as the same text type. Her inclusive analysis shows that all vessel texts, regardless of whether they are multi-sign or single-sign texts, have similar material features in their vessel types, text placement, and writing method (Hirschfeld 1999). Given the shared material similarities between the text types, Hirschfeld suggests that the single-sign texts with script signs record writing on analogy with the multi-sign texts. Steele, following Hirschfeld's tack, argues that the common material features of the multi-sign and single-sign texts means that the texts share content. The division between single-sign and multi-sign texts, 'in terms of understanding the function and context of such inscriptions, is entirely a false one', concludes Steele (Steele 2017, 157). Sherratt takes a slightly different approach to the material, arguing that the large number of single-sign vessel texts 'implies the probability of phonetic values' otherwise the practice of putting signs on vessels would not have become so common (Sherratt 2003, 227). Hirschfeld, Steele and Sherratt's arguments from archaeological context are convincing in theory but warrant the verification of a study that carefully considers the phenomenon of phonetic abbreviations in multi-sign Cypro-Minoan texts and single-sign texts. If the single-sign texts and multi-sign texts abbreviate the same words, then it should be possible to identify a shared repertoire of signs recurring in the multi-sign and single-sign texts.

Since Persson first posited a connection between the single-sign and multi-sign texts in 1937, there has been a dearth of scholarship on phonetic abbreviations in Cypro-Minoan in general and the repertoire of signs in the single-sign and multi-sign texts vessel texts in particular. This paper fills this gap by providing a typology of phonetic abbreviations in multi-sign Cypro-Minoan texts and by comparing the repertoire of signs in single-sign and multi-sign vessel texts. The comparison of repertoires shows the multi-sign and single-sign vessel texts both record the same phonetic abbreviations. Cypro-Minoan script rebels against the Aegean scripts definition of an inscription adhered to in *HoChyMin* and *CM II* in two ways, 1) single-sign vessel texts with script signs, on the whole, record phonetic

abbreviations and, 2) two-sign texts are not always polysyllabic words but sometimes record phonetic abbreviations, especially on vessel texts. These two facts influence how future decipherment efforts should be approached. It was believed that limiting the corpora to two-sign texts would ensure that word lists included only polysyllabic words. Cypro-Minoan texts, especially vessel texts, challenge the efficacy of that strategy for Cypro-Minoan. The Cypro-Minoan script, much like the island of Cyprus itself, refuses a simple Aegean classification. Cypriot writing practices, as the work of Philippa Steele has gone far to show, are most fruitfully understood on their own terms (Steele 2018, 43). Appeals to contemporary script traditions in Cypro-Minoan studies are useful for purposes of description and comparison but not as explanatory models for the idiosyncratic Bronze Age script of Cyprus.

Types of abbreviations in Cypro-Minoan

Abbreviations in multi-sign texts appear on every well-attested Cypro-Minoan writing medium except for the Enkomi tablets. Abbreviations in Cypro-Minoan take three forms: a) isolated signs set apart from the body of a text by a stiktogram, b) isolated signs set apart from the body of a text by position and/or size, c) two-sign texts without stiktograms. Abbreviations with stiktograms, where an isolated sign is preceded by or more rarely proceeded by a stiktogram, are by far the most common and least controversial form of abbreviation. Silvia Ferrara had suggested that the isolated signs with stiktograms are logograms but has since concluded that they are more likely to be phonetic abbreviations (*CM I*, 43). The communis opinio is that the isolated signs are not logograms because the repertoire of signs used in this way is largely non-repeating. The repertoire of isolated signs numbers some 40 signs that do not often recur on the same type of object or objects found in the same context, as one would expect if the isolated signs were in fact logograms. Ferrara and Valério (2017), in their study of the clay balls that have isolated signs after stiktograms on about half of their 90 texts, argue that the isolated signs on the balls abbreviate onomastica. Philippa Steele writes that the isolated signs on balls are 'almost certainly some sort of abbreviation', suggesting that abbreviations on the clay balls may indicate an occupational designation or a patronymic (Steele 2014a, 63). Isolated signs after stiktograms on non-ball writing media have not received the attention the ones on the balls have. These, too, are likely to be abbreviations. As will be argued below, however, they contain a different sign repertoire than the balls, indicating that they have different referents.

Phonetic abbreviations in Aegean scripts

The text type and structure of phonetic abbreviations in the Linear A and Linear B texts are different than what we see in Cypro-Minoan, though the form of the phonetic abbreviations, isolated signs accompanied by stiktograms or demarcated by size and position *vis à vis* the main body of a text, is similar. In Linear A and Linear B texts, phonetic abbreviations are most often logographic in function, as in the famous case of

Linear B *NI*, which abbreviates the long-retired Cretan word for figs *nikuleion* (Duhoux 1989, 71). In both Linear A and Linear B, phonetic abbreviations appear exclusively on administrative texts (Palaima 1989, 41). In Linear B texts, phonetic abbreviations are most often proceeded by numerals. Linear A texts show more variation (for a typology and extended discussion, see Schoep 2002, 135–143). In addition to the 'single-signs' proceeded by stiktograms and numerals, there are single-signs flanked by stiktograms on both sides. These single-signs have historically been referred to as 'transaction signs' (for an overview, see Schoep 1994–1995). They most often appear in the first line of a tablet and are believed to indicate the tablet's topic. Linear A texts also have single-signs not followed by numerals whose function remains poorly understood. An origin for the practice of using single-signs in Cypro-Minoan might be sought in the variety of single-sign types in Linear A, but so far the connection has not been made. Comparisons between Cypro-Minoan abbreviations and Linear A and Linear B have focused exclusively on the syllabic signs with logographic function (*i.e.* the ideograms), which are absent from Cypro-Minoan (Steele 2017, 163–165). The way that abbreviations are used in Linear A and Linear B is dissimilar from Cypro-Minoan, as Palaima has noted, with its lack of logograms and administrative texts with numerals. A study that compares single-sign abbreviations in Cypro-Minoan to the non-logographic Linear A single-signs might still be warranted.

There is diachronic evidence for the use of phonetic abbreviations on Cyprus in the Cypro-syllabic script, often on administrative documents. There are also abbreviations on coins, but this is probably best regarded as a separate phenomenon occasioned by the numismatic format. The best example of abbreviations in Cypro-syllabic is from an administrative text, the Idalion tablet. On the Idalion tablet, the abbreviations are in the form of isolated signs positioned after stiktograms. The signs are phonetic abbreviations of words designating weights (for instance, 'ta' as an abbreviation for *talantos*, *ICS* 217 Idalion, A.13; Georgiadou 2010, 148). The form of the abbreviations on the Idalion tablet and in Cypro-syllabic examples more generally are similar in structure to one of the types of abbreviations seen in Cypro-Minoan, an isolated sign preceded or proceeded by a stiktogram and the isolated sign and stiktogram are on the same plane and of the same size as the main body of text. Formatting similarity aside, there is no reason to infer that the Cypro-Minoan abbreviations are metrological in nature since Cypro-Minoan texts are largely non-administrative *stricto sensu.* Steele regards the clay balls as administrative texts given their standardised format, but they are not likely to be accounting texts (Steele 2017, 156). The formatting of the abbreviation on the Idalion tablet is indistinguishable from that of a Cypro-Minoan text.

Abbreviations with stiktograms

In Cypro-Minoan texts, abbreviations with stiktograms take two forms: 1) a single, isolated sign distinguished from the main body of a text by a stiktogram, discussed above, and 2), the 1+1 inscription type. It is generally accepted that the 1+1 texts record phonetic abbreviations. The 1+1 text type consists of an isolated sign followed

Fig. 4.2. An example of a 1+1 sequence. Miniature Ingot ##174 Mlin 001, CM 1936/VI-19/1. Photographs and drawings by author. Thank you to the Cyprus Museum for access to the materials and permission to replicate them.

by a stiktogram followed by an isolated sign, X | Y. 1+1 texts appear on several Cypro-Minoan writing media, including vessels, a clay wall plaque, and the metal implements (see Fig. 4.2). There is a single 1+1 text on the clay balls. 1+1 texts are especially common on vessel handles. As discussed by É. Masson, the 1+1 texts are a diachronic feature of Cypro-Minoan texts and are seen, in limited number, in the later Cypro-Syllabic script (Karageorghis and Masson 1971).

Abbreviations indicated by position

Abbreviations set apart by the size and position of a sign exist in less than 10 examples and are controversial. They are controversial because of the degree of subjectivity involved in assessing whether a sign is meaningfully larger or set apart from the main body of a text, especially since many multi-sign Cypro-Minoan texts are on surfaces that are difficult to write evenly on, such as curved vessel handles or hard metal surfaces. There is one incontrovertible (*i.e.*, objective) example of an abbreviation with a sign set apart by position in the case of ##185 MYRT Mvas 002, a bronze ring-stand from Myrtou-*Pighades*. The case is incontrovertible because the sequence on ##185 is identical to the sequence on a second bronze ring stand from Myrtou-*Pighades* ##184 MYRT Avas 001 with the difference that the first sign on ##184 is an isolated sign set apart of the body of the text by a stiktogram while the first sign on ##185 is not set apart by a stiktogram but by size and position *vis-à-vis* the other two signs. Bronze stand ##184 reads 038 | 104 101 while ##185 reads 038 104 101. The existence of other examples of isolated sign set apart by position or size can be inferred from the case of the Myrtou-*Pighades* ring stands, but there is no agreement over which texts exhibit this phenomenon. I count four additional examples but recognise that my judgement here is subjective (##105, ##112, ##157, ##158).

Two-sign texts as abbreviations

The last type of abbreviation, two-sign texts without stiktograms, are not generally acknowledged to be phonetic abbreviations in Cypro-Minoan studies. But, as I will

argue here, there are at minimum six sets of two-sign sequences on a variety of different writing media whose two-sign sequences must be regarded as abbreviations. Regarding these six sets of texts, there is a consensus that only one set contains a two-sign sequence as an abbreviation and not a word, the two-sign sequence on miniature ingot ##175 ENKO Mlin 002. Miniature ingot ##175 is one of four miniature ingots bearing multi-sign texts. The four ingots together are exempla for the types of abbreviation in Cypro-Minoan (Fig. 4.3). Together, they evince not only the presence of phonetic abbreviations in Cypro-Minoan texts, but also the different types of abbreviations enumerated above, and the circumstances under which two-sign texts should incontrovertibly be read as abbreviations and not words.

The Miniature Ingots

Miniature ingot ##175 carries two separate sign sequences, a two-sign sequence and a five-sign sequence, the shorter of which appears to abbreviate the longer (Fig. 4.3). The oxhide ingot, made of copper, is about 8 × 5 cm in size, bears its two sign sequences incised on its face. The five-sign sequence is read by Jean-Pierre Olivier as 102-036-023-114-023, and the shorter two-sign sequence is 102-023. The two-sign sequence 102-023 would appear to abbreviate the first and last sign of the longer sequence, even though there is no stiktogram demarcating the signs as an abbreviation. Evidence that the two-sign sequence on ingot ##175 is most definitely an abbreviation comes in the form of the three other miniature ingots with the same sign sequence and, to a lesser degree of certainty, a clay label from Ugarit also bearing the same sign sequence. The three other ingots, all oxhide-shaped and made of copper, and the clay label all carry the same two-signs 102 023 but formatted differently. Ingots ##174 and

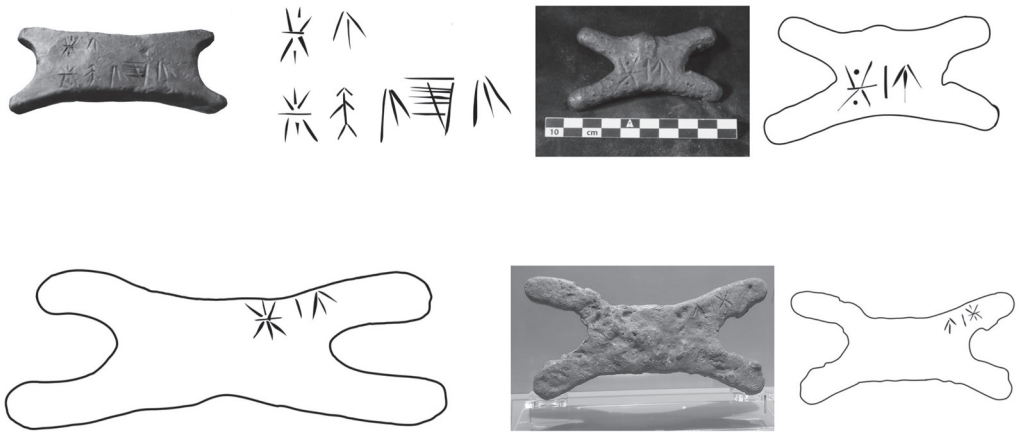


Fig. 4.3. The four Miniature Ingot texts. From top to bottom, left to right: ##175 Mlin 002, ##174 Mlin 001, ##176 Mlin 002, ADD##260 CYPR Mlin 001. Thank you to the Cyprus Museum for access to ingots ##174–##176 and permission to replicate them. Thank you to the Leventis Municipal Museum of Nicosia for permission to publish the photograph of ADD##260, which ingot is part of their collection.

##176 bear the two-sign sequence 102 023 in the form of a 1+1 sequence (102 | 023) and Ingot ADD##260 CYPR Mlin 001 bears it as a 1+1 sequence with the sign order in reverse (023 | 102). On the clay label from Ugarit, ##210 RASH Aéti 001, the two-sign sequence is written in a two-sign sequence without a stiktogram (102-023) as on ingot ##175. The varied formatting of the 102-023 two-sign sequence indicates that it is most likely an abbreviation and not a word, even when the sequence appears without stiktograms as on ingot ##175 and the label ##210 from Ugarit. The case for an abbreviation is especially strong for ingot ##175, since all the ingot texts more than likely record the same thing given their same approximate shape, size, and material. What exactly the two signs abbreviate is a separate question.

Abbreviations of the first and last sign of a word are not attested in the contemporary linear or cuneiform writing systems, to the best of my knowledge, but they are not unheard of in other systems (think, for instance, about the abbreviation of 'Doctor' 'Dr'). Another possibility is that the two-sign abbreviation on ingot ##175 abbreviates the first signs of two different words. Based on the position, angle and inscription method of the last three signs in the five-sign sequence, it is possible that the single five-sign sequence, may in fact be two separate words, the first word being 102-036 and the second 023-114-023. The last three signs are slightly offset from the first two and set at a different angle from them (Fig. 4.4). Further, Francesca Meneghetti, who undertook autopsy of the ingot, has observed that the horizontal lines of fourth sign, CM 114, are drawn in a different direction from the first sign of the two-sign sequences on the upper and lower register (pers. comm. 29.11.19). Altogether,

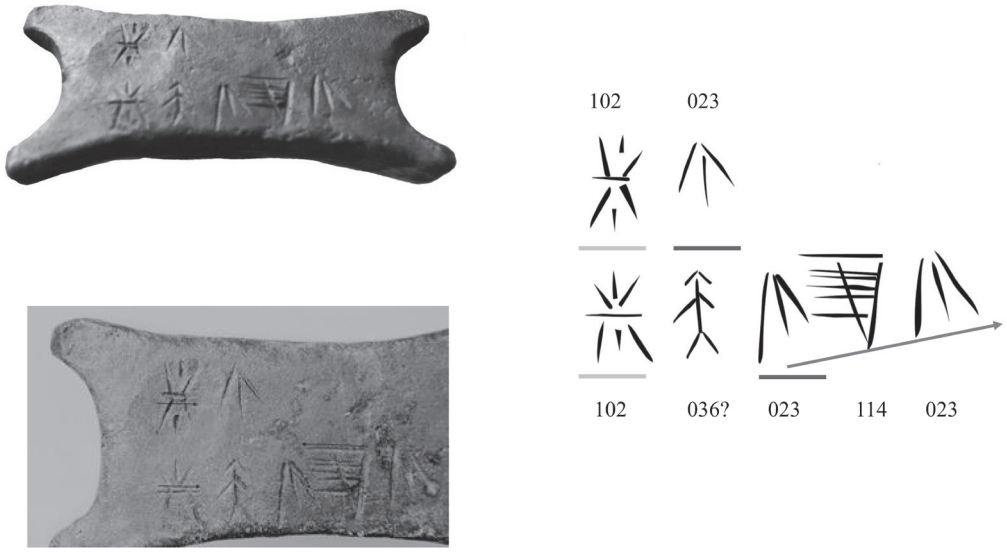


Fig. 4.4. Miniature Ingot ##175. Top photograph and drawing by author, see above. Lower photograph by Francesca Meneghetti, replicated with permission.

the differences could distinguish the last three signs as a separate word, in which case the two signs CM 102 and 023 abbreviate the first signs of two different words.

Altogether, there are five Cypro-Minoan texts that bear a two-sign sequence with CM 102 and 023, the four miniature copper ingots and a clay label from Ugarit (Fig. 4.3). Only ingot ##175 bears an additional sign sequence. Two of the three miniature ingots and the label from Ugarit are published in *HoChyMin* and *CM II*. The third miniature ingot had remained unpublished and unknown to Cypro-Minoan scholars until a 2021 exhibit at the Leventis Municipal Museum in Nicosia where the ingot, A/200810,282, which had been donated to the museum from a private collection, has been put on display. I am assigning the ingot the corpus number ADD##260 CYPR Mlin 001. As mentioned above, the fourth ingot ADD##260 records the same two signs as the other ingots, 102 023, in the 1+1 format and in reversed order, 023 | 102. The interchangeability of the sign order on this ingot compared to the other three reinforces the interpretation of the two-sign sequence on ingot ##175 as an abbreviation. Writing direction in Cypro-Minoan is standardised, with a left-to-right reading direction being the dominant reading direction minus a few exceptions. It is therefore unlikely that the reversed sign order is a reversal of reading direction. Rather, the sequence more than likely records an abbreviation. Given the reversed sign order, the 023 | 102 sequence more than likely records the abbreviation of two separate words and not the first and last sign one word. The reversibility of the two-sign sequence on ingot ADD##260 therefore supports reading the five-sign sequence on ingot ##175 as two separate words.

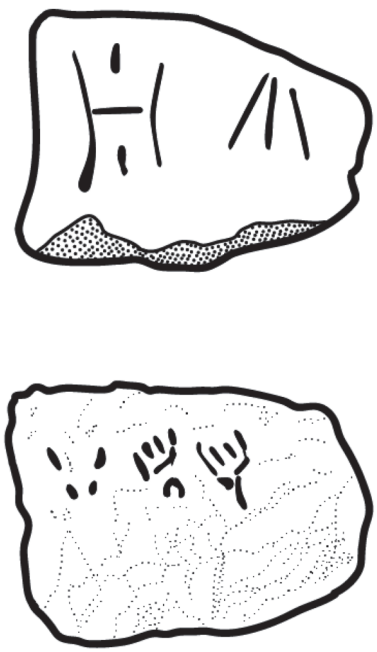


Fig. 4.5. Labels in the Cypro-Minoan script. Top, ##210 RASH Aéti 001. Bottom, ##211 RASH Aéti 002. Digital drawings by author made based on photographs in CM II.

The two-sign sequence on label ##210 from Ugarit, 102-023, probably records the same sign sequence with the same meaning as on the miniature ingots, as Ferrara and Bell (2016, 1015) have argued. Label ##210 is one of two Cypro-Minoan labels from Ugarit, both found in the House of Urtenu. The two-sign sequence on the label, 102-023, appears without a stiktogram. The two signs are positioned next to one another with a slight separation between them that could be interpreted as an intentional separation of the two signs to indicate abbreviation, depending on individual interpretation (Fig. 4.5). Even though the clay label is a different writing medium than the ingots and was found outside of Cyprus, it is still reasonable to assume the sequence has the

same meaning on the label as it does on the ingots, though not for the reasons argued by Ferrara and Bell.

Ferrara and Bell argue that the clay label from Ugarit originated in Cyprus and that the clay label therefore records the same meaning as the 102-023 sequence on the ingots, which they interpret to be a commodity brand. The argument that the commodity label comes from Cyprus is difficult to substantiate, even if the sequence may record a type of commodity as argued below. Ferrara and Bell base their argument on the 'drawn' palaeography of the signs and the claim that the label, which is one of two Cypro-Minoan labels bearing multi-sign Cypro-Minoan texts, 'typologically…do[es] […] not fit the classes of labels normally found at Ugarit' (Ferrara and Bell 2016, 1015). Contrary to their claims, the drawn ductus of the label is not exclusive to texts from Cyprus, nor is the typology of the label different than what is usually found at Ugarit (Steele 2018, 260). There are no clay labels from Cyprus itself. It seems unlikely that a hypothetically common Cypriot writing medium would, by accident of preservation, only survive in two examples from Syria. Their argument would necessitate that label ##210 received its sealing on Cyprus, which is extremely improbable. Only one partial sealing survives from all of Bronze Age Cyprus (Smith 1994, 167). Cypriots simply did not seal with clay with any regularity.

Both labels have the same basic shape as the 'flattened cone' cuneiform labels found at Ugarit, according to the typology developed by van Soldt (1989, 386; see Fig. 4.5). Other characteristics of van Soldt's cuneiform flat cone labels include the fact that most bear sealing impressions, most have pierced holes through which a string would have been threaded and attached to a commodity, and the texts record the name of the commodity to which the label was attached. Just like the cuneiform flat cone labels, label ##210 had a seal impressed on to its anepigraphic side. The label is not said to have a hole pierced through it, but since the label has not been published in full it is possible that this detail remains unreported. With or without a hole, label ##210 fits the typology of the flat cone sealing in its shape and in bearing a sealing impression. If it is indeed the case that the labels were not pierced with holes, then it is difficult to imagine how to the labels made the trip from Cyprus to Syria. If the labels were in fact pierced, then that makes them even more typologically similar to the flat cone labels of Ugarit. On analogy with the cuneiform labels, the 102-023 sequence may record a commodity.

The overall typological similarity between the Cypro-Minoan and cuneiform flat-cone labels suggests that the label was made at Ugarit. This likelihood does not necessarily invalidate Ferrara and Bell's claim that the sequence records the name of a commodity, given that the cuneiform labels record the names of commodities. Since the sign sequence 102 023 appears on all four miniature copper ingots, it may be reasonable to infer that the sequence contains an abbreviation referring to the commodity copper. I do not feel compelled to argue, as Bell and Ferrara do, that the 102 023 sequence functions as a type of branding. As Meneghetti's work

on the miniature ingot shows, Bell and Ferrara's interpretation of the ingots and their inscription ignores the uninscribed miniatures and the qualia, 'enchantment, fascination, intimacy empowerment and control' miniaturised objects in general, and the miniature ingots in particular, are imbued with (Meneghetti forthcoming). It is not unusual for votive texts to refer to their writing medium. For a contemporary example of such a votive text from Cyprus, see the silver bowl from Hala Sultan Tekke, which bears a text written in the short cuneiform alphabet, whose first word reads 'the cup of PN' (Yon 2004, 365; for remarks on the script see Bordreuil in Yon 2004, 266). Clay label ##210 and the four copper miniature ingots, on analogy to the cuneiform flat cone labels, may well abbreviate two words pertaining to the commodity copper. Most certainly, the two-sign sequence 102 023, in all its various formats, records an abbreviation.

Certain two-sign abbreviations

The presence of a two-sign sequence on ingot ##175 that is definitely an abbreviation and not a polysyllabic word raises the possibility that other two-sign sequences on Cypro-Minoan texts should be read as abbreviations and not words. There are five other sets of sign sequences that are similar to the ingots in being repeated multiple times with different variations in the sign order or the presence or absence of stiktogram. In such cases, the two-sign sequences should certainly be read as abbreviations and not words.

The circumstances under which two-sign sequences should definitely be read as abbreviations and not words are all exhibited in the case of the miniature ingots discussed above. They are as follows: 1) when an otherwise identical two-sign sequence appears on different texts both with and without a stiktogram (*e.g.*, one text reads X-Y and X|Y) and 2) when an otherwise identical two-sign sequence appears with interchangeable sign order (*e.g.*, X-Y and Y-X). As discussed above, since Cypro-Minoan has a fairly fixed left-to-right writing order, the reversibility in sign order is unlikely a result of a reversed writing direction but rather the fact that the order of the two signs is irrelevant to their meaning. Aside from the miniature ingots, there are three other examples of the same two-sign sequence appearing with and without stiktograms, two of which will be discussed here (for the third example see Donnelly 2020, 100–102), and at least two sets of two-sign sequences whose signs appear in interchangeable order, both of which I will discuss below. Especially compelling are cases of both phenomena where the texts are written on the same writing medium and were found together. In what follows, I also identify two cases where single-sign texts can be securely interpreted as recording abbreviations. In the two cases in question, a single-sign text was found alongside two-sign abbreviations and the single-sign text records one of the same two signs from the two-sign sequence (so for instance the two-sign text reads X + Y and the single-sign text Y). Such examples not only reinforce the interpretation of the two-sign sequence as an abbreviation but

also provide firm evidence that the single-sign text is an abbreviation as well, and that the texts refer to the same thing.

Same two-sign sequences with and without stiktogram

The first example of a two-sign sequence appearing with and without a stiktogram comes from the site of Kition. The two-sign sequence with CM 023 109 appears on two vessel handles. The fact that the texts appear on the same writing medium from the same site reinforces the conclusion that the text should be read as an abbreviation both on the handle where it appears with a stiktogram and the handle where it appears without a stiktogram. The two signs CM 023 and 109 appear horizontally disposed in two-sign sequences on two separate handles from Kition, ##135 KITI Avas 006, where the sequence has a stiktogram, and ##139 KITI Avas 010, with no stiktogram. Olivier suggests that the stiktogram is accidentally missing from handle ##139 on analogy with ##135 (*HoChyMin*, 206). There is no compelling reason for the inference despite some abrasion on the surface of the handle in between the two signs. The abrasion is not of the right height or length to hide a missing stiktogram. Furthermore, there are other two-sign handle texts from Kition without stiktograms, showing that two-sign handle texts do not *need* stiktograms, and there are the other examples of otherwise identical two-sign texts written with and without stiktograms as seen in the case of the ingots. The fact that both texts ##135 and ##139 should be read as recording the abbreviations is clear-cut given that both texts are from the same site.

The second example of a two-sign sequence appearing with and without a stiktogram is CM 102 and 006. The two signs appear together on as many as four different texts, all written on different writing media (Fig. 4.6). Despite the difference in writing media, the prevalence of the sequence, which occurs on as many as four different texts, reinforces reading the sequence as the same abbreviation on all four texts. The two-sign sequence with CM 102 and 006 appears once with a stiktogram and two or three times without a stiktogram, once on a clay ball, twice on two different types of vessels, and once, in a less than clear reading, on a cylinder seal. The sequence with the stiktogram, 102 | 006, is a 1+1 text on clay ball ##061 ENKO Abou 058. Both two-sign vessel texts, one a post-firing text incised on the base of a bowl, ##248 KOUR Avas 005, and the other a dipinti on a krater, which I will assign the corpus number ADD##259 ENKO Avas 015, do not have a stiktogram but the positioning of the two signs in both examples, slightly offset from one another, could demarcate the signs as abbreviations. On the cylinder, the two signs are pressed against one another and there is no attempt to demarcate the signs as abbreviations. Two signs may be in reversed order *vis-à-vis* the other texts depending on whether the sequence is meant to be read on the surface of the seal or in impression.

The 1+1 sequence on clay ball ##061 does not require further comment. The text's reading, 102 | 006, is straightforward (Fig. 4.6 A). The only remarkable feature of the text is that it is the only 1+1 text on the clay balls. The reading of the text on the

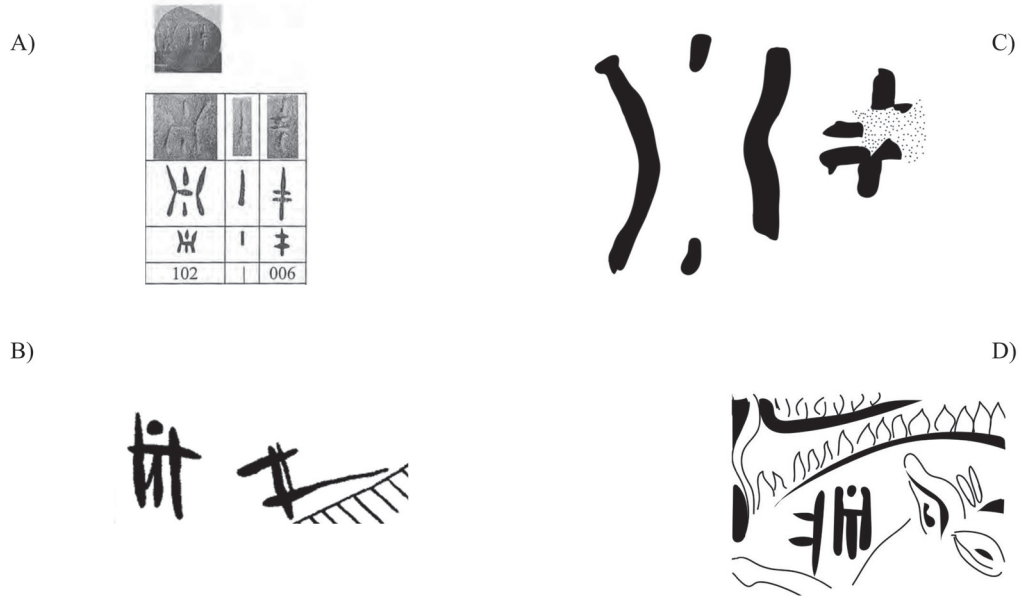


Fig. 4.6. Photographs and drawings of the CM 102 006 Texts. A) Clay ball ##061 ENKO Abou 058, drawing and photograph from HoChyMin. B) ADD##248. Drawing Daniel 1941. C) Krater with Multi-sign Text, ADD##259, BM 1897.0401.1149. Drawing by author. Thank you to The British Museum for permission to study the material. D) Cylinder seal ADD##253 PPAP Psce 001. Digital drawing by author based on photograph from Karageorghis 1983, Pl. CXX, no. 1a.

incised bowl ADD##248 is also straightforward (Fig. 4.6 B). The text, which has been known since 1941 (Daniel 1941, 273, fig. 13:9) but only counted as an inscription by Valério in 2014 (Valério 2014, 115), is one of two post-firing Cypro-Minoan texts incised into a bowl's base (the other is ##231 KLAV Avas 001). The bowl's two signs are not strictly drawn on the same plane (see Fig. 4.6 B). The difference in sign position may be indicative of the fact that the sequence is meant to be read as a two-sign abbreviation and not a word. The case of painted krater ADD###256 is slightly more complicated (Fig. 4.6 C). Like bowl ADD##248, the text has been known for a long time. But it was not until 2019 that Nicolle Hirschfeld proposed that the two-sign sequence be treated as an inscription (Hirschfeld 2019, 142). Hirschfeld did not assign the krater text an inscription number so one will be assigned here. It is not clear why the text was not counted as an inscription in either *HoChyMin* or *CM II* though it is perhaps on account of the space in between the two signs. The space in between the two signs is not necessarily intentional. The text is painted on the interior of a curved krater. The distance of 3.1 cm between the two signs is negligible considering the contortions that would have been required to paint such a text. The krater text should be read as a two-sign abbreviation in light of the 1+1 sequence on clay ball ##061 but not because of the position of the two signs on the text. Hirschfeld (2019, 142) reads the first sign

Fig. 4.7. Cylinder seal ADD##253 PPAP Psce 001. Digital drawings by author based on photograph from Karageorghis 1983, Pl. CXX, no. 1a.

in the dipinti sequence as 103-006. As Valério has argued (2016, 156), CM 103 is likely a variant of CM 102, in which case the reading 102-006 is preferable.

ADD##253 PPAP Psce 001 is a grey basalt cylinder seal with a two-sign text incised horizontally on the seal (Fig. 4.6 D). The text was not incised onto a prepared surface but squeezed into empty space within the image and was not likely original to the design. Valério, who first proposed that the seal be given a corpus number, reads the second sign as CM 072 as he reads the sign as having three horizontal lines (Fig. 4.6 D) (Valério 2017, 121, fig. 16). The third horizontal line is not readily visible in the photograph of the sealing Valério bases his drawing on. He admits that CM 006 or CM 068 are plausible readings if the sign has only two horizontal lines (Valério 2014, 121). There is no sign in the script with the exact same shape as the second sign. For Valério's CM 072 reading to work, the sign would need the addition of at least two more lines, a top horizontal line and a vertical line running the length of the sign, to look like any attested examples of CM 072. For the CM 006 reading to work, the two horizontal lines would need to bisect the vertical line. Valério's reading is less than convincing given that CM 102-072 is not a sequence attested elsewhere in the corpus, either as a stand-alone two-sign sequence, a two-sign abbreviation, or as part of a longer sequence. Reading the sign as CM 006 (Linear B 'pa') is a better reading in terms of sign shape, since the only changes required to the sign would be the extension of the two horizontal lines passed the vertical, but also because 102 006 is an attested sequence (Fig. 4.7). If the 102-006 reading is accepted, then the sequence should be read as a two-sign abbreviation, given the presence of 102 | 06 with a stiktogram on ball ##061.

Same two-sign sequences with interchangeable sign order

The following examples of two-sign sequences are of texts that were found together and bear the same two-sign sequences in interchangeable sign order. At Kition, three different texts incised into the bases of Mycenaean vessels, ##132-##134, contain the same two signs CM 027 and CM 028, twice written as 028-027 and once

as 027-028.[4] Each of the three texts, incised on to the bases of a Mycenaean krater and two Mycenaean jugs, come from the same tomb, T. 4+5, and date to the same LCIIIB context. The interchangeability in the sign order of texts found in the same archaeological context suggests that all three two-sign texts refer to the same thing and record abbreviations not words. Also from the same tomb, dating to the same level, is a Mycenaean bowl with a single-sign text incised with CM 027 into its base, T. 4+5/116 (Masson 1974, 143–147). The presence of the same sign in both a single-sign text and two-sign texts from the same archaeological indicates that the single-sign text likely abbreviates the same thing as abbreviated in the two-sign texts. Another two-sign text from Kition, ##131 KITI Avas 002, also shares an archaeological context with a single-sign text whose sign, CM 026, is the first sign of the inscription. The two-sign text, 026-004, found in Tomb 9, ##131, is a dipinti painted on the exterior of a LHIIIB Mycenaean jug. From the same tomb were two other Mycenaean jugs with CM 026 incised into their handles, T.9/51 and T.9/36. It is reasonable to infer that the single-sign texts found alongside the 027-028 texts ##132-##134 and the jug dipinti ##131, a) record abbreviations and b) refer to the same thing as the multi-sign texts they were found with.

Two-sign texts with interchangeable sign order are also in evidence on the tin ingots from the Hishuley Carmel shipwreck. There are four tin ingots with the same two signs, CM 019 and 082, in interchangeable sign order. None of the four ingots with two-sign texts has so far been included in the lists of multi-sign texts, as their publication in 2012 precluded their inclusion in *HoChyMin* (Galili *et al.* 2012). Two of the four texts bear the sign order 019-082 (T10 and T6) and two the sign order, 082-019 (T5 and T2). In addition, there is another tin ingot from the same shipwreck incised with the single-sign CM 019. The interchangeability of sign order on the tin ingots suggests that the two-sign sequence is an abbreviation not a word. The ingot with the same sign as a single-sign text should therefore also be read as a phonetic abbreviation. The archaeological context shared by all five objects, the four multi-sign texts and the single-sign text, indicates that the sequences are related to one another and likely refer to the same thing.

Conclusions

The examples discussed here are clear instances in which two-sign texts record abbreviations and not polysyllabic words. We were able to deduce this by means of comparing texts that bear the same two-sign sequences as one another. We also adduced two examples of single-sign texts that are certainly used as phonetic

[4] Massimo Perna has alerted me (pers. comm. 1.12.2021) to a confusion in *CM II*, where Ferrara has assigned the wrong corpus numbers to the wrong photographs. Ferrara notes that *HoChyMin* accidentally lists ##133 KITI Avas 004 (LarnDisMus T.4+5/110) before ##132 KITI Avas 003 (LarnDisMus T.4+5/108), but then accidentally mismatches the photographs with the wrong corpus numbers. Ferrara's photograph of ##132 is actually a photograph of ##134 KITI Avas 005 (LarnDisMus T.4+5/207), *CM II* 184–185, and conversely her picture of ##134 is actually ##132, *CM II* 190.

abbreviations by virtue of being found with multi-sign texts with abbreviations containing the same sign as the single-sign text. But what about instances of two-sign texts bearing unique sign sequences and single-sign texts that were not discovered alongside multi-sign texts? It is unlikely that *all* two-sign Cypro-Minoan texts are abbreviations since there inevitably would have been disyllabic words in whatever language(s) Cypro-Minoan texts record. It is also unlikely that *all* single-sign texts abbreviate words since many occur alongside single-sign texts with non-script signs. In the following section, I discuss the circumstances under which two-sign texts and single-sign texts at least be considered abbreviations and not words. I argue that two-sign and single-sign texts on vessels, in general, should be regarded as abbreviations.

Vessel texts

The examples discussed above are clear-cut instances where two-sign texts should be read as two isolated signs functioning as abbreviations and not words. But not all two-sign sequences should be taken as abbreviations. Only in the cases outlined above or on writing media that have a significant number of 1+1 sequences is there a likelihood that the two-sign texts record abbreviations. Take the balls as a counterexample. The two-sign sequences on balls should probably not be regarded as abbreviations. 1+1 texts are not common on the balls. Of the 90 texts on balls (##073 KITI Abou 069ter is anepigraphic), only one contains a 1+1 sequence. Two-sign sequences in general are not common on balls but where they occur they seem to record words. There are only 10 examples of two-sign sequences on balls, including the example with the 1+1 sequence, ##061 discussed above (they are balls, ##014, ##035, ##036, ##037, ##038, ##059, ##061, ##062, ##066, ##80). Eight of the nine examples of two-sign sequences on balls are either preceded or followed by a stiktogram, which is accompanied by either an isolated sign abbreviation or another multi-sign sequence. In these cases, the stiktograms seem to be functioning as word dividers, demarcating the two-sign sequence as a separate word from the preceding or proceeding sign sequence. The near absence of 1+1 sequences on the balls, the small number of two-sign texts and the fact that most seem to be words all suggest that the two-sign texts on balls should not be regarded as abbreviations.

The vessel texts, in contrast to the balls, have a high proportion of 1+1 texts and a high proportion of two-sign texts in general, suggesting that the two-sign vessel texts may in fact be abbreviations. The large number of single-sign texts on vessels, which are typologically similar to the multi-sign texts, also raise the possibility that the two-sign texts should be regarded as abbreviations in the case that the single-sign texts themselves are abbreviations, as I will argue below. Two-sign vessel texts are incredibly common, accounting for anywhere from 48/49 to 57/58 of the 92+ multi-sign vessel texts, depending on how one interprets the broken texts. There are 12 or 13 1+1 texts on vessels, 36 two-sign texts without stiktograms

and an additional nine handles with two-sign texts that have breaks in the middle of their second signs, which may or not have originally contained longer sequences. 1+1 texts constitute anywhere 26–36% of all two-sign vessel texts, a significant portion. Most of the texts in question, the 1+1 texts and the two-sign texts, are on vessel handles, suggesting that the two text types have a similar function. It is therefore worth questioning whether the two-sign texts are in fact abbreviations analogous to the 1+1 texts.

Sign repertoires in the vessel texts

One way to verify whether the vessel texts in question record abbreviations, both the two-sign texts and the 1+1 texts, is to compare the sign repertoires of the different text types. If the repertoire of signs in the 1+1 sequences overlaps with that of the two-sign sequences, then they might both be abbreviations abbreviating the same sets of words. The same comparison can then be applied to the single-sign texts. A comparison of the sign repertoire of the single-sign vessel texts to the two-sign vessel texts shows there to be a significant overlap with the signs used as abbreviations in vessel texts, indicating that they are the same set of signs.

A comparison between the repertoire of signs definitely used as abbreviations on vessels and two-sign vessel texts shows the sign repertoires of these different text types to overlap to a significant degree. Of the 11 signs used in 1+1 abbreviations, nine are used in the two-sign texts, an overlap in repertoire of 81%. When the sign repertoire is expanded to include not just the signs on 1+1 vessel texts but also the signs used as abbreviations in multi-sign vessel (see above, Types of Abbreviations in Cypro-Minoan) the overlap in repertoire is 10 of 13 signs, or 76%. The sample size of signs here is quite small and not statistically significant but suggests that the signs definitely used as abbreviations on vessels are the same signs as those used in the two-sign texts. That this overlap is significant and not coincidental can be adduced from a counterexample. The repertoire of signs used as abbreviations on the balls does not overlap significantly with the repertoire of signs definitely used as abbreviations on the vessels (5 of 13 signs, or 38%) or the repertoire of signs in the two-sign vessel texts (11 of 33 signs, or 33%). It is therefore unlikely that the ball and vessel abbreviations abbreviate the same words. On the other hand, the overlap in signs used as abbreviations on the vessels and the signs used in two-sign vessel texts suggests that they are the same repertoire of signs, abbreviating the same words, despite the small number of signs involved.

When the comparison is applied to the single-sign vessel texts, the results likewise suggest that the single-sign vessel texts share a sign repertoire with the multi-sign vessel texts. This is true when the repertoire of signs in the single-sign vessel texts is compared to the 13 certain abbreviations on the vessels and when the two-sign texts are included in the comparison. When the single-sign text repertoire of 38 signs is compared to the 13 signs used abbreviations in multi-sign vessel texts, all are accounted for. All 13 signs appear in single-sign vessel texts. The overlap in signs

is suggestive of an identity between the repertoires but is not wholly convincing given the small number of signs used as abbreviations. Combining the repertoire of 13 signs definitely used as abbreviations with the signs from two-sign vessel texts, the number of signs is 35, enough for an interesting comparison with the single-sign texts. Of these 35, 31 are attested in the repertoire of 38 signs in the single-sign vessel texts. I applied these numbers to a statistical equation that is used to compare the identity of two distinct but potentially related populations (Fig. 4.8). According to the equation, the proportion of signs shared between the single-sign vessel texts and the abbreviations in multi-sign vessel texts is statistically significant. There is an 88% chance that the two repertoires of signs represent a single 'population' of signs. The comparison is further evidence in support of the suggestion made above a) that the two-sign vessel texts contain two isolated sign abbreviations not a single word and b) that the single-sign vessel texts contain the same phonetic abbreviations as the multi-sign vessel texts.

Again, the balls serve as a counterexample against which to test the significance of the overlap in repertoire. When the repertoire of signs in single-sign vessel texts is compared to the 21 isolated signs on the balls, for instance, 56% of signs from single-sign texts are not in the ball repertoire. Conversely, 70% of the isolated signs in the balls are attested in the single-sign texts. While the 70% figure is rather high, there is reason to doubt its significance. First, the number isolated signs used as abbreviations on the balls is much lower (21) than the number of signs in the single-sign text repertoire (38). Second, the isolated signs on the balls do not overlap significantly with the vessel abbreviations, as elucidated above. It is evident that the isolated signs on the balls have different referents than the abbreviations on the vessel texts. The makers of the vessel and ball texts share the same habit of using isolated signs as abbreviations, but their repertoire of abbreviations is not the same. The comparison reinforces the notion that the single-sign text repertoire is the same as the abbreviations on the multi-sign vessel texts (including two-sign vessel texts), and that the two-sign and single-sign texts are abbreviations, abbreviating the same words.

Table 4.1. Repertoire of signs used as abbreviations on multi-sign and single-sign vessel texts.

Signs as potential abbreviations in multi-sign vessel texts (Signs not held in common are underlined)	*Signs in single-sign vessel texts (Signs not held in common are underlined)*
001	001
004	004
005	005
006	006
007	007

(Continued)

Table 4.1. Repertoire of signs used as abbreviations on multi-sign and single-sign vessel texts. (Continued)

Signs as potential abbreviations in multi-sign vessel texts (Signs not held in common are underlined)	*Signs in single-sign vessel texts (Signs not held in common are underlined)*
011=012	008
019	009
021	011=012
023	013
025	019
026	021?
027	023
028	025
033	026
038	027
050	028
055	033
061	038
064	041
069	044
070	050
072	055
073	060
078	061
082	064
086	068
087	069
091	073
096	075?
097	082
102	087
104	091
107	096
109?	097
110	102
	104
	107
	110?

Comparisons:

- Signs that are in the multi-sign vessel texts that are NOT attested in the single-sign vessel texts:
  - 070, 072, 086, 109?
  - Total: 4 of 35 signs in the multi-sign texts are not in the single-sign text.
  - Total overlap: 31/35 = 89.4%
  - ** of these, 072, 086, 109 are *never initial.*
- Signs in the single-sign texts that are NOT attested in the multi-sign texts:
  - 008, 009, 041, 044, 060, 068, 075?
  - Of these, 041 is initial, 068 is final, 008 and 009 are mostly not initial.
  - Total: 7 of 38 signs in the single-sign vessel texts are not in the multi-sign texts.
  - Total overlap: 31/38 = 81%

A statistical approach: comparing two population parameters
The null and alternative hypotheses are:

$$H0: p_1\text{-}p_2 = 0 \text{ vs. } H_\alpha: p1 \neq 0$$

Where

p_1 is the incidence of abbreviations in multi-sign texts in set 1

and

p_2 is the incidence of signs on single-sign vessel texts in set 2

Under certain conditions, the sampling distribution of $\widehat{p_1}$ for example, is approximately normal and centered around p_1. Similarly, the sampling distribution of $\widehat{p_2}$ is approximately normal and centered around p_2. Their difference, $\widehat{p_1} - \widehat{p_2}$, will then be approximately normal and centered around $p_1 - p_2$, which we can use to determine if there is a difference.

$n_1 = 35$ is a random sample from Set 1

$n_2 = 38$ is a random sample from Set 2

$$\widehat{p_1} = \frac{29}{35} = 0.83$$

$$\widehat{p_2} = \frac{31}{38} = 0.82$$

$$\widehat{p^*} = \frac{x_1 + x_2}{n_1 + n_2} = \frac{29 + 31}{35 + 38} = 0.822$$

$$z^* = \frac{\widehat{p_1} - \widehat{p_2} - 0}{\sqrt{\widehat{p^*}\left(1 - \widehat{p^*}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} = 0.14$$

The p-value of the test based on the two-sided alternative is:

$$\text{p-value} = 2P(Z > |0.14|) = 2 \times 0.4443 = 0.8886$$

With the p-value of 0.8886 we can only be about 12% certain that these XX come from different populations.

Rare and word-initial signs in the single-sign text repertoires

Further evidence that the single-sign vessel texts with script signs should be regarded as abbreviations is the fact that their repertoire contains a higher proportion of word-initial and common (as opposed to rare) signs than the signs that do not appear on single-sign vessel texts. This finding accords with what we would expect if the single-sign vessel texts with script sign record phonetic abbreviations. A repertoire of signs recording abbreviations should consist of signs that often appear in word-initial position. Since abbreviations are more likely to arise in response to heavily used words, it would also make sense to find common, as opposed to rare, signs in the repertoire of signs used as abbreviations. The inverse should also be the case, which is what we find. The signs that do not appear in single-sign vessel texts contain a proportionally high number of signs that prefer word-final positions and a higher proportion of rare signs than the signs that appear in single-sign vessel texts.

In the analysis of sign position that follows, I exclude from my analysis of word-position the word position of signs as they are used on the Enkomi tablets (Émilia Masson's 'CM 2'). According to Valério's study of sign usage and word position, the word position of signs on the Enkomi tablets differs from other texts (Valério 2016, 159–160). This difference does not necessarily imply that the tablets contain a separate script, though it may indicate a difference in the language recorded on them. É. Masson had regarded the signs on the Enkomi tablets as constituting its own branch of the Cypro-Minoan script, which she called CM 2. She based this on what she believed were differences in the sign repertoire of the Enkomi tablets, including signs that were exclusive to the tablets. As new Cypro-Minoan texts are recovered, the signs that were once considered exclusive to the Enkomi tablets are found outside of them, too (Polig 2022). Word position on the Enkomi tablets, however, does appear to be idiosyncratic, per Valério. Bolstering this is the absence of shared sign sequences longer than two signs between the Enkomi tablets and the rest of the multi-sign texts. The question of whether the Enkomi tablets should be regarded as a separate subscript cannot and will not be resolved here. The palaeographic work of Martina Polig, which is based on 3D models of about 75% of the corpus, should help resolve Masson's claim concerning the exclusivity of some CM 2 sign forms. For the present analysis of sign usage, however, I have excluded the Enkomi tablet texts.

When the Enkomi tablets are excepted from the discussion, the evidence shows that the Cypro-Minoan signs that do not appear on single-sign vessel texts are signs that prefer word-final positions and rare signs. 66% of the signs that are not in the single-sign vessel text repertoire are either never initial (33%) or rarely initial (33%). This is

Fig. 4.8. Photograph and drawing by author of SCE A1503. Thank you to the Medelhavsmuseet for permission to study the material and to replicate it.

high proportion compared to the multi-sign text signary overall, where the proportion of signs that are either rarely word initial (31%) or never initial (21%) is, cumulatively, 10% lower. There is only one sign in the whole of the single-sign vessel text repertoire that is never used word initially, CM 060 (SCE A1503, see Fig. 4.8). Curiously, it is also the only sign in the single-sign vessel text repertoire that is exclusive to CM2 tablets. The resemblance of the sign in the text to a sign in the Cypro-Minoan script may, in fact, be coincidental as a) the sign is attested on a vessel only once, b) the sign's shape is quite simple, and c) the text's features are unusual. The unusual features of the text include the fact that it is one of the few pre-firing vessel handle texts and the single wavy line extending up from the sign (Fig. 4.8). It is possible that the text does not record a script sign after all, but an iconic representation (perhaps of an altar?). The absence of other CM 2-exclusive signs in the vessel texts validates the decision to exclude the CM 2 signs from my analysis.

Rare signs, defined as any sign attested fewer than 10 times, comprise 30% of the multi-sign text signary. For an abbreviation to be recognised, it more likely than not abbreviates a word in common use. It would therefore be expected that non-rare signs be over-represented in the single-sign texts, as is the case. By contrast, 42–47% of the signs *not* used in the single-sign text are rare. This proportion of rare signs is significantly higher than that of the single-sign texts. The relatively low proportions

of non-word initial and rare signs in single-sign text repertoire adds further evidence to the arguments adduced above that the single-sign vessel texts *on the whole* likely abbreviate words.

The evidence from the sign repertoires suggests that both single-sign and two-sign vessel texts most likely record phonetic abbreviations. The vessel texts blur the artificial lines erected in Aegean script studies and in *HoChyMin* and *CM II* between single-sign texts and multi-sign texts. These finding corroborate the archaeological arguments made by Hirschfeld, Steele, and Sherratt that the single-sign and multi-sign vessel texts have the same function. The shared sign repertoires between the abbreviations on the multi-sign texts, including the two-sign texts, and the single-sign texts indicates that the single-sign texts abbreviate the same words as abbreviated in the multi-sign texts.

Conclusion

The current study indicates that Cypro-Minoan texts are not always what they seem. Two-sign texts on vessels, on the whole, and the two-sign texts in the specific instances detailed above should not be read as polysyllabic words but as abbreviations. Likewise, single-sign vessel texts with script signs and the single-sign texts found along with multi-sign texts bearing a shared sign should also be read as phonetic abbreviations. Though Cypro-Minoan scholarship had previously recognised the presence of phonetic abbreviations in the script, their extent and form has been underestimated. The most recent Cypro-Minoan corpora exclude single-sign texts and uncritically include two-sign texts as words. The solution to this error is not necessarily to redraw the Cypro-Minoan corpora as there is no way of identifying with certainty the two-sign texts that are words and single-sign texts that are phonetic abbreviations. Except in the specific instances outlined above, it is not possible to make claims about individual cases only a general one about classes of texts on the same writing media. Rather than changing the Cypro-Minoan corpora, recognising the blurred boundary between single-sign and multi-sign Cypro-Minoan texts allows for a better understanding of Cypriot writing practices (both in the Bronze and Iron Ages) and acts as a cautionary tale for future decipherment efforts.

Reading single-sign vessel texts as phonetic abbreviations recasts the extent of literacy in Late Bronze Age Cypriot contexts. The vessel texts are found at a larger number of sites within and outside of Cyprus than the multi-sign texts. Single-sign vessel texts were locally produced, at minimum, at Tiryns, Ashkelon, Ras Shamra, and the major sites on Cyprus. The mercantile association of the vessel texts and their wide geographic spread indicates that Cypro-Minoan literacy, in the sense of the ability to create texts, and paraliteracy, in the sense of an awareness of literate texts, went wherever the vessel text makers went. Much remains to be understood about the vessel texts, including the relationship between the texts with script signs and those without script signs. Were they part of a single marking system that used

phonetic and non-phonetic marks, or were multiple marking systems in concurrent use, some with closer connection to the script than others? The presence of phonetic abbreviations on the single-sign vessel texts also raises the question of whether single-sign texts on other writing media should properly be regarded as phonetic abbreviations and how, or if, those texts interact with the vessel texts. The recent publication of lead ingots bearing Cypro-Minoan script signs, whose ores have been traced to Sardinia's Iglesiente region, suggests that single-sign can help answer these and other questions should we learn how to read them (Yahalom-Mack *et al.* 2022).

Chapter 5

Ductus in Cypro-Minoan writing: definition, purpose and distribution of stroke types[1]

Martina Polig

Introduction

Cypro-Minoan is an undeciphered syllabic Bronze Age writing system that was used to encode one or several languages spoken in Cyprus in the second millennium BC. 251 inscriptions with more than one sign were found to date across Cyprus, the Syrian coast and Greece. Its earliest attestations date back to the sixteenth century BC, marking the earliest experimental stage of the development of this writing system that continues to be used until the turn of the millennium, when it is being superseded by the Cypriot Syllabary. Like Linear B it was developed from Linear A and is thus also part of the Aegean writing system family.

The range of objects bearing Cypro-Minoan inscriptions is very large and shows a remarkable variety in material and type (Fig. 5.1). In fact, there are inscriptions in metal (bronze, copper, silver and gold), stone, ivory and clay. The latter is the predominant material and consists of pottery, labels, cylinders, tablets, a bull figurine and small clay boules, a type of inscribed object unique to Cypro-Minoan. The next most common material is metal with objects ranging from rings and bowls to ingots

[1] This research was carried out under the guidance of my PhD supervisors Joachim Bretschneider from Ghent University and Sorin Hermon from the Cyprus Institute. It was supported by doctoral funding from the Special Research Fund (BOF) at Ghent University and a grant from the Leventis Foundation in support of the travel and data acquisition expenses. I received access to the necessary equipment and technical support from the Science and Technology Research Centre (STARC) at the Cyprus Institute.

The project would have also not been possible without approval of the Department of Antiquities of the Republic of Cyprus, who granted me access to the Cypro-Minoan material in their possession.

I also want to show gratitude to the Contexts of and Relations between Early Writing Systems (CREWS) team at the University of Cambridge for accepting me as a visiting research fellow and sharing their knowledge and insight with me. I am grateful to Miguel Valério for his review and comments on an earlier version of the article.

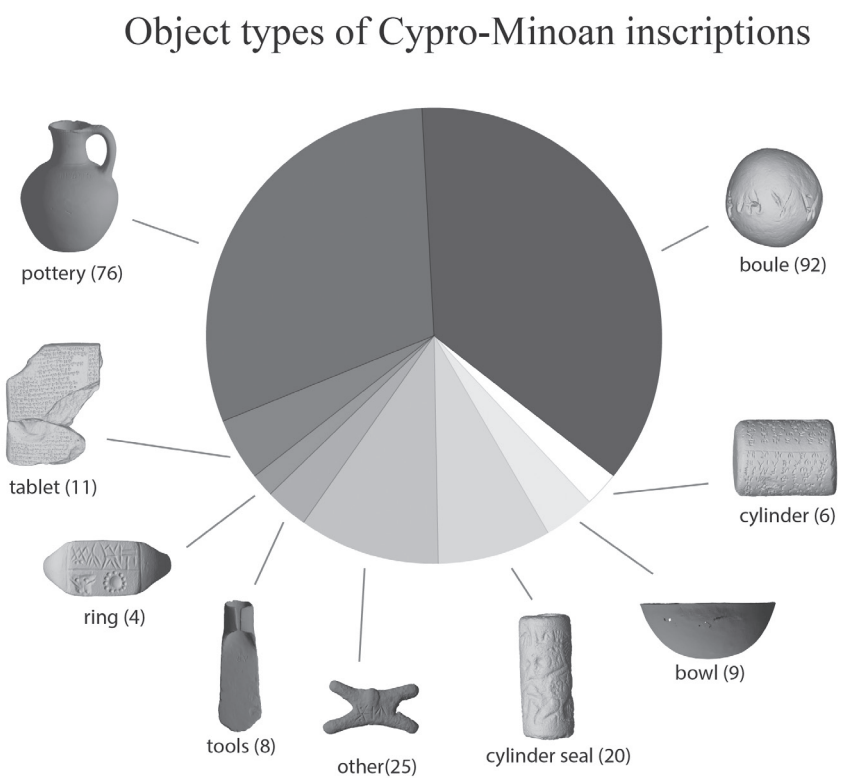


Fig. 5.1. Object types of Cypro-Minoan inscriptions.

and tools. The inscriptions on stone represent the physically largest object types with building blocks, an anchor and a basin, and also some of the smallest examples of inscriptions with cylinder seals. Finally, there are also three objects of ivory: a pipe, a rod and a plaque.

This diversity in writing support and material goes hand in hand with diversity in inscription technique and ductus. Thus, it is not surprising that ductus has been also a prominent topic within Cypro-Minoan studies. Even though the term itself was not always used per se, the impact of different writing tools, material and support type on sign rendition was recognised already in early studies (Persson 1937, 601; Daniel 1941, 252–254). Also, recent research on Cypro-Minoan discuss ductus extensively. Ferrara for instance, highlights its importance in discussing the variations of graphic representations of signs (Ferrara 2012, 15). She dedicates an entire chapter on the different object types, materials and how they were inscribed and uses it to discuss styles and scribal hands (Ferrara 2012, 151–213). Valério relies on ductus together with other criteria in the composition of his Cypro-Minoan signary (Valério 2016, 96–99).

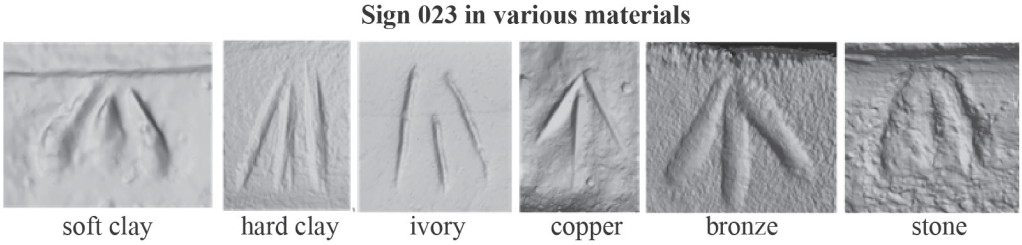


Fig. 5.2. The variability of ductus in sign 023 across different materials.

For him ductus comprises all elements of the graphical execution of a sign, including number and spatial composition of strokes (Valério 2016, 106–159).

It is quite an ambiguous term that various palaeographic study fields and scholars use differently. The term has been used as a synonym of 'script', but also of individual scribal 'hands', of entire scribal traditions or simply in relation to the order in which strokes are made (see examples of different uses of ductus in Cammarosano 2015, 155; and Anderson and Levoy 2002). What the different definitions have in common is that ductus refers to 'the act of tracing strokes on the writing surface' (van den Hout 2012, 152). Consequentially, the ductus of a single sign or inscription is 'affected by the technique used to write it (*e.g.* incising, impressing, painting), the material on which it is written (stone, metal, hard or soft clay, etc.), the type or register of the text (formal, informal, decorative), the level of experience (professional, amateur) and personal traits (neatness, flourishes, etc.) of the author and so on' (Steele 2018, 24).

The examples of Ferrara and Valério, neither of whom give a clear explanation of what they consider to be ductus, show that also in Cypro-Minoan its definition is not homogeneous. The confusion or disagreements in the definition of ductus seems to be due to its connection with sign shape, which also relates to the definition of individual signs and their variants. This might stem from the partial overlap in the determining factors of sign shape (number of strokes and their spatial relationship) and ductus. Many researchers have opted for a distinction between ductus and shape (Ductus and Zeichenformen) (Starke 1977, 9; Neu 1980, 14; Klinger 1998, 372; Cammarosano 2015, 156; Salgarella 2019, 63). Arguably, such a distinction is particularly useful for Cypro-Minoan considering the extreme variability of its ductus (see Fig. 5.2) and the need to understand sign shape independent of support, technique and personal or collective writing styles. Hence, in this study ductus refers to the *results* of the practical execution of a sign shape (angle of incision or impression, stroke depth and outline, neatness of edges, etc.). This means for instance that the number or order in which separate strokes are placed are not considered pertinent to ductus.

In this context, we will look at stroke types in Cypro-Minoan as expression of the movement carried out with the scribal tool to create a sign. Stroke types are intimately connected to ductus, because not every tool movement can be successfully executed in every material and with every technique. For instance, it is not possible to create changes of depth or changes in direction in one movement on hard material, whereas in soft material like wet clay it is. At the same time, stroke types are also a reflection of a design choice and thus not only of the sign shape the scribe wished to realise (*e.g.* rounded rather than angular) but also of writing traditions (*e.g.* cursive writing). Hence, studying stroke types in Cypro-Minoan provides insight on the relationship of the writing system with material and technique, sign and variant composition, and writing traditions.

In the course of this study, we will define the different stroke types that occur on Cypro-Minoan inscriptions, see on which support they are being used and for what purpose and investigate their geographical and chronological distribution. The study of the stroke types in Cypro-Minoan writing was carried out as part of the author's PhD research at Ghent University and the Cyprus Institute. The PhD project entails a detailed palaeographic analysis of the entire corpus and the creation of a comprehensive sign and inscription database. A crucial tool in this analysis has been the high-resolution 3D documentation of inscriptions that allowed to visually inspect diagnostic palaeographic features of individual signs in never-before-seen detail.

The Cypro-Minoan corpus and the study-dataset

The corpus

The inscriptions of the Cypro-Minoan corpus have been collected over a time period of over 100 years. Up until Jean-Pierre Olivier's *Édition holistique des textes chypro-minoens* (hereafter *HoChyMin*) they appeared separately in different publications (Olivier and Vandenabeele 2007). Only then the different inscriptions that are part of the Cypro-Minoan corpus appeared in one volume and received a consistent and consecutive numbering and naming, that was adopted by all the scholars henceforth. *HoChyMin* contains 217 inscriptions and since then more inscriptions were added to the corpus following his numbering system, which brought the tally to 258 objects in the corpus. These new inscriptions are either rediscoveries of already published or unpublished material that Olivier did not include in his collection or are inscribed objects unearthed in recent excavations. However, not all the inscriptions discovered in the past years and attributed to be Cypro-Minoan can be argued to have a place in the corpus and in the dataset.

The rediscovered material consists of additions made by Silvia Ferrara and Miguel Valério (Ferrara 2013; Valério 2014). Ferrara adds 27 inscriptions to the corpus, which are from various locations in Cyprus, from Ugarit in Syria and Tiryns in Greece.

The latter is not a rediscovery but was brought to light in an excavation in 2002 and was already published (Vetters 2011). Ferrara was however the one to formally incorporate it in the Cypro-Minoan corpus numbering system as clay ball ##244 in an addendum to her collection. The remaining 26 additions are seven stone cylinder seals, two clay loom-weights, a stone spindle whorl, a stone anchor, a bronze double adze, a bronze flat axe, a bronze shovel, a pottery basin and 11 inscribed pieces of pottery, one of which is a pithos rim from Ugarit. It was however pointed out that seven of the additions should be excluded because they either are a single sign inscription or are dubious examples of writing (Steele 2014b, 129). The two loom-weights (##222 and ##223) and the cylinder seal ##219 only present one inscribed sign. On the clay handle ##221 there is a series of cross-shaped marks and a line that function more likely as a potmark rather than an inscription. The cylinder seal ##227 has also a dubious position in the corpus, as it is unclear whether the marks on it can even be considered signs or are merely part of the decoration. For the double adze ##228 only one possible sign is reported whose nature is very dubious. Finally, the cylinder seal ##232 presents two possible signs whose nature is also highly dubious. Miguel Valério rediscovered and added seven inscriptions (##247–##253) to the corpus (Valério 2014). The clay ball ##247 was rediscovered and published already by Del Freo (2010), but Valério was the one to give it its number in the corpus. The rest of his added inscriptions consist of four inscribed pottery pieces and two cylinder seals.

Very promising additions are and will be new material coming to light from excavations. The first inscriptions outside of Cyprus and Syria were discovered in Tiryns, consisting of a clay boule ##244 and a pottery handle ##246 (Vetters 2011; Davis *et al.* 2014). After the first discovery of the clay boule ##244, a clay handle that was also found in Tiryns, and already published in 1988 by Oliver, was rediscovered and officially added to the corpus as ##245 (Maran 2008, 56, fig. 35; Davis *et al.* 2014; Olivier 1988, 255–258, 266–267, fig. 2.13). The remaining new inscriptions from excavations are from Cyprus. At Erimi-Kafkalla an inscribed clay jug was found, which in consecutive order is added as inscription ##255 (Hirschfeld and Smith 2012). A recent excavation at the Cypro-Geometric cemetery at Palaepaphos-*Skales* brought to light an inscribed bronze bowl (Egetmeyer 2016). Perhaps the most important discovery from the last decade comes from Pyla-*Kokkinokremos*, which revealed two tablets (Kanta 2014, 110–111) and one inscribed pottery handle, which are still unpublished.

Finally, there is also an example of a newly excavated inscription from Ashkelon in Israel that was not included in the corpus and in this dataset. The inscription in question is painted on a pottery rim and was attributed by the excavators as Cypro-Minoan (Cross and Stager 2006). This attribution was challenged by Hirschfeld (2014) and by Davis (2011), who both agree that the identification of the signs as Cypro-Minoan is conjecture at this point. However, neither of them

were able to physically inspect the inscription and until further information and analysis is put forward the clear attribution or not to Cypro-Minoan remains an open question.

Of the newly added inscriptions only 34 were considered to be part of the corpus together with the 217 inscriptions listed in *HoChyMin*. The excluded objects comprise the seven inscriptions whose presence in the corpus was already questioned by Steele, as discussed above. This means that the corpus consists in total of 251 inscriptions.

The 3D dataset and its representation of the corpus

A number of 154 objects of these 251 inscriptions were documented in 3D with a sub-millimetre resolution (Polig, Hermon and Bretschneider 2021). The remaining 97 inscriptions could not be captured in 3D for various reasons (Fig. 5.3). 42 objects cannot be found (unknown museum ID or unknown holding place) or are reported missing in the various museums that hold them. 55 inscriptions are dispersed across private collections or museums outside of Cyprus: 15 in the Louvre in Paris, 9 in the British Museum in London, 8 in the Damascus National Museum and the remaining 23 are distributed over private collections and museums in Cyprus, Greece, Sweden, Belgium, UK and the US. They could also not be 3D-scanned due to constraints in funding, time and the constrictions imposed by the Covid-19 pandemic.

This means that only 61% of the complete corpus of 251 objects are available for the 3D analysis.[2] This could be potentially brought up to 83% if also the dispersed material were to be 3D-scanned in the future. However, this 61% only reflects the number of inscribed objects and does not take into account qualitative aspects of inscription length and preservation. For example, tablet ##209 could not be scanned and contains one of the longest inscriptions, but the vast majority of the signs on its side A cannot be interpreted with certainty due to the significant abrasion of this side of the tablet. To have a more accurate picture of the coverage of the 3D dataset, the number of signs needs to be looked at as well as their reliability. A missing inscription with bad preservation

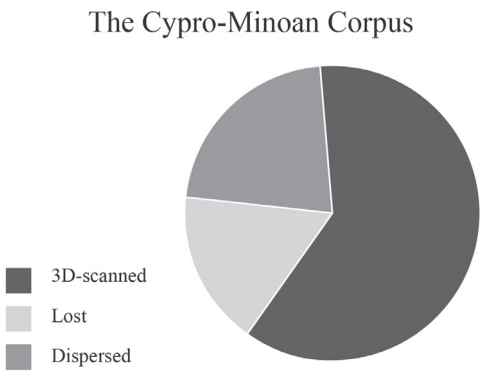


Fig. 5.3. The composition of the Cypro-Minoan corpus in terms of the 3D-scanned, lost and dispersed material.

[2] This translates to 2179 3D models of individual signs that were analysed and approximately 8100 3D files of individual strokes. A complete list is given in the doctoral dissertation Polig 2022.

is in fact not as impactful as one with excellent preservation for the analysis of the corpus.

In total 2834 signs of the almost 4000 signs have been identified with a specific grapheme so far in the Cypro-Minoan corpus. 1890 of these signs have a *reliable and verifiable interpretation* and 1385 of these reliable signs could be analysed in 3D (Fig. 5.4). This means that 73% of the reliable signs are included in the 3D dataset and that the missing 3D data is less significant as feared initially because of the high number of dubious and damaged material that exists overall in the corpus.

What is a reliable and verifiable interpretation of a sign exactly? It requires that the interpreted sign has a sufficient preservation and was adequately documented to verify and assess said interpretation. For that purpose, each sign in the corpus was assigned a preservation value from 1 to 3 (Fig. 5.5). A sign whose outlines of every

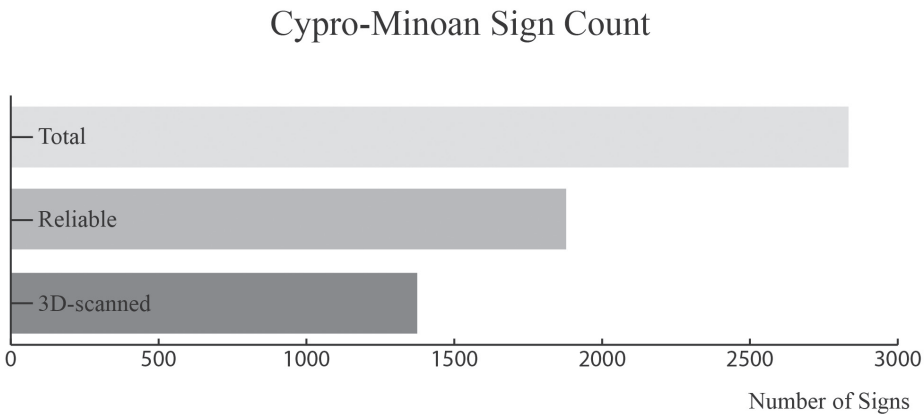


Fig. 5.4. The total number of interpreted Cypro-Minoan signs, the number of reliable signs and the number of reliable 3D-scanned signs.

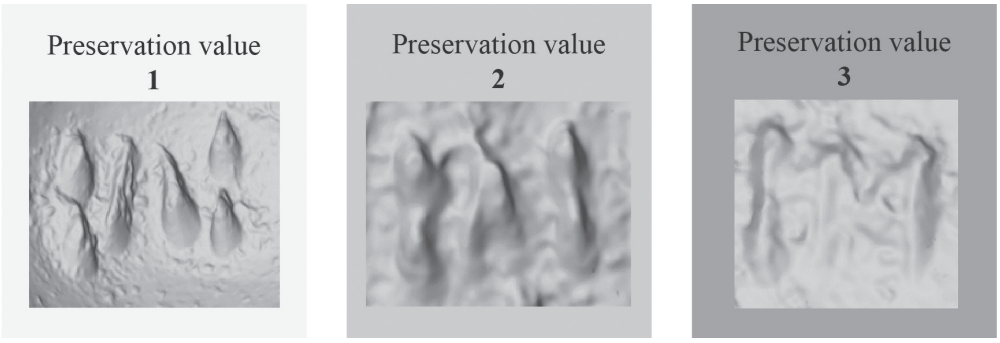


Fig. 5.5. Example of three signs that have been interpreted as sign 038 with different levels of preservation. Snapshots of 3D models with equal levels of resolution.

single stroke are clearly visible receives a rating of 1. When the structure of a sign is still clearly identifiable but the shapes of the strokes composing it are damaged, either due to a breakage or consumption, a value of 2 is assigned. In the cases where it is clear that there was a sign, but its composition is unclear the rating of 3 is given. Only the signs with a value of 1 or 2 were considered to be sufficiently well preserved for a reliable interpretation.

The same principle was applied when judging the adequacy of the documentation. Photographs where the composition of the sign is not visible because of under- or overexposure, or insufficient sharpness were considered inadequate and thus the interpretation of the sign unverifiable. Cases where only an interpretational drawing of an inscription is available were also not considered sufficiently documented. Basing the study only on reliable signs is particularly important in the context of ductus, which requires the analysis and interpretation of minute diagnostic features such as changes in depth and angle.

Overview of stroke types in Cypro-Minoan

In Cypro-Minoan signs it is possible to observe three types of strokes, each representing different movements (Fig. 5.6). The simplest type is linear, which refers

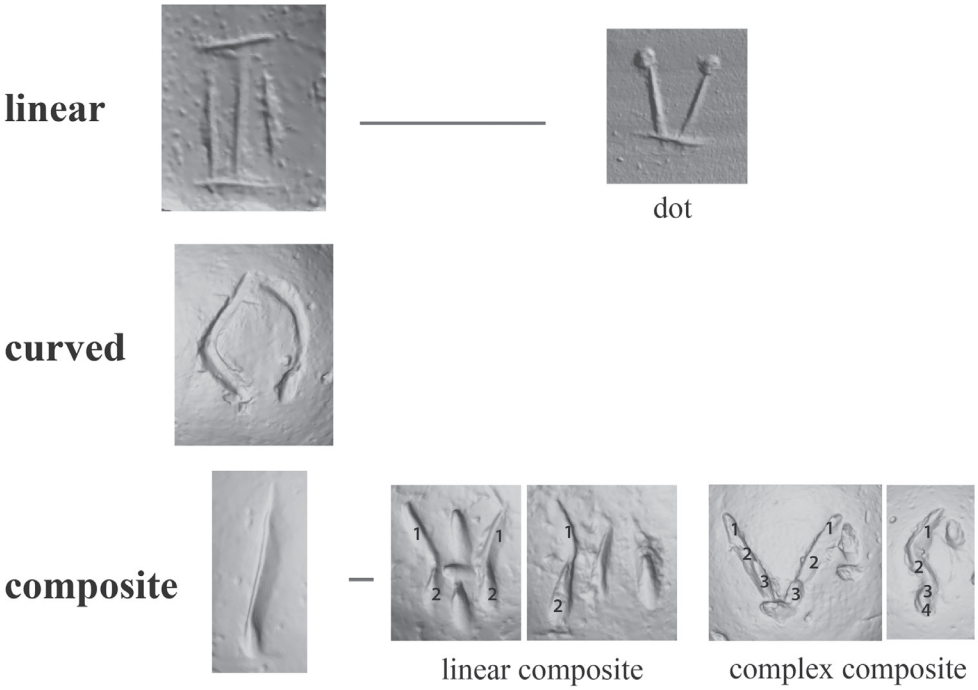


Fig. 5.6. The different stroke types in Cypro-Minoan.

to a movement of uniform direction and pressure. Within the linear strokes, there is a sub-type defined as dots. These are essentially extremely short linear strokes. The second type of strokes are curved, which represent a movement of uniform change of direction and uniform pressure. Finally, the last type is the most complex one and is carried out with a movement that comprises a non-uniform change in direction and/or pressure without having to lift the tool from the surface. As a consequence, two or more distinct parts in the stroke can be identified and the stroke was defined as composite. There are two sub-types within this stroke. A linear composite stroke has only two parts with a single change in direction and/or depth. The second sub-type is called a complex-composite stroke and consists of multiple changes in direction and/or depth. It can only be used when inscribing on soft clay, wax or potentially in painting.

Curved and composite stroke types illustrate the strong relationship between stroke types and ductus, as they require a specific material or technique to be executed. In fact, they can only be dragged/impressed in soft material or painted on hard material. At the same time, they are also related to design choices and the nature of variants because in the same material also simple linear strokes could have been chosen. There is also a close connection between stroke type and the number of strokes that is used to realise a specific sign composition. Where one variant of a sign has two separate linear strokes, another may have just one linear composite stroke or a curved stroke. As a result, there are ductus-dependent variants in Cypro-Minoan whose distinctive feature is connected to the deliberate use of a composite stroke, and which can only be executed in a specific material.

A survey of the stroke type frequency across the digitised material of the corpus reveals that the prevalent stroke type is linear, occupying 89% of the total number of strokes used across all the signs captured in 3D (Fig. 5.7). This is unsurprising as it can be easily executed with every inscription technique, and because every grapheme, with exception of sign 011 and 052, has at least one straight line in its base composition. The other stroke types appear with far less frequency. Only linear composite strokes represent more than 1% of the strokes digitised in 3D. Despite their low percentages they are very informative about writing culture and the formation of variants in Cypro-Minoan, as we will see.

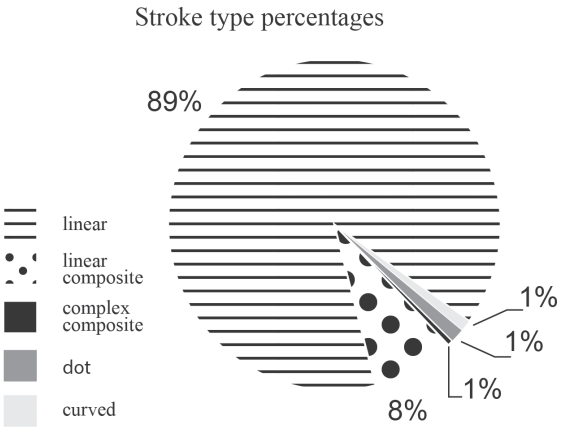


Fig. 5.7. The percentages of stroke types across the digitised Cypro-Minoan corpus.

Dots

Dots represent only 1% of the strokes with little over 90 examples of signs with dots. Despite their low number, they play an important role in the composition of several sign variants to render short lines. In fact, it can be observed that the rendition of short lines in the abstract core composition of signs can be executed either with a short linear stroke or with a dot. In the signs 052 and 053 dots are present in every variant and play therefore an essential part in their base composition. They play also a very important role in sign 055, where only one out of its five variants uses a linear stroke instead of a dot. Dots appear also in at least one variant of 13 other signs.[3] They are incised regardless of the difficulty of inscription and can be found on ivory, stone, metal and clay (see Fig. 5.8).

The temporal distribution reflects the overall chronological distribution of the corpus, with most of the examples coming from the late LCII period and the beginning of LCIII (Fig. 5.9). The earliest examples are however not from LCI, but from LCII and are from Enkomi and Kalavassos-*Ayios Dhimitrios*. There are also two examples from Arpera and Hala Sultan Tekke from LCII, which are not dated with precision and could be earlier than the examples from Enkomi and Kalvassos-*Ayios Dhimitrios*. After the peak in LCIIIA there is a strong drop of examples. However, there are still a few instances of the use of dots in variants in LCIIIB and the Cypriot Geometric coming from Enkomi and from Palaepaphos-*Skales*.

The fact that only 10% of the inscriptions in the corpus are from the north and central area of the island and still there are multiple examples of dot-use also from these sites suggests that it was an extremely widespread and accepted practice to switch between dots and short strokes. Across the entire island and across the entire time frame of Cypro-Minoan writing, both renditions of short lines as dots or as linear strokes are observed across all object types and materials. Thus, the use of dots becomes an example of an overarching palaeographic phenomenon that highlights the fluidity in palaeographic expressions within the Cypro-Minoan writing culture.

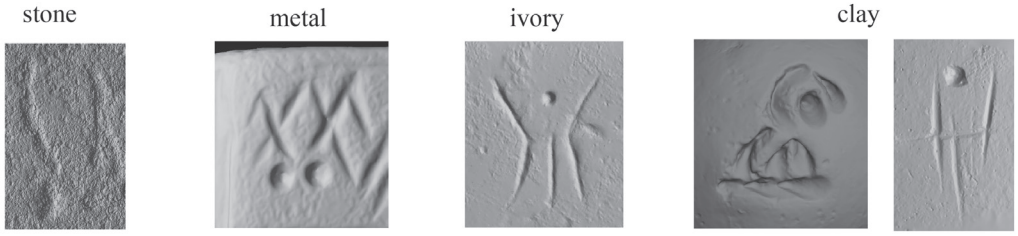


Fig. 5.8. The rendition of dots across various materials.

[3] 024, 036, 038, 039, 041, 046, 047, 064, 070, 090, 091, 101 and 102.

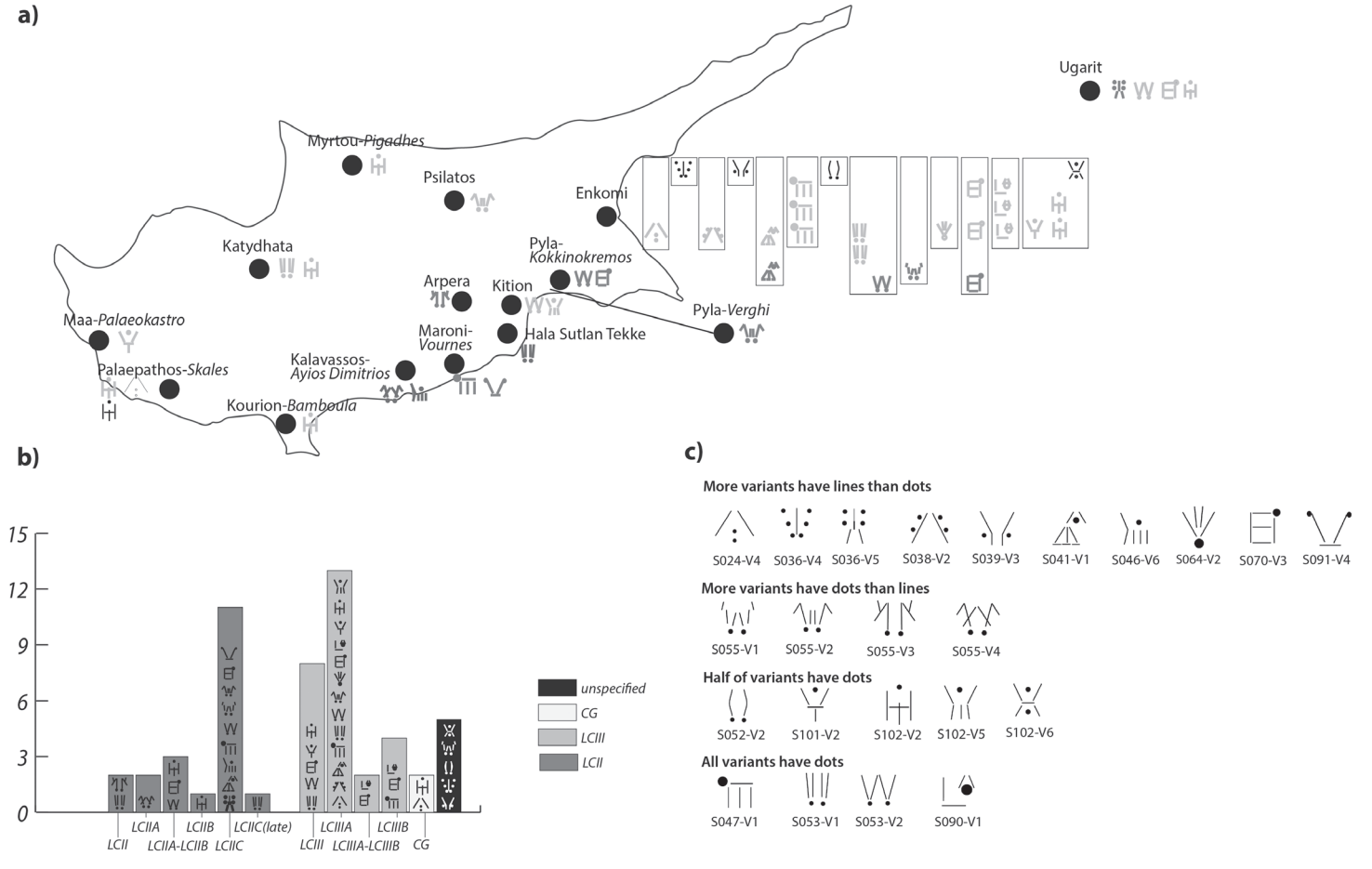


Fig. 5.9. Geographical and temporal distribution of variants with dots. a) Geographical distribution. Variants are coloured according to their dating. Variants from the same sign in the same site are encased in grey. b) Temporal distribution. The y-axis shows the number of examples and the x-axis the time periods. Each time period bar shows the variants that appear in that period. c) List of variants with dots.

Curved lines

Merely 1% of the strokes are curved and appear in fewer than 70 examples of signs. The signs with the most examples are 015, 039, 052, 059 and 074. These are all signs in which long lines with a single bend or curve are a main element of the abstract core composition. Despite the difficulty of inscribing curved lines on hard material they can also appear on carved stone (*e.g.* ADD##224) or ivory objects (*e.g.* ##161) for these signs. In most cases, however, the examples of curved lines are simply particularly round renditions of short or medium length lines that otherwise appear angled, meaning with an abrupt change of direction.

Sign 015 is one of the rare instances where we can see a link between variant composition influenced by material and technique, beyond the variants associated with composite strokes. Variant 1 of sign 015 is executed with two curved lines and appears only in inscriptions which were impressed or dragged through soft clay (Fig. 5.10). The composition of Variant 2 of sign 015 is more conducive for inscription into hard materials and appears predominantly in inscriptions that were either carved or scratched into metal or stone. There is only one example of Variant 2 executed in soft material from an inscription on a clay boule.

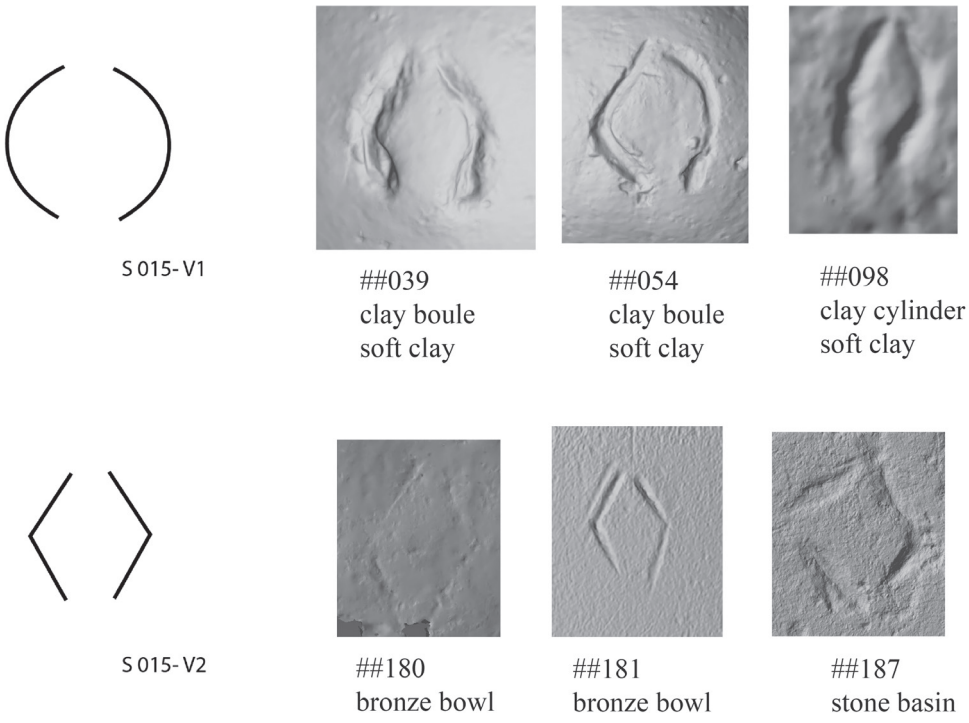


Fig. 5.10. Sign 015 and its variants with examples.

Composite strokes

Linear and complex composite strokes represent together 9% of the total stroke number, appearing on nearly 600 examples of digitised signs. Unlike curved lines and dots, they are connected to a specific inscription technique, as they can only be executed with a stylus in soft material or by painting. Linear and complex composite lines are deliberately used to either render: curves and angles, different levels of depth, or two lines which appear otherwise separate in one stroke (Fig. 5.11). There are also several instances where the purpose of the composite stroke is not clear due to its preservation, or it seems accidental rather than deliberate.

For angles and curves

Composite strokes are most commonly used to render a curvature or angle in a line, with 72% of the cases related to that purpose. It is an expression of a particular way to incise either an angled line or an inclined line. In the case of the former the angle in the line is already demanded by the abstract shape of the sign or variant and rather than being rendered as a curved stroke or as two separate strokes, the change in direction is made in one movement of the stylus at a marked angle that is often accompanied with a change of depth (see Fig. 5.12a).

In the case of the use of a composite line to render an inclined line, the composition of the sign or variant does not demand an angled line but simply an oblique line that in

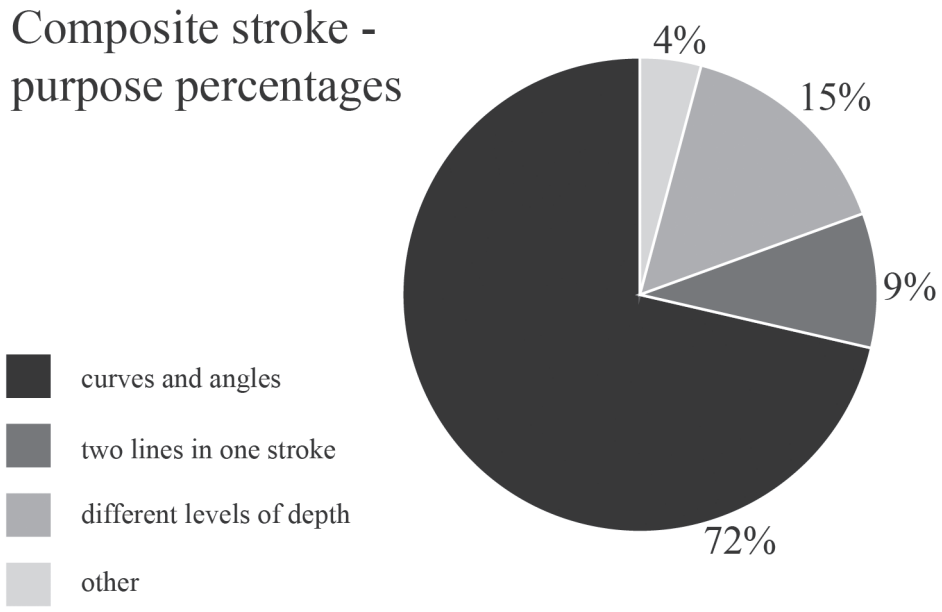


Fig. 5.11. The percentages of the different uses of composite strokes.

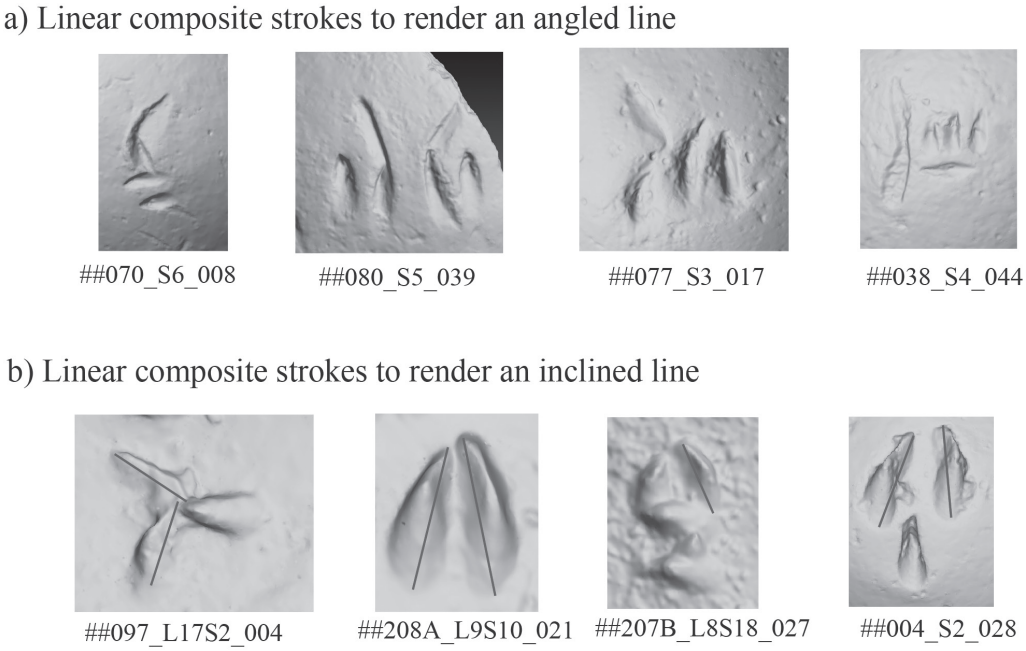


Fig. 5.12. Composite strokes used in the rendition of an angled or oblique line.

other cases is rendered as a linear stroke. As a result, the change in direction is usually not as pronounced. It is still noticeable, however, when one tries to superimpose a straight line from the beginning to the end of the stroke and it becomes clear that the stylus was moved in a subtle change of direction rather than in a straight fashion (see Fig. 5.12b).

For multi-depth

There are more than 80 examples of composite lines used to render different levels of depth in an otherwise straight or curved line. The majority of them are associated with variants that have a central vertical line with two different levels of depth and width (see Fig. 5.13 top line).[4] There are only 28 remaining examples,[5] which usually do not feature an additional change of width and can be divided into three groups. The examples from the inscriptions ##013, ##038, ##044, ##060, ##070, ##101 and ##185 seem to be unintentional rather than related to the sign composition. In the

[4] S035-V2, S036-V1, S036-V5, S037-V1, S062-V1, S054-V1, S056-V2, S013-V4, S026-V1.

[5] ##007_S2_107, ##020_S2_061, ##037_S1_110, ##042_S3_088, ##043_S3_072, ##043_S5_005, ##045_S1_102, ##045_S2_087, ##045_S4_097, ##046_S1_110, ##047_S5_110, ##054_S5_015, ##055_S1_102 and ##050_S1_110, ##066_S7_088, ##084_S3_006, ##110_S3_073, and on four signs of one of the Pyla tablets. Potentially only accidental examples are: ##013_S1_075, ##038_S1_046, ##044_S1_027, ##060_S4_091, ##070_S8_072, ##101_L3S3_023, ##185_S3_101.

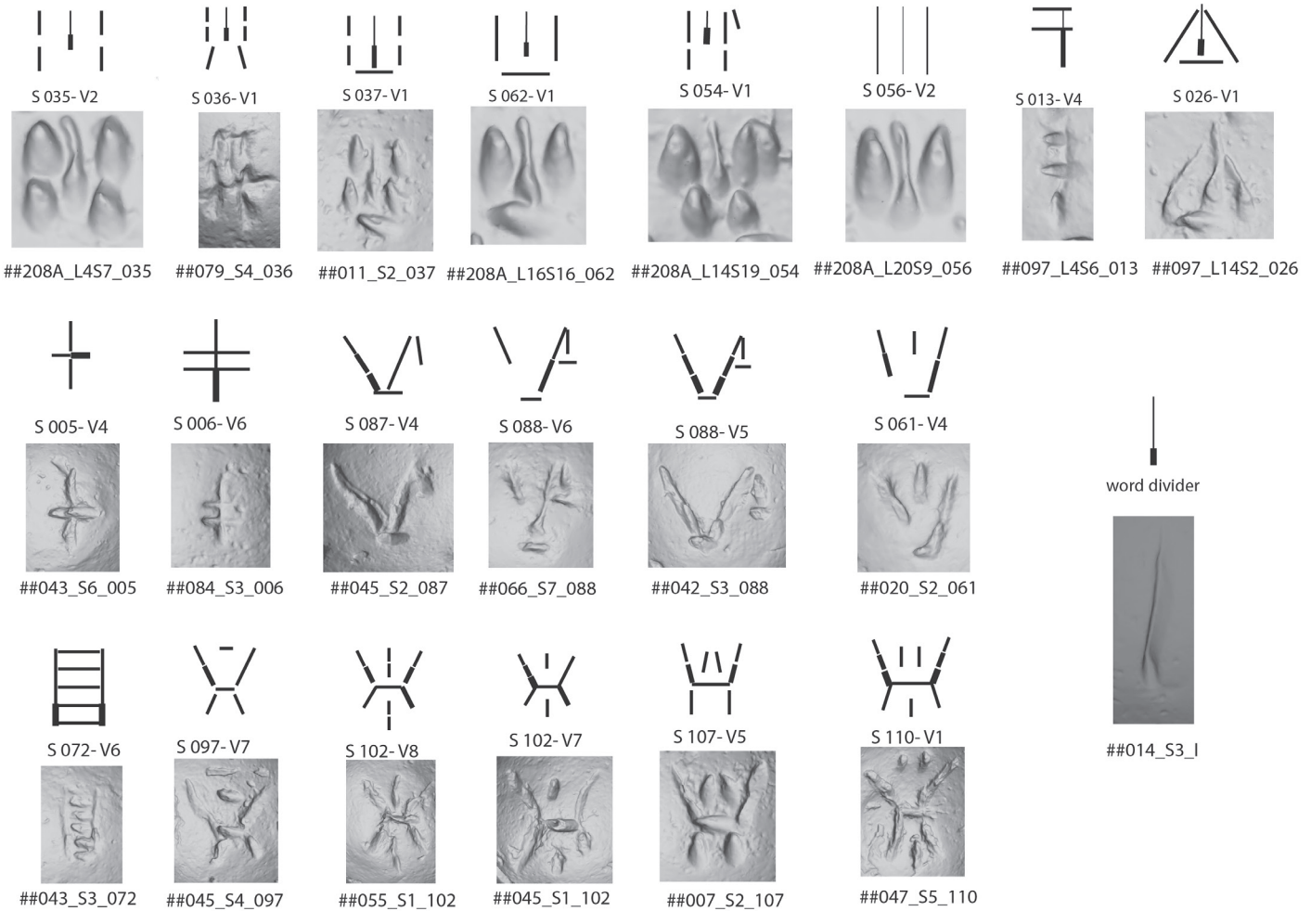


Fig. 5.13. The variants featuring a multi-depth composite stroke.

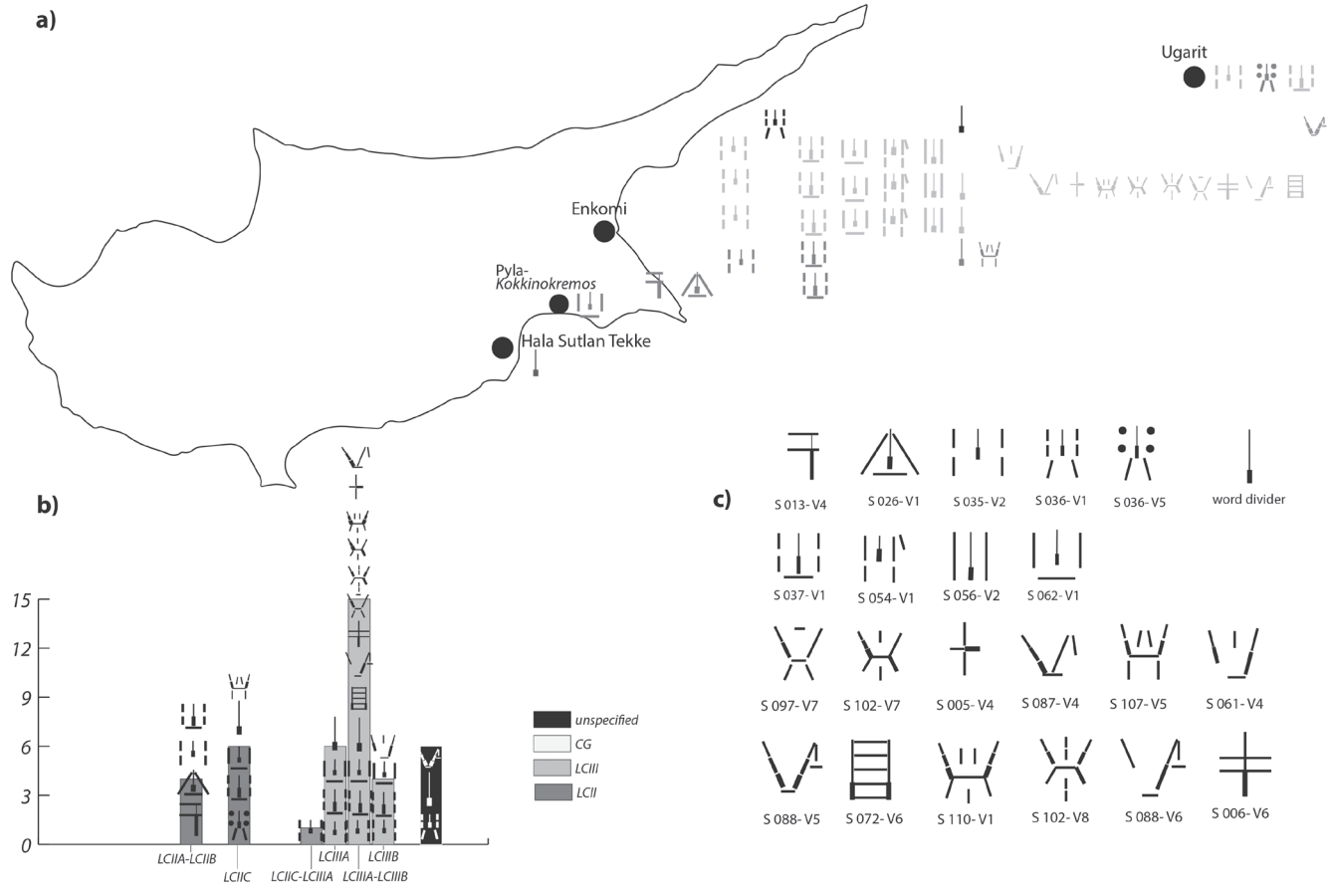


Fig. 5.14. Geographical and temporal distribution of sign variants with composite lines based on depth. a) Geographical distribution. Variants are coloured according to their dating. Variants from the same sign in the same site are encased in grey. b) Temporal distribution. The y-axis shows the number of examples and the x-axis the time periods. Each time period bar shows the variants that appear in that period. c) List of variants with composite lines based on depth.

second group, consisting of examples on three clay boules (##037, ##054 and ##046) and on one of the Pyla-*Kokkinokremos* tablets, the examples could also be a personal trait because they have a clearer definition or are repeated on other signs while not having a clear association with the composition of the sign.

The instances in the third group were considered variants,[6] as they reflect design choices that are relatable to other variants of the same sign. These are extremely rare variants, with each of them exhibiting only one example, except for the one of sign 110 which has two on the clay boules ##047 and ##050. Rather than exhibiting only one change of depth, these variants often have a complex composite stroke with multiple changes in depth. Interestingly, it is a phenomenon that occurs also in the rendition of the word divider.[7]

The geographic distribution of this type of stroke shows a clear association with Enkomi, especially towards the end of Late Cypriot Bronze Age and the beginning of the Iron Age. The more common variants with the multi-depth stroke in the central vertical line are characteristic of the tablets ##207, ##208 and ##209 in Enkomi from the LCIII period. They occur, however, also on clay boules and the clay cylinder ##097 in LCII and on tablets in Ugarit also from LCII and LCIII, as well as possibly on one of the tablets from Pyla-*Kokkinokremos*. Due to their defined occurrence across multiple variants and multiple inscriptions, they can be interpreted as a stylistic element that appears for the first time in Enkomi in the first half of LCII and influenced writing in Ugarit and possibly also in Pyla-*Kokkinokremos*.

The other group of variants is entirely found on clay boules from Enkomi. They are all dated to the LCIIIA–LCIIIB period, with the exception of three signs dated to the LCIIC, LCIIIB and unknown period. The nine instances of multiple-depth strokes in word dividers are also exclusively from clay boules from Enkomi, a part of one example from Hala Sultan Tekke. The earliest examples are dated to the LCIIC period and the last to the LCIIIA–LCIIIB period. Rather than being a stylistic feature, the multi-depth composite stroke on this group of variants seems to be palaeographic experiments because they do not appear in a regular and formalised way across multiple inscriptions.

Instead, they seem to be connected to a faster writing mode and can be used to understand and predict the abstract core shape of a sign. In fact, in several of these signs there are other variants in which the distinct parts of the composite stroke are rendered as separate lines. An example of this is sign 005 (Fig. 5.15a), which in its abstract shape is composed of a horizontal and a vertical line intersecting in their middle. In its most common and simplest Variant 1, the two lines are rendered each with one linear stroke. Variant 2 has the vertical line rendered as two separate strokes and in Variant 3 also the horizontal line is two separate strokes. Variant 4

[6] S005-V4, S006-V4, S087-V4, S088-V6, S088-V5, S061-V4, S072-V6, S097-V7, S102-V8, S102-V7, S107-V5, S110-V1.

[7] Seen on the following inscriptions: ##002, ##004, ##014, ##055, ##069, ##077, ##089, ##080, ##082.

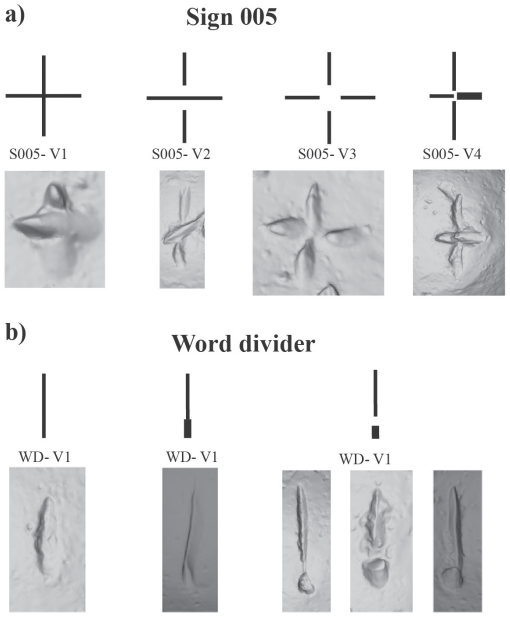


Fig. 5.15. Sign 005 and its variants (a) and the word divider and its variants (b).

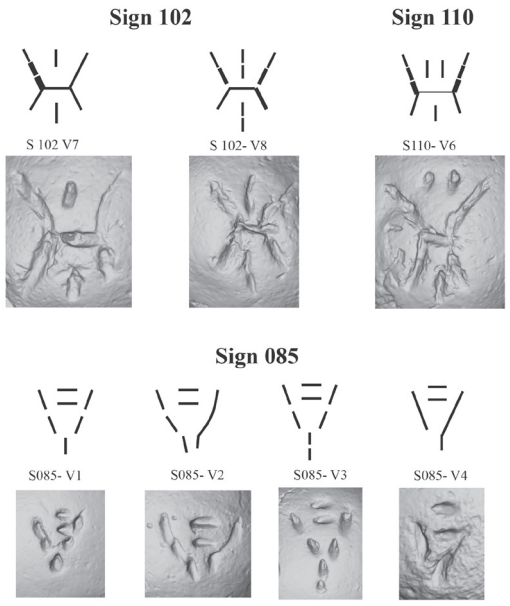


Fig. 5.16. The variants of sign 102 and 110 with composite strokes and sign 085 with all of its variants.

is in between Variant 1 and 3, with the vertical line rendered as two separate linear strokes and the horizontal line is with a multi-depth linear composite stroke.

A similar situation can be observed within the variants of sign 006, 061, 087 and 088, as well as in the word divider (Fig. 5.15b). It shows that composite strokes can predict or point towards the possible composition of other variants within the same signs. Consequentially, one has to entertain the possibility that sign 072, 097, 102, 107 and 110 can have additional variants, where the sub-parts of the composite strokes in them are rendered as separate lines even though they have not been discovered yet. In this sense, the variants exhibiting composite strokes in sign 110 and 102 suggest the possibility of having similar variants to the one seen in sign 085 with multiple short separate strokes (Fig. 5.16). It not only has several variants in which framing lines are rendered in multiple separate short strokes, its Variant 2 and 4 uses also composite strokes with a change of direction and depth. This use of composite strokes is discussed in the next section.

To render 2 lines in 1

Finally, composite strokes are also used to render in one movement two lines that are normally separated according to the base structure of the sign. They include a change in direction and are very often accompanied by a change of depth as well. This is the rarest purpose for composite strokes with 43 examples that appear in connection to eight signs

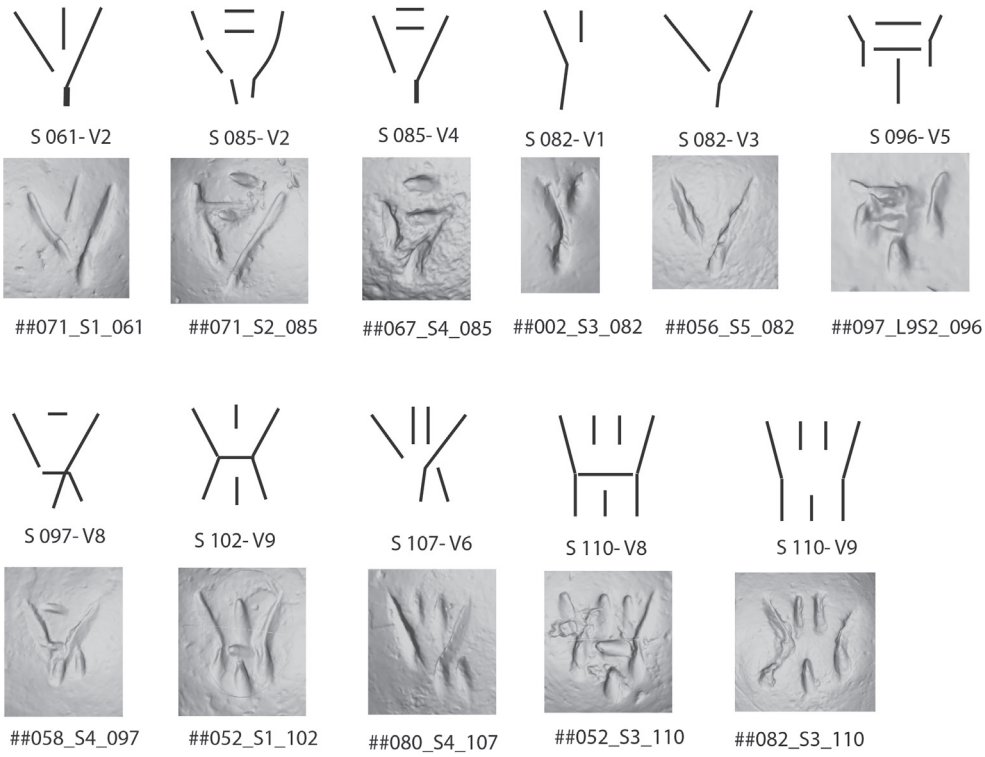


Fig. 5.17. Variants with a composite stroke used to render two lines in one movement.

and across 27 objects.[8] It is a phenomenon that occurs so far only on signs with a Y- or H-frame (Fig. 5.17).

The earliest examples of variants with such strokes appear in the second half of LCII in Enkomi and in Kalavassos-*Ayios Dhimitrios* (Fig. 5.18) and so far these two sites are the only ones in which this type of stroke was found in the digitised material. The highest use occurs towards the end of the Late Cypriot Bronze Age in LCIIIB, which is significant because there are more inscriptions in the corpus dated to LCIIIA and LCIIIA–LCIIIB. Unfortunately, a high number of examples are not dated and could change the temporal distribution of these signs.

Looking at what inscriptions exhibit these variants, it becomes clear that the early examples from LCII are connected with the clay cylinders from Kalavassos-Ayios Dhimitrios and Enkomi. The examples from LCIII on the other hand are exclusively from the clay boules. The clay boules with more than one sign that exhibits a linear composite line used in this fashion are ##052, ##054, ##058, ##068, ##071, ##085, while

[8] 061 (##071, ##020), 085 (##071, ##067), 096 (##102, ##097), 097 (##058), 102 (##101, ##068, ##061, ##054, ##052), 082 (##098, ##097, ##085, ##058, ##056, ##054, ##012, ##002), 107 (##080, ##046), 110 (##097, ##085, ##082, ##065, ##052); potentially unintentional: ##068_S4_008.

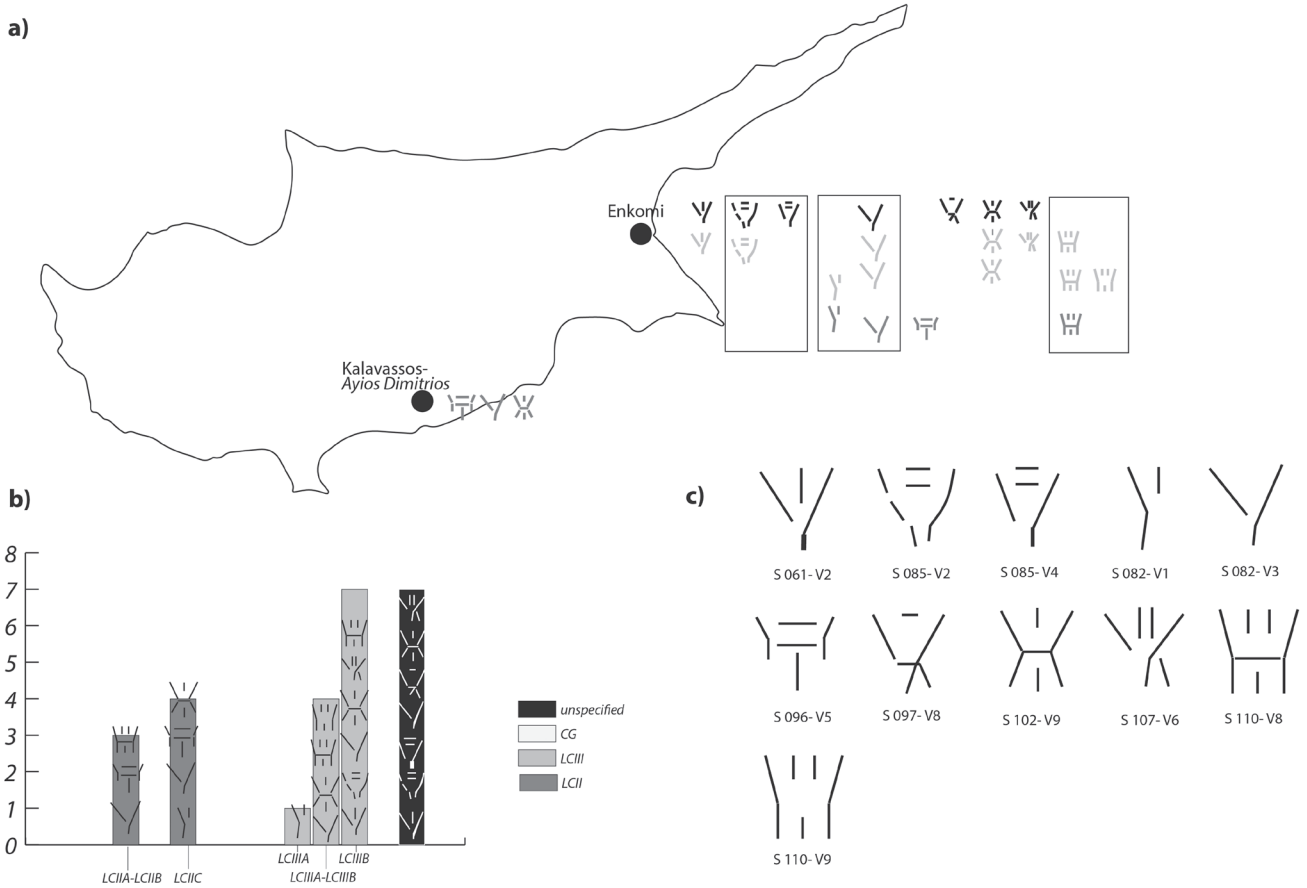


Fig. 5.18. Geographical and temporal distribution of sign variants with composite lines used to render two lines in one movement. a) Geographical distribution. Variants are coloured according to their dating. Variants from the same sign in the same site are encased in grey. b) Temporal distribution. The y-axis shows the number of examples and the x-axis the time periods. Each time period bar shows the variants that appear in that period. c) List of variants with composite lines used to render two lines in one movement.

the inscription with the most examples is clay cylinder ##097. Interestingly, none of the examples from composite lines used in this way comes from tablets.

Similarly to the multi-depth composite stroke examined earlier, also this type of composite stroke serves to understand the abstract core shape of signs better. Sign 082 illustrates this perfectly (Fig. 5.19). In its most common Variant 2, the sign is rendered in three separate linear strokes placed to shape a V. Both Variant 1 and 2 use a composite stroke to render one of the lateral lines and the central line in the bottom in one movement. The scribe used more pressure in the lower part of the stroke to emphasise the part that should represent the central vertical line in the bottom. This suggests the importance of this line to be able to recognise sign 082. At the same time, it makes Variant 4 of sign 082 stand out as the central vertical line in the bottom is completely missing.

As for the reason behind the employment of this type of stroke, a distinction has to be made most likely between the boules and the cylinders. The clay cylinders have among the smallest inscriptions in the corpus, with an average sign dimension of 3.5 and 4 mm in width and height and 1 mm in depth (Fig. 5.20). The use of the composite strokes on the cylinder can

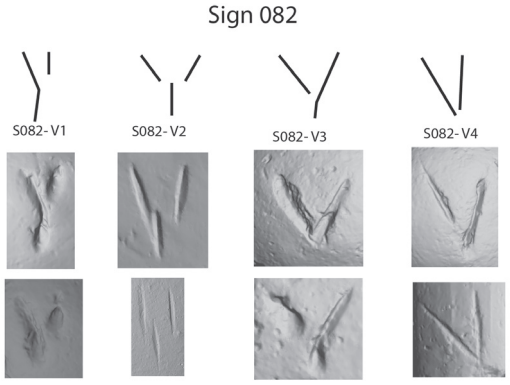


Fig. 5.19. Sign 082 and its variants with examples.

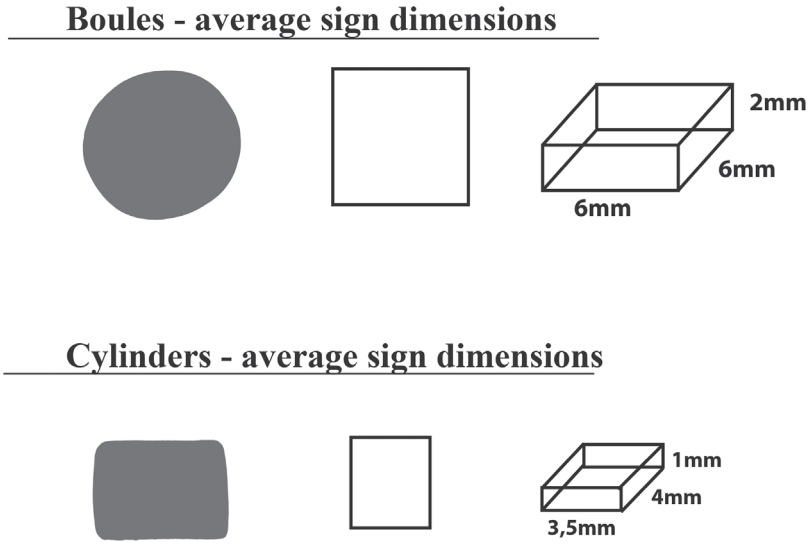


Fig. 5.20. The average dimensions of clay boules and clay cylinders based on the measurements taken from the 3D models.

be interpreted as a strategy to render such small signs legible. Boules, on the other hand, have on average much larger sign with a width and height of 6 mm and depth of 2 mm according to the geometric measurements taken from the 3D models. In the case of the boules one can assume that it was rather connected to experiments towards a faster writing mode in LCIII, as already seen with the examples of multi-depth composite strokes on them.

Conclusions

In this study we have seen that the palaeography of Cypro-Minoan writing as seen in its stroke types is far more complex than it seems at first glance. The high-resolution 3D documentation of inscriptions has made it possible to identify three distinct types of strokes that are being used across the Cypro-Minoan corpus: linear, curved and composite. Both linear and composite strokes have sub-types consisting of dots, which are extremely short linear strokes, and linear and complex composite strokes, which refer to different levels of complexity in the composite stroke type. They represent different tool movements in terms of the uniformity of direction and pressure. The use of the different stroke types is both intimately connected to ductus and sign shape, as they are both dependent on technique and material, and on a design choice. Studying the when, where and why the different stroke types are employed is informative on sign composition and writing traditions in Cypro-Minoan. The most important and common stroke type within Cypro-Minoan is the linear stroke type, representing 89% of all the strokes employed. However, they are not the most informative type. Far more interesting are the distribution and purposes of use of dots, curved and in particular the composite strokes.

It could be shown that dots play an important role in the composition of several variants in Cypro-Minoan signs, where they appear to be used as a substitute of short linear strokes to render short lines in the abstract base shape of signs. They are employed independently of material across the entire time frame of Cypro-Minoan writing, following the general geographical and temporal distribution patterns of the entire corpus. Curved strokes are less important in the composition of signs and variants and represent only 1% of the entire stroke count like dots. One of the signs with a variant that is characterised by the use of curved lines, represents a rare instance of shape adaption due to the material. Composite strokes are more common than both dots and curved strokes, representing 9% of the total analysed stroke number. They are employed for various purposes that ranges from simple renditions of angled or oblique lines, to more complex ones that have a significant impact on the composition of variants. The geographical and chronological distribution of one type of composite stroke featured across various variants, suggests that it represents a distinct stylistic element that appears to originate in Enkomi in LCII and had strong ties with Ugarit. It was also possible to identify indications for experimentations in faster writing among the clay boules of Enkomi in LCIII, and indications for a strategy

to writing particularly minute signs in the context of the clay cylinders of Kalavassos-*Ayios Dhimitrios* and Enkomi. It remains to be seen whether the suggested stylistic elements and palaeographic experimentations and adaptions really have such a close relationship with Enkomi or whether they are a more widespread phenomena given the high number of inscriptions from Enkomi in the corpus. Until more inscriptions from other geographic areas come to light and are analysed this question remains unanswered. Nevertheless, the study of stroke types and their use across the corpus helped to understand better core elements of sign shapes and aspects of the writing culture in Cypro-Minoan.

Chapter 6

The magic of writing in the Late Bronze Age East Mediterranean

Philip J. Boyes

The connection between writing and the supernatural is a fruitful area to explore when thinking about questions of social context and cultural connectivity in writing practices.[1] Writing's origin – divine gift or human invention – and its potential efficacy in marshalling supernatural forces can be central to cultural beliefs surrounding the practice. Furthermore, a supernatural dimension has often been read into instances of contact between people with very different writing practices, or especially between literate and non-literate societies. Those who do not write, it has often been claimed, are prone to interpreting these unfamiliar marks as inherently supernatural because of their ability to encode, transmit and preserve otherwise ephemeral speech and memory. Such generalisations have unsurprisingly been widely criticised for several decades now, the motif increasingly seen as telling us more about the prejudices and assumptions of the literate people who recorded the encounter than the actual beliefs of non-literates taking in writing for the first time (Seed 1991). And yet, beliefs about the supernatural status or efficacy of writing did, and do, spread from place to place as they are taken up and adapted by people from one culture or another. By exploring the agency of the people involved, what they did and did not adapt to their own socio-cultural context and how, we can gain insights into how writing was viewed within those societies and especially into the relationship between writing and cultural contact.

What exactly counts as 'supernatural' and especially what we mean by 'magic' is a rather vexed question, with previous scholarship offering very little consensus and

[1] This chapter was written as part of the CREWS Project, which has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 677758). I am grateful to Pippa Steele and to the anonymous peer reviewer for reading drafts and much improving it with their comments.

many strong opinions. For the sake of brevity, this is not something I want to get into in great detail here. For the purposes of this chapter, 'supernatural' is taken to mean anything involving forces or entities outside the ordinary spectrum of mundane experience. 'Magic' is used for any attempt by human beings to influence, affect or control such forces through the use of specific practices or material culture. This is rather a broad definition and it will be noted that it does not necessarily assume a dichotomy between magic and religion, something which has often been insisted upon by scholars influenced by later Christian thinking. For the region and time we are discussing, such a strict division seems not to have existed. Given the breadth of this working definition of magical practice, I cannot possibly discuss here all practices and classes of material that could fall within its ambit. Consequently, I mostly focus on the clearest examples involving writing. This is not to say that other, potentially more ambiguous or complex cases are not equally valid; merely that they lend themselves less readily to discussion in the available space.

The East Mediterranean during the Late Bronze Age is an excellent case study for exploring these issues: numerous societies, large and small, dominant and subaltern, interacted within a relatively limited geographical region through networks of trade, politics and migration. Multiple, highly diverse writing practices circulated, demonstrating both significant mutual influence and important areas of difference. This chapter explores the relationship between supernatural beliefs concerning writing in the Levant and those in the region more broadly. After a brief survey of how ideas of cultural interaction and writing's supernatural efficacy have been approached anthropologically in more recent contexts, I will summarise our understanding of these beliefs in Egypt and Mesopotamia. Given the magnitude of the topic, this discussion cannot be exhaustive. Egypt is presented here in greater detail since the evidence is abundant and serves to establish concepts that will be returned to in the other case studies. Mesopotamia is discussed slightly more summarily. Despite their brevity, these comparanda will, I hope, allow an exploration of beliefs in the magical potential of writing in the Levant - and especially in the Syrian city of Ugarit (Boyes 2019a; 2021a; 2021b)[2] – and their relationship to the wider regional context.

The motif of writing as magic in the anthropology of contact

> Under the 'diversities of religious experience' the forms dealt with here can be classified as follows: on the one hand, they are based on the amazement and shuddering of primitive people in front of an image, and especially before a script, through which the astonishing is achieved, that distant words talk, as if a ghost is speaking. That leads to a magical use. There are very early purely magical ABC-monuments. For the illiterate, the art of writing can be an uncanny mystery.[3]

[2] For a general introduction to Ugarit during the Late Bronze Age, please see Boyes (2021a); I will not be repeating this material in detail here.

[3] Dornseiff (1925, 1). Translated by the author. Original German: *Unter die „Verschiedenheiten religiöser*

This quotation from Dornseiff's 1925 monograph on the magical use of the alphabet neatly encapsulates a view about how writing was interpreted by non-literate people, which is either explicit or implicit throughout a great deal of twentieth-century scholarship on the subject. It is typical not just in assuming that non-literate people would see writing as magical but also in its patronising approach to these so-called 'primitive people' and its presumption of general applicability. The motif has its origin – in modern scholarship, at least – in conquistadores' accounts of their experiences in the New World and later colonialist explorers' similar tales. The importance of literacy for members of these European societies, and especially that of the Bible as the physical manifestation of the word of God, meant they placed great value in introducing these supposed markers of civilisation to the indigenous people they encountered. Generally these encounters were typified by a reproduction of the stereotype of native wonderment, or else the Europeans noted with peevish indignation when the locals failed to display the expected amazement or gratitude at the marvels they were being offered.[4]

From there, the stereotype of illiterate 'primitive' peoples marvelling at the magical abilities of European (or, later, American) writing entered into anthropological discourse, evolving as it did so. Its legacy is felt in writings by influential linguists and anthropologists such as Ignace Gelb (1963, esp. 230) and Jack Goody (1968).[5] By the late 1980s and early 90s, the Eurocentric and patronising aspects of the motif were increasingly recognised, and there was an increased effort to replace the generalised framework with case studies based on how writing was mediated through specific belief systems, as well as to approach the matter from indigenous perspectives. Nevertheless, the underlying idea remained prevalent enough that Wogan felt it necessary to write an article criticising it in 1994. 'Anthropological understanding has clearly advanced', he argued, 'yet all of these reports still retain a description of nonliterate cultures where European writing is initially perceived as some sort of magical power' (Wogan 1994, 409).

These accounts of the introduction of writing from outside can be contrasted with cases of stimulus diffusion, whereby non-literate people develop their own scripts based on the idea – but not a detailed understanding of the mechanics – of writing, which they have observed being used by members of other societies. The circumstances of such inventions are extremely diverse, but it has been noted that in

Erfahrung" ordnen sich die hier behandelten Formen so ein: auf der einen Seite liegt zugrunde das Staunen und Erschaudern des primitiven Menschen vor dem Bild und vor dem Schriftbild im besonderu, durch das das Verblüffende zuwege gebracht wird, daß die Worte Entfernter reden, als spräche ein Geist. Das führt zu magischer Nutzung. Es gibt ganz frühe, rein magische ABC-Denkmäler. Für den Analphabeten bildet die Kunst des Schreibens leicht ein unheimliches Mysterium...

[4] Good summaries of the history of this motif are provided by Seed (1991) and especially Wogan (1994). The former also provides a case study for differing interpretations of the same encounter from both Spanish and multiple indigenous perspectives, as well as of Spanish dudgeon at a perceived failure by their Inca counterparts to offer the 'correct' response.

[5] See also Wogan (1994, 408).

more recently documented examples, an element of divine or otherwise supernatural involvement has often figured in the accounts of the script's invention. Although we must obviously be careful when accounts are mediated through non-indigenous reporters, these cases may provide an alternative window on cultural contact and the supernatural.[6]

Modern anthropology and colonial encounters in the Americas might seem far away from the writing culture of the Late Bronze Age East Mediterranean, but the tendency of especially earlier twentieth-century anthropology to draw equivalences between contemporary non-Western cultures and those of the ancient past means that what was seen as being true of one was likely to be applied to others. This is implicit in the passage from Dornseiff that began this section: he speaks of 'primitive people' (*primitiven Menschen*) without specifying a time period. Gelb is more explicit in stating the chronological as well as cross-cultural applicability of this approach: 'The concept of the divine origin and character of writing is found everywhere, in both ancient and modern times ... In the main, it is due to a widespread belief in the magic powers of writing' (Gelb 1963, 230). Beyond such generalised statements, it is hard to assess the extent to which these ideas from anthropology have translated to archaeological and historical literature: such works tend to focus more on specific magical practices in their case study societies rather than wider questions of the relationship between literacy and the supernatural. The paucity of good data surrounding the spread of writing, particularly in its earliest phases, has to a significant extent discouraged drawing any conclusions about how it was viewed, supernaturally or otherwise. This lack of archaeological engagement with the relationship between writing, magic and culture means that we must look to other disciplines such as anthropology to inform our analytical framework, and in doing so we must be aware of the pitfalls and missteps such discussion has fallen foul of.

In exploring the potential for magical beliefs surrounding writing practices, and their spread and transformations through cultural contacts, we must think in terms of *understandings* of writing rather than misunderstandings. Literacy and writing do not have a single universal cultural meaning: people encountering and responding to writing practices in one social, cultural and historical context might understand their power and abilities quite differently from those in another, without either being 'wrong'. A good example comes in the 2003 ethnographic case study with which Wogan followed his earlier critical discussion of previous anthropological approaches to the topic. He demonstrates that the magical writing beliefs of the indigenous Salasca people of Equador are not rooted in a failure to understand 'how writing works' arising at the time of the initial encounter between them and their literate colonisers, but rather a detailed knowledge of exactly how writing had been, and continues to be,

[6] Piers Kelly presented a useful paper on this subject at the CREWS conference 'Exploring the Social and Cultural Contexts of Historic Writing Systems' in March 2019. Unfortunately, Kelly was not able to offer a written version of the presentation for the conference volume (Boyes *et al.* 2021a) but a recording of the talk is available online at https://bit.ly/3rjQ6vQ.

used to exert power and control over them through bureaucratic administration. This passage is worth quoting in full:

> Contrary to popular European/North American assumptions, Salasca beliefs in San Gonzalo [a Catholic saint whose earthly guardians could be paid to inflict magical suffering by writing a person's name in a book or to remove it by erasing the name] are not the product of illiteracy or unfamiliarity with the way "writing really works". Quite the opposite, these beliefs persist precisely because the Salascas do understand the way writing works: they understand that documentation is intimately connected with power, and their magical beliefs capitalize on that connection, adopting writing for witchcraft purposes. In this sense, the skeptical suggestion that San Gonzalo is an exploitative scam is a central aspect of these beliefs: writing is not just associated with power, but with exploitative power.
>
> This point is to be stressed, since there is a widespread assumption that beliefs in the type of magical literacy analyzed in this book will disappear once literacy rates rise. After I describe San Gonzalo, sometimes the first question people ask me is whether the Salascas are literate, the premise being (and often explicitly stated) that their magical beliefs will disappear once they grasp writing's "real" (that is, practical) nature. This same premise is found in academic studies, from ethnohistorical accounts of ostensible indigenous amazement at alphabetic literacy due to its novelty to discussions of European reverence for runes. [7]

This principle of paying attention to what people *do* understand about writing and its uses is an important guide when thinking about the spread of writing and scripts in the ancient world; as is understanding that the functions of writing include things beyond merely the communication of information, and that to see it as a tool of coercion or control is astute rather than to miss its inherent value. With the patchy evidence available to us, we cannot necessarily approach things in this much detail or determine why exactly beliefs about the supernatural status of writing were taken up or not in any given context, but we can see that even in encounters where the power dynamic was markedly uneven – such as between the Levant and its neighbours in Egypt and Mesopotamia – local agency and cultural factors played important roles in when and how ideas were borrowed and the ways they developed over time.

Writing in ancient Egypt: divine and magically charged

Egypt offers numerous unambiguous examples of writing being seen as capable of effecting magical influence. Throughout much of antiquity, Egypt was inextricably linked with magic in the minds of many from the Mediterranean and Near East, and something of this characterisation persists to this day. A stereotype, certainly, but one with a certain justification, as the huge quantities of magical texts and objects that have been recovered from the region amply demonstrate.[8]

Not all this magical material involves writing practices, of course, and determining what does brings us to an important point. We must distinguish conceptually between

[7] Wogan (2003, 38).

[8] Overviews can be found in Ritner (1993) and Pinch (1994).

writing that is merely *about* the supernatural and the belief that writing itself – whether that be the technology of writing, the act of writing or the text produced – can have supernatural qualities. In this chapter I am more interested in examples of the practice of writing as a fundamental and necessary part of a magical rite rather than in texts that merely record or provide instructions for spells. However, the distinction is not absolute and there is an ambiguous middle ground, especially when magical spells involve reading or reciting a text. To what extent is the written text itself magically efficacious in such cases? Is it merely a neutral record communicating the magical acts that must be performed, or is the act of reading itself a supernaturally efficacious element?

In the case of Egypt, all these broad categories of magical writing are attested in abundance. As well as countless texts detailing spells that do not themselves involve writing as a magical act, there are also many where inscription played an important role. The middle ground is embodied by the institution of the lector (Forshaw 2014), ritual specialists who were often attached to temples, where they participated in official cult, but who could also work independently either as producers of spells or ritualists-for-hire.[9] All these roles fall within the broad definition of magical practice outlined above, but the aspect that concerns us here is their central duty of ritual recitation and the role text and reading played within it (Forshaw 2014, 116). It is generally believed that it was the verbal utterance of the words that was ritually important, but reading and writing paraphernalia are nevertheless central to the iconography of Egyptian lectors. In the formal conventions of Egyptian art, they are represented as carrying papyrus scrolls, which are open when they recite (Forshaw 2014, 7): in other words, the recitation is consistently depicted as an act of public reading-aloud, rather than declamation from memory (in the case of regularly performed rituals, it seems probable that recitation purely or mostly from memory would not have been possible). Although it may not have been the 'active ingredient' in the lector's ritual performance, the connection with writing does seem to have been significant, then, and their public role is likely to have added to the prestige and authority of the written word and cemented a connection between writing and ritual in the minds of those who witnessed it – especially in the richly inscribed contexts of Egyptian temples.

Probably the most prominent use of writing as part of magical spells is in execration rituals. The most well-known of these is the rite against the chaos-serpent Apep, regularly performed by temple priests. As part of this ritual (Bremner-Rhind Papyrus III: 23, 7), the serpent's name was written in ink on a wax replica of the snake, which was then destroyed (Faulkner 1937; Ritner 1993; Frankfurter 2005).[10]

[9] We should note that Egyptian society was not static. Lectors are first mentioned in the Second Dynasty (Forshaw 2014, 10) and their role likely evolved over the many centuries of Egyptian history. Nevertheless, the centrality of ritual recitation among their duties and their connection to reading and writing appear to have remained constant.

[10] The colour of the ink was likely significant, but there are differing views on what this colour was. The

The relationship between images and the things they represent was close in ancient Egypt, characterised by what Nyord (2020, 3) calls 'close, intrinsic connections between images and that which they depict'. Nyord (2020, 54–68, esp. 64–68) sees the use of writing in execration rites as part of a subcategory of 'presentifying' images, which establish the material presence of the thing depicted. These are specifically intended to alter or manipulate the manifested entity. While part of broader themes in Egyptian art and cultural ideas relating to images and the closely related field of writing, this practice can also be seen as an example of the general cross-cultural idea of 'sympathetic magic', whereby a replica or effigy can be bound to the subject through the use of items associated with them – the inscribed name in this case, but in others bodily substances or possessions. Actions taken against the replica are then believed to be able to affect the intended subject, as with the popular idea of the 'voodoo doll'.[11]

While the Apep ritual took place at the highest levels of official cult, the same principle applies in other execrations, including those by ordinary people. These too could involve directly inscribing a wax replica with the victim's name, as in Coffin Text 37, but the writing might also be applied in other ways: it might be written on papyrus and inserted inside the wax figure, inscribed on lead and tied to it, or else just buried next to it in a graveyard (Pinch 1994, 90–91; Donahou 2010, 74–75). Beyond wax or other replicas, names might also be written together with the hieroglyph for a dying man on bowls for similar purposes (Donahou 2010, 77), although both Ritner (1993, 159) and Donahou (2010, 90–91) argue that in this case the writing alone was not a necessary or sufficient element for magical efficacy. In some cases, destruction of the name could be affected by its consumption by animals: one Late Bronze Age spell involves the inscription of a demon or ghost's name on a phallus-shaped loaf, which was then wrapped in meat and given to a cat to eat (Pinch 1994, 87–88). Writing might also be invoked metaphorically: Coffin Text 425 refers to smashing an enemy's inkwells – the curtailing of their ability to write implying a broader magical destruction of their capacity to act (Donahou 2010, 75).

Writing could also be used in protective or curative spells. Here, physical contact between the words and the patient seems to have been key, the closer the better. For example, the pain from scorpion stings might be relieved by inscribing magical signs on papyrus and using it to bind the affected area (Bohleke 1997, 164). Numerous

text of the rite describes it using hieroglyphs that can mean both 'green' and 'fresh or new'. Red ink was generally preferred for writing the names of the victims of execration rituals due to its association with chaos, evil and otherness, and the name of Apep appears in red in the Bremner-Rhind Papyrus itself (Faulkner 1937, 167; Ritner 1993, 146–147). Ritner seems to see the instructions as calling for fresh (red) ink, while Faulkner (1937, 168) and Frankfurter (2005, 164), translate it as green.

[11] Nyord (2020, 67) actually disputes the claims by Ritner (1993, 112–113) and others that Egyptian execration images work like 'voodoo dolls' specifically, arguing that they function more by 'a manipulation of the underlying "analogistic" connections between things, rather than a pseudo-causal act that automatically makes the depicted person drop dead', but the nuance seems a rather fine one.

curative or protective spells call for the actual consumption of written words: they might be written on the body itself and licked off, or on an egg, which was then licked and eaten (Ritner 1993, 100). Inscribed papyri might be soaked and the liquid then poured on to wounds or drunk (Pinch 1994, 70; Donahou 2010, 58). Some statues or stelae that carried magical inscriptions included basins to allow liquid to be run over the magic words before being drunk (Ritner 1993, 88, 107; Pinch 1994, 70). By the Hellenistic period, a special ink made from myrrh was often used when writing was intended to be washed and drunk.[12]

Protective magic was often harnessed through amulets, of which a significant subcategory incorporated writing. Spells or sometimes magical drawings (the boundary between text and image being more porous than elsewhere in Egypt) could be written on papyrus or linen and worn in leather or linen pouches. From the first millennium BC onwards, these were sometimes replaced by metal tubes, worn around the neck (Pinch 1994, 115; Frankfurter 2005, 163; Dieleman 2015). Although the earliest preserved textual amulet dates from the Ramesside period, they likely existed well before this. An example involving a drawing is referred to in the Edwin Smith Papyrus (c. 1600 BC) and Dieleman (2015, 33–36) suggests that the practice developed from a desire to add magical effectiveness to ordinary bandages used in medicine and mummification, possibly around 1700 BC (although he acknowledges that the dataset provides little scope for conclusive dating). It is also worth noting here the possibility of direct inscription of the body in the form of tattooing. Although tattooing is well attested for Egypt, textual tattoos are not. Nevertheless, there are examples that point towards the possible existence of such practices, such as a woman found at Deir el-Medina, with numerous figural tattoos, including potential hieroglyphic signs and amuletic symbols such as the wedjet-eye. These tattoos have been interpreted as magical in nature (Austin and Gobeil 2017).

In this section we have surveyed the main types of Egyptian magic that involved writing. It remains to explore exactly what Egyptians believed about the relationship between writing and the supernatural. Iconographic depictions point to a strong association between magic, divinity and writing, exemplified in the figure of the deity Heka. Heka is often seen as a personification of magical power; when not acting as a proper name, 'heka' is frequently translated as the general Egyptian word for 'magic', although given that contemporary definitions of the latter are so variable, we should beware of assuming a direct and exact correspondence,[13] The god Heka can be depicted as associated with writing: for example, on the outer wall of the Edfu

[12] The washing or soaking of inscriptions with liquid that is then drunk is a well-attested element of rituals in a number of societies. As well as a Levantine example, which will be discussed below, see also Ritner (1993, 110) and Guillaume-Pey (2021).

[13] The conceptual connection of 'heka' with 'magic' is particularly associated with Ritner (1993), but his relatively straightforward equivalence of the terms has been criticised more recently by scholars such as Nyord. See, in particular, Nyord (2019, 1–14) on the difficulties of pinning down the meaning of 'heka' and on emic versus etic concepts in Egyptology more broadly.

Pylon, he is shown carrying a tray laden with several examples of the hieroglyphic determinative for writing. The accompanying inscription says he presents his 'heka spread out before' Horus, using the same word usually reserved for the unfurling of papyrus rolls. Accompanying Heka is his *ḥmws.t* – the female equivalent of a ka. She carries a tray with a scribal kit on it (Ritner 1993, 36–37).

Mythology reinforces this idea of writing as connected both to the divine and to magic. Literacy was seen as a direct gift from the gods, specifically the scribe-god Thoth. As well as being intrinsically divine, Thoth carried the epithets 'lord of hieroglyphs' and 'strong of heka' and was said to have been the first who 'fashioned signs and wrote heka' (Ritner, 1993, 35 and n. 198). In some traditions he was supposed to have written down books of secret magical knowledge to be shared with only chosen magical adepts, a tradition that over time grew into the esoteric legend of Hermes Trismegistos.

It seems clear, then, that Egyptians believed writing was a divine creation and was fundamentally connected with magic in divine practice. Scholars have taken different views, however, on the role of writing within the magical rituals it was part of. Ritner (1993, passim) emphasises the role of utterance, with writing being a way of encoding this. For Frankfurter (2005, esp. 177–180), the words themselves, whether written or uttered, were not sufficient for magical effectiveness: they had to be combined with appropriate magical authority on the part of the spell-caster – either inherent in their person or station or deriving from their ability to call upon gods or other supernatural forces. The importance of writing in this was that it had the potential to render permanent and transmissible the powerful utterances of such authoritative persons, as well as enhancing it with the public visibility and authority of the writing itself:

> As with curses inscribed on monuments, the permanent threat of subversive action against the transgressor derives its authority as much from the public posting as from the supernatural speaker invoked. The public posting invites the reader's attention, then commands him with threats. It reifies the threat through the concrete medium of the written word: potential action hovering over the space as long as the words are visible.[14]

In sum, the association between writing and magic in Egypt is clear, and is closely tied to Egyptian mythological and cosmological beliefs. However, this specificity in terms of beliefs about writing and magic's place in culture and society is balanced by actual practices that are less unique. Among the many and varied ways writing was applied to magical purposes, several – if not the majority – find plentiful parallels elsewhere. Ideas like sympathetic magic, the use of amulets or the washing of writing and consumption of the textually charged runoff are all cross-culturally widespread, as we will see if we turn our attention to other parts of the East Mediterranean and Near East.

[14] Frankfurter (2005, 179).

Magic and writing in Mesopotamia

Magical beliefs are well attested and well-studied for Mesopotamia, especially beliefs in witchcraft. Misfortunes and illnesses were rarely assumed to be the result merely of random chance or personal error, but were generally believed to result from a person falling under the malign influence of a demon, ghost or witch. The treatment for this was exorcism, many of the rituals for which are recorded in cuneiform tablets, the best-known of which are the Neo-Assyrian series known as Maqlû – the Burning. For this reason, our best evidence relates to the first millennium BC, although the observations made here are broadly applicable to earlier periods too.

Many aspects of Mesopotamian witchcraft and exorcism beliefs and practices echo those we have already discussed for Egypt. The basic belief that misfortune comes from the malevolent action of another is similar; however, whereas human witch figures prominently in Mesopotamian beliefs, Egyptians were more likely to attribute misfortune to ghosts or spirits. This is something of a paradox, since Egypt offers considerably more evidence of ordinary people actually practising magic against each other than Mesopotamia does. The uses of images and replicas also recalls what we saw in Egypt. Figurines were an important tool for the magician, both maliciously – as in beliefs about how witchcraft was carried out[15] – but also in the exorcistic rituals used to combat such attacks. The eponymous 'burning' of the Maqlû tablets is the destruction of a wax figurine of the witch, and the tablets also describe figures being made of dough and fed to dogs (Thomsen 2001; Abusch 2002a; 2002b; 2020).

Bahrani (2003, 183) has argued that this is not so much sympathetic magic per se as an inherent consequence of Mesopotamian understanding of what an image was. Like Nyord for Egypt, she argues that Mesopotamian images were neither representational or mimetic in the modern Western sense; there was no Cartesian division between a thing and the mental representation of it. According to Bahrani, the image *was* the thing, just as a name *was* the thing (see also Bottéro 1992, esp. chs. 5–9, whom Bahrani cites as her major inspiration). Each was conceptualised as a manifestation of a thing or person – 'presentifying', to use Nyord's term mentioned earlier. This, Bottéro and Bahrani claim, is why divination was such a major part of Mesopotamian culture: the nature and fates of anything could be discerned from names, signs and so forth. It also has important implications for the role of writing: if their interpretation is correct, then writing functioned identically to image (Bahrani 2003, esp. ch. 4); it is thus, in her view, intimately connected to magic and divination (Bahrani 2003, 5-6).

These beliefs regarding images and their ability to manifest and manipulate rather than merely represent have much in common with those we saw in Egypt, and consequently the magical practices that emerged from them also seem broadly familiar. In the details, however, differences are numerous, and the use of writing

[15] Although images and other bodily substances that could stand for or substitute the target were an important part of Mesopotamian witchcraft beliefs, magic could also be affected without them, for example using merely the witch's spittle, or even just their malicious gaze (Abusch 2020, 6 and passim).

appears to be one such area. Despite, or perhaps because of, Bahrani's assertion that writing functioned in the same way as image for making manifest the intended subject of a magical rite, inscription seems to play less of a role in Mesopotamian magic of this kind than it did in Egypt. Where Egyptian magical figurines were identified with their subject by inscription of the name, this seems to have been less necessary in Mesopotamia; instead, a verbal declaration was made over them.[16] There was a concern that witches might affect people through messages or evil signs, but these seem to have been ill omens rather than true written messages (Abusch 2020, ch. 14).

This brings us to the topic of divination. Mesopotamians of all periods were alert to the potential of reading and writing as a metaphor for the processes by which the gods encoded information in omens and humans deciphered and interpreted these signs (Bottéro 1992, chs. 7–8; Bahrani 2003, esp. ch. 4). A Babylonian phrase calls the liver 'the tablet of the gods' and deities like Šamaš or Nisaba were said to 'write down' (*šataru* – the same word used for writing on a tablet) oracles on the organs. The metaphor was current from the Old Babylonian period through into the first millennium BC (Steinkeller 2005, 15–16, 29–30; Heeßel 2012, 17–18, n. 16). Steinkeller (2005, 14) argues that the analogy is with legal cases, with the oracle being handed down as a written judgement from a divine court: the animal served as the envelope and the signs on the entrails as the sealed tablet. Similar legal analogies have been observed in other Mesopotamian magical practice, such as exorcism. Abusch (2020, 33) compares the language of the declarations in the Maqlû to those of a law-court, with the subject of the ritual being treated as a defendant in a divine trial, brought before the gods in the form of a wax simulacrum. It seems, then, that in the field of divination – one of the most important of Mesopotamian magical disciplines – the role of writing was primarily conceptual and metaphorical, or else in its practical ability to record the outcomes of divinatory interpretations. A great deal was written *about* divination, and Mesopotamians could see the parallels between scripts and omens as ways of encoding and transmitting information, and in the ways these 'codes' were interpreted; but writing per se does not seem to have been part of the process of Mesopotamian divination.

In ritual recitation too, the evidence suggests that Mesopotamian use of writing was similar in general but different in detail from what we saw in Egypt. In Egypt, as we discussed, writing paraphernalia was prominent in the iconography of the lector, with the lector's recitation being depicted specifically as *reading*. In Mesopotamia, there are abundant ritual tablets including incantations and other texts for recitation. There are some indications that these texts were specifically *read*, rather than recited from memory – for instance, Neo-Assyrian texts refer to copies having to be made of important tablets prior to rituals, which would not be necessary if the rite was purely

[16] *E.g.* Maqlû I, 73–109, Abusch (2020, 32–33); Schwemer (2015, 34). Contra Bahrani (2003, 174), who says 'usually the name was also inscribed on the image', but cites no primary or secondary sources in support of this.

an oral one (Schwemer 2011, 422). However, reading does not seem to have been seen as a central aspect of the identity of the reciter, such that it came to symbolise them in artistic conventions. Whether this represents a genuine cultural difference in the place of writing and reading in ritual performance or merely differing approaches to artistic depiction is hard to say.

Where the situation is clearer – and, again, very comparable with that in Egypt – is in the existence of textual amulets that allowed spells and incantations in written form to be given a certain permanence and to be attached to a body or place. These take various forms. They might be plaques bearing representations of supernatural and demonic entities such as Pazuzu or Lamaštu, with accompanying inscribed incantations; or specially shaped cuneiform tablets with projections and pierced holes allowing them to be hung up in homes. Examples from first-millennium BC Aššur have inscriptions of literary/mythological excerpts, prayers or incantations. In other cases, the amulet might be a fired clay cylinder. Instructions exist for the creation of one to protect babies from demons; the amulet was intended to be hung around the infant's neck, or at the head of the bed (Thomsen 2001, 61–64; Schwemer 2015, 37–38).

A comparison of Egypt and Mesopotamia, then, reveals broad similarities in magical beliefs and in many of the concepts underpinning them. This translates to often quite similar practices, which in both places made use of writing in often fairly comparable ways. Where they differ is in specific details and, perhaps, in the spin they put on the use of script, the particular flavour. There is a sense that the use of writing in Mesopotamian magic often tended towards the scholarly rather than the practical. Its most important role was as a tool of documentation and recording: magical lore was fully part of Mesopotamia's literate scholarly tradition and its principal practitioner – the āšipu or exorcist – was definitively a literate professional who would have specialised into the role after an education that included literacy in Akkadian, Sumerian and possibly a local language and/or script, if those were used in the area.[17] This connection between magical practice and literate culture of the ruling elites is also reflected in some of the metaphors found in magical texts, which can seem rather legalistic and bureaucratic. In contrast, while Egyptians certainly documented magic to a great extent, the actual act of writing seems a little more ubiquitous in magical practice, more often a general practitioner than the preserve of a specialist scholar. This is a generalisation, certainly, and hard to quantify, especially in the space available here. Probably it is a little over-reductive. Nevertheless, there are particularly Egyptian or Mesopotamian inflections to the beliefs and practices that they had in common. We can see how differences in writing culture, among other things, created distinctive local spins on ideas that were evidently circulating in the region during the Bronze Age. So much, at least, for the great powers. What, then, of those societies that found themselves between the two?

[17] On local scripts and variation in cuneiform literate tradition, see Boyes (2021a, ch. 5). On Mesopotamian literate education, see Charpin (2010).

Magic and writing in the Levant

The Late Bronze Age Levant incorporated strong cultural influences from both Mesopotamia and Egypt, as well as other regions such as Anatolia, combining these elements with those of its distinctive local cultures. It is also the first place we have discussed that certainly did not develop writing from scratch on its own; instead its people borrowed the idea and their first scripts from their neighbours to the east and southwest. As such, we find both similarities and differences with both the areas we have discussed so far.

One of the challenges for understanding the development of magical traditions surrounding writing in the Levant is the fragmentation of the evidence by time and place. For the Late Bronze Age, our best evidence comes from Ugarit in the north; for the Iron Age, it is the Southern Levant that is our primary source. While the cultural affinities between Ugarit and the Hebrew world are copiously documented, the latter is of course not a direct development of the former. The political, dialectal and cultural patchwork of the region during the second and first millennia BC means that even within an overall commonality, there were countless differences of emphasis or idiosyncratic local developments that took shared traditions in new directions – the best-known and longest-lasting of which is Judaism. We cannot compare like with like, then; at least not entirely. Nevertheless, a comparison of Ugaritian magical culture surrounding writing with that of Judaism in the first millennium BC and subsequently is instructive in demonstrating how important specific cultural context is to the development and spread of beliefs in writing's magical potency.

As we might expect, given the strong influence of Mesopotamia on Ugarit's literate culture, the surviving evidence from the kingdom – overwhelmingly textual – points to its magical practices existing very much in a context of awareness of and interaction with those to the east. This is most clearly exemplified by the presence in Ugarit's tablet collections of 12 Babylonian incantation documents (see Márquez-Rowe's chapter in del Olmo Lete 2014, 36–80). Linguistically, structurally and in terms of content, these closely resemble their Mesopotamian counterparts; indeed, some are likely to be direct copies. Like the documents in Ugaritic, they are essentially protective in nature, seeking to ward off malevolent entities such as Lamaštu or other demons, as well as diseases. Snakebite was a particular concern. Also in common with the Ugaritic incantations, some tablets are compendia that include multiple different incantations. They also share practical aspects, such as their basis in seeking the intervention of the gods to affect their desired outcome, rather than directly harnessing magical abilities seen as being the practitioner's own. This can take a couple of main forms. The first is a kind of prayer, where the gods are simply petitioned for supernatural intervention. In the second, the magician positions themselves as a medium or manifestation of the deity themselves. We can see this, for example, in RS 25.420+, one of the incantations against Lamaštu, which includes the lines 'The incantation is not [mine,] [it is the incantation of] Ea and [Asalluḫi], [it is the incantation of] Damu and [Ninkarrak,], [it is the incantation of] ... []' (RS

24.420+, col. IV, 14'-17' (trans. Márquez-Rowe in del Olmo Lete 2014, 45).While this is very much what we see in Mesopotamia (del Olmo Lete 2014, 26), similar claims feature in Egyptian spells too (*e.g.* Ritner 1993, 17, 23–14, 99), and the motif of the magical practitioner coming to embody or manifest the magical power of the gods during the rite can be seen as one that was in general circulation in the ancient East Mediterranean/Near East.

The Ugaritic incantations are fewer – del Olmo Lete (2014) identifies only seven tablets, although some include multiple spells. Alongside the incantation-tablets, Ugarit has produced a corpus of replica organs used in divination. These are usually ivory and usually livers, though lungs have also been found (Gachet 1995; Gachet and Pardee 2001; Pardee 2001). Like the incantation texts, they must be understood within the context of a Mesopotamian-influenced tradition; however, they differ from their Mesopotamian counterparts in important respects. There is no sign at Ugarit of the tablet-writing metaphor we observed in Mesopotamian omen-literature, although the fragmentary nature of the Ugaritic liver-texts means this is hardly surprising. More significant are the differences in the nature of divination itself, and in the way writing was used on these divinatory objects. We know relatively little about the mechanics of Ugaritian divination practices, although the literary texts have been taken by some to imply that oneiromancy – the interpretation of dreams – was a fairly important practice (*e.g.* KTU 1.6 III 1ff., del Olmo Lete 2014, 21), as it seemingly was in the later Southern Levant (Cryer 2001, 129–133). This stands in contrast to Mesopotamia, where dreams were apparently one of the less important fields of divination (Bottéro 1992, ch. 7). While the Ugaritian inscribed livers are objects with Babylonian parallels, Dietrich and Loretz (1969, 177) remark that they correspond only in form,[18] not in their use of text. The inscription of the Ugaritian replica organs was not a step in the divination process itself – certainly not ivory ones, which would take time and skill to produce (Pardee in Gachet and Pardee 2001, 202). The ivory livers are fragmentary and their brief inscriptions difficult to reconstruct, but their editor, Pardee, believes that they take a 'broader perspective' than the nitty-gritty of divination ('perspective plus large' – Pardee in Gachet and Pardee 2001, 202). Rather, if the inscriptions relate to divination at all, it is generally to state the occasion, who it was for and what it was about. In some cases, however, Pardee thinks the relationship to specific divinatory rituals may have been less direct, noting that 'the best preserved texts do not deal with circumstances of individual consultations, nor with sacrificial and/or divinatory matters at all, but with broader aspects of personal and corporate security' (Pardee 2001, 228). This he links with the ivories' discovery in the royal palace, whereas the clay livers were found in more obviously religious contexts. However, he does not elaborate on exactly what he envisages the role of these enigmatic objects may have been.[19]

[18] Although Mesopotamian liver models are mostly clay, not ivory; clay examples also exist at Ugarit but in smaller numbers.

[19] He remarks in his edition that RS 20.396 may have been inscribed on ivory because it spoke of the owner's continued life (Pardee in Gachet and Pardee 2001, 203), which may imply something like an

Overall, these incantatory and divinatory documents constitute a magical corpus at Ugarit which is, unsurprisingly, both far smaller in absolute terms than that of Mesopotamia, but, possibly more significantly also constitutes a much smaller proportion of the written material which survives. Whether this equated to a lesser degree of magical practice within Ugaritian society is an open question: it is perfectly conceivable that it merely signifies a relatively limited take-up of Mesopotamian-style incantations as a literary genre, and that less cosmopolitan, predominantly oral magical traditions existed outside the rarefied world of Ugarit's literate elites. This is of course, impossible to prove, though it would be consistent with the suggestion that magical traditions in the Southern Levant were mainly oral before around the mid-first millennium BC (see below).

Within this relatively small corpus of texts, writing and reading do not seem to be magically efficacious elements themselves. Instead, script is used primarily as a way to record and communicate magical practices. The magical traditions of Ugarit's elites, inasmuch as we can reconstruct them, therefore parallel other aspects of the kingdom's high-status culture in their balancing of a strongly Mesopotamian-influenced form and style with adaptations to suit local practices. In his recent monograph on Ugarit's incantations, del Olmo Lete advances the view that while the Mesopotamian influence is undeniable, Ugarit does not seem to have borrowed the 'mythico-cosmological conceptual foundation', which he sees as underpinning Mesopotamian magical beliefs.[20] He points to examples of seemingly distinctive Levantine magical practices in the literary texts, such as the fashioning of clay replicas not for 'sympathetic magic' but as animate beings comparable to the later Jewish golem (KTU 1.17 I 34ff), and draws a comparison in this regard with God's shaping of Adam from clay in the Hebrew Bible (del Olmo Lete 2014, 19). Arguably, the creation of replicas to work on a person's behalf also finds parallels in Egypt, both in the ubiquitous shabtis and in the early sixth-century BC Papyrus Vandier, which includes the tale of a dead general who fashions a clay man and sends it out from the underworld to get revenge on the magicians he blames for his downfall (Brunner-Traut 1989).

The importance of Mesopotamian, or even possibly Egyptian, elements within high-status, literate Ugaritian culture should not lead us to underestimate the extent to which a distinctive local culture existed and was important. It is hard to evaluate

amuletic function – or perhaps just the ancient equivalent of a worried patient framing a clean bill of health from their doctor?

[20] Del Olmo Lete alludes here to van Binsbergen and Wiggerman's (1999) suggestion of a dichotomy between a theistic, hegemonic sphere and a 'holistic', non-theistic one, of which magic was part (*i.e.*, a kind of 'folk magic'). However, van Binsbergen and Wiggerman's discussion does little to situate these beliefs chronologically, and there is a sense that they relate more to the fourth and third millennia than the second; they note on p. 21, for instance, regarding the important concept of ME (similar to the Egyptian *ma'at*), that 'early in the second millennium the concept loses its cosmological significance'. We might wonder, then, whether this Mesopotamian 'mythico-cosmological conceptual foundation' still existed in the same form even in Babylonia by the thirteenth and twelfth centuries BC.

how present writing was in the lives of most Ugaritians, but it does seem clear that actual literacy is likely to have been the preserve of quite a small, elite segment of the population.[21] It is perhaps unsurprising, then, that what we can reconstruct of Ugaritian magical beliefs has little role for writing within the rituals themselves, but largely borrows a Mesopotamian, 'scholarly' approach focused mainly on recording and describing magical procedures.

Evidence for Bronze Age magical beliefs elsewhere in the Levant is scarce. There are a few amulets shaped like Egyptian hieroglyphs found at various sites in the Southern Levant from the Late Bronze Age onwards, for example, but numbers are small and it is unclear how they were used (Sparks 2013, 94–95). Within the textual tradition of the Southern Levant, information on this period is firmly entangled within the highly mythologising framework of the Mosaic era and the story of the Exodus, so must be treated with great caution as a historical source.[22] Attention has mostly focused on the list of apparently magical practices and practitioners forbidden by Moses in the promised land (Deuteronomy 18.9–15). It is far from clear what most of the words mean, which makes any translation difficult.[23] Nor do we know how accurately this represents actual ritual practice in Late Bronze/Early Iron Age Palestine. Bohak (2008, ch. 1, esp. 14–17) argues that rather than being a general prohibition against magic per se, the main point of these lines is to forbid specifically the practices and professions of the non-Jewish Canaanite tradition[24] and that acceptable Jewish equivalents were amply provided.[25] If correct, this would cast a distinctly anti-Canaanite slant on the

[21] For a fuller discussion, see Boyes (2021a, ch. 8). On the elite nature of preserved magical texts from the ancient Near East and the possibility of non-elite magical practices that were not so assiduously recorded, see also Cryer (2001, 143–146).

[22] Ostensibly the Exodus is set around the end of the Late Bronze Age, c. 1200 BC, but it is wholly unsupported by the archaeology.

[23] The New International Version of the Bible translates the passage as follows: 'When you enter the land the Lord your God is giving you, do not learn to imitate the detestable ways of the nations there. Let no one be found among you who sacrifices their son or daughter in the fire, who practises divination or sorcery, interprets omens, engages in witchcraft or casts spells, or who is a medium or spiritualist or who consults the dead. Anyone who does these things is detestable to the Lord; because of these same detestable practices the Lord your God will drive out those nations before you. You must be blameless before the Lord your God. The nations you will dispossess listen to those who practise sorcery or divination. But as for you, the Lord your God has not permitted you to do so. The Lord your God will raise up for you a prophet like me from among you, from your fellow Israelites. You must listen to him.'

[24] This discussion raises the slippery terminology and long-running debate surrounding the origins of Israel and its contrast with so-called 'Canaanite' culture. I use the latter term for convenience here, but without much enthusiasm, since it is notoriously imprecise and defined in wildly different ways by different people. This is not the place for a detailed account of the arguments for and against the historicity of the Exodus, or the growing acceptance of Israelite society as something that arose from within existing 'Canaanite' society during the Late Bronze/Iron Age transition. For what it's worth, I subscribe to this latter theory rather than believing in a genuine migration from Egypt. Further details, with references, can be found in Boyes (2013, 18–19, 136–137).

[25] On definitions of magical terms in the Hebrew Bible, see also Jeffers (1996).

passage, which could potentially undermine the usefulness of what meagre evidence it provides on pre-Jewish ritual practice in the region.

Within the Bible's account of magic and ritual during the Mosaic era, there is only one indication of it involving the use of writing – the soṭah ritual described in Numbers 5. This fits well into the genre of rituals already discussed where writing is washed or soaked with liquid, which is subsequently drunk. Its purpose was to determine the guilt of a woman suspected of adultery and it involved writing down oaths that included the sacred name of Yahweh. These were then washed with a mixture of water and dirt from the tabernacle floor, which the woman then drank (Bohak 2008, 28–29). How much this really represents Late Bronze Age practice is debatable. On the one hand, it fits relatively well with Egyptian practices and so could plausibly have developed as a local adaptation – or even as an idea arrived at independently, given how common it is cross-culturally. On the other hand, it first appears in a biblical account written long after the period it describes and the whole historical context for this ritual – the Israelite migration from Egypt – is of extremely questionable historicity. The rite certainly existed in later periods and makes more sense there, when the magical use of writing and especially of elements like the inscribed name of God was apparently much more common (see below). It seems more sensible to take this as a mythical aetiology for a later ritual than as a genuine illustration of Bronze Age, or even Early Iron Age, practice. We can similarly dismiss other late accounts of much earlier uses of writing in magical practice, such as a claim in the Late Antique Babylonian Talmud (BT Git 68b) that Solomon used a ring inscribed with the tetragrammaton to bind the demon Ashmedai (Bohak 2008, 104, n.101).

We are on slightly firmer ground as we move into the Iron Age, though clear evidence for Levantine beliefs in writing's magical potential remains elusive. What evidence we have points to a continuation, more or less, of similar kinds of inscribed objects to those seen in the Bronze Age. Among the earliest candidates are a number of bronze arrow- or spearheads with Phoenician alphabetic ownership inscriptions, found in the central Levant. Very few have secure archaeological contexts, which makes dating difficult, though palaeography suggests they belong to the early phases of the Phoenician alphabet. Indeed, many have seen them as the earliest examples of the script, around the eleventh or tenth centuries BC – perhaps just a little earlier than the similarly chronologically hard-to-place Byblos royal inscriptions (Puech 2000, 257). The magical connection of these artefacts comes from their frequent interpretation as being used for divination. This suggestion was advanced by Iwry (1961) and has been reiterated more recently by Puech (2000). More recently, however, Sass (2010) has argued against it, pointing out that Iwry fails to explain why inscribed arrowheads suddenly became popular at this time when, by his own evidence, belomancy with uninscribed arrows had been used for centuries. Sass sees the inscriptions rather as indicating ownership and tentatively links them to the social changes the region was experiencing in the Early Iron Age; however, he notes that the evidence is at present too scanty to be sure exactly what these objects were actually for.

The amuletic use of inscribed incantations also continues, as exemplified by a couple of seventh-century examples from Arslan Tash in northern Syria. These resemble earlier Mesopotamian amuletic tablets, both in shape and content, although their material is stone and they are inscribed in the Phoenician alphabet and language rather than cuneiform. One offers protection against a female demon known as the Flying One; the other against the Blood-Sucker, a demon also known from Ugarit. Although the smaller of the two features the characteristic pierced protrusion for hanging seen on some Mesopotamian protective incantation tablets, neither shows much sign of actual use, such as wear from being carried or worn on the body (Caquot and du Mesnil du Buisson 1971; De Moor 1981–2). These suggest continuity in beliefs and practices surrounding demons and protection against them for several centuries after the end of the Late Bronze Age, though with developments in materials and script. This is consistent with the general trajectory of the Late Bronze/Iron Age transition in northern Syria, which was characterised by social and political changes occurring over several centuries and incorporating significant continuity with what had gone before – a phenomenon most famously represented by the so-called Syro-Hittite or Neo-Hittite states (Bryce 2012). That is not to say that North Syria by the seventh century remained much as it had been at the close of the Bronze Age, but that changes had been mostly incremental rather than sudden, and for the most part without a violent rejection of Bronze Age culture and institutions.

The southern Levant offers a different picture, concomitant with its differing network of relationships with its neighbours and the significantly different religious and cultural situation. While the transition to the Iron Age may not have been as total an upheaval there as it is sometimes painted, the rise of Judaism and its specific beliefs surrounding monotheism, othering and rejection of 'Canaanite' culture, and the importance of the name of God seem to have led magical practices and the use of writing in different directions to other parts of the Levant.

In the earlier first millennium BC, writing seems to have been little used in Southern Levantine magical practices. The only real examples of textual amulets, for instance, are a pair of silver amulets found in a single seventh/sixth-century BC tomb at Ketef Hinnom, inscribed with priestly blessings invoking Yahweh, which parallel biblical examples (Barkay *et al.* 2004). Even in areas where relatively large numbers of written documents survive on perishable materials, there are very few magical texts among them, which has been suggested to indicate that magical practices were principally oral rather than employing script, either as a recording method or an efficacious act in its own right (Bohak 2008, 137).

The earliest widespread examples of magically potent writing in the Southern Levant seem to focus around the inscribed name of God. The power inherent in this sacred name was harnessed through its inscription and use in amulets, with Bohak describing it as the 'apotropaic mark *par excellence*' (2008, 117). Evidently it was the name itself that was seen as primarily significant here, but writing enabled it to be materialised as a physical object and incorporated into all manner of other

items. Perhaps the most notable use was its inscription on the gold plates worn on high priests' foreheads. Interestingly, the script used seems to have been important, demonstrated by a preference for writing the name of God in archaising rather than contemporary Hebrew characters. From this period onwards numerous accounts link these objects with magic and divination. This magical usage continued for many centuries, such that by the Middle Ages, texts existed detailing how a magician might create a substitute when they could not obtain the genuine article (Bohak 2008, 117–118). As we have already touched on, accounts from the early first millennium AD and later cast these magical uses back into mythical antiquity. As well as Solomon's demon-controlling inscribed ring, we can also add a rabbinic story of Moses throwing a gold lamella inscribed with God's name into the Nile in an attempt to magically recover Joseph's coffin, or David inscribing an ostracon and using this to prevent a flood. The tetragrammaton also seems to have been inscribed on tools, utensils, weapons, furniture or even tattooed on to the human body to grant a share of divine power or protection (Bohak 2008, 118–119).

The amuletic use of the name of God may have been a catalyst that prompted people to consider other ways writing might be applied for magical purposes. In the later first millennium BC we perhaps see evidence of writing being given a broader application in magical practice, with the first signs of abecedaries being used magically. Abecedaries are among the oldest alphabetic documents, with several examples from the second millennium BC, including a number in the alphabetic cuneiform script from Ugarit, and another from Beth Shemesh. Most likely these were used in education, but there seems to have been an expansion in how abecedaria were used from the mid-first millennium BC onwards. Ben Ami and Tchekhanovets (2008, 199–200) have argued that many of the abecedaria found in the Southern Levant from the Hellenistic period onwards are more likely to be apotropaic or magical than educational, particularly those found on ossuaries, in sacred precincts or in places where people were sheltering from enemies.

Broadly, however, magical uses of script remain fairly uncommon in the Southern Levant in the first millennium BC. It is not until the early first millennium AD that this really changes. This is largely beyond the scope of this discussion and it is certainly not possible to do justice to the range and extent of this flourishing in the space available, but we can note in brief that alongside continued expansion in the use of the tetragrammaton and the main flourishing of potentially magical abecedaria, late antiquity saw a great cross-pollination of Egyptian, Greek, Jewish and Arabic magical traditions, which included a great interest in the use of writing. Textual amulets were in widespread use among Jews, Christians, and other religious groups, just as they were among non-Levantine cultures such as the Greeks. Late Antique textual amulets are similar in form to those that had been used in Egypt for centuries: small inscribed metal lamellae, folded or rolled and placed in a metal tube or cloth pouch, which was worn on the body (Bohak 2008, 150–153). The multicultural nature of the region and of its magical practices is also apparent in how writing was used in

aggressive magic. Inscribed Greek curse tablets have been found from several sites in the region, and while defixiones in Levantine scripts are less common, they do exist, such as a fifth–sixth century example from Ḥorvat Rimmon, where an Aramaic inscription was inscribed on wet clay before firing (Bohak 2008, 154–158). Inscribed gems sometimes incorporate magical formulae, which can demonstrate a degree of play with the forms of script and alphabet for magical purposes. A Greek gem allegedly from Ephesos, for example, takes a sequence derived from a somewhat muddled form of the Hebrew alphabet and presses it into service as a magical formula (Keil 1940;Bohak 2008, 161–162).[26] This period also sees the development of so-called *characteres* – signs without phonemic values, embellished with characteristic rings to underline and enhance the magical effect of texts. These appeared in Jewish magical texts written in Greek and spread into other branches of European and Middle Eastern magical traditions over later centuries. The inspiration for these signs has been sought in Egyptian hieroglyphs and Mesopotamian cuneiform, among others, but remains obscure (Brashear 1995, 3440–3442; Bohak 2008, 270–274). Another common magical writing practice was the significance attributed to writing certain words in specific patterns, such as the triangular or 'grape-cluster' formation, with one letter removed on each line. Examples from an Aramaic spell in the Cairo Genizah, for instance, and a Greek spell in the Christian *Testament of Solomon* both suggests curing various aches and pains by writing the Greek name Lykourgos in this way (Bohak 2008, 236).[27]

[L?]YQWRGWS
YQWRGWS
QWRGWS
WRGWS
RGWS
GWS
WS
S

The development of Southern Levantine magical practices and beliefs is highly complex and this is not the place to analyse it fully or draw premature conclusions. But what I hope the summary above has demonstrated is the importance of local agency and of specific cultural and religious beliefs in shaping beliefs around writing and its potential role in magic. The Southern Levant had long and intensive contacts with Egypt, where, as we have seen, such beliefs had existed for centuries. Writing itself was borrowed, adapted, put to various uses; but unlike other Levantine societies further north, it appears that for a long time there was very little interest in its potential for magical uses. When these uses finally did develop, they are distinctively

[26] The sequence on the gem runs ET BOS GAR DAK AS OF ZA AS TAN IAL CHAL, which as Bohak points out is an alternation of a consonant from each end of the alphabetic sequence (as in English AZBYCX... etc.) with a vowel inserted between them.

[27] On the Graeco-Egyptian use of this practice see also Pinch (1994, 164).

Jewish in character, and remained so even as they mixed and mingled with Greek and Egyptian magical practices in the multicultural melting-pots of the Hellenistic and Roman worlds.

Magic and writing in cultural context

Writing was an important part of magical practice in each of the parts of the East Mediterranean and Near East that we have examined. Some specific beliefs and practices can plausibly be said to be shared between societies, reflecting a shared cultural context and the spread of ideas and beliefs from place to place. The use of textual amulets is a good example. The general idea of inscribing a magical incantation on an object to render it permanent and potentially portable is probably obvious enough that it would not necessarily indicate actual contact or the borrowing. However, we see specific parallels in object form and text-type: the use of both Egyptian-style papyrus-cases and Mesopotamian-style hanging incantation tablets in the Levant at various times and places. We can also see commonalities at broader conceptual levels. Bahrani and Nyord's ideas about images and words acting as manifestations or instantiations of a thing rather than representations would seem to fall into this category, and from these broad conceptual approaches develop parallel applications, such as rituals that fall broadly within – or at least adjacent to – the category of so-called sympathetic magic.

This is all much as we would expect in a region with deep cultural interrelationships that persisted over millennia. It is also what we see in other areas of culture, such as art, for example, where Feldman (2002; 2006) identifies a Late Bronze Age 'international style'. However, this does not equate to homogeneity. Within common frames of reference, ideas can still be interpreted, adapted or rejected in specific ways from place to place. There is much in common in the way writing is used in Egypt and Mesopotamia, but they are by no means the same, each retaining their own particular 'flavour'. Likewise, those societies between these two superpowers were open to influences from both, but we have seen how these borrowings were adapted to suit local beliefs and contexts. In the highly Mesopotamian-influenced elite writing culture of Ugarit, for instance, we nevertheless see evidence of distinctly local practices and beliefs surrounding divination. In the Southern Levant, Egyptian influence was strong, as was – perhaps to a lesser extent – that of Mesopotamia, but it seems that magical practice largely resisted the incorporation of writing for a long time, even as the region was a hotbed for innovation in the use of script in other ways – most obviously in the development of alphabetic writing practices.

Thus, magical beliefs and their use of writing can be a useful exemplar of the relationship between writing, society and culture, demonstrating how people actively engaged with ideas about how script could be used and transforming them to suit their local contexts.

Chapter 7

Relations between script, writing material and layout: the case of the Anatolian Hieroglyphs[1]

Willemijn Waal

Introduction

In Hittite Anatolia, two writing systems were in use: the cuneiform script, which was imported from Syria, and an indigenous writing system that is generally referred to as Anatolian or Luwian hieroglyphs. The cuneiform script was in use during the entire existence of the Hittite Kingdom, from c. 1650 to 1180 BC. The cuneiform records that have come down to us belong to the palatial tablet collections, no texts in clearly private contexts have been found. Altogether, some 30,000 clay tablets and (mostly) fragments have been found on several locations in central Anatolia, the majority stemming from the Hittite capital Ḫattuša/Boğazköy. They are mostly written in Hittite, the official language of the Empire, but they also include texts in Akkadian, Sumerian, Hurrian, Palaic, Hattic and Luwian. The latter is a language closely related to Hittite that was probably spoken by the majority of the people in the Empire. Luwian is not only recorded in cuneiform (cuneiform Luwian), but also in Anatolian hieroglyphs (hieroglyphic Luwian).

The Anatolian hieroglyphs are best attested on seals and seal impressions. The inscriptions on seals are overall quite short and usually only consists of names and titles. The first more substantial hieroglyphic inscriptions that have come down to us date to the fourteenth century BC, in the form of monumental royal inscriptions in stone. The number of rock inscriptions from Late Bronze Age Anatolia is limited, but their geographic distribution is wide, from the western coast of Anatolia to the north

[1] Abbreviations:
CAD = *The Assyrian Dictionary of the Oriental Institute of the University of Chicago*, Chicago 1956–2010.
HED = Puhvel, J. (1984–) *Hittite Etymological Dictionary*, Berlin.
HW² = Friedrich, J. and Kammenhuber, A. (1975–) *Hethitisches Wörterbuch, 2. völlig neu bearbeitete Auflage,* Heidelberg.

of Syria. The bulk of the inscriptions stems from the Iron Age, mostly from northern Syria and Cilicia, where this script continued to be used till c. 700 BC. Most inscriptions are of an official character, though there are also examples of incidental, informal looking graffiti. The inscriptions may be executed in relief, with the background cut away (Fig. 7.1), or incised (Fig. 7.2). The incised inscriptions from the Iron Age sometimes display cursive sign shapes and it is therefore assumed that there was a parallel tradition of hand-written documents in this period (*e.g.* Hawkins 2000, 4). Confirmation hereof is provided by a handful of lead strips from Assur and Kululu dating to the Iron Age, which contain private letters and economic-administrative records (Hawkins 2000, 503–513, 533–555). The question to what extent the Anatolian hieroglyphs were already used for such purposes in the preceding Hittite period is a moot point. A lead strip dating to the Late Bronze Age was discovered in Ḫattuša, but it is in a very poor state and there is no writing visible (Akdoğan and Hawkins 2010, 2, 14–16). There are indications that the Anatolian hieroglyphs were used on wooden tablets during the Hittite period, but these have not survived (see below pp. 131–133). Apart from the above-mentioned inscriptions on stone and the lead, there is a small corpus of metal and clay objects with hieroglyphic inscriptions (see recently van den Hout 2020, 176–177).

Fig. 7.1. Basalt orthostat from Karkamış with Luwian hieroglyphs, 900–700 BC. Source: https://luwianstudies.org/luwian-scripts/. Courtesy of Eberhard Zangger.

Fig. 7.2. Part of the Karatepe inscription (incised), eighth century BC. Source: https://www.hittitemonuments.com/karatepe/karatepe34.jpg. Courtesy of Tayfun Bilgin.

The long road to the decipherment of the hieroglyphic script was completed only in the 1970s, and in the last decades tremendous progress has been made in our understanding of the script and the language.[2] However, still plenty of unexplored areas and open questions remain, not least regarding the origins and use of the Anatolian hieroglyphs, about which no consensus exists. This paper aims to contribute to this debate by addressing the layout of the Anatolian hieroglyphic inscriptions and what it might tell us about the primary writing material(s) used for this script.

Anatolian hieroglyphs: textual layout

The Anatolian hieroglyphic system consists of some 500 signs, which may function as logograms, determinatives and/or syllabograms. Larger inscriptions are arranged in horizontal lines or registers, which are subdivided by means of horizontal rulings. If an inscription contains more than one line, the writing direction usually changes with each line, this alternation is called *boustrophedon* ('as the ox ploughs'). The reading direction is determined by the asymmetrical signs, which always face the beginning of a line. Within the horizontal lines, the signs are written in vertical columns, usually consisting of two–three (sometimes four) signs stacked on top of each other (Fig. 7.3). The inscriptions sometimes make use of word dividers (though not always consistently) and there seems to have been an overall preference to start a new word at the beginning of a new vertical column.[3] In addition, the scribes had a predilection to completely fill the columns without leaving any gaps. Because of this *horror vacui* they sometimes played with the sign order, or they made use of so-called space fillers: to avoid an empty space an extra vowel sign could be added, which did not have a linguistic function (Vertegeaal 2017).[4] Especially in the Assur letters, this practice was applied with great consistency.[5]

If we look at the longer hieroglyphic inscriptions, we see that the above-described layout (long, horizontal lines written in a boustrophedon manner with vertical columns consisting of two–four signs) is widely spread; it is found in all regions and time periods, though we do see some variation. Some stone inscriptions, for example, have lines of a shorter height, with only one–two signs per column.[6] By contrast, some

[2] For an introduction of the history of the field and an overview of the most important sources, see Hawkins (2000, 1–23). For an introduction in to the Luwian language, see, *e.g.*, Payne (2014) and Giusfredi (2020).

[3] The appearance of a word divider in the middle of a column is quite rare; Vertegaal (2017, 240) only mentions four examples hereof: Ancoz 7, Körkün (for this inscription, see also below), Porsuk and probably Tünp 1.

[4] In addition, the phenomenon of 'initial a final', *i.e.* the habit to write the sign 'a' at the end, rather than the beginning of a word, may sometimes also be aesthetically motivated, see Melchert (2010, 148), who further points out that aesthetic factors affecting the configuration of the signs are also found in other 'hieroglyphic' scripts such as the Egyptian Hieroglyphs and the Maya script.

[5] For a diplomatic study of these Assur letters, see Dillo (2017).

[6] See, for example, Nişantaş, Karkamiš A1b, A4b, A 14a, 15a, Kelekli, Ispekçür, Kötükale, Darende, Izgin 1–2,

Fig. 7.3. Detail of the Karatepe inscription. The arrows indicate the reading direction, the circle marks an example of a word divider. Source: https://www.hittitemonuments.com/karatepe/karatepe34.jpg. Courtesy of Tayfun Bilgin.

registers are taller, usually containing three–four signs per column.[7] In other cases, we see slight deviations in the subdivision by means of horizontal rulings; the line divider is occasionally missing.[8]

Other peculiarities include additional subdivision by means of vertical rulings. The second register of the inscription Ancoz 10 (Hawkins 2000, pl. 188) is divided into compartments by vertical lines. As suggested by Hawkins (2000, 59), this appears to have been done to separate out individual offerings to gods. A similar vertical subdivision is found in the Kululu lead strips (Hawkins 2000, pl. 286–289), where each compartment contains one entry. The strips Kululu 1 and 2 are further subdivided into different sections that are separated by double vertical rulings with wavy lines in between (Hawkins 2000, 503). Further, two hieroglyphic documents from Nineveh show vertical rulings. The heavily damaged clay tablet Nineveh 1 (Hawkins 2000, pl. 324), which is written in landscape orientation, possibly contains registers of gods or their offerings (Hawkins 2000, 566). Nineveh 2 is a small limestone fragment that is now apparently lost (Hawkins 2000, pl. 325). The horizontal lines are consistently divided up into compartments by means of vertical lines. The content is unclear as there are no words that are clearly identifiable (Hawkins 2000, 567).

The exceptions to the rule

In the above, some inscriptions with minor deviations from the conventional layout have been discussed. There are, however, only very few inscriptions that have a completely atypical layout. They are all inscriptions that were made around sculptures. The most obvious exception is the Körkün stele (Hawkins 2000, pl. 58–59), which was found in 1967 in a vineyard near Körkün, a village about 20 km southeast of Gaziantep. It is a flat-topped basalt stele with an inscription on each side. On the reverse, which is slightly curved, there is a dedicatory inscription of a person named Kazupi(?) from

Malatya 1,3, Kirçoğlu, Babylon 3 (written on rim), Hama 8 (large signs), Kizildağ 3 (large signs), Burunkaya, Sheizar, Qal'at el Mudiq, Meharde.

[7] See, for example, Sultanhan (stele); Kayseri, Eğriköy, Karkamiš A25b.

[8] See, for example, Çiftlik, Şirzi (non-straight rulings), Palanga, Körkün.

the reign of Astiru(wa), king of Karkamiš in the late ninth century BC (Hawkins 2000, 171–172). It is arranged in the conventional manner, with 3.5 horizontal registers with vertical columns consisting of up to four signs. The only exceptional feature is that the horizontal ruling between lines 3 and 4 is missing (cf. above n. 8) and that it partly continues on the obverse (Hawkins 2000, 172). The obverse contains a large relief of the Storm god holding a thunderbolt in his left, and a double axe in his right hand (Fig. 7.4). The background is inscribed with an inscription that is independent of that on the obverse. It is written around the figure of the Storm god and is in the words of Hawkins (2000, 172) 'somewhat irregularly placed'; there is no division into horizontal registers or vertical columns. Likewise, Maraş 5 (Hawkins 2000, pl. 118–119), a partially preserved stele with the figure of the Storm god, contains an inscription which 'is scattered irregularly over the background of the figure, behind, below and in front of it; it is not arranged in lines, but it zig-zags downwards with signs oriented in different directions, then runs dextroverse across the bottom, and is then read ascending the right-hand background in a similar manner to Körkün' (Hawkins 2000, 269).

Further, the inscription of Malatya 13 is not organised in horizontal lines (Hawkins 2000, pl. 164). This limestone boulder shows a sculpture of two deities on animals facing each other below a winged sun-disc, with inscriptions on the right and left side, and across the lower front. The inscriptions on the sides are written vertically down the side (Hawkins 2000, 328).[9]

In the above cases, the inscription appears to have been subordinate to the sculpture. This was, however, not always the case; there are also inscriptions accompanying sculptures that show the usual layout (*e.g.*, Cekke, Karkamiš A13d, Bor), sometimes even continuing over the depicted figures (see, *e.g.*, Maraş 8 (Fig. 7.5), where only the head and hands are devoid of script).

Sources of inspiration?

The above exceptions are of importance, as they make clear that the layout we find in all the other inscriptions, is far from self-evident and not dictated by the material (stone). It is interesting that the arrangement is overall very consistent, regardless of the shape of the monument, be it a vertically orientated stele (*e.g.* Iskin 1–2) a horizontally orientated inscription on rock (*e.g.* Nişantaş, Malpinar), a cylindrical stone (Karkamiš A15b) or a statue in the shape of a lion (*e.g.* Maraş 1). With respect to the lead strips found in Kululu and Assur, we see that these documents were deliberately shaped to accommodate the typical arrangement in long, narrow, horizontal registers. The same applies to the clay tablet from Nineveh. Both clay and lead could easily have been cut or kneaded into different shapes and the choice for this format is therefore significant.[10] The consistently identical arrangement implies a deeply rooted practice and raises the question where it came from.

[9] Other less organised inscriptions include Kululu 8 (Hawkins 2000, pl. 284), a graffito-like inscription on a small fragment of black stone (Hawkins 2000, 501–502) and some of the Suvasa rock graffiti containing the names of servants of Wasusarmas (Hawkins 2000, 462).

[10] If Hawkins' (2000, 503) suggestion that the Kululu fragment 1 is possibly nearly complete is correct,

Fig. 7.4. Körkün stele with an irregularly placed inscription, ninth century BC. Source: https://www.hittitemonuments.com/korkun/korkun09.jpg. Courtesy of Tayfun Bilgin.

Fig. 7.5. Stele Maraş 8 with inscription in horizontal registers continuing over the sculpture of the ruler, tenth century BC. Source: https://www.hittitemonuments.com/maras/maras04a.jpg. Courtesy of Tayfun Bilgin.

Fig. 7.6. Neo-Sumerian cylinder seal, Ur III period, c. twenty-first century BC. Metropolitan Museum of Art, New York. Public domain.

According to some scholars, the 'Kolumnen-Schreibung' was influenced by the seals (*e.g.*, Neumann 1992, 36 [14]; Marazzi 2010, 229; Rieken 2015, 225; van den Hout 2020, 131). Though the glyptic art may certainly have had its impact on monumental inscriptions,[11] it seems unlikely that the vertical columns are derived from seals. This suggestion would make good sense in the case of cylinder seals; there are examples known from Mesopotamia where cuneiform inscriptions are organised in vertical columns on cylinder seals (Fig. 7.6). In Anatolia, however, round stamp seals were in use, and circular surfaces do not particularly lend themselves for vertical arrangements. Though some of the seals may indeed show signs on top of each other, they are not organised in clear vertical columns, but rather have a playful and loose order (Fig. 7.7). Moreover, the round stamp seals certainly do not explain the arrangement of long, horizontally oriented registers. This arrangement is clearly also not inspired by documents cuneiform clay tablets, which could hardly have been more different with respect to their layout features (see Table 7.1).[12]

this would be an exception, as it would mean that this document was square-shaped.

[11] For the influence of glyptic art on Hittite rock reliefs in general, see Seeher 2009 and Marazzi 2010. With respect to the hieroglyphic inscriptions, various scholars have suggested that the fact that the signs are executed in relief rather than incised in rock could have been inspired by seal impressions, just like the antithetic placement of titles in some inscriptions (*e.g.*, Rieken 2015, 224–225). Likewise, it has been suggested that the origin of the phenomenon of 'initial a final' (see above n. 4) can be traced back to seals (Melchert 2010, 147 n. 1; Rieken 2015, 226). It has further been proposed that seals may have prompted the boustrophedic writing direction, but this phenomenon is more generally found in early writing systems.

[12] The layout is by no means the only difference between these two scripts; their structure (the Anatolian

Table 7.1. The layout of Anatolian hieroglyphic and cuneiform script compared.

Layout	*Anatolian Hieroglyphs*	*Cuneiform script*
Direction of writing	boustrophedon	left to right
Word division	none, or word dividers	space between words
Vertical sign arrangement per line	2–4 signs	1 sign
Preferred document orientation	landscape	portrait

Fig. 7.7. Hittite stamp seal with a handle and a hieroglyphic inscription, c. fourteenth–thirteenth century BC. Metropolitan Museum of Art, New York. Public domain.

If we broaden our scope to outside of Anatolia, no clear parallels are to be found. Documents written in Aegean scripts may have a landscape orientation, notably the Linear B palm-leaf tablets and the Cretan hieroglyphic clay bars, but the horizontal lines are not subdivided into vertical columns.[13] The layout of Egyptian hieroglyphic texts is also distinctly different.[14] It thus appears that we are dealing with an independent, indigenous Anatolian tradition. In the following, I would like to entertain the possibility that its origins are related to the most likely primary writing material of the hieroglyphic script, namely wood.

Wooden tablets in Anatolia: script

Hittite cuneiform tablets make mention of wooden documents, which have not survived. Though their existence is generally agreed upon,[15] their usage and appearance are a hotly debated topic. According to some scholars (*e.g.*, Singer 1983, 40–41; Symington 1991, 115–116; van den Hout 2010, 257–258), they were wax-covered tablets inscribed with cuneiform, similar to examples of writing boards known from first millennium Mesopotamia (see MacGinnis 2002; Cammarosano *et al.* 2019,

hieroglyphs have almost exclusively (C)V signs, whereas the cuneiform also has VC (and CVC) signs), as well as the use of determinatives are also distinctive.

[13] For Cretan hieroglyphic documents, see, *e.g.*, Tomas (2010), for Linear B documents, see, *e.g.*, Palaima (2010).

[14] The Egyptian hieroglyphs could be written horizontally or vertically, with the signs are ordered in quadrats/cadrats or blocks constituting one word (see, *e.g.*, Vernus 2020).

[15] A very minimalistic view of their usage is held by Theo van den Hout (most recently 2020, 184–217), even if he does not question their existence.

151–154). In this view, the use of the Anatolian hieroglyphic script was restricted to seals and (royal) rock inscriptions in the Late Bronze Age. Others are of the opinion that the missing wooden records were inscribed with Anatolian hieroglyphs, which would imply a much wider use of this writing system (*e.g.*, Güterbock 1939; Bossert 1958; Dinçol and Dinçol 2002, 210; Waal 2011; 2012). Yet others maintain that both scripts could be used on the wooden tablets (*e.g.*, Hawkins 2000, 3; Cammarosano *et al.* 2019). Over the last decade, I have put forward a number of arguments for the use of Anatolian hieroglyphs on wood, which I briefly summarise below.

- *Terminology used with respect to writing.*[16] The Hittites made a clear distinction between writing on wood and writing on clay. They differentiated between a regular scribe (^{LÚ}DUB.SAR) and a scribe-on-wood (^{LÚ}DUB.SAR.GIŠ) – the Sumerogram GIŠ means 'wood'. This distinction, which is not attested outside of Anatolia, implies a fundamental difference between these two professions. A good later parallel is provided by the Neo-Babylonian texts and the Persepolis tablets, where a distinction is made between 'scribes' (writing in cuneiform) and 'leather-scribes' (writing in alphabetic Aramaic, which was primarily written on the material leather). In addition, the Hittites used a separate verb (GUL-*š*-/Cuneiform Luwian GUL-*zā*(*i*)-) to refer to writing on wood, stone and metal, which in some cases can be confidently linked to inscriptions in hieroglyphs (see also the excursus below). Moreover, the verb GUL-*š*- is related to the verb for writing attested in Anatolian hieroglyphs (REL-*za*-), which confirms its connection with the hieroglyphic script (Waal 2014; 2019). This link is further evident from the fact that the verb GUL-*š*- is never used in relation to clay tablets (*tuppi*/DUB/*TUPPUM*), which were reserved for the cuneiform script.

  Also telling is the terminology for the wooden writing boards; they are commonly referred to by means of the Sumerogram GIŠ.ḪUR (Akkadian *uṣurtu*(*m*) 'drawing') or Hittite GUL-*zattar*, of which the basic meaning is 'drawing'. The term GIŠ.ḪUR is not used to refer to documents in Mesopotamia, which is an indicator that it represents something other than cuneiform records. The designation 'drawing' would be a fitting description for a document written in pictorial hieroglyphs, note that in ancient Egyptian the verb for 'writing' and 'drawing' is also the same (*sš*). Lastly, it is remarkable that four of the five terms relating to the wooden writing boards ($^{(GIŠ.(HUR))}$GUL-*zattar*, $^{(GIŠ.HUR)}$*parzaki*(*š*), $^{(GIŠ.HUR)}$*hatiwi*(*ya*-), and $^{GIŠ(.HUR)}$*k/gaštarhait/da*) show Luwian influence (van den Hout 2020, 211). This is perfectly understandable if these wooden boards were used to record the Luwian language in Anatolian hieroglyphs, but harder to explain if they were used for Hittite cuneiform.
- *Characteristics of the script.* The characteristics of the hieroglyphic script, notably its round forms, provide a further important indication that it was not written exclusively on stone, but also on other, softer materials such as wood (see already

[16] For a more detailed discussion of the Hittite terminology for writing, see the excursus below.

Güterbock 1939, 36, later also, *e.g.*, Hawkins 1986, 374; Neumann 1992, 43 [21]; Payne 2008, 119; for a critical evaluation, see van den Hout 2020, 212–213). Especially the shift to cursive sign forms, of which there are already examples from the second millennium BC, is significant. As David Hawkins (1986, 374) has pointed out, the evolution towards cursive linear forms probably points to writing with pen and ink. One would not expect such a development if the hieroglyphs were only carved in hard materials like stone.

- *Text genres.* The surviving hieroglyphic inscriptions consist of, on the one hand, official royal rock inscriptions, and, on the other hand, informal graffiti. It is telling that the kings opted for the Anatolian hieroglyphs, and not the cuneiform script, when they aimed to address the population at large. This choice is an additional indication that this script was more widely known than the cuneiform script, of which the usage was restricted to the palace. The informal graffiti also imply a more extensive usage of the script. Of particular interest is the recent find of a graffito from Kayalıpınar, which can be dated to between the seventeenth century and c. 1400 BC. Müller-Karpe *et al.* (2017, 77) have interpreted it as a spontaneous graffito of a builder or architect, which they consider to be a demonstration of the everyday use of the script in this period.
- *Wide geographic spread.* Further, the wide geographic spread of the Anatolian hieroglyphs is of interest. Unlike the cuneiform script, which was confined to the Hittite heartland, the Anatolian hieroglyphs were in use all over Anatolia, all the way up to the western coast. In this region, graffiti have been discovered that suggest the existence of local scribal traditions, independent of the Hittite Empire (Oreshko 2011).
- *Public scribes.* In the Hittite capital Ḫattuša, several stone blocks have been found that preserve scribal names in hieroglyphs, which have been explained by Kurt Bittel (1957, 19) as signs for public scribes who offered their scribal services to the inhabitants of Ḫattuša – a practice well known from other parts of the ancient Near East. The presence of public scribes in Ḫattuša would suggest a broader use of hieroglyphs than for seals and stone inscriptions alone (cf. Dinçol and Dinçol 2002, 210). Van den Hout (2020, 214) and Cammarosano *et al.* (2019, 143) have pointed out that the fact that the signs of these public scribes were written in Anatolian hieroglyphs does not automatically imply that they also wrote their documents in this script, but that these could have been written in cuneiform. Even if this were the case, the fact that the scribes used Anatolian hieroglyphs to advertise their services implies that this script that was more familiar and recognisable to the inhabitants of Ḫattuša than the cuneiform script, again implying that it was employed on a larger scale.[17]

[17] The example discussed by van den Hout (2021, 214) of the scribe at the steps of the Yeni Valide sultan mosque in Istanbul who offered his services to elderly people unfamiliar with the Latin script (which was introduced by Atatürk in 1928) is telling in this respect. The scribe advertised his profession on a sign written in Arabic, whilst composing the documents in the Latin alphabet. The choice for a sign

- *Ratio scribes vs. scribes-on-wood.* One may further mention a list of personnel (KBo 19.28), which lists 19 scribes (^{LÚ}DUB.SAR) as opposed to 33 scribes-on-wood (^{LÚ}DUB.SAR.GIŠ) out of a total of 205 employees of the É.GIŠ.KIN.TI, the house of the craftsmen (*e.g.*, Payne 2008, 118; van den Hout 2010, 263). This is only one text and it may not be representative, but the fact that in this list of personnel considerably more scribes-on-wood than regular scribes are mentioned is certainly noteworthy and can be seen as a sign that the scribes-on-wood were responsible for composing a major part of the documents circulating in the Hittite Empire.
- *Hieroglyphic inscriptions on seals.* It is also of interest that Hittite seals contain inscriptions in Anatolian hieroglyphs and not in cuneiform (except for the royal seals, which show both a cuneiform and a hieroglyphic legend, see Fig. 7.8). The cuneiform texts inform us that wooden tablets could be sealed – (some of) the clay sealings discovered in Ḫattuša may originally have been attached to them (*e.g.*, Herbordt 2005, 37). It would make sense that the wooden documents were inscribed with the same script that was used on the seals of the parties and witnesses involved.
- *Survival into the Iron Age.* Last but not least, there is the fact that the Anatolian hieroglyphs survive after the fall of the Hittite Empire. During the succeeding Iron Age, it was used not only for inscriptions on stone, but also for private letters and economic records, as surviving documents on lead demonstrate. The continuity of the script implies that it was firmly rooted in society – in any case more so than the cuneiform script, that disappeared simultaneously with the collapse of the Hittite administration. It therefore seems unlikely that the Anatolian hieroglyphs were only used for seal legends and incidental rock reliefs in the Late Bronze Age.

Let us now briefly address the main arguments against the idea that the wooden writing boards were written in hieroglyphs. An often-heard objection is the fact that the hieroglyphic script is always used for the Luwian language. As there are examples of texts that were recorded on wooden tablets and subsequently transferred to clay tablets, this would mean that these would also have to be translated from Luwian to Hittite. The use of two languages and

Fig. 7.8. Seal of Tarkasnawa, king of Mira, showing with inscription in Anatolian Hieroglyphs and cuneiform, thirteenth century BC. Walters Art Museum, Public domain, via Wikimedia Commons.

in Arabic, and not in Latin script resulted from the fact that the intended audience was much more familiar with the former.

scripts within the same administration is, however, not exceptional nor unparalleled, compare for example digraphic and diglossic administrations of the Neo-Assyrian and Neo-Babylonian Empire (Akkadian and alphabetic Aramaic) and the simultaneous use of cuneiform Elamite and alphabetic Aramaic in the Persepolis administration. It is generally accepted that Luwian was spoken by the majority of the population and that Ḫattuša was basically a bilingual society in the later Empire period, so the scribes would certainly have been capable of switching from Luwian to Hittite (van den Hout 2010, 257; Yakubovich 2010, 396–416). [18] Evidence that such translations were possible, and indeed occurred, is provided by KBo 12.38, a cuneiform text that was written as a blueprint for (or a copy of) a hieroglyphic inscription (Güterbock 1967, 74, see also the excursus below).

Another objection that has been raised is that the hieroglyphic script would not be suitable for elaborate compositions, such as festival or ritual instructions, that were recorded on wooden tablets, especially because some of the references to such texts predate the first attestations of longer hieroglyphic inscriptions. If one assumes that the wooden writing boards were used for Anatolian hieroglyphs, this presupposes that they already functioned as a writing system from at least the Old Hittite period onwards. Evidence that would confirm this assumption include legends of Old Hittite seals, which can be read phonetically, but their dating is disputed (recently Weeden 2018) and a graffito on a vase from Kültepe-Kaneš Ib (1830–1700 BC) which has been interpreted as a personal name, rendered by logosyllabic elements (Poetto 2018, and already earlier Woudhuizen 2011, 84; Müller-Karpe *et al.* 2017, 67 n. 3). If this analysis is correct, this would imply that the Anatolian Hieroglyphs were already functioning as a writing system in the Old Assyrian period.

The most tenacious obstacle, however, remains the lack of direct evidence. Some scholars are reluctant to accept the existence of the Anatolian hieroglyphs as a writing system, as well as their usage on wood, as long as there is no unambiguous proof hereof, in the form of a surviving document. Until such a smoking gun turns up, however, all one can and must do is look for the most probable scenario on the basis of the data available to us, even if they are woefully incomplete. The arguments adduced above for a hieroglyphic tradition on wood are inevitably all indirect, and some are more conclusive than others. Together, however, they have an accumulative

[18] Van den Hout (2020, 182–183) rightly points out that there must have been a reason for code switching. Based on the evidence available, it appears that the two scripts and languages were used in different domains. Hittite cuneiform was the language and script of the state. It was restricted to the palace and used for permanent records (historical texts, festival and ritual texts, literary compositions, etc.), royal correspondence, and semi-current administrative documents relating to the palatial administration such as (cult) inventories, whereas the Luwian hieroglyphs were used outside of the palatial context, for private documents as well as daily economic administrative records (cf. Waal 2011, 25–28, 30–31). On occasion, these two domains would meet, for example, in the practical organisation of state festivals or lawsuits of common people.

Fig. 7.9. Birch bark letter no. 292, Novgorod, thirteenth century AD. Image by Gratomy.ru, Wikimedia Commons. Public domain.

force, enough to warrant the assumption that the wooden tablets were inscribed with Anatolian Hieroglyphs.

Wooden tablets in Anatolia: physical characteristics

Discussion about the appearance of the wooden documents is unavoidably speculative. Hittite texts mention various terms for wooden documents, which could serve different purposes and which may have looked different as well. In the debate about the physical features of the Anatolian wooden tablets, a well-preserved wooden diptych found in a shipwreck near Uluburun, dating to the fourteenth century BC tends to take a central role (see, *e.g.*, Symington 1991; Herbordt 2005, 37; Cammarosano *et al.* 2019). The origin of this tiny diptych, which was originally filled with wax, is unknown. One of the edges bears traces of undetermined signs, which have recently been tentatively identified as Aegean numerals (Dillo 2021). Comparable, though much larger, writing boards filled with wax are known from first-millennium Mesopotamia (see also above p. 131). Though such wooden writing boards may certainly have existed in Hittite Anatolia, they were not necessarily the only type of wooden records.[19]

A look at the use of wooden documents in other regions and time periods shows that there are many more possibilities. Worldwide, wood was a very common writing material, as were other parts of trees, such as leaves and bark. Quite often, such documents were carved into the material, or inscribed with ink. As for their layout, they often take the shape of long, horizontal strips. This holds true for birch bark documents (though not exclusively) and for documents made of bamboo slips, palm leaves or palm ribs (Figs 7.9–7.12). Especially in the case of the latter three, their format was dictated by the material. In some instances, this layout may in turn have influenced the shape of other writing materials; already a century ago, Arthur Evans (1921, 638) suggested that the form of the most common type of Linear B tablets

[19] For a different view, see Cammarosano *et al.* 2019 and the excursus below.

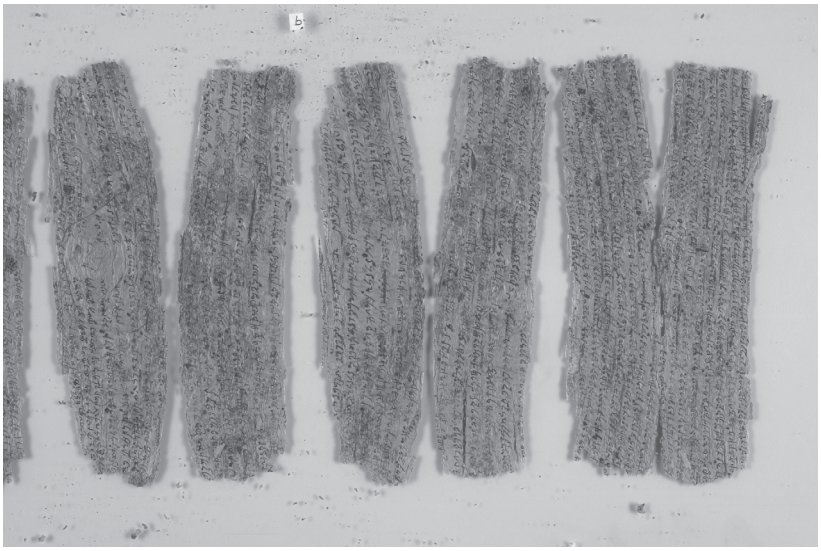


Fig. 7.10. Gandhara birchbark scroll fragments, c. first century AD. Digital collections of the British Library, via Wikimedia Commons. CC0.

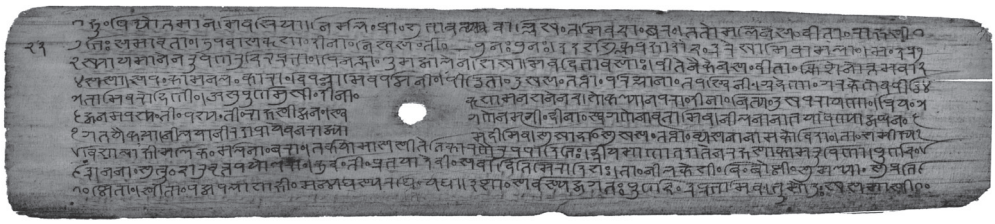


Fig. 7.11. Folio of a manuscript written in Nandinagari script. Image by ಶ್ರೀ, Wikimedia Commons. CC BY-SA.

Fig. 7.12. L024. Palm midrib with incised alphabetic inscription from Yemen, eleventh–tenth century BC. Stichting Oosters Instituut, Leiden University Libraries. Photo: Jorrit Kelder.

was inspired by palm leaves (hence dubbed 'palm-leaf tablet'). Though not generally accepted, there are good indications that palm leaves served as a primary writing material in the Aegean (Waal 2021; forthcoming b). Turning to Anatolia, Cretan palm trees are native to parts of the western coast of Turkey, but not to central Anatolia, where other tree types were dominant. Charcoal analyses from Boğazköy-Ḫattuša, which mostly stem from the Iron Age, show that oak and pine were well represented, in addition

to other tree species, such as juniper, willow/poplar and Rosaecae (Dörfler *et al.* 2001, 104; 2018, 299). The lesser investigated Hittite period appears to present a similar dominance of oak and pine (Dörfler *et al.* 2018, 299). Further evidence for the Hittite period is provided by two settlements in the Hittite heartland; Kuşaklı-Šarišša and Kaman-Kalehöyük. Pollen investigations from Kuşaklı show evidence of the presence of pine, oak and hazel (Dörfler *et al.* 2001, 101); in the charcoal analyses pine is dominant, with other trees such as willow/poplar, oak juniper and Rosaecae making up less than 30% (Dörfler *et al.* 2001, 104; 2018, 299). At the site of Kaman-Kalehöyük, oak makes up some 79% of the charcoal composition (Wright *et al.* 2015, 225). Birch trees, of which the bark was commonly used as a writing material in many regions in the world (see, *e.g.*, the Novgorod documents, Fig. 7.10), are not represented. However, birch is not the only tree that could be used for such ends; as, for example, the Vindolanda tablets from the Roman period show, the wood of oak is also a suitable writing material. The so-called 'leaf tablets' that were unearthed there are made of the wood (not the bark) of locally grown birch, alder and oak (Bowman 1998, 15–16). These thin leaves, which were 1–3 mm thick and could have various shapes and sizes, were inscribed with ink (see Fig. 7.13). The exact process of how they were created escapes us, but they were presumable cheap and easy to make (Bowman 1998, 15, 84).

In Anatolia, the bark of oak was already exploited from the Neolithic onwards; it has recently come to light that at the site Çatal Höyük, the fibres of oak were used to make textiles (Rast-Eicher 2021). It is not hard to imagine that the wood of this tree was used for other purposes, such as writing, in later times. Since the wooden documents have not survived, we cannot tell if the Hittites indeed preferred oak, or other tree species, nor do we know how they would have prepared the writing surface

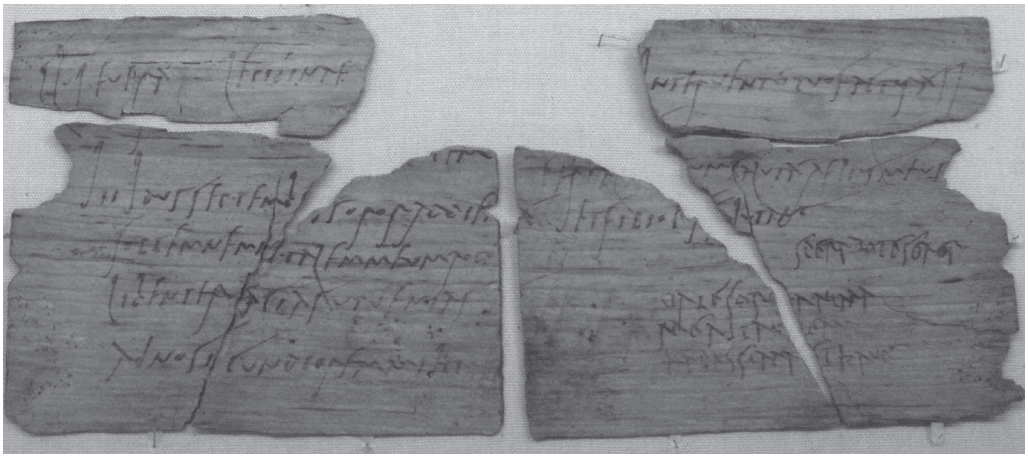


Fig. 7.13. Vindolanda tablet 291. Wood writing tablet with a party invitation from Claudia Severa to Lepidina written in ink, in two hands, first–second century AD. Image by Fæ, Wikimedia Commons. CC BY-SA.

on their wooden tablets. What we do know, however, is that they did make use of wood as a writing material. In light of the above, it is worthwhile to consider the possibility that a common type of wooden documents in Anatolia were strips of bark or wood, which were either carved or inscribed with ink. This particular document shape would have given rise to the arrangement in long horizontal registers with short vertical columns. Because these kinds of wooden strips were widely used on an everyday basis, this layout became the norm, and in turn influenced the layout of inscriptions on other (more durable) writing materials, such as stone and lead.

Recently, Cammarosano *et al.* (2019) have dismissed the possibility that the Anatolian wooden documents were directly inscribed on wood with ink, arguing that they must have been wax-covered writing boards instead. One of their objections is that there is no clear evidence for the Hittite use of ink. However, since ink is quite easy to make (*e.g.*, by mixing water with charcoal, which was widely available and already used as a pigment for Neolithic rock paintings) and its usage is abundantly attested all over the Near East, the Aegean and Egypt, it would be remarkable if the Hittites were *not* familiar with this substance.[20] If one does not want to accept the use of ink, it is possible that the signs were carved into the soft bark or wood, without the use of ink. Cammarosano *et al.* further draw attention to the three metal objects discovered in Ḫattuša that have been identified as styli. Since they resemble later examples of Roman styli, this identification seems plausible, though other functions cannot be excluded (van den Hout 2020, 211). These styli have one pointed end, which was used for writing, and one spatula-shaped flattened end, which in case of the Roman styli served to erase the wax. As argued by Cammarosano *et al.* (2019, 141–142), this flattened end would not be useful when writing directly on wood (or lead). It is, however, possible that the flattened end served another purpose; some styli used for palm leaf writing, for example, have a comparable flattened end (the *chatra*), which served as a cutting or trimming tool.[21] Lastly, the styli found in Ḫattuša may indeed have been used on wax tablets; as mentioned above, their existence, alongside other types of wooden documents, should not be excluded. The Vindolanda and Bloomberg tablets from Roman Britain offer nice examples of the co-existence of various kinds of wooden documents (Figs 7.13 and 7.14); the Bloomberg documents are mostly stylus tablets, but there are also a few that were inscribed with ink; the Vindolanda documents include (imported) waxed-covered stylus tablets, but the majority consist of (locally made) leaf tablets inscribed with ink with a (reed) pen (Bowman 1998, 15, 83–84).

[20] Note that the fragments of painted plaster found in Ḫattuša display similar techniques as the Mycenaean paintings (Müller-Karpe 2003, 392–393; Brysbaert 2008, 102), which demonstrates that the Hittites were part of a network in which such information was exchanged – should such knowledge exchange have been necessary at all for the creation of a simple substance like ink.

[21] Note that one of the terms for wooden writing boards *kurta-* is probably derived from the root *kuer-/kur-* 'to cut' (Kloekhorst 2008, 496).

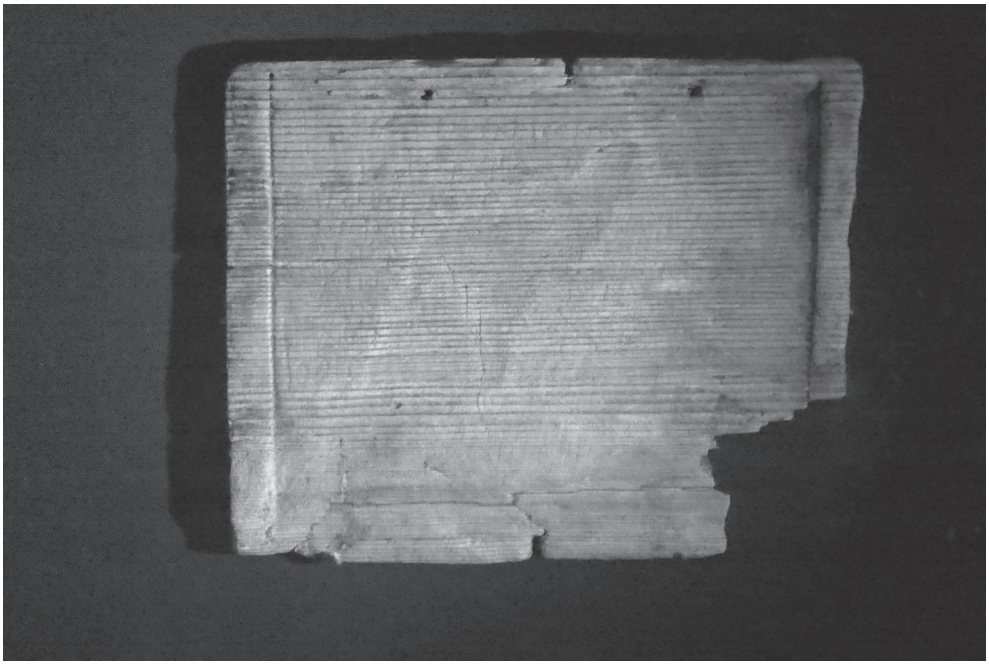


Fig. 7.14. Bloomberg writing board, London, first century BC. Image by Udimu, Wikimedia Commons. CC BY-SA.

Concluding remarks

In absence of the wooden documents themselves, the scenario sketched above is tentative. However, precisely because we solely have to rely on indirect evidence it is imperative to keep an open mind and to explore various scenarios. After all, the commonly accepted assumption that all wooden tablets in Hittite Anatolia were wax-covered writing boards is equally speculative. In this article, I have proposed that (some of the) wooden documents were strips of wood or bark, and that their format gave rise to the layout of long horizontal registers with vertical columns of two–four signs. This arrangement became so standardised that it was subsequently also used for inscriptions on other materials (with different shapes), such as stone and lead. In the case of the latter, the material was cut to mimic the shape of the wooden strips. This is not to say that all wooden documents must have had this format, other types and shapes of documents may also have existed, which is also suggested by the diverse terminology used for wooden documents.[22] In all likelihood, the choice for a

[22] It should certainly not be excluded that different notation systems involving various degrees of literacy co-existed, and that some of these wooden records included tally sticks, or other recording mechanisms that did not necessarily involve writing. For Hittite evidence for non-literate bookkeeping practices, see Waal forthcoming a.

certain document type largely depended on the function; a private letter would have had a different format than an official document.[23] The undoubtedly diverse writing tradition on wood is completely lost, but the layout of the surviving hieroglyphic inscriptions on stone and lead may offer some clues regarding their appearance. Not only the layout itself is significant, but also its ubiquity; the fact that the same textual design is found in virtual all inscriptions from all regions, implies that it was a well-established and widely spread tradition.

Excursus: the terminology for wooden tablets and scribes-on-wood

The meaning of some of the Hittite terminology for writing is not undisputed and other interpretations than the ones offered above have been made, most recently by Michele Cammarosano *et al.* (2019) and Theo van den Hout (2020). Below, I offer a more detailed discussion of the most relevant terms.

^{LÚ}DUB.SAR.GIŠ – As mentioned above, the Hittites made a distinction between a regular scribe (^{LÚ}DUB.SAR) and a scribe-on-wood (^{LÚ}DUB.SAR.GIŠ), which implies an essential difference between these two professions. If one assumes that the wooden documents were wax-covered tablets inscribed with cuneiform, there would have been no reason to make a distinction; note that in Mesopotamia there also was no separate term for scribes writing on wax writing boards. Theo van den Hout (2010, 262; 2020, 294–297) has proposed that the difference must lie in their function; the ^{LÚ}DUB.SAR.GIŠ was not an actual scribe, but rather 'administrators in the narrower sense of "clerks"'. He suggests that the element GIŠ in ^{LÚ}DUB.SAR.GIŠ is short for 'wood(en) chest/container'. The wood scribes 'would then be the officials who are in charge of securing and recording incoming and outgoing goods into and out of the storerooms, so called after the most typical way of storage in the royal magazines' (van den Hout 2010, 266). Although the ^{LÚ}DUB.SAR.GIŠ was certainly involved in administrative affairs, his activities were not restricted to the storerooms alone and he also played a role in, for example, cultic activities. Even more problematic is the assumption that this profession is coined after the material of the containers used within the storage rooms. This feels somewhat artificial and to my knowledge no parallels for such usage exist. By contrast, we do have a convincing parallel from the first millennium BC for the interpretation as the ^{LÚ}DUB.SAR.GIŠ as scribe-on-wood writing in Anatolian hieroglyphs. In the Persepolis archives the scribes writing in alphabetic Aramaic are called 'scribes (writing) on leather' (^{HAL}*tup-pi-ip* KUŠ^{MEŠ} *uk-ku*) or 'Babylonian scribes (writing) on leather' (^{HAL}*tup-pi-ip* ^{HAL}*ba-ip-li-ip* KUŠ^{MEŠ} *uk-ku*), thus distinguishing them from the scribes writing in cuneiform. Similarly, in Neo and Late Babylonian a *sepīru*, a scribe writing in alphabetic script (mostly on leather or

[23] I will not address the sealing of wooden documents here, it suffices to say that irrespective of their shape or appearance, they could be sealed by means of strings to which clay *bullae* were attached, see Waal forthcoming c.

parchment), was designated by the Sumerogram ^{LÚ}KUŠ.SAR, KUŠ meaning 'skin' or 'leather' (CAD, 225 s.v. *sepīru*; Henkelman 2009, 93; Hunger 2009, 269). Scribes writing in a different script and language were thus identified by means of the (primary) writing material they used. Finally, if one does not except that the ^{LÚ}DUB.SAR.GIŠ referred to scribes writing in hieroglyphs, this begs the question what the scribes writing in this script would have been called, who after all did exist. All in all, this scenario creates more problems than it solves.

GIŠ.ḪUR – The wooden writing boards are commonly referred to by means of the Sumerogram GIŠ.ḪUR or Hittite GUL-*zattar*. The Sumerogram corresponds to Akkadian *uṣurtu*(*m*) of which the basic meaning is 'drawing'. The noun GUL-*zattar* is connected to the verb GUL-š-, which means 'to draw' (see below). Interestingly, the Sumerogram GIŠ.ḪUR is never found in Mesopotamian context referring to writing or wooden writing boards, which implies a fundamental difference between the Mesopotamian and Anatolian situation. Theo van den Hout (2020, 188–195) takes the fact that GIŠ.ḪUR does not refer to wooden documents in Mesopotamian sources as an argument to propose that also in Anatolia this term does not refer to documents made of wood. He instead argues that in Anatolian context, the GIŠ.ḪUR refers to official documents. First of all, this interpretation does not solve the discrepancy between its usage in Mesopotamia and Anatolia, as GIŠ.ḪUR is never used in the meaning 'official document' in Mesopotamian sources. Secondly, as also pointed out by Cammarosano *et al.* (2019, 137), there are a number of attestations of GIŠ.ḪUR (notably in ritual context), where it is highly improbable that we are dealing with official documents. Thirdly, the term GIŠ.ḪUR may be used as a determinative for other words referring to wooden documents, alternating with the determinative GIŠ 'wood' ($^{(GIŠ.(HUR))}$GUL-*zattar*, $^{GIŠ(.HUR)}$*k/gaštarhait/da*, $^{(GIŠ.HUR)}$*parzaki*(*š*), $^{(GIŠ.HUR)}$*hatiwi(ya)-*, $^{GIŠ(.HUR)}$ *k/gurt/da-*), confirming that it indeed refers to the material wood (cf. Cammaraosano *et al.* 2019, 138).[24]

At this point, it is helpful to introduce the textual evidence from the Old Assyrian period. Cuneiform tablets of Assyrian merchants mentioned a document called *iṣurtum* (= Akkadian *uṣurtum* 'drawing'), which typically list debts of Anatolians to Assyrians (Waal 2012, 291–298; Veenhof 2020 [1995]). No examples of such documents, which were clearly differentiated from clay tablets (*TUPPUM*) have been found. Cammarosano *et al.* (2019, 134–136) suggest that these *iṣurtum*-s were wax boards inscribed with cuneiform. They rightly pose the question why these documents would have been labelled as 'drawings'. In an attempt to explain this, they presuppose 'the existence of wax boards in the native Anatolian milieu, where beeswax was more common than in Mesopotamia. Such boards would not have been used for proper writing (which would be anachronistic) but rather for drawing ground-plans, tallying marks and simple pictographs' (Cammarosano *et al.* 2019, 136). According to them, the Anatolians would have referred to these wax boards with the term GUL-*zattar*, and this term

[24] Note that van den Hout (2020, 209) does accept that when the terms are indicated by the determinative GIŠ alone we could be dealing with wooden writing boards.

was taken over and translated by the Assyrians to refer to wax boards inscribed with cuneiform. A serious objection against this proposal is the fact that the Assyrians were already familiar with waxed writing boards and had a term for them: *tuppum ša iškurim* (tablet of wax), so why would they borrow an additional Anatolian term? The fact that they did, implies that there must have been a difference between their own cuneiform wax boards and the Anatolian *iṣurtum*-s. A more plausible and economical solution is that the Old Assyrian *iṣurtum*-s indeed represent a loan translation of the word GUL-*zattar*, referring to wooden documents drawn up by Anatolians in their own script. These Old Assyrian *iṣurtum*-documents can be considered the forerunners of the GUL-*zattar*/ GIŠ.ḪUR/ *uṣurtum*- documents in the succeeding Hittite period. This scenario is confirmed by the fact that the *iṣurtum* documents occur in transactions involving Anatolians and the *tuppum ša iškurim* in Assyrian context only.

The verb GUL-*š*- – In connection to the wooden writing boards the verb GUL-*š*- (Cuneiform Luwian GUL-*zā*(*i*)-) is consistently used, which is generally translated as 'to carve', 'to engrave', 'to mark', or 'to write'. This verb is related to Luwian GUL-*zattar*, used to identify wooden documents (see above). In addition, the general verb *iye/a*- 'to do', 'to make' may be used. This verb *iye/a*- also occurs in connection to clay tablets (see below), and seems to refer to the composing of the document rather than the actual writing process. Unlike the verb *iye/a*-, the verb GUL-*š*- is *never* attested in combination with (clay) tablets, which were reserved for the cuneiform script. The verb GUL-*š*- is, however, in addition to wood, attested in combination with metal and stone – two materials on which hieroglyphic inscriptions are attested. The archaeological record thus supports the assumption that GUL-*š*- refers to writing in hieroglyphs, as evidence for the use of this script is preserved on the materials mentioned in relation to this verb (with the obvious exception of the perishable material wood), but not on clay, which is never connected to this verb (see Table 7.2).

I have therefore proposed earlier (Waal 2011) that the verb GUL-*š*- refers to writing in hieroglyphs, a suggestion that was already made by Heinrich Otten (1967, 234). He did so in relation to KBo 12.38, a cuneiform text, which, as mentioned above (see p. 134), has been identified as containing a blueprint for (or copy of) a hieroglyphic inscription (Güterbock 1967, 74). Precisely in this text, the verb GUL-*š*- is used.[25] The relation between the verb GUL-*š* and the hieroglyphic script is further confirmed by the fact that the verb is related to the verb for writing in Hieroglyphic Luwian, namely REL-*za*- (Waal 2014; 2019).

Lastly, if the verb GUL-*š*- indeed means both 'to draw' and 'to write (in hieroglyphs)', this would explain the anomalous use of the Sumerogram GIŠ.ḪUR and Akkadian *uṣurtum* (and Old Assyrian *iṣurtum*) by the Hittites. In Akkadian, the verb *eṣēru*(*m*) is only used in the meaning 'to draw' and not 'to write', and the noun *uṣurtum* means 'drawing'. The corresponding Hittite verb GUL-*š*-, however, made no distinction

[25] 'And just as my father, the Great King Tudḫaliya was a true king, in the same way I GUL-*šed* [his] true manly deeds thereon' (KBo 12.38 ii 11′–14′).

Table 7.2. Attestations of Anatolian Hieroglyphs and the verb GUL-š- in relation to various writing materials.

Attestations	*Stone*	*Metal objects (not tablets)*	*Tablets*	*Wooden documents*
Verb GUL-š-	+	+	-	+
Anatolian Hieroglyphs	+	+	-	(+)?

between these two actions, which is why GIŠ.ḪUR / *uṣurtum* 'drawing' could end up being used in the meaning 'writing (in hieroglyphs)' in Anatolian context: the act of 'drawing' and 'writing' was considered the same by the Hittites (just like the ancient Egyptians).

The verb *ḫazziye/a* – Let us now turn to the terminology used for writing in relation to cuneiform tablets. The most common term for clay tablets is *tuppi* (Sumerogram DUB, Akkadogram *TUPPUM*). This term can also be used more broadly in the sense 'documents', but in the Hittite text corpus it mostly refers to tablets. In most cases, the general verb *iye/a-* 'to make, to compose' is used in combination with *tuppi*, or, in the case of letters, the verb 'to send' (*ḫatrae-*), which are both not very helpful for our purpose. In two cases, there is a direct reference to the inscribing of tablets, and here the verb *ḫazziye/a-* is used. The basic meanings of the verb *ḫazziye/a-* are 'to strike/stroke', 'to pierce', or 'to play (a music instrument)' (cf. HW² Ḫ s.v. *ḫazzi*(*ya*), 539–541; HED H s.v. *ḫat*(*t*), 248–255). The verb finds a nice parallel in Akkadian *lapātum*; this verb, of which the basic meaning is 'to touch', 'to affect' or 'to play (a stringed musical instrument)' is also commonly used in the meaning 'to write (in cuneiform), *i.e.* to touch, to impress the surface of the clay tablet with a stylus' (cf. CAD L s.v. *lapātu*, 82–94). The verb *ḫazziye/a-* is once used in relation to a clay tablet, and once in relation to a tablet made of iron, two very different materials, which excludes the possibility that it refers to a specific kind of writing technique. The most plausible solution is that the common denominator was that both these texts were written *in cuneiform*, the verb *ḫazziye/a-* representing the action of impressing the clay/metal with the stylus or chisel. This assumption is confirmed by archaeological evidence: there are examples of metal and clay tablets inscribed with cuneiform (see Table 7.3). Since there are only two attestations, however, the fact that *hazziya/e-* is not attested referring to wood and stone may very well be due to coincidence. It is nevertheless of interest that the only material where both verbs (GUL-*š-* and *ḫazziye/a-*) are used, namely metal, is also the only material for which both scripts (Anatolian hieroglyphs and cuneiform) are attested.

Van den Hout (2020, 214–216) and Cammarosano *et al.* (2019, 144) do not accept that GUL-*š-* refers to writing in hieroglyphs and *ḫazziye/a-* to writing in cuneiform, but instead argue that both verbs refer to writing in general. Following Marazzi (1994, 137–140), they maintain that the verbs denote motions or techniques of making marks on a surface; the verb *ḫazziye/a-* reflecting the piercing or striking of the stylus into

Table 7.3. Attestations of cuneiform script and the verb hazziya/e- in relation to various writing materials.

Attestations	*Stone*	*Metal objects (including tablets)*	*Tablets*	*Wooden documents*
Verb *ḫazziya/e-*	-	+	+	-
Cuneiform script	-	+	+	(-)?

clay or metal, and the verb GUL-š- reflecting a 'drawing' motion. Cammarosano *et al.* (2019, 144) observe that 'the fact that the writing-oriented use of *gulš-*[26] and *ḫazziye/a-* refers primarily to hieroglyphs and cuneiform respectively, this does *not* imply that either verb cannot be use for either script'.[27] This interpretation, however, does not explain why the verb GUL-š- is *never* used in relation to tablets (*tuppi*/DUB/*TUPPUM*)). If the verb refers to writing in general, one would expect it to be used for all kinds of documents, similar to the general verb *iye/a-* 'to make, to compose'. The distribution of the verb GUL-š- is not random and this can hardly be due to chance considering the numerous attestations of both the noun *tuppi* and the verb GUL-š-.

Last but not least, one should not forget that, regardless of whether or not they were written on the wooden tablets, the Anatolian hieroglyphs *were* in use in the Hittite period, next to the cuneiform script. If one does not accept that the verb GUL-š- refers to the hieroglyphic script (and the ^{LÚ}DUB.SAR.GIŠ to the person writing it), one wonders how the Hittites distinguished between the two writing systems. The assumption that they did not make such a distinction would imply that either the cuneiform script and the Anatolian hieroglyphs were completely interchangeable, which they were evidently not, or that they were used in completely separated domains that never interfered, in which case there was no need for any differentiation. Though the two scripts were indeed mainly used in different spheres (see above n. 18), their paths demonstrably did sometimes cross – this is perhaps most eloquently illustrated by the royal seals, which contained a legend both in cuneiform and Anatolian hieroglyphs (see Fig. 7.8).

[26] Cammarosano et al. (2019, *passim*) prefer to hold on to the phonetic reading of the verb, but see Waal (2019).

[27] Note that they do seem to assume that originally this distinction did exist, as they remark that 'it is naturally expected that in the course of times these verbs as well as their derivatives could be used in a more general sense and/or underwent semantic changes' (144).

Chapter 8

The rare letters of the Phrygian alphabet revisited[1]

Rostislav Oreshko

From all the non-Greek alphabets found in Anatolia in the first millennium BC, the Old Phrygian (OPhr.) is arguably the closest to the Greek. Although stylistically distinct – often featuring more slender letter shapes with shorter side strokes than was usual for Greek letters – the majority of the Old Phrygian inscriptions can be read by those familiar with Greek inscriptions of the Archaic period without any difficulty. Indeed, from the 24 letters recognised in the standard edition of the OPhr. inscriptions, *Corpus des inscriptions paléo-phrygiennes* (Brixhe and Lejeune 1984, 280) and adopted in the recent comprehensive overview of the Phrygian language (Obrador-Cursach 2020a, 31), 17 practically exactly correspond to their familiar counterparts in the Archaic Greek alphabets. Together with a special letter for the non-syllabic *i* (*y*, no. 18), which is the only important feature distinguishing the Phrygian alphabet from the Greek alphabet, these letters constitute the bulk of the standard Phrygian letter set used in an ordinary Phrygian inscription.

The remaining six letters listed in the table are found practically only in a handful of the OPhr. inscriptions constituting less than 10% of the Phrygian corpus. Moreover, the relative significance of these rare letters is by no means equal. In fact, only *two* of them (nos. 19 and 20, see Fig. 8.1) are relatively well represented in the corpus and can be properly classified as independent letters that make up part of an 'average' Phrygian letter repertoire.

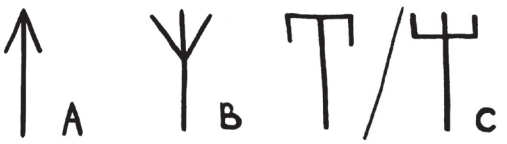


Fig. 8.1. Rare letters of the Old Phrygian alphabet: nos. 19 (A), 20 (B) and 23 (C).

[1] Abbreviations:
OPhr. = Old Phrygian
NPhr. = New Phrygian
Skr = Sanskrit

No. 23 is found very rarely (only in four graffiti on pottery sherds), and its status – a separate letter or a special local variant of another letter – remains not quite evident (see below). No. 22 is claimed to be found (Brixhe and Lejeune 1984, 282) only in two graffiti from Gordion (G-106 and G-244, both being meaningless three-sign sequences) and there is every reason to suspect that in both cases we are dealing with a corrupt text. Similarly, no. 21, found in only one inscription (W-08) on a natural rock, probably is a variant of a usual letter (in all likelihood, *r*). Lastly, no. 24 is very probably simply a graphic variant of *b* (cf. discussion in Obrador-Cursach 2020a, 50–51), more typical, as it seems, for the easternmost part of the Phrygian epigraphic zone, given that it is found in 2 out of 12 known inscriptions coming from this region (P-101 and P-106).

On the other hand, the standard table does not list all letters attested in the Phrygian alphabet. One additional rare Phrygian letter appears to have hitherto escaped identification. It is found in only two very early (c. 740 BC) inscriptions and, as will be argued below, probably represents a further variant of no. 19.

The topic of the present contribution is thus the three rare letters of the Phrygian alphabet (nos. 19, 20 and 23). The discussion will focus primarily on the definition of the exact phonetic value of the letters that hitherto remained controversial (albeit not quite to the same degree), using linguistic, philological and epigraphical evidence. In the final part of the paper, there will be discussed the question of possible 'relatives' of these letters within Anatolia – a question on which the establishment of the exact phonetic values sheds some new light.

Letter 𐤕 (no. 20)

One may count about 10 possible attestations of the crow's-foot-shaped letter corresponding in essence to the most common variant of Ψ in the Archaic Greek 'Blue alphabets' and X in the 'Red alphabets'.[2] Four of these possible attestations are found, however, as graffiti on pottery sherds consisting of only one letter (G-278, G-294, G-298, G-306) and may represent a sort of 'mark'. The claim of Obrador-Cursach (2020a, 38) that the 𐤔-shaped character found on 10 other sherds[3] is a variant of 𐤕 is unfounded. In none of the cases the 'letter' appears in what can be properly classified as a sensible letter sequence, and there is a strong suspicion that it represents a sort of 'owner's mark'; for G-249, which is a special case, see in detail below. There are thus only *six* real cases in which 𐤕 appears in a more or less sensible epigraphical context, W-01b, B-07, G-115, G-145, G-224c and G-339, although even from these the last two are much less informative, as both represent three-letter sequences. These are the following:

[2] It is not clear to me on what count is based Obrador-Cursach's statement (2020a, 38) that the letter no. 20 'occurs twenty-three times in twenty-one different inscriptions'. Somewhat further in the text he mentions only 17 inscriptions (erroneously citing NW-121 twice), including those featuring 𐤔.

[3] G-225, G-249, G-322, G-324, NW-101, NW-105, NW-112, NW-119, NW-121, NW-126. In fact, it is even dubious that in all these cases we are dealing with the same character: in a number of cases (NW-112, NW-119 or NW-121) the strokes may be a part of bigger and more intricate drawing.

Fig. 8.2. Graffito G-145, Penn Museum Gordion Archive: image G-4620.

1. Graffito G-145 on a jar handle from Gordion: a *scriptio continua* sequence *voineio*ϒ*uriienoisku[* (Brixhe and Lejeune 1984, 131–132; Obrador-Cursach 2020a, 458). Although the word boundaries are by no means obvious and the sequence is broken at the end, the attestation is important from an epigraphical point of view. The part of the graffiti with the letter ϒ bears clear traces of correction from one letter to another, although it is not quite clear whether ϒ is the former or the final variant of the letter. Due to the importance of the technical side, it seems appropriate to reproduce the graffito here (Fig. 8.2).
2. Graffito G-115 on the bottom of a small vessel from Gordion, which can be read as ϒ*uva*ϒ*aros* (Brixhe and Lejeune 1984, 107; Obrador-Cursach 2020a, 450). The parallels of other graffiti from Gordion suggest that the sequence probably represents a personal name.
3. Graffito G-224c (one of three) on a large cooking pot from Gordion, which can be read as ϒ*uv* (Brixhe and Lejeune 1984, 181; Obrador-Cursach 2020a, 475). Given that the other two graffiti on the pot represent personal names (*Ata* and *Garṭes*), and the only other personal name beginning with ϒ*uv* is found in G-115, it is quite possible that ϒ*uv* is an abbreviation for ϒ*uva*ϒ*aros* (as already thought by Lejeune 1978, 784).
4. Inscription associated with the so-called '*Areyastis* Monument' (W-01b). The letter is found in the word *da*ϒ*et* in the second clause of the inscription which reads as follows (Brixhe and Lejeune 1984, 39-41; Obrador-Cursach 2020a, 433):

*yos esai-t materey: eveteketi̯y: ove vin: onoman: da*ϒ*et:*
lakedo-key: venavtun: avtay: materey

5. A Middle-Phrygian funerary epigram B-07 (Brixhe 2004, 73–85; Obrador-Cursach 2020a, 441; 2021). The letter is found in the word *aniva*ϒ*eti* in the final clause of the inscription:

   *Tiv[(.)]n-ke devụṇ-ke umnotan ordoineten me kos aniva*ϒ*eti smaniṇ*

6. A graffito G-339 found on the bottom of a bowl from Gordion consisting of only three letters ϒ*ir* (Brixhe 2002, 93). The sequence may be interpreted as an abbreviated personal name, comparable with ϒ*uv* in G-224c.

The earliest interpretations of the letter proceeded from its similarity with the Greek letter of the same general shape, which had two different values in its two main alphabetic varieties: /k^{h}/ in the 'Red alphabets' and /ps/ in the 'Blue alphabets'. Young (1969, 254 with n. 12 and 291) hesitated between the two values, but thought that the correction of ϒ to *s* in the graffito G-145 supports its interpretation rather as /ps/ containing a sibilant. Haas (1976, 79–82), on the other hand, tried to defend the value /k^{h}/ by etymological speculations around the idea of the 'Phrygian Lautverschiebung' (now obsolete).[4] Both interpretations were, however, made obsolete by the special discussion Lejeune (1978) in which he proposed to define its value as /ks/. This suggestion was commonly adopted in the more recent literature (*e.g.* Ligorio and Lubotsky 2018, 1817). Lejeune proceeded in his interpretation of the letter from G-145 (no. 1 above), arguing that the scribe initially wrote *s* and subsequently corrected it to ϒ, which should imply that 'ϒ doit noter une articulation consonantique complexe à composante sifflante (ss? ts? ks? ps? vel sim.)'[5] (1978, 786). Lejeune preferred /ks/, assuming that the case may be typologically comparable with the variation seen in Greek σύν/ξύν. In the interpretation of the name ϒ*uva*ϒ*aros* in G-115, Lejeune followed Haas, who suggested that it should be a Phrygian form of the royal Median name known from Greek sources as Κυαξάρης and from the Old Persian Behistun inscription as ^{h}*Uvaxštra-*, and argued that the value /ks/ fits even better. Lejeune interpreted the form *da*ϒ*et* in the Areyastis monument as a suffixal form based on the root *dak-*, adducing as a parallel Latin *faxō* vs. *faciō*/*fēcī*. As B-07 was discovered only in 1997, Lejeune was not able to use its evidence. It is noteworthy that Lejeune himself was fully aware that the letter value suggested by him is no more than a *possibility* (1978, 788).

Lastly, a new interpretation of the letter was recently proposed by Obrador-Cursach (2020a, 38–49). Obrador-Cursach rejected the evidence of G-145, following a suggestion by Adiego that the scribe had in fact written not ϒ but *ou,* and subsequently

[4] For the recent views on the development of the Phrygian consonants see in general Ligorio and Lubotsky 2018, 1823–1824). One may note, however, that given the size of the Phrygian linguistic area and the likely existence of several dialects already in the early period, it is not excluded that the reflection of the IE consonants was not quite the same in different parts of Phrygia.

[5] 'ϒ ought to denote a complex consonantal articulation with a sibilant component (ss? ts? ks? ps? or similar).'

inserted *s* between the two letters. He also doubted Lejeune's interpretation of the form *daϒet* as /dakset/ on linguistic grounds (consonantal stems seem to insert *-e-* before the suffix *-s(e)-*), suggesting instead that the form may be a 'spelling variant' of *daket*. Obrador-Cursach found the key piece of evidence confirming this interpretation in G-249, which he read, following Brixhe and Lejeune (1984, 196), as *seϒelt|ias* (omitting, however, three question marks present in the original edition). He further claimed that *seϒel* represents a Semitic borrowing in Phrygian corresponding to *šql* 'shekel, weight' (which gave also Greek σίκλος/σίγλος). Next, using the comparative evidence of an Aramaic inscriptions form Daskyleion, Obrador-Cursach analysed the last clause of B-07, *me kos anivaϒeti smaniṇ*, as imprecation with the general meaning 'let nobody harm Manes', and proposed to connect the root of the verb *anivaϒeti* with PIE root **u̯eh₂g-/*u̯eh₂ǵ-* 'break'. Lastly, he assumed that a tectal value (*k* or the like) would be equally suitable for the case *ϒuvaϒaros* as reflecting Median *ʰUvaxštra-*. From three possible interpretations of ϒ, which the evidence may imply – a palatalised allophone of /k/, a fricative allophone of *k* (/x/) or simply a graphic variant of *k* – Obrador-Cursach gave preference to the latter.

Neither the 'classical' interpretation of ϒ as /ks/ nor its re-interpretation as a /k/ by Obrador-Cursach are quite satisfactory. Only the very first step of Lejeune's analysis – the assumption that the letter is somehow connected with sibilant *s* – appears to be correct. His further argumentation is contradicted by several pieces of evidence. As for the attempt of Obrador-Cursach (following Adiego) to cast the epigraphical evidence of G-145 into doubt, it fails to convince. All photos that I was able to study in the Gordion Archive (*e.g.* Fig. 8.2) have only confirmed the previous interpretation of the picture as a case of correction of ϒ to *s*. In fact, the story of the correction is even somewhat more complex, which puts even more value on this evidence (see in detail below).

However, the idea to interpret the letter as /ks/ contradicts the evidence present in one of the inscriptions featuring ϒ, W-01a. Here, the verb *evetekseti̯y*, found in just a couple of words before *daϒet*, contains a cluster *-ks-* spelled with two letters. The attempt by Lejeune (1978, 788–789) to explain the obvious contradiction by the general reference to the 'redundancy in the orthographic possibilities' and by an assumption that in *evetekseti̯y* there was a morphological border between *evetek-* and *-seti̯y* fails to convince. It is difficult to believe in the existence of such 'redundancy' in general as none of the other known alphabets of Anatolia or the Mediterranean shows any apparent signs of it, and all the more difficult to believe that two alleged 'orthographic variants' are found in the same inscription. As for the second point, Lejeune was right that there is a morphological boundary between *evetek-* and *-seti̯y*, as the latter part contains the prospective/future suffix *-se-* and the ending *-ti(y).* However, precisely the same applies to the form *daϒet* which should have the same prospective/feature semantics, as it makes a part of the same protasis of an imprecation formula, the two verbs being divided only by the disjunctive *ove* 'or'. If the root were *dak-* 'to do', its *se*-form would be probably spelled as **dakset*. This argument is now even further

strengthened by the recent appearance of a second instance of the spelling *ks* for the phonetic cluster */ks/*. It is found in the name *Muksos* discovered together with several other names on the beam of the Tumulus MM in 2007 (see Liebhardt and Brixhe 2009, 147–148). There is also a further contextual argument against the interpretation of the form *daϒet* as **dak-set*: the verb *dak-* 'do, make' is in fact inappropriate in the context of the clause; this point will be addressed in more detail below.

The personal name *ϒuvaϒaros* does not lend any firm support to the reading /ks/ either, as its time-honoured comparison with *Median* name ^{h}*Uvaxštra-* represents, if taken unbiasedly, a sheer absurdity both from historical and linguistic points of view. To avoid any misunderstandings: the name *ϒuvaϒaros* is found as a graffito (G-115) on the bottom of a grey-ware black-polished drinking bowl excavated on the City Mound of Gordion, the capital of the Phrygians. Similar pottery is in general very well represented in the Middle Phrygian Gordion (c. 800–540 BC). The dating of the object is unclear: like the majority of the pottery material on the City Mound, it was found in rubble fill, and the objects associated with it essentially lack any precise dating. Even if the dating of the fill by Young (1969, 271) to the late sixth century is correct, it gives only a *terminus ante quem* for the object and the graffito, which is useless, since this dating is anyway obvious from the letter shapes. In fact, the shape of the slim six-bar[6] *s* clearly points in the direction of a relatively early date, possibly first half of the seventh century BC. In any case, nothing in the graffito suggests that the name *ϒuvaϒaros* is anything other than an ordinary *Phrygian* name, as is the case with dozens of other names incised in the pottery sherds from Gordion. It is noteworthy that, besides *ϒuvaϒaros*, only one further Iranian name, *Asakas*, was tentatively assumed to be attested in Gordion (G-150, Avram 2019, 328–329); however, even in this case, the Iranian character is highly dubious.[7] The attestation of *ϒuv* in G-224c, probably representing an abbreviation of *ϒuvaϒaros*, even further confirms that we are dealing with a local Phrygian name.

On the other hand, the name ^{h}*Uvaxštra-* is not even a Persian name, which one might theoretically expect to find in Gordion after the Achaemenid conquest of Anatolia c. 540 BC. It is a Median name. Moreover, as far as one can see it is a name associated exclusively with Median nobility. Besides the Old Persian form ^{h}*Uvaxštra-* (*u-v-x-š-t-r*), the name is attested in Assyrian sources as ^{m}*Ú-ak-sa-tar* or ^{m}*Uk-sa-tar*

[6] The sixth bar of the letter is found close to the ring and is incised only slightly.

[7] Schmitt 1982, 34. The Iranian origin of *Asaka* is claimed on the basis of its possible Iranian etymology (a diminutive of *asa-* 'horse') and the attestations of *Áš-šá-ka*$_4$ in two Elamite tablets (Tavernier 2007, 118). Neither of the arguments is compelling, as the chance correspondence is not excluded in such a short name. In fact, a very similar name is possibly attested also in another Phrygian graffiti from Seyitömer (W-101, see Bilgen *et al.* 2011) in which one read *asakas* after the broken edge of the sherd. The traces before the word would be compatible with *p* or *m*, but there is no guarantee that this is the first letter of the name and not a part of the preceding word. Even if it is not the same name, it has a very similar morphological structure, and, in the absence of clear indications otherwise, both names can be defined as Phrygian. Lastly, one may point out the name Αἴσακος belonging, according to Apollodorus (3.12.5) and Ovid (Met. 11.749–759), to the son of Priam and Arisbe. It is not impossible that the two names are related.

for a Median prince of the eighth century BC, and as Babylonian ^{m}*Ú-ma-ku-iš-tar* or ^{m}*Ú-ma-kiš-tar* and Elamite *Ma-ki-iš-tur-ri* or *Ma-ak-iš-tar-ra* for the sixth century king known from Herodotus (1.73, 1.103–107) as Κυαξάρης (for an overview of the evidence see Diakonoff 1993). In addition, the latter name was recently identified also in a late Assyrian document in the form ^{m}*Ú-ba-ki-is-te-ri* (Roaf 2021). It is obviously a fantastic idea that a Median king of the sixth century BC or a Median prince of the eighth century BC would show up in Gordion, grab a drinking bowl and write his name on it, without any attempt to identify himself as a Median.

No more credible is the linguistic side of the equation, which presupposes that the initial *h-* of the Iranian form would be reflected in the Phrygian alphabet as /ks/ (Lejeune) or /k/ (Haas and Obrador-Cursach). All the cuneiform forms, including the Old Persian, clearly show that already in the eighth century the initial *h-* was a very weak sound, which could be simply ignored in writing. The initial *k-* of the Herodotean form represents an oddity, the source of which is quite unclear; it may well result from a Greek folk-etymological reinterpretation of the name. At any rate, there is absolutely no reason to think that the strange Greek form was known in Gordion. The expected Phrygian spelling would simply ignore the initial weak *h-*, which is supported, *inter alia*, by a piece of onomastic evidence: while the name of the central Anatolian river *Halys* appears with a rough breathing in Greek (Ἅλυς), the personal name *Alus*, well attested both in Phrygia and Lydia, which is likely based on it, appears with the initial *a* (Oreshko 2020, 88, n. 18). In sum, the name *ϒuvaϒaros* cannot be connected with ^{h}*Uvaxštra*-Κυαξάρης and should be interpreted in Phrygian terms.

These observations already undermine in part Obrador-Cursach's argument for the re-interpretation of the letter as *k*. From the remaining two pieces of evidence, the heuristic value of the graffito G-249, regarded by Obrador-Cursach as the key piece of evidence, is in fact close to zero. There is every reason to think that the graffito does not encode any verbal message at all, but only *imitates* writing. Indeed, the 'letters' of the graffito (for a drawing and the photo see Brixhe and Lejeune 1984, 195 and pl. CVI) not only have 'un dispositif bizarre' (Brixhe and Lejeune 1984, 195) unimaginable for a normal text – in fact *not a single one* of the characters corresponds to a normal Phrygian letter. The reading *se*$^{?}$*ϒ*$^{?}$*e*$^{?}$*lt*|*ias* proposed by Brixhe and Lejeune (1984, 196) is as arbitrary as, for instance, 'κύριε βοήθεσε' would be. No better-founded is the definition of the object as an 'alabaster weight' given by Brixhe and Lejeune (1984, 195), which they probably took from the title of the object card preserved in the Gordion archive. However, the text of the card makes it clear that the compiler had in mind not a 'weight for scales', but a 'loom-weight' (which has obviously quite a different function), since the general form of the object to a degree resembles one and there is an unfinished hole in it. More probably, however, the object was conceived to become a sort of magic amulet to be worn around the neck: comparable things with the characters imitating writing and thus making it more powerful for the practitioner are well known both in Antiquity and in the medieval period

(see Boyes, this volume). Obrador-Cursach's analysis of the last piece of evidence – the verb *aniva*ϒ*eti* in B-07 – again fails to convince, as both the identification of the root as **va*ϒ- and its connection with PIE root **u̯eh$_2$g-*/**u̯eh$_2$ǵ-* are quite speculative (for an alternative analysis see below).

As already in part adumbrated above, G-145 and W-01c remain two crucial pieces of evidence for establishing the value of ϒ. Both texts in fact contain more clues than was assumed earlier. As for the former, a close observation of the corrected letter reveals that we are probably dealing with *two* stages of correction: first ϒ to *s* and then back to ϒ. Indeed, the distance of the letter from the preceding *o* clearly implies that ϒ was the letter that was intended initially. However, *s* is seen well only in the lower part, and its long tail and the irregular shape – as contrasted with the neat multi-bar shape of the second *s* of the graffito – seems to suggest that the scribe 'freaked out' because of his own mistake. On the other hand, ϒ is incised very deeply, obviously with several additional scratches for every element, a process that caused the loss of black varnish around the incised lines. This indicates that the scribe has returned to the initial variant of the letter, making significant efforts to obliterate *s*. This painful hesitation of the scribe implies that the writing of ϒ instead of *s* was not just a mistake caused by negligence – apparently, it was indeed not that easy to choose between the two letters. This means that the phonetic values of ϒ and *s* were indeed connected closely.[8]

As for the form *da*ϒ*et*, its analysis both by Brixhe and by Obrador-Cursach was quite imprecise, being arrived at by an inveterate misconception concerning roots, *da-* and *dak-*. These roots, although etymologically related, have *different* meanings in Phrygian and the latter is in fact irrelevant for W-01c. The root *dak-* is abundantly attested in the Phrygian corpus, first of all in the NPhr. inscriptions (cf. Obrador-Cursach 2020a, 157–158). Although not all attestations are equally clear, the semantics of the verb αδ-δακ-ετ (which features the prefix *ad-* ~ Latin *ad-*) used in the standard protasis of an imprecation formula ιος νι ... κακον αδδακετ 'whoever does/inflicts evil to...' leaves little doubt that the precise meaning of the root *dak-* was 'do, make, inflict'. The verb thus corresponds to the Latin root seen in *faciō*, which can be traced back to PIE **d^{h}eh$_1$-k-*, an old extension of PIE root **d^{h}eh$_1$-* with the suffix *-k-*. In contrast, the Phrygian verb *da-* in all probability preserves the original semantics of the PIE

[8] As for the meaning of the text, one may tentatively analyse the sequence as *Voineio* ϒ*uriieno(i) sku[*. The first word apparently represents an adjective (poss. nom. neutr.) based on the personal name *Voines* attested elsewhere in Gordion (G-129, G-228 and G-286). Given the observations put forward below, it would be tempting to recognise in ϒ*uriieno(i)* an ethnic adjective derived with the suffix *-en-* (= Greek -ην-, as in Σιπυλήνη etc.) from a toponym **Suri-*. The word finds a nearly exact correspondence in the epithet of Zeus Συρεανος found in an inscription from Söğütyaylası in the Phrygian Highlands (some 30 km to the east of Kütahya, see Haspels 1971, 340 no. 109). The epithet of Zeus likely continues the name of the Mount *Šuwara* (> *Συρα) attested in the Hittite sources (cf. Forlanini 1996, 8). This is not excluded for ϒ*uriieno(i)*, but this is not the only possibility. Another option would be to connect it with the people called Σύροι or Λευκοσύροι in the Greek sources and *Sura* in hieroglyphic Luwian, who inhabited the northern parts of Anatolia (for which cf. Simon 2012). A third, less likely possibility, would be to connect it with Syria.

root *$d^{h}eh_{1}$- 'put, place, set' and thus corresponds to Greek τί-θη-μι. This is especially clearly seen in the use of the aorist form *e-da-es* regularly used in the dedicatory context (cf. M-01a, M-01b, M-02, B-01 or W-08 and discussions in Gorbachov 2005 or Ligorio and Lubotsky 2018, 1827). There is no evidence suggesting that the verbs *da-* and *dak-* belong, on the synchronic level, to the same paradigm, and their treatment by Obrador-Cursach (2020a, 157–159) under one lemma is confusing and erroneous.

The clause *yos esai-t materey: evetekseti'y: ove vin: onoman: daϒet:* very probably represents a protasis of a *negative* imprecation formula, although the meaning of the verb *evetekseti'y* and the verb *lakedo* in the apodosis are not quite clear.[9] At any rate, the fact that the second part of the clause uses the noun *onoman* 'name' suggests that we are dealing with a usual topos of replacing the name – *i.e.* appropriating a monument by obliterating the original name and writing instead his own – frequently found in Luwian inscriptions. The formulations in Phrygian and in Luwian were different: in the Luwian inscriptions one usually used in the respective imprecation formulas the verb 'delete, obliterate'.[10] However, the collocation 'name' + 'put' is often found in other cases, cf., *e.g.*, *wa/i-tu-ta* (LITUUS)*Á-za-ti-wa/i-tà-ia-na*(URBS) |*á-la/i-ma-za* PONERE-*ḫa* 'And to it (scil. the 'fortress') I gave (lit. 'put') the name « Azatiwadaya »' (KARATEPE §39) or *wa/i-ta* (DEUS)*Pa-ḫa-la-ti-i-sà á-ma-za-ḫa-´ á-lá/í-ma-za* PONERE-*ḫa* (HAMA 4, §7) 'I put the name of the goddess *Ba'alat* and my (own) name (on it)'. These parallels and general logic requires for *daϒet* a meaning 'would/will put' and not 'would/will make' (thus contra Ligorio and Lubotsky 2018, 1823). In other words, the expected root is not *dak-*, but *da-*.

[9] The context suggests for the verb *evetekseti'y* a general meaning 'harm, make wrong' directed against the deity (*esai-t materey* 'this Mother') [I find quite unconvincing the analysis of the clause and the form as an adjective by Obrador-Cursach 2020a, 223]. The part of the word preceding the suffix *-se-* looks too complex to represent a simple root, and there are good reasons to analyse it as *eve-tek-*, with **tek-* being to the root, as was assumed already by Lubostky (1988, 20) and now also by Obrador-Cursach (2020a, 223). However, the probable negative semantics of the verb excludes its connection with PIE *$h_{1}su$- (in any case problematic, as the 'prefix' features additional *-e-*). An alternative interpretation would be to compare the prefix with Skr. suffix *ava* 'away, off'. Given its separative/privative semantics, it would not look inappropriate. As for the root **tek-*, one may compare it with the Phrygian root **tik-* seen in the NPhr. form τε-τικ-μενος usually interpreted as 'accursed' (see Obrador-Cursach 2020a, 363–363 with further refs.). The alternation *i/e* does not represent a problem, as it is found in Phrygian on the synchronic level (*e.g.*, *kubileya/kubeleya,* δεως/διως, for further examples see Obrador-Cursach 2020a, 62–63), and the use of the root in a negative context supports the equation. The root in question probably go back to PIE **deiḱ-* 'to point, indicate' and corresponds to the root of Greek δικάζω. It would be very tempting to see in the verb *eve-tek-* a Phrygian correspondence of Greek ἀ-δικέω 'injure, do wrong', which is the most frequent term in Greek imprecations. Alternatively, *eve-tek-* may mean simply 'neglect' or the like. However, one may also indicate an alternative possibility: the element *eve* could be not a suffix, but the first part of a complex disjunctive *eve ... ove*, which can be typologically compared with English *whether ... or*, or German *weder ... oder*; etymologically, the disjunctive can be compared with Skr. *vā*, on the one hand, and with Tochatian B *epe ... epe*, on the other. This interpretation would be, however, difficult to agree with the possible semantics of the root **tek-*.

[10] Usually *ARḪA* 'MALLEUS'-*la/i/u-* (as, *e.g.*, in KARKAMIŠ A11a, §25), but cf. also *ARḪA* *69"(-)*i-ti-* in KARATEPE §§63.

It is not difficult to see that the evidence of W-01c points in exactly the same direction as that of G-145: the expected *se*-form of the verb *da*- should be something like **daSet*. These observations suggest a very simple solution, which was in fact mentioned as a theoretical possibility already by Lejeune (see above), but for some reason finally disregarded: the letter 𐤚 should render a sort of sibilant.

This interpretation can be supported by several strands of evidence, which concern both the early Mediterranean alphabets and the language in general. To begin with the Phrygian evidence, one may point out that several words in the NPhr. inscriptions feature geminate σσ. The form in which this spelling appears to be employed consequently is just the *se*-forms of two verbs, τοτοσσειτι and δεδασσιννι, based on **to*- 'give' (< PIE **deh*$_3$-) and on the already discussed *da*- respectively (Obrador-Cursach 2020a, 367 and 158).[11] The correspondence with the use of 𐤚 in *da*𐤚*et* is striking, and strongly suggests that 𐤚, at least in this form, conceals precisely the geminate *ss* (for further discussion see below).

Next comes the evidence of the Phrygian alphabet found in the north-western part of the Phrygian cultural zone, which is slightly different from the central Phrygian variety. This variety appears to have two letters for sibilants, although due to the low number of inscriptions found there, the picture is not as clear as one would wish. A letter for a second sibilant was for the first time identified by Cox and Cameron (1932) who published the Phrygian inscription from Üyücek (B-04). They transliterated two letters, which (at least in their drawing) almost exactly correspond to Lydian 𐤣 and 𐤶 as *ś* and *s* respectively (cf. Table 8.1), picking up the then-usual transliteration of the two Lydian letters for sibilants (now *s* and *š* respectively).[12] However, the photo in the original publication is of a rather mediocre quality, and the inscription has since been missing, so that it is impossible to verify the correctness of identification of the letter 𐤶 in the inscription; the context does not give any reliable clues either (for different readings of the inscription see Brixhe 2004, 39 and Obrador-Cursach 2020a, 439). The second inscription from the region in which a second letter for sibilant could be suspected is the inscription from Vezirhan (B-05). The first publisher of the inscription, Neumann (1997, 18) transliterated with *ś* a letter resembling (especially in his drawing) an *s* with a diacritic mark (cf. Table 8.1), which he identified in the words *eśtat* (l. 4), *enpṣatuṣ́* (l. 5), *śiray* (l. 11), *yosikeṣ́os* and *śemeney* (l. 13). In the new edition of the text, Brixhe (2004, 47–48, 50) corrected Neumann's transliteration *ś* to *s* in three words (*eśtat, enpraṣtuṣ́* and *yosikeṣ́os*), which was accepted in subsequent discussions (Obrador-Cursach 2020a, 439–440 with further refs). Again, due to the poor quality of the published photos, a purely epigraphical verification of the picture is impossible, and one can rely only on circumstantial considerations (see below). Lastly, Gusmani-Polat (1999) published a short but clear graffito on a pottery sherd (B-108), which

[11] One may note, however, the form *dedaṣitiy* found in B-05 (l. 8), which is clearly based on the root *da*- as well. If the fifth letter is indeed *s* (and not *ś*, cf. below), we are dealing apparently with a simplified spelling.
[12] A third sign that the publishers transliterated as *š* in fact renders the glide *y*.

Table 8.1. Sibilants/affricates in the north-west Phrygian alphabet (after Brixhe 2004, 28).

		s	*ts*(?)
B-04	5th – 4th C		
B-05	End 5th C		
B-06	6th C		
B-07	1st quarter 5th C		
B-108	6th – 5th C		

features a personal name *Saragiś*, in which the first *s* corresponds to usual central Phrygian *s* and the final *s*, which they rendered with *ś*, to the northwest Phrygian *s* (cf. Table 8.1).

In his new edition of the inscriptions from the northwestern zone, Brixhe (2004, 26–29) dedicated a special section to the problem of the double representation of the sibilants, which, however, introduced even more confusion in the already rather incoherent picture with 'western sibilants'. Observing that yet another inscription from the region, B-06, features the arrow-like letter ↑ (in the word ↑*egmatin*), while B-04 and B-05 lack it, Brixhe suggested that the letters earlier transliterated as *ś* represent in fact a variant of ↑, which he takes for an affricate resulting from the palatalisation of *k* before *i/e*. As for B-108, Brixhe simply identified both letters as different graphic variants of *s* (cf. Table 8.1).

This resulted, *inter alia*, in that the words *śiray* and *śemeney* found in Vezirhan are confusingly rendered in Obrador-Cursach's edition (2020a, 247 and 440) as ↑*iray* and ↑*emeney*. The problem is that Brixhe's suggestion, while not entirely impossible, has a very weak basis. The alleged letters for *ś* identified by Cox and Cameron, Neumann and Gusmani and Polat, are found not in the same words where ↑ is found in B-06, and the latter inscription is in general too short and fragmentary to give a reliable picture of the alphabet used in it. In fact, the absence of ↑ in B-04 and B-05, and the absence of a letter for *ś* in B-06 could be based simply on chance, as both letters, and especially ↑, are rare.[13] On the other hand, it is difficult to agree that two letters in B-108, having clearly distinctive shapes, represent the same sound, all the more that their distribution corresponds to that seen in Lydian: while *s* apparently renders a

[13] The only other argument that can be advanced to support Brixhe's hypothesis is the alleged identity of *śira-* and NPhr. ζειρα suggested already by Neumann (1997, 25) and later picked up by Hämmig (2013, 150–151) and Obrador-Cursach (2020a, 35–36) who saw in the latter word the Phrygian correspondence of Greek χείρ 'hand' (< PIE **ǵʰes-r-*). If the meaning 'hand' is possible – although by no means certain – for NPhr. ζειρα, the meaning of *śira-* is entirely obscure, due to the problematic context. However, in view of the relative dating of the forms, the identity is unlikely. The Vezirhan inscription is dated probably to the late fifth century BC, and thus the form *śira-* is at least 500 years older than NPhr. ζειρα. Despite its late date, the digraph ει probably renders a true diphthong *e̯i̯*, as *i* is rendered by simple ι. In view of the Greek χείρ and the possible IE etymology of ζείρα, a later diphthongisation of *i* > *e̯i̯* looks very unlikely.

usual sibilant /s/, *ś* may render its palatal variant found after *i*. In sum, there is a good probability that the northwest Phrygian alphabet had two letters for sibilants and that central Phrygian ϒ might correspond to the second one.

Even more abundant evidence supporting the possibility of identification of a second sibilant in the central Phrygian alphabet is found beyond Phrygia. The evidence of the Lydian alphabet has been already mentioned above. Carian alphabet appears to have even three different letters for sibilants (*s*, *ś* and *š*, see Adiego 2007, 250). At least two letters for sibilants were present in the Sidetic alphabet (cf. Brixhe 2018, 146). In the Pamphylian alphabet, one finds a special letter Ψ, which appears in the words where later inscriptions have the geminate *ss* (cf. Brixhe 1974, 7); it is noteworthy that graphically, the letter is not that far away from ϒ (see below). Moving away from Anatolia, one finds two letters for sibilants at least in three Italic alphabets: Etruscan, Umbrian and South-Picene. Greek alphabets, each of which have only one letter for one basic sibilant of Greek, represent rather an exception; it is noteworthy that technically even the Greek alphabetic zone knew two letters for sibilants, *sigma* and *san*.

The common presence of several letters for sibilants in different alphabets has its roots, of course, in the simple fact of the linguistic reality: the majority of the world's languages have at least two, but often three sibilants. Usually, the contrastive pair is the alveolar sibilant /s/ vs. postalveolar sibilant /ʃ/ (as in English, Italian, Hungarian, Turkish etc.), but the contrast between alveolar vs. palatal /ç/, as in Lydian, is also frequent. In addition, a contrast in strength that can be expressed as fortis vs. lenis or geminate vs. non-geminate is another linguistic universal. In sum, the presence of the second letter for a sibilant in the central Phrygian alphabet looks entirely natural, whatever the exact linguistic nature of the sound concealed behind it could be. Before addressing this question, one has to discuss three other available attestations of the letter to verify how they agree with the re-interpretation of the letter.

The general interpretation of the last clause of B-07 (*me kos aniva*ϒ*eti smaniṇ*) as 'let nobody harm Manes' proposed by Obrador-Cursach (2020b, 42–45; cf. further 2021) appears quite convincing. One can readily agree with the interpretation of *me kos* as a combination of a prohibitive particle (found also elsewhere in imprecation formulae) reflecting PIE *meh_1 (= Greek μή) and an indefinite pronoun. However, his morphological analysis of the verb *ani-va*ϒ*eti* and the connection of the root with PIE *$\hat{u}eh_2g$-/*$\hat{u}eh_2ǵ$- 'break' look quite arbitrary. There is no other evidence for a prefix **-*ani*-, and even the existence of a prefix **-*an*- (assumed by Brixhe 2004, 84) is highly dubious.[14] Also, there is probably no necessity to analyse the sequence *smanin* and *smanes* in line 1 as a combination of the 'proclitic particle' *s*≠, possibly a form of the demonstrative root *s*-, and the name *Manes* (cf. Obrador-Cursach 2020a, 343–344). The

[14] In view of several attestations of the word δετουν or δετον (Obrador-Cursach 2020a, 212) the correct division of the text in W-11, 1. 7 is doubtlessly κοροαν δετουν. NPhr. 40.3 (31), l. 2–3 feature in all probability εσαν μανκαν 'this monument' (acc. sg.).

appearance of a deictic element in combination with a name would look quite odd. Rather, we are dealing with a name *Smanes*, a variant of the name *Manes* 'embellished' by an *s*-mobile, which is comparable with Σμῖκρος/Μῖκρος, Σμικυθίων/Μικυθίων and the like. As for the verb, it can now be read as *anivaSeti.* Read in this way, it can be immediately identified as a future/prospective *se*-form directly comparable with *daSet*, τοτοσσειτι and δεδασσιννι. As for *aniva*-, one may suggest connecting it with the root of Greek ἀνιάζω or ἀνιάω 'grieve, distress, vex', which excellently fits formally (with Phrygian preserving the intervocalic *-v-*) and semantically. The Greek verb is based on the noun ἀνία 'distress, grief', which do not have a good IE etymology and thus may well be of a substrate Balkan origin.[15]

The name ϒ*uva*ϒ*aros* can be read now as *SuvaSaros.* Comparable forms are not attested in the later Greek epigraphical record of Phrygia or Anatolian in general. One may adduce, however, a piece of toponymic evidence: Stephen of Byzantium (301 Συασσός) mentions a settlement called Συασσός, which he defines as κώμη Φρυγίας 'Phrygian village' (for further details see below). The root may be tentatively identified also in the name Σουησις attested in the northern Pisidia (in an inscription from the Burdur museum, cf. Balzat *et al.* 2018, s.v.). This correspondence suggests that **suwas(s)aros* may be a secondary derivative based on the root **suwas(s)*-, most probably an adjective, structurally comparable with Greek adjectives with the suffix -ρ- (ἰσχυρός, λιπαρός etc.). On the other hand, one may compare **suwas(s)aros* with the word σαυσαρός attested in the Lexikon of Hesychius: 285 σαυσαρόν· ψίθυρον 'whispering, twittering'. In other words, **suwas(s)aros* may be an onomatopoeic reduplicated formation imitating whispering or soft melodious sounds. These two explanations do not necessarily exclude each other.

Turning back now to the question of the exact phonetic value of ϒ, one may say that the evidence of B-07 and, to a degree, that of G-145 support the idea that ϒ corresponds first of all to the geminate -σσ-, *i.e.* indicates a sharper articulation of the alveolar spirant. Moreover, even if the evidence is not very numerous, it is still possible to identify the source of this sharper articulation. As the usual form of the future/prospective suffix was *-se-* and, normally, it is found spelled both in OPhr. and NPhr. inscriptions with a single *s*, cf. *evetekseti*i̯*y* (W-01b), *egeseti* (P- 04a), *dedasitiy* (B-05), *umniṣet* (B-05), ομνισιτ (W-11) and εγεσιτ (56.2 = 58).[16] The forms *daSet*, *anivaSeti,*

[15] The Phrygian evidence clearly disproves the speculative connection with Skr. *iṣ-* 'to desire'. To some degree, it supports the old connection with Skr. *ámīvā* 'disease, pain' (Beekes 2010, s.v. ἀνία), but the alternation *n/m* is difficult to explain.

[16] For further discussion see Obrador-Cursach (2020a, 100–102). The hypothesis of Hämmig mentioned there that the suffix *-se-* goes back to a 'suffix **-sḱi-*' (possibly **-isḱ-*) does not find much support in the Phrygian material, and in any case a direct comparison with Armenian marker *-ic'-* is hardly possible. There is in fact no necessity in this explanation, as there is a much more obvious option: the suffix is probably cognate with the Greek future suffix -σ-, as assumed earlier (Sowa 2007, 84–85). More precisely, the suffix can be directly compared with the suffix -σε-, which builds the so-called Doric future (cf. Delph. ταγευσέω, κλεψέω, Rhod. ἀποδωσεῦντι, σπευσίω, πραψίομεν, βοαθησιοντι in Cretan, with -σε- > -σι-), as I argued earlier (the talk 'Phrygian and the Early History of Greek Dialects' given at the conference

τοτοσσειτι and δεδασσιννι represent thus special cases. The sharper articulation of the sibilant in these forms most probably lies in the prehistory of the roots. The forms *daSet* can be reconstructed as **d^{h}eh$_{1}$-se-t* (3.sg.); reduplicated formation δεδασσιννι presupposes **d^{h}h$_{1}$-*d^{h}eh$_{1}$-se-nti* (3.pl.) and τοτοσσειτι presupposes **dh$_{3}$-*deh$_{3}$-se-ti.* The exact stem form of *anivaSeti* is not immediately clear: in theory it may correspond to either ἀνιάω (stem **aniu̯a-i̯-ō*) or ἀνιάζω (stem **aniu̯ad-i̯-ō*). The latter possibility appears more probable, as the sharper articulation of the sibilant can be in this case naturally explained as resulting from the assimilation *-ds- > -ss-*, *i.e. anivaSeti* can be traced back to **aniu̯ad-se-ti.* As for the former three forms, the gemination is apparently connected with the presence of the laryngeal in the root. What is amazing, however, is that the distinction between the two variants of the future/prospective suffix (*-se-* and *-sse-*) was synchronic, which might imply that the traces of the laryngeal was somehow retained in Phrygian. This appears, however, unlikely, especially given the very late date of the attestation of τοτοσσειτι and δεδασσιννι (beginning the common era). Rather, we are dealing with some secondary effect of the laryngeal. One may tentatively assume that the process went in two stages. First, the disappearance of the laryngeal caused the lengthening of the preceding vowel, just as it was the case in Greek, *i.e.* actual form of the Phrygian roots were **dā-* and **tō-*, which was not expressed in writing. The effect of gemination of the sibilant of the suffix *-se-* might then manifest itself in the second stage, resulting from the transformation of the syllable weight **dāCV- > *daCCV-* and **tōCV- > *toCCV-*. Very probably, the accent played a role in the process too.[17]

However, the rendering of the geminate (long/fortis) alveolar sibilant was not the sole function of the letter 𐤕. In four cases (G-115, G-224c, G-339 and very probably G-145, cf. above, n. 7) it is attested at the beginning of the word, where the presence of the geminate *s* is unlikely. However scarce the available material is, it suggests that in these cases we may be dealing with a different sort of 'unusual *s*'. At the beginning of the words, 𐤕 is found either before *u* or before *i.* Under the assumption that the Phrygian *u* has a front close articulation, as υ in Greek, one may explain 𐤕 as rendering the palatal sibilant /ç/. This is reminiscent of the situation in Lydian and in northwest Phrygian alphabet. Thus, although the evidence is too slim to be sure, the 𐤕 had a complex function of rendering of 'unusual *s*', usually geminate in the

'Contacts linguistiques en Grèce ancienne: diachronie et synchronie', 7–9 April 2021). Most probably, Phrygian *se*-forms has simply future/prospective meaning, but some sort of semantic development or semantic specialisation of the suffix in Phrygian cannot be ruled out. Also the question of the semantic difference between the forms using primary endings (as *-ti*) and those using secondary endings (as *-t*) remains open.

[17] It is noteworthy that the phenomenon is in a way reminiscent of the Aeolic compensatory lengthening of the resonants (ρ, λ, μ, ν) resulting from the disappearance of old *s > h*, as contrasted with the lengthening of the preceding vowel in other Greek dialects, cf., *e.g.* Aeol. ἔμμι vs. Att.-Ion. εἰμί and Dor. ἠμί (< **h$_{1}$es-mi*) or Aeol. σελάννα vs. Att-Ion. σελήνη and Dor. σελᾶνᾱ (< **selas-nā*). Given that from the geographic point of view Aeolic dialects (esp. Lesbian) and Phrygian were contiguous, it may be considered as a local feature. Both can be connected with a special type of accent.

intervocalic position and palatal at the beginning of the words. Given this phonetic value, one may propose to transliterate the letter ϒ as *ś*.

The 'Lunate letter' ϲ

The lunate-shaped character was discovered for the first time in the Phrygian inscription from Kerkenes discovered in 2003–2005 (Brixhe and Summers 2006). The character is found twice in the sequence]*xpa*ϲ*uva*ϲ*x*[preserved on a fragment no. V possibly belonging to the upper 'beam' of the inscribed monument (see Brixhe and Summers 2006, 121, fig. 23 and 106, fig. 9 for a reconstruction of the frontal part). Brixhe (Brixhe and Summers 2006, 123) identified it as a sort of interpunction sign, which serves to emphasise the text standing between the characters, *i.e. uva*. He proposed to identify in *uva* a personal name, comparing it with *Uwa* attested in Hittite texts and Ὸα(ϛ) attested in the later epigraphic record from Anatolia. The second attestation of the same character appeared several years later in one of the graffiti discovered on the beams of the Tumulus MM dated to around 740 BC, which reads ϲ*urunis* (cf. Liebhardt and Brixhe 2009, 156, fig. 7). Brixhe made a connection between this sign and that found in Kerkenes and hypothesised that the sign was also here used in a function comparable with cuneiform LÚ in the Hittite texts.[18]

The interpretation proposed by Brixhe fails to convince. The idea of seeing in a character of the alphabetic writing a sign comparable in the function of cuneiform LÚ is simply fantastical. Why then it is not used in the three other graffiti from the Tumulus MM, and is never found in the longer Phrygian texts, where it would be especially appropriate? In the Kerkenes inscription, such an interpretation looks no more convincing. First and foremost, the usual Phrygian interpunction sign is found in the inscription on another fragment (no. III) of the same inscription (Brixhe and Summers 2006, 117, fig. 18), which shows that the idea of interpunction was known to the scribes of the Kerkenes inscription, even if applied not very consequentially. Second, although *uva* may in theory indeed correspond to Ὸα(ϛ) or Ουα, the appearance of such a short and inconspicuous name, attested in no other Old Phrygian inscription, looks rather odd. The interpretation of the character as some auxiliary sign should be dismissed. The character should render a *letter*. Its extremely rare attestation in the Phrygian corpus can be associated with the early dating. The graffiti from the Tumulus MM dated to around 740 BC belong

[18] The character was also allegedly identified in the newly discovered inscription from Sarhöyük (Dorylaion) published by Baştürk and Avram (2019). The attestation is, however, highly dubious. The photo of the inscription (234, fig. 2) does not show any clear traces of the sign, which is drawn, moreover, in an inverted position, which is more than odd. The identification is further contradicted by the context: the text can be read *iman umniṣ*[, with *iman* being either a personal name or, more probably, the name of the monument and *umniṣ*[is very probably the initial part of *umniset* attested in B-05, l. 7 and corresponding to ομνισιτ in W-11, l 8 (for possible meaning of the word see now Obrador-Cursach 2020b, 46–48).

to the earliest inscriptions written in Phrygian. The same can be said about the Kerkenes inscription. As I have argued previously (Oreshko 2021, 292–294 and 299–302) both the possibility to identify in *Masa Urgitos* mentioned in the Kerkenes inscription with *Masa-Urḫissas* of the HLuw. inscription Porsuk probably dated to the late eighth century BC and a number of unique graphic features of the Phrygian inscription strongly imply that it belongs to this time, and not to the sixth century BC, as thought earlier. One can assume, consequently, that ⋾ represents an early variant of another letter of the Phrygian alphabet.

Although the evidence is extremely scarce, both attestations of ⋾ strongly suggest that it is an early variant of ⋎. On the one hand, the sequence ⋾*uva*⋾- finds a striking structural correspondence in the sequence ⋎*uva*⋎- at the beginning of the name ⋎*uva*⋎*aros*.[19] On the other hand, in the name ⋾*urunis*, the letter appears at the beginning of the word before *u*-, which corresponds to three attestations of ⋎ (⋎*uva*⋎*aros,* ⋎*uv* and ⋎*uriieno(i)*). Due to the fact that in both cases we are dealing with names, it is difficult to prove the reading beyond all doubt. However, in both cases the readings are not entirely senseless. As for the name **Śurunis*, it is not attested in the later epigraphical record. However, it is quite possible that it is in a way connected with the word *śuriieno(i)* (G-145), which, as noted above (n. 7), is possibly based on a toponym/ethnonym *Sura*. *Śurunis* may be an alternative suffixal derivative based on the same root.[20]

The reading *Śuvaś-* in the Kerkenes inscription presents an even more intriguing connection. The peculiar details that Stephen of Byzantium provides about the 'village' Συασσός (see above) prove to be quite relevant for the situation at Kerkenes. Stephen reports that 'they say that in this very village the Cimmerians have found large quantities of wheat, stored in the corn-pits, on which they fed for a long time' (ἐν ταύτῃ τῇ κώμῃ φασὶ Κιμμερίους εὑρεῖν ἐν σιροῖς τεθησαυρισμένας μυριάδας πυρῶν, ἀφ' ὧν αὐτοὺς ἐπὶ πολὺν χρόνον διατρηφῆναι). It is obvious that this description suggests quite a specific type of 'village' quite different from an ordinary unprotected agricultural settlement. The commanding and well-protected position of Kerkenes at a high altitude in the centre of a fertile corn-producing region excellently fits with this description. No less relevant is the connection with the Cimmerians. As noted above, the palaeography of the Phrygian inscription from Kerkenes suggests a dating for the palatial complex – and probably the city itself – to the second half of the eighth century BC. Given the short life span of the city, its possible destruction date can be situated around or slightly after 700 BC. The connection of the destruction with the Cimmerian invasion of Anatolia would be one of the most straightforward possibilities. There are thus good chances that *Śuwaś-* at the beginning of the Phrygian inscription

[19] One may note that a structurally comparable sequence is found also in another name, *Ṭuvatis* attested in G-133. However, identification of ⋾ as a variant of *t* is clearly out of the question.

[20] Structurally, one may compare *Kukkunniš*, a name of an early king of *Wiluša* (Troy) attested in KUB 21.5 I 18.

is a part of the name of the city. Needless to say, more epigraphical evidence is needed to confirm this interpretation.

It is noteworthy that the existence of two different chronological varieties of the same letter, strongly suggests that the 'invention' of the letter was a local Phrygian development, and not an import from abroad. The source of the early variant of *ś* might have been simply the drastic 'truncation' of the form of *s*. However, this shape was probably too inconspicuous and in a way disagreed with the general Phrygian preference for the high and slim letters, and was at some point replaced by a new letter that matched it better. Given that 𐤔 is found already in the graffito G-145, which hardly dates later than c. 700 BC, the process of replacement had already taken place in the eighth century BC.

Letter no. 23

As already mentioned above, letter no. 23 is found extremely rarely in the Phrygian corpus. The letter represents a sort of T with two additional vertical strokes, which are suspended from the horizontal hasta; a similar letter in which the horizontal hasta is set somewhat lower, so that it has the shape of a 'trident' (Fig. 8.3), is probably a graphic variant of no. 23, although it is impossible to prove. The letter is found in only four graffiti on pottery sherds: G-112 in a sequence *e*𐤕*tạ*[; P-106 in a sequence :*makiota*𐤕*bi:*[21]; in NW-120 in a sequence]𐤕*is* and in G-275 is an isolated two-letter combination *Ti*. The isolated character found on yet another pottery sherd (NW-128) has a different shape (a 'trident') and its connection with either no. 23 or no. 20 is impossible to demonstrate (see above on 𐤅). Similarly, the reading of the graffito NW-135 is too uncertain to suggest anything about the identity of the fifth letter (Brixhe and Sıvas 2009, 135–136). Although obviously too scarce to suggest anything certain about the phonetic value of the letter, the available evidence is still not quite useless.

Fig. 8.3. Graffito G-112, Penn Museum Gordion Archive: image GR-675-6 [edit].

Given the scarcity of the attestations, there are good reasons to see in the letter a rare variant of a different, more usual letter, be it a purely graphic variant or

[21] Contra Brixhe and Lejeune 1984, 250 (adopted in Obrador-Cursach 2020a, 504–504), it is highly unlikely that the vertical hasta before 8-shaped letter represents an *i* (and the reading is thus: *makiota*𐤕*ibi:*). In all appearances, we are dealing with a somewhat idiosyncratic mode of writing of *b*.

an attempt to render a specific phonetic phenomenon. The attestation of the letter immediately before *t* in G-112 excludes with high probability the identification of the letter as a graphic variant of no. 19, which likely represents an affricate /dz/ or /ts/ (see in detail below), since the phonetic sequence /tˢt/ is strange (if not entirely impossible). On the other hand, the identification of the letter as yet another graphic variant of ϒ would be thinkable. Indeed, in the position before *t*, the alveolar sibilant *s* frequently assumes a post-alveolar articulation (/ʃ/), as is the case, for instance in German (cf. English *stone* vs. German *Stein*) or some Italian dialects (for further examples see Kümmel 2007, 236). Read as *eštą*[(G-112), the sequence may be interpreted as a part of the verbal form *estaes* 'put' (3rd. aor. sg.) or the like found in later inscriptions (cf. Obrador-Cursach 2020a, 232). It is noteworthy that the northwest Phrygian *ś* is possibly found in the form *eśtat* in B-05: 4 (see above), although this reading should be verified on stone. This explanation well agrees with the evidence of P-106 in which the letter is found again before a consonant. The position before a labial consonant is also conductive to the development *s* > ʃ (cf. English *swine* against German *Schwein* or *spare* against *sparen*). Thus, it is quite possible that the letter is connected with ϒ. It remains, however, not quite clear whether it is merely its purely graphic variant (for instance, a local variation), or an attempt to render /ʃ/ as contrasted both with /s/ and with /ss/.

The 'Arrow letter' (no. 19)

In contrast to no. 20, the clues for the phonetic reading of the arrow-shaped letter are more straightforward, and its identification as a sort of affricate (/ts/ or the like) was suggested long ago (Brixhe 1982, 229–238). However, in part etymological speculations on the prehistory of the sound rendered by this letter and in part its confusion with no. 20 and the northwest Phrygian *ś* (see above) have muddled the picture. The recent discussion by Obrador-Cursach (2020a, 33–37), which even more heavily relies on the etymological method, have even further confused the situation, the result being that the letter is rendered throughout the book by a special arrow sign (↑) – although the words beginning with this letter are given in the dictionary section intermixed with those beginning with ζ. As the problem has been already in part disentangled by the above discussion of no. 20, one can here only briefly revisit the key pieces of evidence concerning the reading of no. 19.

The clearest piece of evidence is supplied by the graffito *A*↑*ses* (HP-109) found on a bronze bowl from Tumulus D in Bayındır (Varinlioğlu 1992, fig.1, no. 7; cf. Brixhe 2004, 114). The word clearly represents a variant of the personal name *Ates* found on the other bowls from the same tumulus. The odd spelling apparently represents an attempt to render the real pronunciation of the name as /Atˢes/ resulting from the assibilation of the *t* before *e*. In all probability, the scribe was not quite sure about the real phonetic value of the letter ↑ and thought it better to add *s* for clarity, which resulted in the redundant spelling ↑*s*. The spelling *A*↑*ios* and *A*↑*ion* found in

T-02 represent probably more correct spellings of a derivative of the same name.[22] This evidence clearly implies that the value of ↑ (or at least one of the values) in the early Phrygian inscriptions was the affricate /t^{s}/.

The interpretation of the letter as an affricate is supported by a further piece of onomastic evidence. The Phrygian name *Si*↑*idos* (G-105, G-346, HP-110) or **Si*↑*etos* (W-08, W-09 and patronymic *Si*↑*etodas* in W-10) is very probably connected with the name **Sidis* attested in the Pamphylian bilingual S6 as *śdiṯś* (gen.) and Σιδιδος (gen.).[23] The Phrygian *Si*↑*idos* represents either a direct counterpart of gen. Σιδιδος or, if a nominative, is a quasi-patronymic derivative of **Sidis* with the suffix *-t-/-d-*.[24] The appearance of ↑*i* where Pamphylian and Greek still have *-di-* implies that ↑ renders the voiced affricate /d^{z}/.

This interoperation is further confirmed by later evidence. A number of words attested in the NPhr. inscriptions, which are written in the Greek alphabet, feature the letter ζ, cf. ζεμελως, ζειρα or PN Ζωτικῶ. The exact reading of the Greek ζ in different periods (and different words) is a problem in itself (Allen 1987, 56–59), but in the late period (second to third centuries AD) the common reading of the letter was probably either /dz/ or /z/ (and not /zd/ as earlier). Whatever the case, there is every reason to think that ζ has the same function in the NPhr. inscriptions as ↑ had in the Old Phrygian alphabet, while the letter Ϟ rendering sibilants is quite irrelevant here. One has to emphasise that the question of the *origin* of the Phrygian sound rendered by ↑/ζ has as little relevance for its synchronic phonetic realisation, as the etymology of the Greek ζ (which can go back to PIE **i̯*, **di̯*, **gi̯*, **zd* < **sd*) has for its synchronic phonetic realisation.

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[22] A non-assibilated form of the same name is probably found in the first line of the Germanos inscription (B-01). Although the end of the first line is somewhat weathered, one can still quite clearly discern after *adi-* an *o*, after which there may be an *s* (cf. photos in Brixhe and Lejeune 1984, pl. XXXVIII, 3 and 4, and the drawings on p. 63). Both the position of the word *Adiọṣ* immediately after the object of dedication (*si bevdos*), as the absence of any other clearly identifiable names in the second line, suggests that *Adios* is the name of the dedicator. The name is probably related to *Ates*/Ἄττις, as there are further examples for the alternation of the Phrygian dentals (Oreshko 2020, 88, n. 18 and 108).

[23] Contra Nikolaev (2017, 223), it is hardly possible to see in the Carian name *šδτatś* (E. Me. 13) a counterpart of the Pamphylian and Phrygian names, as its phonetic reading is probably */šəndə-t^{s}atəs/*. Most probably, it is a composite theophoric name based on the name of the War-and-Pestilence god *Šandas*. It would be seducing to see in the second part the Carian counterpart of the Luwian *zida/i-* 'man', but the *a*-vocalism is odd.

[24] As argued in Oreshko (2020, 88, n. 18), the form *Si*↑*idos* is a nom. sg. rather than gen. sg. The Pamphylian evidence would, however, better agree with an assumption that *Si*↑*idos* is gen. = Σιδιδος. Such a re-interpretation would be possible if one takes the form *Si*↑*idos* on the wooden beam in Tumulus MM in Gordion (G-346) not as an isolated name, but as a patronymic of *Muksos* found immediately above it. In G-105 (*Si*↑*idos akor*) and in HP-110 (*Si*↑*idos*) interpretation of the form as gen. sg. is equally possible. This reinterpretation does not significantly affect the interpretation of *Alus* in W-08-10: the form *Sizeto* can be interpreted as an asigmatic genitive (< **Si*↑*etos*) and *Si*↑*etodas* would be, now as before, as patronymic based on the stem-form **Si*↑*et-* (poss. < **Si*↑*etadas*).

Last but not least, the interpretation of the 'arrow letter' as an affricate agrees well with the presence of letters of (nearly) identical shape and comparable phonetic values in three other Anatolian alphabets: Lydian, Carian and Sidetic. In Lydian, the letter very probably renders an alveolar affricate /t^{s}/, as etymologically the sound appears to go back to the palatalised *t/d* (cf. Gérard 2005, 59–60). In Carian, the corresponding letter also stood for a sort of affricate, either /tʃ/ or /ts/, which appears more probable in the local perspective (Adiego 2007, 251; 2019, 25; Oreshko 2013 [2015], 81–82). As for the Sidetic alphabet, the appearance of the arrow-shaped letter in *śdiṯś* = Σιδιδος (S6) and in *ubaṯ-* (poss. < **ubati-*) suggests a sound comparable with that rendered by the Lydian ↑.[25] In sum, the available evidence rather strongly suggests that ↑ rendered an affricate in the Old Phrygian alphabet, very probably both *t*^{s} and *d*^{z}. It is not impossible that in late Phrygian the sound was simplified to voiced sibilant /z/, as was the case in Greek, but this is irrelevant for the Old Phrygian alphabet. The transliteration of the letter as *z* would thus be a fair option.

The unravelling of the phonetic values of letters nos. 19 and 20 has some interesting implications for two Greek alphabets of Anatolia, which one may briefly explore here. First, the Pamphylian Greek alphabet had a special trident-shaped letter (Ψ), which is found in the words usually spelled with the geminate σ elsewhere in Greek or in the later inscriptions from Pamphylia. For instance, it is found in the word for 'queen, lady', (F)ἄνασσα, attested in the coin legend ΨΑΝΑΨΑΣ ΠΕΡΕΙΙΑΣ, which would correspond to Fάνασσας Περγαίας 'of the Lady of Perge'. In the discussion of different hypothesis about the origin of the letter, Brixhe (1976, 7–9) expressed doubts about the possible connections of the letter with the Cypriot syllabic sign *se*, with Ionian *sampi* and a Carian letter of the same shape suggested earlier, and instead gave preference to the derivation of the letter from the Phoenician *ṣade*. The connection of the letter with the Cypriot sign and the Carian letter (now transliterated as *y*)[26] is indeed quite out of the question. However, a connection with the Ionian *sampi*, which has a similar shape, appears to have exactly the same phonetic value and found in the same general region is entirely thinkable (see below). As for the derivation directly from the Phoenician *ṣade*, it is not impossible per se, but is not especially convincing either. Graphically, such a derivation is possible, but the problem is that in the Greek alphabets of the Aegean, the Phoenician letter produced quite a different shape, ϻ (*san*). It would be rather strange if the Pamphylian Greeks had re-borrowed the Phoenician letter

[25] Cf. Pérez Orozco 2007, 128 and 134. In view of the very probable correspondence of the name to Phrygian *Si↑idos*, one wonders if *śdiṯś* is not a result of metathesis (or simply an error) for **śṯidś*. The proposal by Nikolaev (2017) to interpret *ṯueſ* (S4) as 'all' and interpret the phonetic value of the first letter as /ʃ/ does not seem convincing to me. Now as before, the *ṯueſ* is most probably a verb corresponding to Luw. *Tuva-* with assibilation *t* > *t*^{s} before *u*, which probably conceals a front close /y/.

[26] The letter is found in the alphabets of Mylasa, Sinuri and Kildara (Adiego 2007, 209–210 and 212–213).

in a shape closer to its Phoenician original, disregarding the possibility of adopting Greek *san* as the second sign for a sibilant.

On the other hand, the shapes of 𐤱 and the Phrygian 𐤳 are close indeed, and their core phonetic values correspond, as far as one can see, quite exactly. Given this similarity, one may suggest that the Pamphylian letter has an Anatolian origin. As chronologically the central Phrygian 𐤳 is very probably much earlier (possibly eighth century BC, see above) than the Pamphylian letter, the direction of borrowing should have been from Phrygia to Pamphylia. In fact, the Phrygians were present very early as far south as *Milyas* (the tumuli of Bayındır), and this circumstance makes it probable that the letter come to Pamphylia via Termessos. The slight difference of the shapes of the Pamphylian letter and the standard central Phrygian crow-foot variety of 𐤳 can be naturally explained by the wish to differentiate the new letter for the sharp sibilant from the letter for /ps/, which was also present in Pamphylian alphabet.

The second implication concerns the Ionian *sampi*. The letter is usually shaped as a T with additional short strokes suspended from the horizontal hasta, but sometimes also having the shape of an arrow. It is found in the inscriptions of Ephesos, Erythrai, Teos, Halikarnassos, Kyzokos and Pontic Messambria, and thus is essentially confined to the Ionian alphabet, being exported to Messambria possibly via Kalchedon (see Jeffery 1990, 38–39; Willi 2008, 419–422; Hawkins 2013, 7–27). The letter appears in the words that are spelled in Ionian literary texts with the geminate σσ and with geminate ττ in Attic, which etymologically go back to the clusters **t̯i̯*, **k̑i̯* and **t̯u̯*. This picture suggested the idea that the letter renders a sound ancestral to σσ and ττ, a sort of affricate /ts/ or /tʃ/ (cf. Allen 1987, 60–61 or Hawkins 2013, 17). Given that the use of the letter was essentially confined to Ionia, one frequently saw its source in Anatolia, or more specifically in Caria. In the recent discussion of the possible Anatolian sources of the letter, Hawkins (2013, 18–24) tried to specify its origin, analysing all available graphic comparanda from the Anatolian alphabets, but remained inconclusive about its exact source.

The separation of the two Phrygian letters changes the perspective and brings in clarity. On the one hand, one can postulate in the Phrygian alphabet a letter that graphically very closely – or even exactly, if one interprets no. 23 as a graphic variant of no. 20 – corresponds to the Ionian *sampi* and has exactly the same phonetic value. On the other hand, it becomes clear that the Carian and Lydian arrow-shaped letters are connected not with this letter, but with the Phrygian arrow-shaped letter. Neither Lydian nor Carian alphabet has a letter closely matching both graphically and phonetically the Ionian *sampi*. This implies that the source of the Ionian letter, like that of the Pamphylian 𐤱, can only be the Phrygian letter no. 20. Moreover, as the letters for affricates become now irrelevant, there is no necessity to assume that the phonetic value of *sampi* was something other than the sharp *ss*, like in Phrygian. The putative affricate transitional between **t̯i̯*, **k̑i̯* and **t̯u̯* and *ss* should be sought on a much earlier stage of the linguistic development of Greek.

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Chapter 9

Measuring particularity and similarity in Archaic Greek alphabets with NLP[1]

Natalia Elvira Astoreca

Introduction

The appearance of alphabetic writing in Geometric and Archaic Greece is clearly marked by the diversity of writing systems seen across the multiple poleis and colonies spread throughout the Mediterranean Sea: the so-called 'epichoric alphabets'. Since the mid-nineteenth century, researchers have tried to untangle their shared elements and individual characteristics in the attempt to understand how they are related to each other and how they came to be. This started with Kirchhoff's (1863) *Studien zur Geschichte des griechischen Alphabets* and found its zenith in the 1960s with the monumental works of Jeffery (1961) and Guarducci (1967). Back then, doing this kind of research involved reading and analysing hundreds of inscriptions only with the help of the human eye, multiple notebooks and a typewriter.

However, the computing power that we can access today means that, with datasets of sufficient quality, we can (1) manage the ever-growing knowledge and evidence, (2) run experiments that are not as time consuming, (3) create fast and helpful data visualisations, (4) get statistical measures based on a myriad of data points and (5) identify patterns difficult to discern without computational tools. The present study intends to show how it is possible to apply these principles of the Digital Humanities to the study of ancient writing systems using a dataset of alphabetic Archaic Greek inscriptions and following current theories and methodologies in grapholinguistics.

[1] The dataset and all the code used for the experiments in this paper can be found here: https://github.com/nea-glossa/greek_alphabets_tf-idf. The data was gathered during my doctoral training at the CREWS project, funded by the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement no. 677758).

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That is the basis of the two experiments discussed in this chapter that will try to illustrate how we can represent writing systems in a way that can be used for computational experiments – more specifically those that apply Natural Language Processing (NLP) tools – and address the two main issues that the researchers mentioned above intended to elucidate: what the most distinctive elements of each alphabet are and how we can cluster them in groups according to their shared characteristics.

Applying NLP to the study of these epichoric alphabets entails certain challenges, as these techniques are designed to work with texts rather than writing systems and they are most effective with balanced datasets *i.e.*, where each data class – in this case each alphabet – is represented more or less equally. Yet, our ancient sources are not just fragmentary, but also deeply imbalanced since some sites count with large amounts of evidence while others barely have any inscriptions. This will prove to be a challenge when trying to measure their characteristics. Nevertheless, the results of these experiments will hopefully show that, with the right datasets, these computational techniques have the potential to expand the fields of writing systems studies and ancient epigraphy,[2] offer stimulating suggestions and even question previous research approaches.

Methodology

TF-IDF

The aims of NLP are (1) to represent human language in a way that can be processed by a computer and (2) to use computational tools for its analysis.[3] This specific experiment takes a simple NLP technique called TF-IDF, which stands for Term Frequency – Inverse Document Frequency. This technique is normally used to measure the similarity between different documents and the relevance of specific words within a text (Roul *et al.* 2014; Qaiser and Ali 2018).

TF, or Term Frequency, is a simple calculation of how many times a term (or token) appears in a given document divided by its length, *i.e.*, the total number of tokens in the text. In this way, we can get a relation of the most recurrent terms in a text. However, this measure alone would give a higher score to high-frequency words that are not in fact characteristic of any document, like auxiliary verbs, articles, prepositions or conjunctions. That is why, in order to get the most characteristic terms of a given document, we want to balance the TF count against the number of times

[2] A sample of papers that have applied NLP techniques to these two areas of research: Sproat 2002; Assael *et al.* 2019; Luo *et al.* 2019, 2021; Fetaya *et al.* 2020; Rizk *et al.* 2021.

[3] 'We will take Natural Language Processing—or NLP for short—in a wide sense to cover any kind of computer manipulation of natural language. At one extreme, it could be as simple as counting word frequencies to compare different writing styles. At the other extreme, NLP involves "understanding" complete human utterances, at least to the extent of being able to give useful responses to them.' (Bird *et al.* 2009, ix).

the term appears in the whole corpus of texts using its Inverse Document Frequency (IDF). This is calculated as IDF = log(N/df) where N denotes the total number of documents in the corpus and df the number of documents where the term appears. The final TF-IDF score, which represents the weight of a term in a given document, is produced by multiplying TF × IDF.

To illustrate this, let us imagine that we would like to measure the similarity of these three sentences: 'The Cretan alphabet is a green alphabet', 'The Euboean alphabet is red', and 'Cretan is a Greek dialect'. If we calculate the TF-IDF weights for each of the terms in each sentence (Table 9.1), we can see how the numbers are quite low for words that appear in all sentences, like 'is', having an even lower score in the first sentence as it is longer than the other two. However, those that get repeated in the same sentence, like 'alphabet' in the first example, or that only appear in one of them, like 'dialect', 'Euboean', 'Greek', 'green' and 'red', get higher scores since these are interpreted as being more relevant in their texts.

Once this calculation is done for all tokens in our corpus, the scores for each word in each document can be used to represent the texts as multidimensional vectors. Although this is a priori a descriptive technique, *i.e.*, it only offers a description of the documents, these weights can be used to train predictive models for text clustering tasks. However, to get to this next step, we first need to compare the vectors used to represent these documents so as to know which texts are closer to each other. This is done by calculating the cosine similarity – *i.e.*, the measure of the cosine of the angle between two vectors – for every pair of documents (Roul *et al.* 2014, 76).

Following our previous example, if we make this calculation for all possible pairs and we rank them from most to least similar (Table 9.2), we get this result: the two sentences about the Cretan and Euboean alphabets are the ones that are closest, followed by the sentences about the Cretan alphabet and the Cretan dialect, and finally when comparing the sentence about the Euboean alphabet and the Cretan dialect we get the lowest score. In this way, we are able to measure the similarity between the sentences and cluster them according to their main topic.

Table 9.1. TF-IDF weights for each of the words in the sample sentences.

	a	*alphabet*	*Cretan*	*dialect*	*Euboean*	*Greek*	*green*	*is*	*red*	*the*
1	0.3274	**0.6547**	0.3274	0.0000	0.0000	0.0000	**0.4304**	0.2542	0.0000	0.3274
2	0.0000	0.4062	0.0000	0.0000	**0.5341**	0.0000	0.0000	0.3154	**0.5341**	0.4062
3	0.4062	0.0000	0.4062	**0.5341**	0.0000	**0.5341**	0.0000	0.3154	0.0000	0.0000

Table 9.2. Cosine similarity measures for each pair of sentences.

The Cretan alphabet is a green alphabet	The Euboean alphabet is red	0.479092
The Cretan alphabet is a green alphabet	Cretan is a Greek dialect	0.346125
The Euboean alphabet is red	Cretan is a Greek dialect	0.099505

The current experiments, however, are not concerned with words, but with writing systems. It is obvious that, in linguistic terms, graphemes and phonemes are not the same as words and meanings. The machine, however, does not understand this difference and thus it will not process them differently if we present the data in an equivalent way, in this case a string of characters that can be divided in tokens.

Comparative graphematics

Following current theories in grapholinguistics, the base of a writing system is the conjunction of graphic elements with linguistic units, meaning that, if we want to compare writing systems, we need to analyse not only the shapes of their signs but also how these map with the linguistic elements represented by them, *i.e.* their graphematic relationships or features (Neef 2012; 2015; Weingarten 2013; Meletis 2020). In this case study, this translates to graphemes and their rendered phonemes since we are dealing with alphabetic writing.

This approach is significantly different to what Jeffery and Guarducci did in their studies, as they would only map the different shapes that had a correspondence with a letter in the Greek koine alphabet, making it a strictly graphic comparison. Nevertheless, the aim of the current experiments is not to analyse these alphabets from a palaeographic point of view but to approach them using the methodology of comparative graphematics (Weingarten 2013), *i.e.*, instead of looking at the synchronic and diachronic differences in shapes we will be comparing the graphematic features seen across alphabets. This means that we are not concerned with whether the vertical stroke of the epsilon stretches over the top or the bottom of the sign, but whether <𐌴> is representing the phoneme /e/, /e:/ or even /ɛ:/ and what other signs are used across alphabets to render each of these sounds.

Data pre-processing

The data needed for such an experiment was taken from a dataset that consists of 714 Greek alphabetic inscriptions dated in the eighth and seventh centuries BC and that covers the graphematic relationships seen in each of them, including the representation of word dividers in the text. The information was arranged so that a single token would render a phonetic value (Table 9.3) and the sign used to notate it codified using a numerical system (Table 9.4), *e.g.*, the token 'l35' stands for the phoneme /l/ and the grapheme no.35 𐌋. In this way, where in the previous examples we had words, here we have tokens that represent grapheme-phoneme pairs that will get a TF-IDF weight according to how many times they appear in the dataset.

In this case, the documents parsed through the vectoriser were not the inscriptions themselves – as the intention is not to analyse and compare individual inscriptions –, but the combination of all graphematic relationships seen in a specific archaeological

Table 9.3. Phonemes considered for the present experiment.

Vowels	/a/, /a:/ /e/ /e:/ /ɛ:/, /æ:/ /i/, /i:/ /o/ /o:/ /ɔ:/ /u/, /u:/, /y/, /y:/
Nasals	/m/ /n/
Liquids	/l/ /r/
Approximant	/w/
Voiceless glottal fricative	/h/
Sibilant	/s/
Voiced stops	/b/ /d/ /g/
Voiceless stops	/p/ /t/ /k/
Aspirated voiceless stops	/p^h/ /t^h/ /k^h/
Consonant clusters	/ps/ /ks/ /dz/

site or, where this cannot be tracked down, the region of origin of the texts.[4] This will allow us to identify the most characteristic graphematic features of each site or region – *i.e.* those with the highest TF-IDF scores – and to measure how close their writing systems are by calculating the cosine similarity of the vectors that represent them.

However, as mentioned above, those representations may not be comparable across sites since the amount of evidence varies deeply. For some alphabets the data is so fragmentary that we only have evidence for a few letters, making it impossible to reconstruct all their graphematic features. On the other hand, areas that have been

[4] Problems arising from the dating and origin of the inscriptions are discussed in Elvira Astoreca 2020, §§ 2.2.2 and 2.2.3.

Table 9.4. Signs present in the dataset with their numeric notation and allographs.

1	𐌀	𐌀 𐌀 𐌀	18	𐌘		35	𐌺		52	𐌟	𐌟 𐌟
2	𐌁		19	𐌙	𐌚	36	𐌻	𐌼	53	𐌠	𐌠
3	𐌂	𐌂	20	𐌉		37	𐌼		54	𐌡	𐌡 𐌡
4	𐌃	𐌃	21	𐌇		38	𐌽		55	𐌢	𐌢 𐌢
5	𐌄		22	𐌋		39	𐌾		56	𐌣	
6	𐌅		23	𐌌		40	𐌿	𐌽	57	𐌤	𐌤
7	𐌅𐌍		24	𐌍		41	𐌧		58	𐌥	𐌥 𐌥
8	𐌀	𐌈	25	𐌏	⊗	42	𐌎	𐌎 𐌎	59	𐌦	
9	𐌆		26	𐌐		43	𐌏		60	𐌧	
10	𐌇	𐌇	27	𐌑		44	𐌐		61	𐌨	
11	𐌈		28	𐌉		45	𐌑		62	𐌩	
12	𐌊		29	𐌊		46	𐌒		63	𐌪	
13	𐌃	𐌃 𐌃	30	𐌓	𐌔	47	𐌈	𐌈 𐌈	64	𐌫	𐌫
14	𐌄		31	𐌔	𐌔	48	𐌇		65	𐌬	
15	𐌅	𐌅 𐌅 𐌅	32	𐌕	Σ	49	𐌉	𐌈	66	𐌭	𐌭
16	𐌗		33	𐌊	𐌊 𐌊	50	𐌈		67	𐌮	𐌮
17	𐌂		34	𐌋		51	𐌚	𐌚	68	𐌯	𐌯

extensively excavated, like Athens, count with so many inscriptions that it is even possible to see a variety of signs to represent a single sound. This imbalance in the data will certainly affect the measures and this is exactly where the interpretation of the experts plays an important role: they are the ones to assess whether the calculations can be trusted in each case and why.

Results

Particularity

One of the elements that we can measure using this technique are the most idiosyncratic graphematic relationships of each alphabet, *i.e.*, those that can help us identify them best. The Inverse Document Frequency calculation finds the grapheme-phoneme pairs that are not generalised across many of them, while the Term Frequency filters possible outliers that may only appear on a couple of occasions.

The initial TF-IDF scores, however, are not comparable across sites, as those with very few tokens tend to give higher scores to each of their features even if they are common across sites (Table 9.5). This is what happens with Al Mina, where we only have one inscription that shows three letters (Boardman 1982) and, as shown in the table, gives a high score to what we can recognise as a common *beta*. To avoid this, it is possible to normalise the documents so that they are all comparable. In this

Table 9.5. Sign-sound pairs with TF-IDF scores over 0.6 (not normalised).

Origin	*Sign*	*Sound*	*Score*
Aeolian Larisa	𐌇	/e/	0.662844
Al Mina	𐌁	/b/	0.836674
Crotona	𐌉	/i/, /i:/	0.622019
Kalymnos	𐌋	/l/	0.880861
Lefkandi	𐌀	/a/, /a:/	0.620445
Paros	𐌏	/o:/	0.844990
Sicilian Naxos	𐌖	/u/, /u:/	0.734054
Sikyon	𐌇	/e/	0.722784
Zagora	𐌌	/m/	0.688561

case, I applied the Manhattan norm – also known as the Taxicab or L1 norm – which normalises the weights against the length of the document (Leopold and Kindermann 2002, 428). This neutralises those scores inflated or deflated due to the length of the document, solving the issue mentioned above and offering a better representation of which would be the most characteristic graphematic relationships for each site (Table 9.6).

Nonetheless, this normalisation can sometimes give more weight to exceptional cases. Some of those outliers are signs that appear only once in the whole dataset, like the upside-down san in Acrocorinth, or the reversed signs and the rhomboid shape from Mt Hymettos. However, most of the features that we can see here are in fact representative of the sites where they are found. This suggests that a simple filter that leaves out the grapheme-phoneme pairs that are only seen once should be enough to solve this problem. Some examples of idiosyncratic graphematic features that do appear in this table are the two concentric circles for /ɔ:/ in Afrati, the digraphs from Corfu, the signs for /b/ in Thera and Gortyna, also the representations of aspirated consonants and clusters in those two sites, the dividing signs from Lakonia or the omega-shape to render /o/ and /o:/ in Thasos.

Similarity

Another interesting insight that we can derive from the TF-IDF scores is the closeness of these writing systems. By using the non-normalised vectors and calculating the cosine similarity for each possible pair, we can measure how similar these alphabets are in graphematic terms.

This method grouped correctly writing found in sites from the same region, or in colonies and their metropoleis (Table 9.7). That is the case of the Attica region, represented here by Athens and Mt Hymettos; the poleis and sanctuaries related to Corinthia, for example Corinth, Perachora, Penteskouphia and the colony of Corfu; and the connection of Eretria with its colonies Methone in Pieria and Pithekoussai.

Table 9.6. TF-IDF scores over 0.8 after L1 normalisation.

Acrocorinth	/s/ - Ϻ
Aegina	/p/ - Γ
Aeolian Larisa	/e/ - Ͱ
Aetos	/i/, /i:/ - ȝ
Afrati	/ɔ:/ - ◎; /ks/ - ϘΜ
Athens	/g/ - Λ
Boeotia	/ks/ - Χ≷
Corfu	/i/, /i:/ - ϟ; /o:/ - ΟΥ; /e:/ - Bϟ; /g/ - ‹
Cumae	/g/ - ⅂; /ps/ - Φ≷
Dreros	/s/ - Ϻ; /ps/ - ΓΜ
Eretria	/w/ - Ϝ; /s/ - Ƨ
Gortyna	/w/ - Ϝ; /ps/ - ΓΜ; /b/ - ϼ; /p/ - Γ; /p^h/ - Γ
Lakonia	Division - ‹, ›
Methone in Pieria	/ks/ - ȝΧ; /m/ - Ϻ; /o:/ - ⊙
Mount Hymettos	/h/ - Ͱ; /s/ - ʔ; /a/, /a:/ - ◇; /l/ - √; /n/ - ϟ; /ks/ - +≷
Naxos	/e/ - ⊟; /ps/ - Φϟ; /ks/ - ⌷ȝ, ⌷≷, ⌷ϟ
Paros	/o:/ - ∝
Penteskouphia	/e:/ - B≷, B; /t^h/ - ⊙
Phaistos	/p^h/ - (
Prinias	/p^h/ - Π
Sikyon	/e/ - ⧖
Smyrna	/g/ - Γ
Tanagra	/p/ - Ͷ
Thasos	/o/ - Ω, /o:/ - Ω
Thebes	/h/ - ⊟
Thera	/k^h/ - K⊟, Ϙ⊟; /p^h/ - Γ⊟; /b/ - Ϭ; /i/, /i:/ - ϛ, ≷, ȝ; /e:/ - Ƙϟ; /t^h/ - ⊕⊟; /dz/ - ⌶

There is also a cluster in Boeotia that links the region to Tanagra and Thebes. Another group is found around some Cretan sites like Dreros, Gortyna and Afrati. And finally, the Samos-Smyrna pair also comes as no surprise since these are both Ionian sites in Asia Minor. Given that there was no parameter in the data that would give a higher weight to pairs known to have a geographic or colonial connection, these obvious pairs should be taken as a confirmation that the algorithm makes predictions that are coherent to what we, as researchers, can perceive from the epigraphical evidence.

Yet not all of the results were as predictable. In Rhodes there seems to be no cluster of alphabets between sites. In fact, Ialysos is paired with Ephesos, while

Table 9.7. Pairs with cosine similarity over 0.8.

Origin	*Origin*	*Score*
Athens	Mount Hymettos	0.9592109087
Corinth	Penteskouphia	0.9546390856
	Corinthia	0.9160378427
Athens	Pithekoussai	0.907368484
Corinthia	Penteskouphia	0.9042898381
Eretria	Methone in Pieria	0.9002974603
Methone in Pieria	Pithekoussai	0.8998983458
Athens	Attica	0.8996817889
Mount Hymettos	Pithekoussai	0.8834484523
Attica	Mount Hymettos	0.8826793389
Kommos	Mount Hymettos	0.8802181152
Eretria	Mount Hymettos	0.8752511348
Corfu	Corinth	0.8689083655
Methone in Pieria	Mount Hymettos	0.8682750856
Corfu	Perachora	0.8638783928
Dreros	Gortyna	0.862636235
Boeotia	Tanagra	0.8596952512
Kommos	Methone in Pieria	0.8575893467
Afrati	Gortyna	0.8570252593
Athens	Methone in Pieria	0.8518671955
Eretria	Pithekoussai	0.851394502
Corfu	Penteskouphia	0.8484584665
Samos	Smyrna	0.8454961168
Sikinos	Thera	0.8441205931
Mount Hymettos	Naxos	0.8293970606
Kamiros	Mount Hymettos	0.828178391
Athens	Eretria	0.8255643165
	Naxos	0.8251110873
Kalapodi	Methone in Pieria	0.8238107851
	Pithekoussai	0.8190138812
Ephesos	Ialysos	0.8127431647
Eretria	Syros	0.8090358989
Athens	Kamiros	0.8061869677
Eretria	Kommos	0.8002081512

(Continued)

Table 9.7. Pairs with cosine similarity over 0.8. (Continued)

Origin	*Origin*	*Score*
Corfu	Corinthia	0.8055696886
Methana	Thebes	0.805279368
Kommos	Pithekoussai	0.8052680759
Athens	Kommos	0.8033544108
	Lakonia	0.8009919627
Eretria	Kommos	0.8002081512

Kamiros is paired with Athens and Mt Hymettos. In this case, we might be looking at a problem derived from not having enough evidence for the Rhodian sites. Only a few graphematic relationships can be reconstructed from the inscriptions found in these sites and the ones that appear in both of them are identical (Table 9.8). However, the fact that there is evidence of the use of *eta* in Ialysos is what might bring it closer to Ephesos. Perhaps Kamiros would have been in the same cluster if only we had a record of how they notate their mid-open long vowel.[5] This seems to indicate that the algorithm is more likely to draw connections between sites with many gaps in the reconstruction of their writing system and alphabets for which we have larger amounts of evidence that cover most of their repertoire of grapheme-phoneme pairs, and especially those that show some degree of graphematic variety.

The case of Kommos is quite an interesting one. This commercial site in southern Crete shows some graphematic elements that could be related to Crete, for example the use of *eta*, while others are not seen elsewhere in the island, like the straight *iota* (Table 9.8) (Bourogiannis 2019, 155–157; Steele 2019, 140–142). In the table with the highest similarity scores (Table 9.7), it appears first related to Mt Hymettos, another site where we find features from different alphabets (Threatte 1980, 42; Elvira Astoreca 2021, 74 f.), then to Methone in Pieria, Pithekoussai, Athens and Eretria. Given that, on this occasion, we do have reasons to think that at least part of the inscriptions from Kommos come from outside of Crete, I would suggest that the connection to Attic and Euboean poleis and colonies should be considered seriously. However, since there are still some graphematic features found in this site that seem to contradict this link, such as the *eta*, perhaps in this case we would probably benefit from doing an analysis that indicates the similarity per inscription rather than for these alphabets as a whole.

Another interesting pair with a high similarity score is that of Sikinos and Thera. If we look back at the most characteristic features of Theran writing (Table 9.6), we can see that it is the representation of the voiced stop /b/, the consonant clusters

[5] Jeffery (1961, 347) is certain that all Rhodian sites used the same alphabet, which included the use of both *heta* and *eta*.

and the aspirated consonants that could be the best way to recognise an alphabet similar to that of Thera. However, there is no record of how any of these sounds were rendered in the writing of Sikinos. Probably the connection is in the other signs, which, on their own, might appear to be common to other alphabets as well, but together they form a combination of grapheme-phoneme pairs that draws a link to

Table 9.8. Graphematic relationships recorded for: Athens, Ephesos, Eretria, Gortyna, Ialysos, Kamiros, Kommos, Methone in Pieria, Mount Hymettos, Pithekoussai, Sikinos and Thera.

Origin	*a/a:*	*e*	*i/i:*	*o*	*u/u:/y/y:*	*3:*	*0:*	*e:*
Athens	𐌀	𐌄	𐌉	O	Y V	𐌄	O	𐌄𐌉
Ephesos	𐌀	𐌄	𐌉	O		𐌇		𐌄
Eretria	𐌀	𐌄	𐌉	O ⊙	Y V	𐌄		𐌄
Gortyna	𐌀	𐌄	S Ƨ	O	Y V	𐌇	O	𐌄
Ialysos			𐌉	O		𐌇		
Kamiros	𐌀	𐌄	𐌉	O	Y			
Kommos	𐌀	𐌄	𐌉	O		𐌇		𐌄
Methone in Pieria	𐌀	𐌄	𐌉	O	Y			𐌄
Mount Hymettos	𐌀 ▷ ◇	𐌄	𐌉	O ◇	Y	𐌄 H	O	𐌄𐌉
Pithekoussai	𐌀 ▷	𐌄	𐌉	O	Y	𐌄		𐌄
Sikinos	𐌀	𐌄	ϟ ϟ	O	Y			
Thera	𐌀	𐌄	S Ƨ ϟ ϟ ϟ ϟ ϟ	O ⊙	Y	𐌄 𐌇	O ⊙	𐌄 𐌄ϟ

Origin	*o:*	*m*	*n*	*l*	*r*	*w*	*h*	*s*
Athens	O	𐌌 𐌌	𐌍	𐌋	𐌓	𐌅	𐌇	ϟ ϟ ϟ ϟ ϟ ϟ
Ephesos		𐌌	𐌍					ϟ
Eretria	O	𐌌	𐌍	𐌋	𐌓	[	𐌇	S ϟ ϟ ϟ ϟ
Gortyna	O	𐌌	𐌍	𐌋	𐌓	𐌅 ϝ		𐌑
Ialysos		𐌌	𐌍					ϟ
Kamiros			𐌍		𐌓			
Kommos	O	𐌌 𐌌	𐌍	𐌋	𐌓	𐌅		
Methone in Pieria	O ⊙	𐌌 𐌌 𐌌	𐌍	𐌋	𐌓	𐌅	𐌇	ϟ ϟ ϟ ϟ
Mount Hymettos	O	𐌌 𐌌	𐌍 𐌍	Λ 𐌋 𐌋	𐌓 R	𐌅	H 𐌇 𐌇	ϟ S ϟ ϟ ϟ ϟ ϟ ϟ
Pithekoussai	O	𐌌 𐌌	𐌍	𐌋	𐌓	𐌅	𐌇	ϟ ϟ ϟ
Sikinos		𐌌	𐌍	𐌋	𐌓			𐌑
Thera	O	𐌌 𐌌	𐌍	𐌋	𐌓		𐌇	𐌑

(Continued)

Table 9.8. Graphematic relationships recorded for: Athens, Ephesos, Eretria, Gortyna, Ialysos, Kamiros, Kommos, Methone in Pieria, Mount Hymettos, Pithekoussai, Sikinos and Thera. (Continued)

Origin	*b*	*d*	*g*	*p*	*t*	*k*	*ko/ku*	*ph*
Athens	𐌁	𐌃 𐌄	𐌀 𐌋	𐌓 𐌐	𐌕	𐌊	𐌒	𐌖
Ephesos								𐌖
Eretria	𐌁	𐌃		𐌓 𐌑 𐌐	𐌕	𐌊		
Gortyna	𐌁 𐌑	𐌄	𐌀	𐌂 𐌓 𐌓 𐌑	𐌕	𐌊	𐌒	𐌓
Ialysos								
Kamiros				𐌐				
Kommos		𐌃 𐌄	𐌑	𐌐	𐌕	𐌊		
Methone in Pieria		𐌃	𐌑 𐌓	𐌓	𐌕	𐌊		𐌖
Mount Hymettos	𐌁	𐌃 𐌄	𐌀 𐌑	𐌓 𐌐	𐌕	𐌊	𐌒	𐌆 𐌖
Pithekoussai	𐌁	𐌃		𐌓 𐌐	𐌕	𐌊	𐌒	𐌖
Sikinos		𐌄	𐌓	𐌐	𐌕	𐌊	𐌒	
Thera	𐌂	𐌄	𐌑 𐌓	𐌐 𐌒	𐌕	𐌊	𐌒	𐌒𐌇

Origin	*th*	*kh*	*ps*	*ks*	*dz*	*Division*
Athens	𐌘 𐌆 𐌇	𐌗				⁚
Ephesos						
Eretria	𐌘	𐌚				
Gortyna	𐌘		𐌓𐌌	𐌊𐌌	𐌉	∣
Ialysos						
Kamiros						
Kommos						
Methone in Pieria	𐌘			𐌎𐌗		
Mount Hymettos	𐌘 𐌇	𐌗	𐌖𐌎	𐌅𐌎		
Pithekoussai	𐌘					⁚
Sikinos						
Thera	𐌘 𐌇 𐌘𐌇	𐌒𐌇 𐌊𐌇		𐌊𐌌	𐌕	∣

Thera rather than Crete, contrary to Jeffery's judgement.[6] In fact, the evidence in the dataset clearly supports this link between the two Cycladic islands, which are also closer in geographic terms.[7]

[6] Talking about LSAG 324.27: 'The dialect is Doric, and the script, which has the wavering *ductus* of the seventh century, corresponds closely with Cretan' (Jeffery 1961, 322).
[7] Compare Sikinos and Thera to Gortyna (Crete) in Table 9.8.

This is an important lesson about how we have been clustering alphabets before and why it only took us this far. Researchers have focused more on specific letters and how they divide the epichoric alphabets in major groups: the sigma users vs the san users, those that have specific signs for long vowels or for consonant clusters, etc. However, it seems that it is the overall combination of graphematic features that tells us to what extent different alphabets might be related or not. This is a necessary shift in the way we study and conceptualise these alphabets.

Conclusions

These and other computational techniques have a lot of potential to help us manage and process big amounts of data. More specifically, NLP applications allow us to perform new analyses on the language and grapholinguistics of ancient sources. However, these experiments do not come without problems, especially when working with imbalanced datasets. Thus, using our human knowledge to perform a qualitative analysis that identifies possible biases and skewed results becomes an important part of the process.

While the outcome of the present experiments was unsurprising for the most part – especially in the calculation of the most particular features of each alphabet – this should be taken as a sign that these techniques work, since they offer measures that are coherent with our intuition as researchers. Still, some results did bring interesting insights about some connections that question the way in which we have approached the problem so far.

Although Jeffery linked the writing of Sikinos to that in Cretan inscriptions, our computational measures find it closer to that of their Theran neighbours. This contradiction highlights the previous tendency to draw links between different alphabetic traditions based on a selection of letters instead of focusing on the writing system as a whole. Of course, conducting manually that kind of analysis for the 67 places of origin studied here would be time consuming. This is where the computational tools come in useful, as they can very rapidly point out patterns in the data not identified before. However, since not all of those results are as reliable, our experience and interpretations as researchers are still necessary to assess their validity.

These experiments also suggested that some areas may benefit from an analysis per inscription, most notably those places of confluence for peoples from different Greek regions. Such sites often present conflicting graphematic features, as inscriptions with elements from specific areas get mingled in a single place. That is the case with Kommos and Mt Hymettos.

A comparative study based on individual inscriptions would also enable us to train a Machine Learning model on each of them so that it can learn from their TF-IDF scores and place of origin to later predict the most likely alphabets for inscriptions with unknown provenance. Nevertheless, this would not be possible with the current

dataset. It does not offer enough data points for a model of these characteristics and these are not distributed evenly nor cover all possible graphematic relationships of each alphabet. This would create a model biased towards the areas with larger amounts of epigraphic evidence, as it would not be able to learn enough from those that are only represented by a few inscriptions.

Although these experiments could be extended to different chronologies or for the comparison of other writing systems, to make such applications we still need a better offer of datasets. These need to be of a considerable size and quality to develop reliable measures and models. However, once the data is made available, if the datasets are designed in a reusable and accessible way, researchers all around the world could run their own experiments and the field would advance rapidly.

Chapter 10

The introduction of the Greek alphabet in Cyprus: a case study in material culture[1,2]

Beatrice Pestarino

Because of its strategic position, located in the eastern Mediterranean close to Greece, Anatolia, the Levantine Coast, and Egypt, Cyprus has always been a crossroads of civilisations (Hadjisavvas 2010; Bombardieri and Panero 2021). The island was home to a rich and prosperous society during the Bronze Age – mostly because of the trading of copper, dug up from the mines of the Troodos foothills (Kassianidou 2013, 133–146; 2017, 111–134). At the end of the Bronze Age it underwent the migration of Aegean people (Iacovou 2008, 625–657; 2014, 660–674; Voskos and Knapp 2008, 659–684). They brought various innovations with them including a fair amount of engineering skills, as seen by the construction of imposing walls and, more relevant to our ongoing discussion, also brought the Greek language (Iacovou 2008, 631–634; 2014, 664–665; 2019, 207–209). However, the use of the Greek alphabet on the island only became widespread in the fourth and third centuries BC, particularly after Cyprus became part of Alexander's empire (Papantoniou 2013b). From the ninth to eighth centuries BC until the Roman era, the Cypriots utilised their own script for writing Greek: the Cypriot syllabary (Egetmeyer 2013, 130–131; 2017, 180–201; Olivier 2013,

[1] I am grateful to Dr Pippa Steele and to Dr Philip Boyes who invited me to the conference *Writing around the Ancient Mediterranean: Practices and Adaptations*, as part of the CREWS project. In its final form, this paper owes a debt of gratitude to Dr Pippa Steele, Dr Christian Körner and Prof. Carlo Consani, who supplied bibliographic material and to the *Haifa Center for Mediterranean History* (HCMH).

[2] Abbreviations:

CIS = Renan, E. *et al.* (1867–1962) *Corpus Inscriptionum Semiticarum*, Paris.

ICS = Masson, O. (1983) *Inscriptions Chypriotes Syllabiques*, Paris.

IG XV 1.1 = Karnava, A., Perna, M. and Egetmeyer, M. (2020) *Inscriptiones Graecae XV 1, Inscriptiones Cypri syllabicae, Fasc. 1, Inscriptiones Amathontis, Curii, Marii*, Berlin.

IG XV 2.1 = Summa, D. and Kantiréa, M. (2020) *Inscriptiones Graecae XV 1, Inscriptiones Cypri alphabeticae, Fasc. 1. Inscriptiones Cypri orientalis: Citium, Golgi, Tremithus, Idalium, Tamassus, Kafizin, Ledra,* Berlin.

16–17; Steele 2018, 240). However, a few epigraphic documents show a limited use of the Greek alphabet already in the sixth century BC.[3] A fresh analysis of these texts will allow us to better understand why the Greek alphabet was introduced in Cyprus in those years, and the context of its first employment.

Moving on from the traditional structuralist and functionalist approaches applied to the studies of languages and writing systems, the examination of these inscriptions will be conducted through a materiality perspective by highlighting the multifunctionality of writing practices (Malafouris 2004, 53–61; 2013b; Cardona 2009; Piquette and Whitehouse 2013; Boyes 2021b, 19–25; Boyes *et al.* 2021b). This research, however, will not focus on the inscriptions' *technē* and production but, by broadening the field of the analysis of materiality, on their distribution and reception as part of material culture and visual culture, taking into account that scripts may also convey socio-cultural messages by their visual impact (Robb 2017, 587–597; Overmann and Wynn 2019, 457–478). Through this innovative approach, the study will show that the introduction of the Greek alphabet in Cyprus was not a random occurrence but the result of a socio-political requirement that applied to the members of the Archaic Cypriot elites, close to the kings who ruled over the island's city-kingdoms, who were set far above the common people (Körner 2017, 327–330; Pestarino 2022, 18–33). The Greek alphabet was implemented as a sign of higher social status that depended on appearing Greek and showing the Greekness of the upper class; its introduction was triggered by the contacts between the Cypriots and other Mediterranean centres where Greek alphabets were widespread, such as Greece, Rhodes and Ionia.

Languages and scripts in Archaic and Classical Cyprus

Before embarking on the examination of a few case studies, it is worth analysing the socio-cultural environment in which the Greek alphabet was introduced. Because of the close contacts with the cities of the central and eastern Mediterranean, the Cypriot Archaic and Classical linguistic and writing landscape was extremely varied and complex: the island stands out for the amount of spoken and written languages, mainly attested through inscriptions on different support materials – *e.g.* stones, ostraca, clay/bronze tablets. Along with the writing systems and languages officially used by the administrations of the city-kingdoms – such as the Cypriot syllabary used to write Cypriot Greek and Eteocypriot, an autochthonous language still undeciphered, and Phoenician in its own alphabet (Steele 2013; Körner 2019, 59–76) – documents found on the island also attest to the presence of other languages and scripts, written and spoken by foreign individuals or minorities who were either occasionally visiting or living in Cyprus for short or long periods, or even by foreign rulers. Inscriptions provide direct and indirect testimonies. For example, among the

[3] *IG* XV 1.1 n°167 = *ICS* 164 = Egetmeyer 2010 Vol. II, Marion n°83; *IG* XV 2.1 n°340 = *ICS* 260 = Egetmeyer 2010 Vol. II, Golgoi n°1.

direct testimonies, we may count the stele of Sargon II (707 BC), found in the temple of Bamboula, in Kition (Larnaka), written in Akkadian, in cuneiform script. Its text lists the names of 10 Cypriot city-states and their kings, a crucial source to better understand Cyprus' political status in the eighth to seventh centuries BC, when the island started to be part of the Neo-Assyrian Empire (Saporetti 1976, 83–88; Yon and Malbran-Labat 1995, 169–179; Yon 2004, n°4001; Cannavò 2007, 179–190; Radner 2010, 429–449).

Fig. 10.1. IG XV 1.1 n°126. The syllabic text of the situla from Kourion.

Another example is a situla found in the temple of Apollo Hylates in Kourion. The situla bears two texts, one written in Egyptian hieroglyphs all around the band below the upper rim, which reads 'Shepenamun, son of Psamtik', and another one written in the centre of the situla's body, in Cypriot syllabic Greek – in the Paphian variant but engraved from right to left – which reads *to-te-o*, 'to the god' (Fig. 10.1) (*IG* XV 1.1 n°126 = *Kourion* n°15 = Egetmeyer 2010 Vol. II, Kourion n°25; Consani 1988, 48–49). These texts are probably coaeval and date to 570–545 BC, when Cyprus intensified its contacts with Egypt after the collapse of the Neo-Assyrian Empire. The dedicant, Shepenamun son of Psamtik, who probably did not live permanently on the island but happened to be visiting the sanctuary, inscribed the situla according to the Egyptian tradition; but at the same time he tried to apply elements of Cypriot customs such as the syllabary. Cypriots who worshipped in this temple, in the temple of Bamboula, and probably in other sanctuaries throughout the island, were used to seeing objects bearing foreign scripts, particularly from the Near East.

Equally important is the indirect information provided by the inscriptions, which attests to the presence of communities of foreigners living in Cyprus in the Classical period, whose first representatives probably already frequented the island in the Archaic period. For example, Carians and their interpreter were permanently employed by the Kitian government, most likely as mercenaries, in the fifth to fourth centuries BC. Two classical Phoenician dedications – an epitaph and an administrative ostracon – bear the text MLṢ KRSYM, 'interpreter of Carians' and KRSY, 'Carian' (Pestarino 2022, 108–132).[4] Although the interpreter may have performed various duties, his presence suggests the existence of another language spoken on the island and the need to understand it.

Inscriptions also show individuals who had Hebrew names. They are attested in the epitaphs of the Agios Georgios necropolis, close to Kition (Hadjisavvas *et al.* 1984,

[4] Amadasi and Karageorghis 1977, 23–25, A9 = Yon 2004, n°1009 = *CIS* I, 22; Amadasi 1977, 178–184 F1 = Yon 2004, n°1125 = *CIS* I, 88; Amadasi and Karageorghis 1977, 88–90, B40 = Yon 2004, n°1070 = *CIS* I, 44; Amadasi 2015, 343 n° KEF 600 = Yon 2004, n°1151.

101–116; Yon 2004, n°1131, 1134, 194–198). In one case, the deceased was called Shillem, and his father ʾSPYHW, ʾAsaph-Yahou, 'Yahweh has gathered', whose name is a hapax in Semitic onomastic. In another epitaph, the father of a *rab soferim,* 'chief of scribes', was called ʿZR YHW, ʿAzar-Yahou, 'Yahweh helped him', a name attested several times in the Bible (Sznycer 2004, 217–228). This information is not enough to hypothesise the existence of a Hebrew community in Kition. However, it is plausible that the families of the deceased mentioned in these epitaphs were of Levantine origin and that their ancestors were able to speak Hebrew, if not these individuals themselves, and used to frequent Cyprus. They were members of the local elite, as demonstrated by the rich funerary goods found in their tombs, and by the titles that they held.

Furthermore, some Cypriot anthroponyms, such as Kilikas – a name attested in both Cypriot syllabic Greek and Cypriot Phoenician dedications, and in various cases linked to the profession of scribe – may indicate a connection to Cilicia and Anatolia, and perhaps the ability to speak more than one language, a skill undoubtedly useful for a professional writer (*e.g. ICS* 251 = Egetmeyer 2010 Vol. II, Voni n°1; Egetmeyer 2010 Vol. I, §531; Amadasi and Karageorghis 1977, 45–48, A 30 = Yon 2004, n°1030; Pestarino 2022, 77–107). All in all, Cyprus was a melting pot of languages and writing systems, native or imported.

The arrival of the Greek alphabet in Cyprus

But what role did the Greek alphabet play in this complicated linguistic and graphic landscape when it was introduced? It should be stated beforehand that the presence of such a variety of languages and scripts – and later on of the Greek alphabet too – was the result of encounters between Cypriots and other Mediterranean populations and cultures, the product of the so called 'island paradox'. This is Braudel's successful definition, followed up by scholars specialised in Mediterranean Studies, and in the study of Cyprus, for example Knapp and Papantoniou, who recently argued that socio-cultural islandscapes should be investigated by taking into account their environment and emphasising the active role that natural connections play in influencing human affairs (Braudel 1972, 161; Horden and Purcell 2000, 76; Knapp 2008, 19–30; Papantoniou 2013a, 169–205; Broodbank 2013, 1003; Papantoniou and Bourogiannis 2018, 2–27; Papantoniou *et al.* 2019; Hodos 2020, 1–7; López-Ruiz 2021, 58–61; Bourogiannis 2022). Despite their levels of isolation, islands are exposed to high numbers of interactions and linked into broader social, cultural and politico-economic networks through maritime connectivity. These interactions inevitably contributed to shape islanders' culture and identity and their sense of belonging to a specific social group, as argued by Hall (1997, 30).

Cyprus was part of a high number of seafaring routes between Mediterranean coastal centres and its inhabitants have been particularly skilled in absorbing elements of neighbouring cultures and shaping them according to their needs. This became even more striking when the island became part of the Neo-Assyrian Empire (709–708 BC)

and was further incorporated into its trade network. This further stimulated the exploitation of Cypriot landscapes and raw materials and triggered a process of territorial consolidation through the proliferation of extra-urban sanctuaries in the peripheries of the city-states (Cannavò 2015; 2018, 240–264). This phenomenon aimed to better establish the hegemony of the ruling dynasties and of the kings who held both political and religious powers in the city-kingdoms. Warrior-based material culture, mostly coroplastic figurines featuring warriors and chariots and bearded statues with helmets, spread in the sanctuaries as symbols of the elites' higher social status, as a tool of power legitimation (Satraki 2013, 123–144).

Cyprus' greater exposure to sea routes and cultural contacts constantly increased, particularly once the island was freed from the Assyrian rule and further entered Egypt's orbit, and later on when it became part of the Achaemenid Empire (545 BC). In this period of changes, Cypriot trade was no longer predominantly directed at the Near East but from the seventh century BC also increasingly looked towards mainland Greece and Ionia. The first attestations of the Greek alphabet in Cyprus, therefore, should be framed within this historical context, taking into account the increasingly frequent cultural exchanges between Cyprus and Aegean/Mediterranean centres (Georgiadou 2015; Raptou 2015).

The development of the Greek alphabet itself depended on connections and exchanges that happened through Mediterranean seafaring routes. Trade networks and contacts between Greece and the Levant were crucial for its flourishing and spread. Although a specific place of origin has not yet been found for the first development of the Greek alphabet, cultural exchanges and cohabitation between Euboeans and Levantines, who used the Phoenician alphabet from which the Greek one derives, seem to have played a pivotal role in its inception (Nijboer 2008, 365–377; López-Ruiz 2021, 48–49). Indeed, Euboeans and Atticans have been among the first to make use of it (Kourou 2004, 11–30; 2012, 33–51; 2015, 245–263; Papadopoulos 2017, 36–14; Bourogiannis 2018a, 43–88; 2018b, 235–257; 2019, 151–180; Hodos 2020, 66–93; López-Ruiz 2021, 49). In the Aegean, the earliest examples of Greek alphabetic writing are short graffiti inscribed on objects, usually vessels, pottery and *ex votos* dedicated in sanctuaries. These graffiti give information on the owner or the dedicant (names, place of origin, work) and, in sporadic cases, the reasons of the dedication; they spread from the end of the eighth century BC as a sign of wealth and upper-class status. Traders engraved them with the new Greek alphabet, distinguishing themselves through the use of this new technology at a time when literacy was still uncommon among the Greeks, and so emphasising their prestige (Kourou 2015, 245–263).

In light of this evidence, it is not surprising that the earliest examples of Greek alphabet found on Cyprus, in Salamis, are written on Attic amphorae (seventh century BC), which were imported from Greece and therefore not written *in situ* (Pouilloux *et al.* 1987, n° 354, 355, 356, 357c, 357d; Steele 2018, 202). They were part of funerary goods found in the tombs of the Necropolis of Cellarka, where members of the elite were buried (Karageorghis 1970, 275). Abroad, Archaic Cypriot stone and gypsum

votive statuettes that bear alphabetic Greek inscriptions come from Rhodes, a great importer of Cypriot products and a site that has also produced a substantial quantity of early Archaic inscribed votary objects. The dedicants of these statuettes, very likely Greek speakers, were either able to write in alphabetic Greek or made use of local scribes. A few similar occurrences come from Knidos, Kalymnos and Naukratis (Jenkins 2001, 163–179; Demetriou 2012, 131–134; Kourou 2015, 245–263; Thomas 2015, 1–31).

However, contemporary Cypriot dedications on Cyprus – made by Cypriots – never show alphabetic Greek graffiti but always Cypriot syllabic or Phoenician texts. The Greek alphabet appears on Cyprus in a later period (sixth century BC) and although its introduction was probably an innovation of the competing elites and also depended on the necessity to display their upper-class status, as was the case in the Aegean, it did not aim to distinguish them from an 'illiterate' mass. Cypriots have shown good levels of literacy through the centuries and consistency in writing, which was not interrupted at the dawn of the Iron Age, unlike in Greece and in the Aegean (Steele 2018, 85). Different scripts were used and displayed on the island, as shown above, and hierarchical bodies of highly specialised scribes under the authority of one or more chiefs worked for the royal administrations of the city-kingdoms, likely from their consolidation phase onwards (eighth century BC onwards) (Yon 2004, n°1030; Pestarino 2022, 77–107); thus, in Cyprus, writing itself was not such an innovative technology as it was elsewhere. The introduction of the Greek alphabet may, therefore, depend on other factors than the restricted and elite nature of writing itself.

The first Cypriot attestations of the Greek alphabet

The first Cypriot local attestations of the Greek alphabet appeared in digraphic inscriptions written in Cypriot syllabic Greek and alphabetic Greek on funerary monuments – and not on votive objects as in the other Aegean centres. The first one is an epitaph from Golgoi dated to the sixth century BC (*IG* XV 2.1 n° 340 = *ICS* 260 = Egetmeyer 2010 Vol. II, Golgoi n°1; Consani 1990, 69–70). Its texts are inscribed on the bottom of the decorative capital of a funerary stele featuring two lions facing away from each other (Fig. 10.2). A better analysis of the decoration of the monument and of the arrangement of the two texts will provide information on the social status of the deceased and on the reasons behind the used of the Greek alphabet on the capital.

Fig. 10.2. Capital of IG XV 2.1 n° 340.

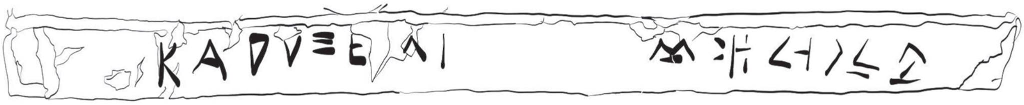

Fig. 10.3. IG XV 2.1 n° 340, texts on the capital.

Both the Cypriot syllabic and alphabetic Greek texts are inscribed on an undecorated band under a winged solar disk that the lions overhang (Fig. 10.3). On the left side, the alphabetic inscription reads: *Kārux ēmi*, 'I am Karux'. On the right side, the Cypriot syllabic text reads *ka-ru-xe-e-m-i* (𐠖𐠁𐠸𐠧𐠊).[5] As Steele pointed out, the presence of the sign *xe* 𐠸 is a peculiarity of the syllabic inscription (Egetmeyer 2006, 707–712; 2010 Vol. I, §245; 252; Steele 2018, 221–222); it was probably a later addition to the syllabary, never attested in Cypro-Minoan, the Late Bronze Age script from which the syllabary derives (Ferrara 2012; Egetmeyer 2013, 107–113; Steele 2018, 4–35). The sign *xe* was employed to write a consonant cluster that otherwise would have been spelt with two distinct signs, *ke-se*. Because of its use, which developed on the island in a later stage, and because the syllabic text conforms to the usual Cypriot orthographic tendency to separate *e-mi* from the previous word by keeping the syllabic boundary (*i.e. ka-ru-xe-e-mi* and not *ka-ru-xe-mi*), we may assume that the writer or the commissioner was confident with the syllabary, and that he was very likely a Cypriot from Golgoi. Previous editors claimed that the shape of the letters of the alphabetic text was very similar to that of the Rhodian alphabet (*ICS* 260), particularly the Ξ, which is represented as Ξ. However, according to the recent re-examination of the early Greek epichoric alphabets by Elvira Astoreca (2021, 118–119), the cluster /*ks*/ represented as Ξ is attested in Archaic inscriptions from Corinth, Penteskouphia, Corfu, Samos and Smyrna. Thus, it is more probable that the writer or commissioner of the monument had contacts with mainland Greece and Asia Minor than with Rhodes.

The rich and elaborated iconography of the capital suggests that Karux was a member of the Cypriot upper class. The winged solar disc, placed below the lions, was a symbol of power and authority in Cyprus as in the Near East (Lipiński 1992, 131; Seidl 2020, 119–150). For example, in Palaipaphos, a helmet found in the Cypro-Archaic tomb of a member of the local elite is also decorated with a winged solar disc (Maier 1989, 383; Satraki 2013, 130), and Cypriot coins from Paphos, Kition and from a Ledrian hoard show legends with winged solar discs along with bulls, lions, and hathoric female figures (Markou 2014, 402).

A digraphic epitaph from Marion is the other Cypriot early attestation of the Greek alphabet, also dated to the sixth century BC (*IG* XV 1.1 n°167 = *ICS* 164 = Egetmeyer 2010 Vol. II, Marion n°83; Consani 1990, 70; Jeffery 1990, 346–352) (Fig. 10.4). This epitaph is written on a rectangular stone bearing the Greek text *kasignētas*, 'of the sister', on the upper part, and the syllabic text *ka-si-ke-ne-ta* (𐠭𐠚𐠋𐠪𐠊) on the down

[5] All Cypriot syllabic transcriptions presented here read from right to left.

Fig. 10.4. IG XV 1.1 n°167.

side of the support, in a vertical column, to be read from top to bottom. In this case, the iconography of the monument, a simple block of stone, does not help to confirm that the writer or commissioner was a member of the Cypriot elite. The palaeography of the Greek alphabetic text is very similar to that of the inscriptions from Knidos, where *ēta* is □. As suggested by Steele, the absence of the sign *-se* in the ending of the genitive *ka-si-ke-ne-ta* may indicate unfamiliarity with the Cypriot syllabary (Egetmeyer 2010 Vol. I, §179–180; Steele 2018, 220). Instead, the habit of omitting the *-s* of the genitive ending was a common feature in Knidian inscriptions. Therefore, the commissioner of this monument may have been from Knidos, and may have settled in Cyprus with his family, most likely as a result of the increasing contacts and trade between Cyprus and Asia Minor. He commissioned the monument according to Knidian customs and inscribed it in alphabetic Greek; but he also tried to conform to the local culture by using the Cypriot syllabary, just as Shepenamun, the Egyptian dedicant of the situla described above, did, although not quite correctly. In this case, the use of the Greek alphabet was probably linked to the Greek origins of the commissioner.

The Greek alphabet as an element of Cypriot elites' material culture

This analysis makes us wonder why, in the sixth century BC, Karux, a Cypriot Golgian, and a member of the local upper class – therefore not originally from East Greece or mainland Greece – decided to employ the Greek alphabet along with the Cypriot syllabic Greek in his epitaph. Certainly, it was not a question of structurally communicating an otherwise incomprehensible linguistic message or of making it better understandable to passers-by.

Steele (2018, 222) suggested that in Cyprus the Greek alphabet was perceived as exotic and foreign-looking whereas the Cypriot syllabary and the Phoenician alphabet were the most common scripts. Indeed, the cognitive aspect that prompted Karux to employ the Greek alphabet should not be underestimated. Scholars demonstrated that scripts may shape individuals' thinking and convey messages that the brain processes to generate information on cognition, problem solving and cultures (Malafouris 2011, 140–170; 2013a, 151–152; Graham 2021, 571–601). The exotic nature of a script usually raises the curiosity of the reader, or better of the viewer – since the passer-by is not always able to read or understand its content – to whom it looks uncommon. The

script, despoiled of its structural function, may not convey simply a linguistic message but operate as an element of visual culture, broadly intended as part of material culture. In some cases, the script may be asemic (Houston 2018, 21–48). Two examples of asemic scripts are the twentieth-century cases of the famous artworks of James Castle, who employed Latin letters without knowing their meaning since he was deaf and semi-illiterate, and of the totally new writing system, invented from scratch, in the *Codex Seraphinianus* by Luigi Serafini (Serafini 1981; Gaze and Jacobson 2013; Jon 2016; Houston 2018, 23, 27). By contrast, in some other instances, a script carries specific messages through its visual impact, even if it is a nonsense script – *e.g.* the script on the Athenian drinking cups that bear both meaningful and nonsense inscriptions to stress the difference between the competing elites of those who were able to read and pronounce the letters, represented by the words of sense, and those who were not, represented by the nonsense words (Pappas 2012, 71–111). The employment of the Greek alphabet in Karux's epitaph might be an example of this second typology of scripts, which carry a visual message. The analysis of Cypriot Archaic material culture and epigraphic record contributes to our better understanding of what it consisted of.

Cypriot contacts with other centres of the Mediterranean had an impact on the pottery production of the island. Cypriots had been importing Greek drinking vessels and locally imitating them since the ninth century BC. The first typologies were geometric *skyphoi* from Aegean and Euboea (Coldstream 1979, 255–269; Fourrier 2008, 131; Georgiadou 2015; 2017, 105; 2019, 91–95). In the seventh and sixth centuries BC, however, once the island was freed from the Assyrian rule, two other types of drinking cups were widespread: one is the so-called 'Greek Ionic', imported from Ionia or reproduced locally, which may be simplistically described as having two handles, and another one called 'Phoenician', with no handles (Fourrier 2008, 130–132). The distribution and use of these two varieties is not accidental. As Fourrier demonstrated, in Amathus, most of the drinking vessels found in the temple of Aphrodite were of Phoenician type, whereas in the central palace they were of the Greek kind, as shown by the finds of two large Archaic deposits discovered in West Terrace (Fourrier and Hermary 2006, 90–126; Fourrier 2008, 132; 2009, 1–98). Similar data come from the palace of Vouni, were several Greek bowls and *skyphoi* were found (Gjerstad *et al.* 1977, 33). Fourrier argued that since the distribution of Greek drinking vessels in the East Mediterranean was connected to banquets and symposia in which members of the upper class took part, it is plausible that the use of the Greek *skyphoi* was mainly practised by members of the Cypriot elites. Banquets are a recurring motif in Cypriot iconography; they are featured in sarcophagoi, bowls and reliefs, which show that kings and members of the elites took part in them (Markoe 1985, 175–177; Hermary and Mertens 2014, 193–195; Pestarino 2022, 21–22, 32–33). Furthermore, a Phoenician ostracon from the Idalion archive mentions a *marzēaḥ*, a ritual banquet, the expenses of which were paid by the local palace (Amadasi and Zamora López 2018, 199–203; 2020, 151). The members of the Cypriot upper class may have preferred to use Greek drinking vessels when they participated in these symposia.

The analysis of the names of the kings and of the members of the Amathusian elite may corroborate this theory. Amathus is the only Cypriot city-kingdom that adopted Eteocypriot in its official administrative documents and monuments. It was probably one of the most heterogeneous centres of the island, where part of the Cypriot indigenous population lived. Amathus has also produced a considerable amount of Phoenician pottery, in such a high number that Hermary argued that the city was founded by Phoenicians (Hermary 1997, 375–388; Petit 2015, 353–357). However, almost all the kings of Amathus had Greek names. The Amathusian coins of the Classical period always show the names of the sovereigns written in Greek through the Cypriot syllabary. An exception may be the name of the king *pu-ru-wo-so* (𐠫𐠵𐠧𐠢) who ruled in 385 BC (*IG* XV n°88 = *ICS* 198 = Egetmeyer Vol. II, Amathus n° 20; Amandry 1984, 71). His name is Greek, probably the Cypriot equivalent of *Pyrwos*, but it might end according to an Eteocypriot inflection in *-so* (Markou 2018, 221–235; Steele 2013, 163; 2018, 163). Egetmeyer, however, does not exclude that *pu-ru-wo-so* is the genitive form of the name **pu-ru-wo-so-se,* since most of the legends of the Amathusian coins bear the names of the kings in the genitive case. If so, *-so* would be a rare Cypriot familiar-looking suffix, also attested in another Cypriot anthroponym, *pa-no-so-se,* (𐠩𐠫𐠜𐠞) (*ICS* 351 = Egetmeyer Vol. II, uncertain origins n°15). This reading would show that, even in this case, *pu-ro-wo-so* may be a Greek name that ends according to the Greek inflection of the genitive case (Egetmeyer 2010 Vol. I, § 450–451).

Finally, the recent autoptic inspection of the Amathusian coins by Karnava and Markou allowed a new reading of another king's name (Karnava and Markou 2020, 109–136). Previous scholars read it as *Epipalos* since, according to them, it was attested in coin legends in the genitive form *e-pi-pa-lo*, (𐠒𐠞𐠠𐠀), 'of Epipalos' (370/360 BC). This anthroponym should be instead read as Apipalos, since the coins bear the text *a-pi-pa-lo*, (𐠒𐠞𐠠𐠀), 'of Apipalos' (*IG* XV 1.1 n° 92 = *ICS* 202 = Egetmeyer Vol. II, Amathus n° 24; Amandry 1984, 73). Apipalos is a Phoenician name transliterated and inflected as Greek. According to Zamora López, it is the equivalent of the Semitic anthroponym ʾBBʿL, ʾAbibaʿal, 'my father is Baʿal' (*IG* XV 1.1 n° 92, 36, with the note of Zamora López in the commentary). It is remarkable that, although this sovereign had a Phoenician name, the legend of his coins was written in Cypriot-syllabic Greek. This could prove that the Amathusian elite, to which the kings belonged, wanted to publicly appear as Greek, at least in the Classical period, and may have preferred to use Greek drinking vessels for similar reasons.

Despite the paucity of information on the names of the Amathusian kings in the Archaic era, an inscription may confirm that the members of the upper class had Greek names in those years too. The document is written in Cypriot syllabic Eteocypriot, and is engraved on a lintel of a monumental tomb (*IG* XV 1.1 n° 6, 4–5 = *ICS* 195 = Egetmeyer 2010 Vol. II, Amathus n°6; Steele 2013, 107, EC2; 2018, 129). The tomb was dated to the very late Archaic period but the stele on which the text is inscribed was clearly re-used and should be dated back to the beginning of the Archaic years. Although the content of the inscription is unclear, since it is written in Eteocypriot,

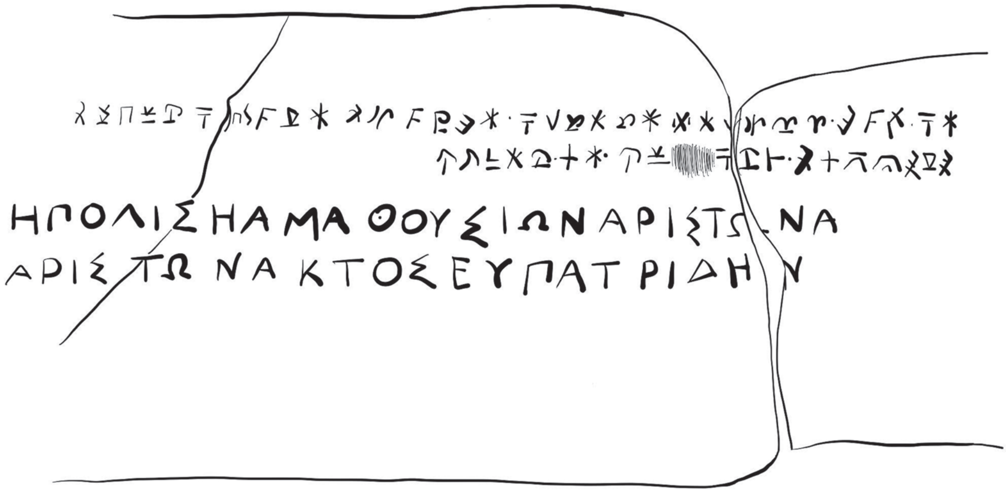

Fig. 10.5. IG XV 1.1 n°7.

at least eight anthroponyms mentioned in the text are Greek. In his recent re-edition, Perna provides a new interpretation of a sign of the syllabary previously read as *ko* and now identified as *we,* Ⲏ, often attested in the suffix of the Eteocypriot patronymics as *o-we-o* (Perna 2018, 213–220). Perna's reading allows to identify a new anthroponym/patronymic, *ko-i-ro-so-we-o* (⩡Ⲏ⩢Ձ⋇Π), which appears twice in the document (ll. 3–4), probably another Greek name (see Hdt. 7.170.3; Cannavò's personal comment in *Mnemon* seminars 2019, Scuola Normale Superiore, Pisa).

Likely, the Cypriots mentioned in this text were members of the elite of Amathus. Despite the uncertainty of the content, scholars assumed that this document was originally an honorific decree dedicated to one or more notables of the city. In line 4, the text shows the term *ke-ra-ka-re-tu-lo-ti*, (↑+⩩⇑↥Ω⩙), which is also attested in a bilingual syllabic Eteocypriot/alphabetic Greek inscription from Amathus (330–310 BC), but with a different inflection, *ke-ra-ka-re-tu-lo-ro* (Ձ+⩩⇑↥Ω⩙) (*IG* XV 1.1, n°7 = *ICS* 196 = Egetmeyer Vol. II, Amathus n°7; Perna 2018, 213–220; Steele 2013, 105–106, EC1; 2018, 130–137; Consani 1988, 35–60) (Fig. 10.5). This second text is indeed an honorific decree dedicated by the city of Amathus to Ariston. This was easily understood according to the content of the Greek text, shorter and less accurate than the Eeteocypriot one, which reads: *Hē polis hē Amathousiōn Aristōna Aristōnaktos eupatridēn,* 'The *polis* of the Amathusians to Ariston son of Aristonax, of noble origins'. The term *eupatridēn*, 'of noble origins', corresponds to the word *ke-ra-ka-re-tu-lo-ro* in line 2 of the Eteocypriot text. Therefore, since the lintel shows the same title, it is plausible that it also was an honorific decree for members of the elite.

All in all, as demonstrated through the analysis of the inscriptions and material culture of Amathus, in Cyprus, Greekness seems to be the distinctive component of the elite status. Karux's choice, therefore, could depend on this social construct. As

a member of the upper class, Karux wanted to emphasise his Greekness; thus, he commissioned or wrote the epitaph not only in Cypriot syllabic Greek, but also in alphabetic Greek. The use of the Greek alphabet probably was an impelling necessity for a member of the elite of Golgoi, where Karux lived. Golgoi is the Cypriot city that, along with Amathus, showed the greatest number of documents written in a local autochthonous language through the syllabary; it is, however, not clear whether it was the same language attested in Amathus, or rather a different local dialect, which Egetmeyer called Golgian (Egetmeyer 2012, 427–434). This testifies to the presence of indigenous Cypriots in Golgoi. Therefore, the use of the Greek alphabet on the epitaph probably was an expedient adopted by Karux to highlight his superior status to the local population, or perhaps to a new competing and challenging indigenous group.

Greekness seemed to be the prerogative of the Cypriot elites. This notion could certainly depend on the development and subsequent consolidation of the Cypriot kingship in the Archaic period (Satraki 2013, 125–126). Cypriot kingship emerged between the end of the ninth century BC and the eighth century BC, when official monumental buildings, royal palaces and sanctuaries started to appear on the island. According to the analysis of burial gifts, during the early years of the Geometric period, there was no single dominant ruler but broader elites (Janes 2013, 145–168; Satraki 2013, 25). However, from the late ninth century BC, one upper-class family prevailed over the others and kingship emerged and consolidated itself. A Greek elite prevailed in Paphos and it may not be excluded that this happened in other centres of the island (Iacovou 2013, 133–160).

This analysis leads to the conclusion that in Cyprus, during the Archaic period, the Greek alphabet was introduced as an element of visual, material culture to convey a specific message of Greekness and upper-class status. Frequent exchanges that Karux and other wealthy Cypriots had with Greek centres encouraged the choice of employing the Greek alphabet in the epitaph. Furthermore, this analysis also showed how seafaring contacts contributed to shape islanders' awareness of conscious or desired membership of a social group, which is reflected in their culture, and, in the case of Karux, a member of the upper class, in the employment of a specific script, the Greek alphabet in his epitaph.

The use of scripts as elements of visual and material culture is not a novelty on the island but part of a very profitable vein that has its origins in the development of the first Cypriot writing system: Cypro-Minoan (Ferrara 2012). This script and language, still undeciphered, had a predominant symbolic value. It marked possession and emphasised high social positions. Ferrara has argued (2017, 7–32) that Cypro-Minoan may possibly have been deliberately created as a material consolidator of a specific identity and that it reflected a particular image of the Cypriot elites of the Bronze Age. It also was an element of visual culture which became a socio-political instrument.

The employment of specifically Cypriot languages and scripts in the Iron Age is not so different. The Cypriot syllabic writing system developed between the ninth and eighth centuries BC from the Cypro-Minoan, probably in Paphos, and subsequently

spread all over the island. The syllabary was born as a distinctive cultural element to show the power and Greekness of the Paphian elite and then came to be used in the other city-kingdoms, where its writing direction changed from left-to-right to right-to-left, with the shape of some signs also altering (Iacovou 2013, 133–160; Egetmeyer 2016, 131–136; 2017, 180–201); however, this did not happen in Paphos, where it kept its original aspect, a distinctive element of this city-kingdom (Olivier 2013, 7–26; Elvira Astoreca 2018, 35–43).

In Cyprus, the choice of using a particular writing system always had a socio-political connotation. Cypriot syllabic Greek, Eteocypriot and Phoenician were employed by local administrations and governments to legitimate the power of the ruling dynasties, and used as symbols of strength and authority. The Greek alphabet also had a similar function. However, in the Archaic period, when it was introduced, it was limited to epitaphs of singular individuals, members of the elites as Karux was. Only at a later time would it officially appear on monetary legends and monumental inscriptions, for example, under the reign of Evagoras, king of Salamis, or of Nicocles of Paphos, purely for political reasons (Consani 1990, 63–79; Iacovou 2013, 133–160). The Greek alphabet symbolised the proximity with Athens and Greece during the war against the Achaemenids (Zournatzi 2019, 313–326), or internationally legitimised the Cypriot kingship in a period of difficult changes, after the advent of Alexander the Great, when the *diadochoi* contended the island (Consani 1990, 78–79; Papantoniou 2013b; Elvira Astoreca 2018, 35–43; Pestarino 2022, 21-22, 32–33). Only after the fall of the city-kingdoms it replaced the Cypriot syllabary in monuments and decrees, when it became the official script of the new Cypriot-Ptolemaic administration, and fully regained its primary linguistic function (Michel 2020). By contrast, in the Archaic period, the Greek alphabet was an additional visional tool, an element of the Cypriot material culture along with warrior-based coroplastic figurines and imposing statues, which contributed to manifesting the power and authority of the elites, particularly in the centres where the number of the Cypriot indigenous inhabitants was conceivably more relevant.

Chapter 11

Word-level punctuation in Latin and Greek inscriptions from Sicily of the Imperial period

Robert S.D. Crellin

Introduction

To punctuate or not to punctuate in Latin and Greek

It is often implied that scriptio continua – that is, writing characters as a stream without any indication of word breaks – was the norm for writing around the Mediterranean basin in antiquity, and that it was the medieval period that we have to thank for the (re)introduction of word-spacing. Thus, summarising the popular view, Dickey (2017, 159) states:[1]

> Word division is normally considered to be one of the clear advantages that our civilization has over those of the ancients.

However, several early Greek inscriptions provide word-level punctuation (Morpurgo Davies 1987; Wachter 1999; 2010; Crellin 2022). In Latin, moreover, word division is not only 'found in the very earliest inscriptions, such as the *lapis niger* and the *fibula Praenestina*', but is also 'regularly found on all good inscriptions, in papyri, on wax tablets, and even in *graffiti* from the earliest Republican times through the Golden Age and well into the Second Century' (Wingo 1972, 15; italics original).

The practice of punctuating at the word level appears to have continued much longer in Latin than in Greek, until at least the second century AD, a point to which I will return. Seneca the Younger, in his *Epistles*, written c. AD 55 (cf. Reynolds *et al.* 1996), makes the following observation (also cited and partially quoted in Wingo 1972, 15):

[1] Cf. Saenger (1982, 377) who states: 'Word separation was the singular contribution of the early Middle Ages to the evolution of Western written communication.'

> [Haterius] numquam dubitavit, numquam intermisit; semel incipiebat, semel desinebat. Quaedam tamen et nationibus puto magis aut minus convenire; in Graecis hanc licentiam tuleris; nos etiam cum scribimus, interpungere adsuevimus.
>
> Haterius never hesitated, never paused; he made only one start, and only one stop. However, I suppose that certain styles of speech are more or less suitable to nations also; in Greek you can put up with the unrestrained style, but we Romans, even when writing, have become accustomed to separate our words. (Seneca the Younger, *Epistles*, 40.10–11; text and translation Gummere 1917)

The primary reference of the passage is speech: in Greek it is acceptable to speak without breaks, but in Latin you should pause. Seneca highlights the degree to which this is the case by pointing out that in Latin one should even mark pauses in writing, *i.e.* via interpuncts (see Wingo 1972, 15), whilst in Greek, by implication, this is not done.

The complementary distribution of word-level punctuation in Latin and Greek texts in the early Empire is borne out in papyrus documents written in this period: whilst Latin texts frequently provide evidence of word-level punctuation (Anderson *et al.* 1979; Adams 1996; Dickey 2017), Greek texts are usually written without (Oliver 1951, 241–242; Anderson *et al.* 1979, 131; Dickey 2017, 160).[2]

Morphosyntactic word division

Despite the presence of word-level punctuation in both Latin and Greek writing at various stages of their history, the unit(s) thereby demarcated do not correspond to the kinds of unit punctuated by spaces in modern languages with their roots in Western Europe. Here the orthography proceeds broadly along the lines of what might be termed morphosyntactic principles, where 'words' correspond to morphosyntactic units. Consider the following sentence:

> I have eaten an apple.

Each 'word' – viz. unit separated by spaces – corresponds to an element with a morphosyntactic identity, respectively: personal pronoun 'I', auxiliary verb 'have', past participle 'eaten', indefinite article 'an' and substantive 'apple'.

Consensus on the definition of the morphosyntactic word is notoriously difficult to find (Matthews 1991; Haspelmath 2011; cf. Packard 2000). A central concern is the precise relationship between morphology and syntax, which varies from language to language (see Matthews 1991, 206). The present study is not, however, concerned with the morphology-syntax interface, but rather with the interface of morphosyntax with phonology, insofar as a distinction can be observed between word division strategies separating phonological words from morphosyntactic ones, however defined.

[2] Cf. Saenger (1982, 370): 'The typical Roman book contained neither punctuation, distinction between upper- and lower-case letters, nor word separation.'

Prosodic words and phrases

Prosodic words are units that share particular suprasegmental phonological properties. In particular, there is a cross-linguistic tendency for morphemes with functional, rather than lexical, content to be prosodically deficient (Crellin 2022, 12 and references). Of particular relevance for our purposes are the sharing of a single primary accent or stress, and the presence of junctural phenomena at morpheme boundaries (Crellin 2022, 13–16 and references). This is to say, that such morphemes either have the possibility of carrying, or are obliged to carry, no primary accent of their own, and are instead incorporated prosodically into a neighbouring (series of) morpheme(s). Thus in English it is very rare for the indefinite article 'a(n)' to carry a primary accent or stress, and it is usually incorporated into the following word (Crellin 2022, 14), *e.g.* (in the following prosodic words indicated within brackets labelled with $_{\omega}$):

('I have $_{\omega}$) ('eaten $_{\omega}$) (an 'apple $_{\omega}$).

While some inscriptions from antiquity separate prosodic words, others separate prosodic phrases. This is indicated by units demarcated by punctuation aligning with the edges (usually right edges in our case) of constituency boundaries (so-called 'edge alignment'; for further details see Selkirk 1996; Truckenbrodt 2007; for application in the case of Northwest Semitic and Greek, see Crellin 2022).[3]

Punctuation strategies in Ancient Greek and Classical Latin

In an orthography where prosodic rather than morphosyntactic words or phrases are separated, we expect to find that function words are written together with neighbouring words, whilst lexical words are written independently (unless of course they are written next to a function word). In inscriptions with word-level punctuation from Argos and Mycenae, Morpurgo Davies (1987, 271) summarises the normal distribution as follows:

> [T]he article in its various case forms and the prepositions are not followed by punctuation nor are *αἰ* 'if', *καί* 'and', and *μή* 'not'; the postpositives *δέ* and *τε* are not preceded by punctuation.

Similarly, in Attic inscriptions, Morpurgo Davies (1987, 271) states that:

> [I]n the texts where the main purpose is that of dividing words the usual rules apply: prepositions, *καί*, and the forms of the article are not separated from the word which follows.

[3] Note that the right edge of a syntactic phrase does not necessarily trigger a prosodic phrase break, and therefore punctuation. For example, in fast speech potential prosodic phrases can be grouped (see Devine and Stephens 1994, 389 with references). Rather, it is the case that punctuation, where it occurs, is expected to fall at the edge of syntactic constituents.

Scholarly consensus is that the underlying rationale for the distribution of word-level punctuation in these early Greek inscriptions is prosodic, and that the units marked out are accentual units, or prosodic words (Morpurgo Davies 1987; Devine and Stephens 1994; Wachter 1999; Wachter 2010; Vis 2013; although cf. Goldstein 2016, 67–68).

Similar distributions of punctuation have been observed in Latin epigraphic and documentary material (Wingo 1972; Dickey 2017). Thus Wingo (1972, 16) notes that 'prepositions are only rarely separated from the word they govern', whilst Adams (1996) points out that the same phenomenon can be seen with verb-plus-personal-pronoun sequences in the Vindolanda tablets and ostraca from Wadi Fawakhir, *e.g. misi tibi* (*O. Wadi Fawakhir*, 1.4, Adams 1996, 209).

Adams (1996) links the general lack of interpuncts after prepositions to their proclisis, *i.e.* 'the preposition formed a single accentual unit with the dependent term' (p. 208). Adams (1996, 209–210) goes on to suggest, on the basis of the lack of punctuation before some personal pronouns, that the latter, at least when unemphatic, may be enclitic.

Dickey similarly links graphematic wordhood to prosody, by stating that the 'only exceptions' to punctuation between words was between 'enclitics and proclitics' and the words on which they depended (2017, 159–160). Since clitichood is a function of prosody, by implication word division in Latin is a reflection of prosody. Under 'enclitics' Dickey (2017, 159) lists only *-que* 'and', which is regularly written together with the preceding word, whilst prepositions are given as examples of proclitics. Dickey observes (p. 160) that of these only *-que* is graphematically dependent in modern texts, whilst prepositions are written as independent graphematic words.

From this brief survey it emerges that the semantics of word-level punctuation in Classical Latin has not been treated in the same depth as that for Greek: I could find no study that treats the topic in more than a few sentences.[4] Furthermore, beyond references to 'enclitics' and 'proclitics', I have found no attempt to account for the principles underlying word-level punctuation in Latin, in documents where it is found.

If the issue determining word division in Latin is indeed clitichood, as Dickey (2017) suggests, we would expect to find that clitics as a class are subject to univerbation with neighbouring morphemes, *i.e.*:[5]

- **Enclitics**: *-que*, *-ue*, *ne* and *ce* (Probert 2019, ch. 6)
- **Proclitics**: *varia* including prepositions, relative pronoun forms, subordinating conjunctions and some co-ordinating conjunctions (Probert 2019, 36, 63–64)

This is to say that we would not expect the set of univerbatable items to be limited to prepositions and enclitics such as *-que*.

[4] Wingo (1972, 14, 16, 17), despite going into more detail on the question of word-level punctuation than any other scholar in the last 50 years, states explicitly that word-level punctuation is beyond the scope of his study.

[5] The precise realisation of clitichood in Latin is the subject of considerable discussion. The interested reader is referred to Probert (2019).

Punctuation and abbreviation

Any investigation of word-level punctuation in Latin and Greek should take note of the fact that punctuation may be used in conjunction with abbreviation. In Latin abbreviation of certain frequently occurring items in inscriptions is mainstream from an early stage, and much more common than in Greek (Gordon 1983, 15; Cooley 2012, 357): Gordon (1983, 15) observes that 'in the long *Res Gestae* of Augustus, whereas the Latin has so many abbreviations, the Greek version – so far as it is extant – contains not one'. We will see examples of this below, both in pre-Imperial Latin inscriptions, and in those of the Imperial era.

Interpuncts are not taken by modern scholars to be indicative of abbreviation per se. Thus Cooley (2012, 359) lists seven marks of abbreviation, including various sign types that we might generally conceive of as diacritics, such as horizontal lines through letters, diagonal lines (termed signs 'like an acute accent') above letters and small circles above letters. Middle dots to the right of letters, *i.e.* interpuncts, are not listed.

It is beyond the scope of the present study to conduct an in-depth analysis of the abbreviatory function of the interpunct, or to make a full assessment of the relationship between word division and abbreviation. However, if interpuncts do have an abbreviatory function, they must also have a word-separating function. The question of the nature of the relationship between the two is left to future research.

End of word-level punctuation in Latin and Greek

The prevailing view is that word-level punctuation in Greek writing ceased in the Classical period (Wingo 1972, 14–15). By the Roman Empire Greek texts were almost without exception written without punctuation or word breaks (Oliver 1951, 242; n. 18; Saenger 1997, 9–10).

The Romans are held to have ceased punctuating at the word level at some point in the second century AD (Oliver 1951, 242; Saenger 1997, 10), and perhaps even as early as the first century or the beginning of the second (Adams 1996, 208; Dickey 2017, 159). However, the practice did not completely vanish at that point (Oliver 1951, 242, n. 20): Wingo (1972, 17) sees a gradual decline in the course of the second century, and even 'very late texts can be cited which use the interpunct regularly' (Wingo 1972, 17). It is possible that the popularity of the use of the interpunct as an abbreviator may have contributed to its greater longevity as compared with its Greek counterpart.

The eventual move away from word-level punctuation in Latin is attributed to one of two causes in the literature. First, it is seen as due to influence from the Greek tradition (Oliver 1951, 242; Wingo 1972, 16). Thus Oliver (1951, 242), whose primary purpose is to establish what the original manuscripts of Tacitus might have looked like, sees this development in wholly negative terms:

> For this amazing and deplorable regression [*i.e.* into writing in scriptio continua] one can conjecture no reason other than an inept desire to imitate even the worst characteristic of Greek books.

Alternatively, word-level punctuation was seen as 'superfluous', and for that reason abandoned (Saenger 1997, 10).

Word- and phrase-level punctuation in Sicily

Introduction

The present study is a preliminary exploration of word division practices in Imperial-era Sicilian inscriptions, to see what word division strategies are employed, and to summarise the implications of word-level punctuation in this corpus for word-level punctuation in (later) antiquity more broadly. We will see that the Sicilian evidence provides a counterpoint to the prevailing view that by the second and third centuries AD word-level punctuation had been abandoned in written varieties of both Latin and Greek. Indeed, word-level punctuation can be found in both Greek and Latin inscriptions from the island, providing evidence that in Sicily, at least, there was no absolute dichotomy between Latin and Greek writing practices. Finally, while most inscriptions with word-level punctuation provide evidence of prosodic word division strategies, in Latin inscriptions we will also find evidence of morphosyntactic word division strategies.

Before embarking, however, it is worth briefly outlining the general significance of Sicily for the wider Mediterranean context.

Sicily in antiquity

'Sicily is the key to everything' (Goethe, see Norwich 2015, 1). This (perhaps slightly overstated) claim could be made for many contexts. However, in the context of the ancient Mediterranean, Sicily can be argued to offer a microcosm of both sociolinguistic and sociocultural relations at play (Prag *et al.* 2017; Prag 2018). If so, an understanding of the linguistic situation on Sicily leads to a greater understanding of the whole.

A wide range of languages are attested on the island of Sicily in antiquity, including not only the languages of the major cultural and political powers in the Mediterranean between c. 500 BC and c. AD 500, namely Greek, Latin and Phoenician-Punic, but also the languages of minority communities, such as Oscan, Hebrew and Lybico-Berber.[6] Additionally, inscriptions in two languages unique to the island of Sicily are found, namely Elymian and Sikel.[7] The present study is concerned with inscriptions in Latin and Greek in the Roman Imperial period, since it is then that some of the best evidence for word-level punctuation practices on Sicily can be found. For diachronic context, however, instances of punctuation from earlier periods on Sicily are briefly presented.

In the case of Greek, both Doric and Ionic dialects are attested on the island from the earliest period through to well into the period of Roman imperial domination

[6] See Prag *et al.* (2017, 84). For Phoenician-Punic see Amadasi Guzzo (2012, 119); for Oscan see Clackson (2012, esp. 139–141); for Lybico-Berber, see https://crossreads.web.ox.ac.uk/article/new-language-epigraphic-landscape-ancient-sicily-3, last accessed 1st Feb. 2022.

[7] For Elymian see Marchesini (2012, 104); for Sikel see Poccetti (2012, 72).

(Mimbrera 2012a; 2012b; Mimbrera Olarte 2013; De Angelis 2013). The influence of Latin is felt to an ever greater extent from the Roman conquest of Sicily (211 BC) onwards (for the early period of Roman domination, see Tribulato 2012b; for the Imperial period see Korhonen 2012). Assessing the true extent to which Latin is used, especially in the early period of Roman domination, is difficult (Tribulato 2012b, 295). Nevertheless, the general picture is of Latin in the ascendency, especially in the realm of public documents (Korhonen 2011, 7, 20, 21).

A number of bilingual inscriptions have been found on the island, including both Greek-Latin (*e.g. ISic000470*) and Latin-Greek (*e.g. ISic000348*) examples, as well as at least one Hebrew-Latin (*ISic000781*).[8] The bi-directional interaction of Greek with Latin is regarded as a particularly interesting feature of the linguistic history of the island (De Angelis 2013; see also Tribulato 2012b, 295–296).

Inscriptions in both Latin and Greek are represented in every major city on Sicily, although Latin was stronger in the northern and western part of the island, and Greek stronger in the east and on the island of Lipari (Korhonen 2011, 7; 2012, 331). Such a distribution bespeaks a bilingual environment existing across the island, resulting in the whole island comprising a 'border zone' (Korhonen 2012, 361–362; Tribulato 2012b, 295–296). This situation is anomalous for the Roman Empire, where the half west of a line running through the Balkans, Cyrenaica and Tripolitania is traditionally regarded as predominantly Latin-speaking, whereas east of that line Greek is predominant (Horrocks 1997, 72–73; Korhonen 2012, 361; Prag 2018). Such extensive mixing of epigraphic codes provides the context for biscriptalism, and evidence of graphemic influence of Latin on Greek has been reported in the alternation of Greek <Y> and Latin <V> (Korhonen 2012, 346; see also *ISic001320* discussed below). We will see that, insofar as the interpunct can be regarded as belonging to the alphabet (see Oliver 1951, 242 n. 19; Wingo 1972, 15), the Sicilian material provides evidence of biscriptalism in the domain of punctuation as well.

I.Sicily *corpus*

An issue that has traditionally hampered the investigation of Sicilian epigraphy is the relative paucity of the material (Korhonen 2012, 326; Tribulato 2012a, 42–43, citing Prag 2002). However, more recent studies have placed the number of lapidary inscriptions from Sicily at levels comparable to those in other parts of the Roman Empire (Prag 2018).

The basis of the present investigation is the *I.Sicily* corpus (Prag *et al.* 2017; Prag 2022), an EpiDoc database of all known Sicilian inscriptions from antiquity. The inscriptions in the *I.Sicily* corpus are, in many cases, in a 'draft' state. This means, among other things, that the text has not necessarily been checked recently

[8] For Greek on Motya see Amadasi Guzzo (2012, 120–121). At Lilybaeum Greek is used more frequently in written texts, but Phoenician-Punic is found in the *tophet* (Amadasi Guzzo 2012, 121); for personal names written in Greek characters see Amadasi Guzzo (2012, 122). On Greek-Hebrew interactions, see De Angelis (2013). The Sikel inscriptions attest a high level of convergence with Greek (Poccetti 2012).

(*e.g.* since the publication of *CIL* X, = Mommsen 1883, or *IG* XIV, = Kaibel and Lebègue 1890) against the original inscription. The present study is made on the basis either of published photos, or of photos taken by members of the Crossreads project team. The photographic basis of the readings provided here is indicated in each case.

Citations of documents from *I.Sicily* are provided in the form *ISicXXXXXX*, where XXXXXX stands for a six-digit identifier. The bibliographic details for the *I.Sicily* documents are listed at the end of the chapter.

Overall distribution of word-level punctuation in Sicilian inscriptions

The preliminary state of much of the *I.Sicily* corpus means that precise quantitative information cannot currently be provided. Nevertheless, a very rough indication of prevalence can be given by searching the *I.Sicily* online interface for interpunct characters (encoded as middle dot · [=u00B7], bipunct ⁚ [=u2236], and tripunct ⁝ [=u205D]), provided in Table 11.1.[9]

The table shows that the number of inscriptions containing punctuation is much greater under the Empire on Sicily than in previous periods. This is the case both for Greek and for Latin, but for different reasons. The number of Latin inscriptions dated prior to the Empire is many times lower than those dated to the Imperial period. From this imbalance it follows that very few Latin inscriptions from before the Empire contain punctuation. By contrast considerably more are found with punctuation in Imperial times. However, there is apparently little difference in proportional terms between the two: in both the Imperial and pre-Imperial periods the proportion of inscriptions with punctuation is about half. (The number of instances in the pre-Imperial period is of course very low; the ratio for this period may well, therefore, not be statistically significant. The lack of explicit punctuation by means of interpuncts does not, of course, necessarily imply the lack of word- or phrase-level punctuation, since spacing may also be used for this purpose.)[10]

Table 11.1. Distribution of punctuation in pre-Imperial and Imperial-era inscriptions from Sicily

	Period	*Tripunct*	*Bipunct*	*Monopunct (= middle dot)*	*Total*	*%*
Greek	Pre-Imperial	2	2	16	736	3
	Imperial	-	1	170	1592	11
Latin	Pre-Imperial	-	-	6	12	50
	Imperial	-	-	475	999	48

[9] 'Pre-Imperial' means any inscription in *I.Sicily* with a 'before' and 'after' range equal or prior to 27 BC. Conversely 'Imperial' means any inscription with a 'before' range and 'after' later than 27 BC.

[10] An example of an Imperial-era inscription apparently without explicit punctuation by means of interpuncts, but with some use of spacing, is *ISic000008*.

The distribution of punctuation in the Greek material is somewhat different. Here the number of inscriptions dated prior to the Empire is considerable, albeit smaller than the total of Imperial-era inscriptions. The proportion with explicit punctuation by means of interpuncts, does, however, appear to increase, from 3% to 11%. In proportional terms, however, this second figure is considerably lower than the equivalent for Latin (approximately a tenth versus a half).

It should be cautioned that the actual number of Greek inscriptions with word-level punctuation by means of interpuncts is lower than these figures indicate: the figures represent only the number of those inscription texts that contain a tripunct, bipunct, or monopunct (as encoded by the middle dot · [=u00B7]). In the case of Greek the middle dot is also a punctuation character used in modern editions. A case in point is *ISic000613*, where the use of the middle dot in the *I.Sicily* text corresponds with where one would expect to find a middle dot in modern texts; in the EpiDoc such instances are not marked up as 'interpuncts'. Before any weight is put on these figures, the results need to be checked to ensure that the middle dot does in fact encode the interpunct. This is not a problem for Latin, since the middle dot is not ambiguous in Latin editions.

Despite these caveats, the figures are enough to indicate that, in both Imperial and pre-Imperial periods, the proportion of Latin inscriptions with interpuncts Latin is likely to be considerably greater than the proportion of Greek inscriptions with interpuncts. The greater prevalence of punctuation in Latin inscriptions compared with Greek is in keeping with the view that the practice of punctuating Greek ceases much earlier than it does for Latin (see Introduction). However, the presence of Imperial-era Greek inscriptions showing regular punctuation provides a counterpoint to this: I will argue that it is possible to interpret the re-emergence of word-level punctuation in Greek epigraphy on Sicily as influence from Latin orthographic practice.

The present study focuses on inscriptions from the Imperial period, since examples with regular word- and phrase-level punctuation are considerably more plentiful from this period than from beforehand. This material is concomitantly better suited to illustrating the variety of word-division strategies adopted. However, in order to place the Imperial material in context the pre-Imperial material is presented in the next section.

Pre-imperial inscriptions from Sicily

Distribution of word- and phrase-level punctuation

As the figures presented in Table 11.1 indicate, Greek and Latin inscriptions with word- and phrase-level punctuation from pre-Imperial times are few and far between. The following pre-Imperial inscriptions are presented in order to indicate the kinds of word division encountered in this earlier period.

Greek

The following pre-Imperial Greek inscriptions were found to have word- or phrase-level punctuation:[11]

- *ISic000822* (= *IG* XIV 14.1), a sixth-century BC bipunct-punctuated dedication from Syracuse;
- *ISic001466*, a sixth-century BC tripunct-punctuated funerary inscription from Selinus;[12]
- *ISic030029*, a fifth-century BC bipunct-punctuated inscription on a lead tessera from Kamarina;
- *ISic020594*, a fifth–fourth-century BC tripunct-punctuated statement of ownership from Naxos;
- *ISic001489*, a fourth–third century BC tripunct-punctuated dedication from Agrigento.

With one exception (see immediately below), these inscriptions are dated to the Archaic and Classical periods. The apparent lack of clearly Hellenistic-era inscriptions is consistent with the general cessation of punctuation after the Classical period (see Introduction). The possible exception is *ISic001489*, which is dated to the fourth century BC or earlier part of the third century on the basis of the letter forms (see *ISic001489*), that is, to the late Classical or early Hellenistic period. The inscription is a dedication, and is clearly of high quality (Jonathan Prag, pers. comm.). It is possible that the monumental nature of the inscription encouraged the archaising use of interpuncts.

The early Greek inscriptions are punctuated either on the level of the prosodic phrase, or of the prosodic word. An example of the first kind is *ISic001466* (Selinus, 550 BC):[13]

1 → ΑΡΙΣΤΟΓΕΙΤΟΕ

2 ← ΜΙ ⁝ ΤΟΑΡΚΑΔΙΟΝΟΣ

3 → ΗΟΣΗΥΠΟΜΟΤΥ

4 ← ΓΑΙ ⁝ ΑΠΕΘΑΝΕ

[11] Inscription dates provided in this study are on the basis of statements in *I.Sicily*, Prag (2022). For completeness the following can also be mentioned: *ISic003015*, a very short fragmentary inscription from Agrigentum (sixth–fifth century BC); *ISic020499*, a short inscription containing the name Εὐα·ρίδας or Εὐχ·ρίδας (fifth century BC); *ISic020593*, a short inscription Ε·ὐδράμῶν (fifth–fourth century BC); *ISic030001*, a house sale contract containing two interpuncts (second century BC); *ISic030031*, a *defixio* containing a single interpunct (fifth century BC). In the remaining cases counted in Table 11.1, the middle dot was found not to represent punctuation in the original inscription.

[12] *ISic001466* is not included in the figures in Table 11.1, since it is not entered into *I.Sicily* with a date range.

[13] Transcription on the basis of the photograph in Piraino (1973, #80, Tav. XLIX). *ISic000822* (Syracuse, sixth century BC) also appears to punctuate at the level of the phrase.

The normalised text according to *ISic001466* reads:

1 Ἀριστογείτο̄ ε̣̄-

2 μὶ ⁝ το̄ Ἀρκαδίονος

3 hὸς hυπὸ Μοτύ-

4 ϝαι ⁝ ἀπέθανε

'I am (the grave) of Aristogeitos, the son of Arkadion, who died at the hands of Motuwa. (trans. author)'

By contrast, *ISic001489* (Agrigento, 400–250 BC) shows prosodic word-level punctuation (where the line break serves as a word divider):[14]

1 ΦΑΛΑΚΡΟΣ ⁝ ΘΕΥΔΩΡΟΥ

2 ΕΡΜΑΙ ⁝ ΑΝΕΘΗΚΕ

The normalised text according to *ISic001489* reads:

1 Φάλακρος ⁝ Θευδώρου

2 Ἑρμᾶι ⁝ ἀνέθηκε

'Phalakros son of Theudoros dedicated (this statue) to Hermes.' (trans. per *ISic001489*)

The variation in the prosodic target of punctuation is in keeping with what is found in Archaic and Classical Greek inscriptions more generally (Devine and Stephens 1994, 326–330, 388–390).

Latin

The following four pre-Imperial Latin inscriptions include punctuation with a monopunct, as encoded in *I.Sicily* with the middle dot character:[15]

- *ISic004367*, a third-century BC inscription on a Roman ship's ram, in bronze, from the First Punic War;
- *ISic000469* (= *CIL* X 7265), a third–second-century BC dedication from Halaesa;
- *ISic000616* (= *CIL* I 2649), a Republican-era (on the basis of letter forms) honorific inscription from Agrigentum;[16]
- *ISic000007*, an inscription relating to the construction of fortifications (39–36 BC) from Lilybaeum.

[14] Transcribed on the basis of the photo in *ISic001489*.

[15] Two of the six pre-Imperial inscriptions in Table 11.1, *ISic000104* and *ISic000664*, are potentially Imperial and therefore not included in this list: Bivona (1994) dates *ISic000104* to the end of the first century BC, or to the beginning of the first century AD, on the basis of the letter forms, and *ISic000664* is dated to the Augustan era on the basis of the script (see *I.Sicily* record).

[16] *ISic000616* suggests a date range of 125–75 BC.

ISic000469, dated to between 300 and 150 BC is 'one of the earliest Latin inscriptions from Sicily' (see *I.Sicily* record):[17]

1 APOLINE ·

2 L · CARNIUS · C · F

Expanded, the text reads as follows (per *I.Sicily* record):

1 APOLINE ·

2 L(ucius) · CARNIUS · C(aius) · F(ilius)

'Lucius Carnius, son of Gaius (dedicated this) to Apollo' (trans. per *ISic000469*)

Each word is carefully punctuated, even at the line boundary.

Similar is *ISic004367*, an inscription on a Roman ship's ram, in bronze, from the First Punic War. This inscription must be from the third century BC, and no later than 241 BC (see *I.Sicily* record):[18]

1 C · PAPERIO · TI · F

2 M · POPULICIO · L · F · Q · P

The expanded text reads as follows (per *I.Sicily* record):

1 C(aios) · PAPERIO(s) · TI(beri) · F(ilios)

2 M(arcos) · POPULICIO(s) · L(ucii) · F(ilios) · Q(uaestores) · P(robaverunt)

'Gaius Papirius, son of Tiberius, (and) Marcus Publicius, son of Lucius, quaestors, approved (this ram)' (trans. per *ISic004367*)

Both inscriptions are characterised by the extensive use of abbreviation.[19] They are also too brief to provide evidence for the kind of word-level punctuation employed, *i.e.* whether prosodic or morphosyntactic. However, the late Republican *ISic000007* provides possible evidence of morphosyntactic word-level separation in its third line:

3 L · PLINIUS · L · FRUFUS · LEG · PRO · PR · PR · DES · F · C ·

With abbreviations expanded, this reads (see *ISic000007*):

3 L(ucius) · Plinius · L(uci) · F(ilius)Rufus · LEG(atus) · PRO · PR(aetore) · PR(aetor) · DES(ignatus) · F(aciendum) · C(uravit) ·

[17] Text after *ISic000469* based on the photographs provided there. The *I.Sicily* text gives no interpunct in the first line after <APOLINE>. However, to the present author, one seems to be discernible, *i.e.* <APOLINE ·>.
[18] The text follows *ISic004367*.
[19] In *ISic004367* every interpunct corresponds with abbreviation.

> 'Lucius Plinius Rufus, son of Lucius, Legatus Propraetore and Praetor designate saw to the construction' (trans. after *ISic000007*)

In < · PRO · PR · > for *propraetore*, *pro* is separated from the following *praetore* by an interpunct. The separation of <PRO> and <PR(aetor)> is consistent with morphosyntactic separation, in that *pro* and *praetore* are separate morphosyntactic entities.[20] Further work is needed, however, to show how *pro* would be treated in a clearly prosodic orthography.

Imperial inscriptions from Sicily

Introduction

In keeping with the preliminary nature of the present study, only a small set of Imperial-era inscriptions are examined in detail. Within the EpiDoc corpus a search was made of inscriptions containing ten or more interpuncts, *i.e.* those with enough interpuncts to make the possibility of discovering regularity reasonable. Of these five inscriptions – three Latin, two Greek – were chosen to illustrate some of the breadth of word-division strategies employed in Sicily:

- *ISic000031* (= *CIL* X 7295), a second-century AD honorific inscription in Latin from Panhormus (Palermo);
- *ISic000093* (= *CIL* X 7346), a third-century AD honorific inscription in Latin from Thermae Himeraeae (Termini).
- *ISic000133* (= *CIL* X 7377), an Imperial-era funerary inscription in Latin from Thermae Himeraeae (Termini).
- *ISic001231* (= *IG* XIV 404), a funerary inscription of the first or second century AD in Greek from Messana (Messina);
- *ISic001320* (= *IG* XIV 499), a second-century AD funerary epigrammatic inscription in Greek from Catina (Catania).

Latin

Prosodic word division: ISic000031 *(Panhormus, second century AD)*

Univerbation in Latin documents is particularly associated with preposition-plus-noun syntagms (Introduction, 'Punctuation strategies'). *ISic000031* is a case in point. The inscription as a whole is carefully punctuated at the word level, but preposition-plus-noun syntagms are not separated:[21]

> 12 · EXHIBITAS · ADAVGENDAM |
>
> 7 · INQVAMIRATVS ·

[20] *ISic003457* is a parallel; see the photo there by R.J.A. Wilson.

[21] In transcription, the vertical bar | indicates a line boundary. Transcriptions are from the image provided at *ISic000031*, starting from the *I.Sicily* text. *CIL* X (Mommsen 1883) places an interpunct after every morphosyntactic word. Translations are not offered, in view of the fragmentary state of the inscription.

9 · INVTRIVSQUE · CAVEIS ·

The fact that in all three instances involving preposition-plus-noun syntagms in the inscription, the presence of an interpunct cannot be discerned from the photograph, leaves the reader suspicious that in fact none was ever written.

However, the univerbation of morphosyntactic words goes beyond that of preposition plus nominal object, to encompass other short function words. For example, there is no discernible trace of an interpunct between <AT> and <CVLTVM>, although there is space for one:

10 · MERVIT · AT CVLTVM ·

The fact that *at* 'but', is a short function word makes it a strong candidate, on cross-linguistic grounds, for prosodic subordination to a following morpheme that is prosodically heavier.

There is even one sequence involving a particle-plus-verb syntagm, *quod esset*, where no punctuation is apparent:

14 · QVODESSET · DVABVS ·

In principle, the univerbation of <QVODESSET> could be explained by appealing to the clitichood of *quod*, since relative pronoun forms were regarded as clitics by Roman grammarians (Probert 2019, 36, 63–64).[22] However, two considerations indicate that the verb could be in part responsible. First, contrast the presence of word division in the following instances, where <QVOD> is followed by a nominal:

1 · QVOD · MERA ·

2 · QVOD · SINGVLARI |

Secondly, before other verbs there is also word-level punctuation after <QVOD>:[23]

4 · OPTANDO QVOD · VOLVIT |

Thirdly, there is a parallel for the univerbation of a form of *esse* after a nominal in the Gallus Papyrus, line 3, dated to either first century BC or AD (diplomatic text quoted from Dickey 2017, 160; italics mine):[24]

Fata·mihi·caesar·tum·erunt·mea·dulcia·quom·tu
Maxima·romanae·*p̣ạrserit*·historiae·

[22] However, Probert (2019) does not appear to give any examples of the relative *quod* specifically.

[23] The use of a space rather than an interpunct after <OPTANDO> before <QVOD> is noteworthy and deserving of further investigation. Note however that the relative *qui* in <QUIEXIEBAT·> in *ISic000266* has no punctuation before the verb; see also photo in Bitto (2001, #32).

[24] In Dickey's diplomatic transcript, capitals are used 'to indicate letters that are physically larger than the others in a text, although these are not capitalized in the sense of being in a different alphabet' (Dickey 2017, 160). See also the editio princeps, Anderson *et al.* (1979), which also does not punctuate before the verb 'to be'.

Dickey's restored text (p. 160) reads (italics mine):

> Fata mihi, Caesar, tum erunt mea dulcia, cum tu
> maxima Romanae *p̣ạrseri<s>* historiae
>
> 'The fates will be kind to me, when you, Caesar, are the greatest portion of Roman history' (translation author[25])

Dickey does not comment on the univerbation of *pars* with *erit*. However, since *pars*, as a nominal, is certainly not enclitic, the univerbation must be due to the verb *esse*.

The possibility of univerbation in sequences involving verbs – including the verb *esse* 'to be' – has not, to my knowledge, previously been pointed out for Latin. However, it is in keeping with a prosodic basis for word-level punctuation: in Ancient Greek, for example, there is evidence that verbs were prosodically less prominent than nouns (Devine and Stephens 1994, 143, 352), and this is paralleled across Indo-European (Fortson 2010, 109–110). In Northwest Semitic writing systems, it is often the case that verbs are written as a unit with a neighbouring morpheme (Crellin 2022).

Prosodic phrase division: ISic000093 *(Thermae Himeraeae, third century AD)*
A prosodic basis for punctuation can be observed in *ISic000093*:[26]

1 TITIANO · C · F · C · MAESI

2 TITIANI · ETFONTEIAE

3 FRONTINAECONSV

4 LARIVM · FILIO

5 PATRICIO · OBHONO

6 REMTOCAEVIRILIS

7 CLODIVSRVFVS EQVESROMANVS

8 AMICOSVO INCOMPARABILI

The normalised and expanded text reads (after *ISic000093*):

1 Titiano · c(larissimo) · f(ilio) · C(ai) · Maesi(i)

[25] With reference to https://en.wikipedia.org/wiki/Cornelius_Gallus, accessed 4th Feb. 2022.
[26] The text presented here is a transcription by the present author on the basis of the photo at *ISic000093* and the images at Manganaro (2016 [1988], Tav. XX) and Bivona (1994, Tav. VII), starting from the text of *ISic000093*. See also Bivona (1994, #10). The surface of the inscription is damaged, making it difficult always to know for sure, at least on the basis of photographs, whether or not interpuncts are present. This is especially the case in the last two lines. In the diplomatic transcription, the alternation between full caps and small caps is intended to highlight the difference in character size in the relevant sections of the inscription.

2 titiani · et fonteiae

3 frontinae consu-

4 larium · filio

5 patricio · obhono-

6 rem togae virilis

7 Clodius Rufus eques Romanus

8 amico suo incomparabili

'To Titianus, the most illustrious son of Gaius Maesius Titianius and Fonteia Frontina (both) of consular rank, son of patrician birth. In honour (of his assumption) of the toga virilis. Clodius Rufus, a Roman knight, (made this) for his incomparable friend.' (trans. after *ISic000093*)

Once again, there is no trace of word division in the preposition plus nominal sequence *ob honorem* 'in honour':

5 PATRICIO · OBHONO

6 REM ...

Word division is also lacking between the conjunction <ET> 'and' and the following <FONTEIAE> 'Fonteia':

2 TITIANI · ETFONTEIAE

The prosodic basis of punctuation in *ISic000093* differs from that in *ISic000031*: apart from the abbreviations in the first line, the interpunct separates prosodic phrases rather than prosodic words. This is indicated by the fact that the units demarcated by punctuation right-align with syntactic constituency boundaries (see Introduction, 'Prosodic words and phrases'). For example, the interpunct after *consularium* (line 4) corresponds to the right edge of the appositive genitive nominal phrase *Cai Maesi Titiani et Fonteiae Frontinae consularium* dependent on *c(larissimo) f(ilio)*. Similarly, the right edge of the phrase *filio patricio* is marked by an interpunct. The univerbated sequence *ob honorem tocae virilis* is a prepositional phrase.[27]

Morphosyntactic word division: ISic000133 *(Thermae Himeraeae, Imperial period)*
The corpus provides examples of punctuation occurring between a nominal and its object, *e.g.* the admittedly fragmentary *ISic000133:*[28]

[27] The surface of the last two lines is too damaged to be sure of the placing of interpuncts (or indeed spacing).
[28] An image is provided at Bivona (1994, #52, Tav. XXVII). The text here is a transcription by the author on the basis of this image, starting from the text of *ISic000133*. *ISic000767* provides a parallel for word division after <EX>.

1 M ·]ARRVNTI[

2 BROCC[

3 [L]OCVS · PU[B]LIC · D[

4 EX · D · [D] · IN · FR[

5 IN · AGRO · P · XX[

The normalised and expanded text reads as follows (after *ISic000133*):

1 M(arco) ·]Arrunti[o

2 Brocc[ho

3 [l]ocvs · pu[b]lic(e) · d[atus]

4 ex · d(ecreto) · [d(ecurionum)] · in · fr[onte · p(edes)] [–?–]

5 in · agro · p(edes) · XX[

'To [Marcus] Arruntius Brocc[hus]. (This) burial plot was granted, at public expense, by the decree of the town council. In width [...] feet, in depth [at least 20?] feet...' (trans. after *ISic000133*)

The presence of word-level punctuation separating morphosyntactic units alongside abbreviations raises the possibility that morphosyntactic word separation is connected originally to abbreviation:[29] in a prosodic orthography without abbreviation we might expect to find <| EXDECRETO · > in line 4. With abbreviation, however, this becomes <| EXD · >. This has the potential to confuse the reader, however, encouraging them to look for a single morphosyntactic word starting with <EXD>. By placing an interpunct after <EX>, however, it becomes easier to discern that <D> is an abbreviation for <DECRETO>.

<| IN · AGRO ·> (line 5) cannot be explained in such terms, however, and the punctuation corresponds to separation on the level of the morphosyntactic word.

Greek

Prosodic word division: ISic001231 *(Messana, first or second century AD)*

ISic001231 provides evidence of punctuation in a Greek document on the level of the prosodic word, parallel to what we find in the Latin *ISic000031*:[30]

1 · Θ · · Κ ·

2 ΑΝΔΡΟΒΙΟΣ · ΛΥΚΙΟΣ · ΝΑΥ

3 ΚΛΗΡΟΣ · ΕΖΗΣΕ · ΑΠ͡ΡΟΣΚΟΠΤΟΣ ·

[29] I am grateful to Jonathan Prag for pointing out the possible relationship with abbreviation.

[30] After *ISic001231*, on the basis of the photographs in Bitto (2001, #29) and at the *I.Sicily record*.

4 ΕΤΗ · ΛϚ · ΑΠΟΛΛΩΝΙΟΣ · ΣΥΝ

5 ΜΟΥΣΑΙΩ · ΚΑΙΘΕΟΔΩΡΩ · Α

6 ΔΕΛΦΩ · ΙΔΙΩ · ΜΝ͡ΗΜΗΣ · ΕΙΝΕΚΕΝ

The normalised and expanded text reads as follows (after *ISic001231*):

1 · Θ(εοῖς) · · Κ(αταχθονίοις) ·

2 Ἀνδρόβιος · Λύκιος · ναύ-

3 κληρος · ἔζησε · ἀπρόσκοπτος ·

4 ἔτη · λς · Ἀπολλώνιος · σὺν

5 Μουσαίῳ · καὶ Θεοδώρῳ · ἀ-

6 δελφῷ · ἰδίῳ · μνήμης · εἵνεκεν

'To the underworld deities, Androbios Lukios, shipowner, lived without offence for 36 years. Erected by his brother Apollonios, with Mousaios and Theodoros, for the memory of our brother.' (trans. per *ISic001231*)

The inscription is well preserved and written clearly. Interpuncts are marked distinctly as apostrophe-shaped hooks written at mid-line height, and punctuation generally coincides with morphosyntactic units. Line division does not entail word division, as in lines 2–3 <ΝΑΥ|ΚΛΗΡΟΣ> 'shipowner', and 5–6 <Α|ΔΕΛΦΩ> 'brother'. Interpuncts may occur at the ends of lines where they separate words, as at lines 3–4: <ΑΠ͡ΡΟΣΚΟΠΤΟΣ ·| ΕΤΗ>.

The following are, however, two instances where punctuation is expected on morphosyntactic grounds, but is not found:

4–5 ΣΥΝ|ΜΟΥΣΑΙΩ (= σὺν Μουσαίῳ) 'with Mousaios'

5 ΚΑΙΘΕΟΔΩΡΩ (= καὶ Θεοδώρῳ) 'and (with) Theodoros'

The two examples involve the preposition σὺν 'with' and the conjuncution καὶ 'and'. These prosodically light function words are exactly the kinds of morphosyntactic units we expect to find written without separation in an inscription punctuated by prosodic word. The fact that such punctuation is found in so late a Greek inscription, despite the apparent absence of such inscriptions in the Hellenistic period, is suggestive that the punctuation strategy of *ISic001231* is influenced, either directly or indirectly, by Latin punctuation practices.

Support for this hypothesis comes from the abbreviations at the start of the inscription: · Θ · · Κ · for Θεοῖς · · Καταχθονίοις, *i.e.* 'To the gods of the underworld, the Greek equivalent of the frequently abbreviated Latin expression *D(is) M(anibus)*.[31]

[31] For a Sicilian parallel, but without word-level punctuation, see *e.g. ISic001304*.

Since abbreviation is much less common in Greek inscriptions than in Latin ones (see Introduction), its presence in a Greek context, in a phrase with a direct Latin equivalent, is all the more marked and suggestive of influence from Latin.

Prosodic word division: ISic001320 *(Catina, second century AD)*[32]

I close with the somewhat perplexing case of *ISic001320*. This, like *ISic001231*, is punctuated at the word level. At first sight, however, the distribution of interpuncts is much more sporadic and unpredictable: Kaibel and Lebègue (1890, #499) refer to the 'miram interpungendi rationem' (= 'strange way of punctuating') in the inscription:[33]

1 ΤVΜΒΟΝ · ΟΡΑ · ΣΠΑΡΟΔΕΙΤ · ΡΙΚΛΕΙΤΗΣ

2 ΡΟΔΟΓΟVΝΗΣ · ΗΝ · ΚΤΑΝ · ΕΝΟVΧΟΣΙΩΣ ❦

3 ΛΑΕΣΙΔΕΙΝΟΣ · ΑΝΗΡ · ΚΛΑVΣΕΔΕ · ΚΑΙ · ΤΑΡ

4 ΧVΣΕ · ΑΒΙΑΝΙΟΣ · ΗΝ · ΠΑΡΑΚΟΙΤΙΝ · ΚΑΙ

5 ΒΑΙΗΝ · ΣΤΗΛΗ · ΤVΝΔ · ΑΠΕΔΟΙΚΕ · ΧΑΡΙΝ

6 ΟΝΟΜΑ · ΤΟΠΡΙΝ · ΜΕ · ΠΑΣΕΚΛΗΖΕΝΣ

7 ❦ ΕΠΑΓΑΘΩ ❦

8 ΝΙΝ · ΔΕΡΟΔΟΣΟVΝΗ · ΒΑΣΙΛΙΟΣ

9 ❦ ΤΟ · Ε · ΠΩΝVΜΟΝ ❦

The normalised text reads as follows (starting from *ISic001320*):

1 τύμβον · ὁρᾷ̈ς παροδῖτ(α) · <πε>ρικλειτῆς

2 Ῥοδογούνης · ἦν · κτάν·εν οὐχ ὁσίως ❦

3 λάεσι δεινὸς · ἀνήρ · κλαῦσε δὲ · καὶ · τάρ-

4 χυσε · Ἀβιάνιος · ἦν · παράκοιτιν · καὶ

5 βαιὴν · στήλῃ · τήνδ'[34]· ἀπέδωκε · χάριν

6 ὄνομα · τὸ πρίν · με · πᾶς ἔκλῃζεν{ς}

[32] Dated to second century on the basis of the letter shapes by Libertini (1936–37, 33).

[33] Full quote: 'Literarum formas et miram interpungendi rationem servavit Arrigonius' (= 'Arrigonius preserved the forms of the letters and the strange way of punctuating', trans. author). *CIG* (Franz 1853) does not record any interpuncts. The inscription is likely lost (Jonathan Prag, pers. comm.). However, Libertini (1936–37, Tav. 1) reproduces the record of Arrigoni, which is transcribed here, starting from the text of *ISic001320*. For (the wide variety of) alternate readings, see Kaibel and Lebègue (1890, #499), Ferrara (1829) and Boeckh & Franz (1853, #5724).

[34] Boeckh and Franz (1853, #5724) notes that 'Vs. 5 στήλῃ τῇδ' dedit Iacobsius; sed τήνδ' offensioni non est' (='Iacobsius offered στήλῃ τῇδ'; but τήνδ' is not problematic.')

7 ❦ Ἐπαγαθώ ❦

8 νῦν · δὲ Ῥοδογούνη[35]· βασίλιος

9 ❦ τὸ · ἐ·πώνυμον ❦

'You see the tomb, passer-by, of Rodogoune, of great fame, whom a terrible man impiously killed with stones. But Abianios mourned and buried his wife, and rendered this small favour in a stele. Everyone used to call me by the name Epagatho, but now my name is Rodogoune, the name of a queen.' (trans. author, with reference to Ferrara 1829, 344–345)

The inscription has a number of spelling alternations with respect to (what we would regard as) standard orthography, notably:

5 TVNΔ (for expected THNΔ = τήνδ', *i.e.* τήνδε)

8 NIN (for expected NYN = νῦν)

These spellings involve confusion of the letters <V> (= <Y>), <H> and <I>. Insofar as the phonemes represented by these letters – /y/, /ę/ and /i/ – all eventually merge to /i/ (Horrocks 2010, 162–3), the interchange is perhaps not unexpected. It is, however, surprising to find the confusion of <I> and <H> with <Y> as early as the second century AD since the merging of /y/ with with /i/ was only complete in educated speech by the middle Byzantine period (ninth/tenth century AD) (Horrocks 2010, 163; Horrocks 1997, 111). In general the interchange of <Y> with <H> and <I> is much less common than the interchange of <H>, <EI> and <I> (Horrocks 1997, 111).[36] It may be relevant, however, that both spellings are in the environment of /n/: the nasal context may have brought about neutralisation of the rounding distinction, just as the neutralisation of the distinction between <H> and <EI>/<I> is more common in that environment (Horrocks 1997, 110).[37]

In one instance different morphology is potentially responsible for the spelling:

8 ΒΑΣΙΛΙΟΣ (for expected ΒΑΣΙΛΙΔΟΣ, gen. sg. of βασιλίς 'queen')

It could in principle be the case that the composer of the text viewed βασιλίς as an *i*-stem noun; compare dialectal πόλις, -ιος (Sihler 1995, 313).

[35] Kaibel and Lebègue (1890) print Ῥοδογούνην, which would then be the direct object of an elliptical form of κληζω.

[36] The anonymous reviewer highlights that Horrocks' statement concerns 'educated' language, and that it is possible that more instances of this interchange might be present in inscriptions from a wider context from the period before the Byzantine era. I leave it to future work to examine this question.

[37] The spelling ΑΠΕΔΟΙΚΕ (l. 5) for ΑΠΕΔΩΚΕ is harder to explain, since /o:/ and /oi/ do not merge. However, by the mid-second century BC distinctions of vowel length are lost (Horrocks 1997, 109). The final element of the long diphthongs was also lost (Horrocks 1997, 109), meaning that /o/, /o:/ and /o:i/ all merge to /o/. Thus the spelling <OI> might be a hypercorrect rendering of <ΩI>, itself incorrectly applied to the aorist of δίδωμι in ἀπέδωκε.

In another case a spelling mistake involves the interchange of <Γ> with <Σ>:

8 ΡΟΔΟΣ̲ΟVΝΗ (compare ΡΟΔΟΓ̲ΟVΝΗ, l. 2)

This interchange is not as unexpected as it seems from the modern shapes of the Greek capitals: in the inscription the sigma is represented by a sign resembling three sides of square, with the right-hand side open. The change from <Γ> to <Σ>, therefore, requires simply the erroneous placing of a horizontal stroke parallel to the top stroke of the gamma.

This spelling error might be explained within the context of biscriptalism. In particular, Arrigonius transcribes expected <Y> with a shape closer to Latin <V> (Libertini 1936–37, Tav. I). Conflation of <Y> and <V> is attested elsewhere on Sicily in the Imperial period (Korhonen 2012, 346 n. 77). In the light of this, the anonymous reviewer of this paper makes the attractive suggestion that influence from Latin script may lie behind both confusions, especially if the engraver were 'transcribing' a Greek text from an original written in Latin script: the version in Latin script would have represented that <Γ> as a <G>, or perhaps even a <C>, which could readily be read as a lunate sigma.

The fact that spelling in the inscription is not unprincipled leaves open the possibility that punctuation, although perhaps unexpected, is also not without logic. In fact, the rationale of the word-level punctuation can be seen to be largely in keeping not only with the Greek examples discussed so far, but also with the prosodic principles observed for Archaic and Classical Greek inscriptions. For instance, in a number of instances function words are univerbated with a neighbouring sequence:

2 ΟVΧΟΣΙΩΣ | (= οὐχ ὁσίως)

3 · ΚΛΑVΣΕΔΕ · (= κλαῦσε δὲ)

6 · ΤΟΠΡΙΝ · (= τὸ πρίν)

6 · ΠΑΣΕΚΛΗΖΕΝΣ | (= πᾶς ἔκλῃζεν)

8 · ΔΕΡΟΔΟΣΟVΝΗΝ · (= δὲ Ῥοδογούνην)

Furthermore, there is one instance of the univerbation of lexical words, a feature that can also be paralleled in the Archaic and Classical periods (Crellin 2022, Part IV):

3 | ΛΑΕΣΙΔΕΙΝΟΣ · (= λάεσι δεινὸς)

However, there are some interesting differences. Function words can be written as independent graphematic words, *e.g.:*

3 · ΚΑΙ · ΤΑΡ |

4 ΧVΣΕ ·

Under the Classical principles of punctuation, we would expect to find ·ΚΑΙΤΑΡΧΥΣΕ·.

The enclitic pronoun με is even written as an independent graphematic word:

6 ΤΟΠΡΙΝ·ΜΕ·ΠΑΣΕΚΛΗΖΕΝ (*i.e.* τὸ πρίν με πᾶς ἔκληιζεν)

Although the direction of clisis can apparently vary for this pronoun (see Goldstein 2016, 67–68), it is unexpected on cross-linguistic grounds to find it written as an independent word.

Another surprise is that interpuncts are occasionally written in the middle of words, *e.g.*:

1 ΟΡΑ·ΣΠΑΡΟΔΕΙΤΑ (for expected ΟΡΑΣ·ΠΑΡΟΔΕΙΤΑ ὁρᾶς παροδεῖτα)

2 ΚΤΑΝ·ΕΝΟΥΧΟΣΙΩΣ (for expected ΚΤΑΝΕΝ·ΟΥΧΟΣΙΩΣ κτάνεν οὐχ ὁσίως)

9 ΤΟ·Ε·ΠΩΝΥΜΟΝ (for expected ΤΟ·ΕΠΩΝΥΜΟΝ τὸ ἐπώνυμον)

Notwithstanding these unexpected features, overall the principles of word-level punctuation in the inscription appear to follow prosodic principles much like the Latin inscription *ISic000031*. This is notable given that word-level punctuation itself is rarely found in Greek of the Imperial period (see Introduction).

Conclusions

Variety of punctuation strategies

It emerges from this short study that there is no one-size-fits-all punctuation strategy that can be identified for Sicilian inscriptions. Instead possibilities include both prosodic and morphosyntactic, with prosodic strategies comprising punctuation at both the word and phrase levels. It naturally follows that each inscription should, at least at first blush, be taken in isolation, before broader trends are considered. Nevertheless, some more general conclusions can be drawn that may challenge the *communis opinio*, both for Greek and for Latin.

Word-level punctuation in Greek

The two Imperial-era inscriptions studied provide a counterpoint to the generally held view that that word-level punctuation in Greek ceased before the Imperial period, showing that word-level punctuation in Greek persisted well into the Empire. It is a matter for future work to establish exactly how frequent such punctuation is in the Imperial period. Nevertheless, the question arises where such practices come from, at least in these two cases. In principle the adoption of prosodic punctuation in *ISic001231* and *ISic001320* could be attributed to one of the following causes:

- A continuation of the tradition of prosodic word-level punctuation for Greek from the Classical period through to the second century AD.

- Adoption of Latin principles of punctuation, which, as we have seen, can be seen to have their source in word-level prosody.

The possibility of a continuing tradition of prosodic punctuation in Greek on Sicily cannot be ruled out, not least since (presumably) inscriptions from the Archaic and Classical periods would still have been available to view in the Empire. However, since Latin would have been in the ascendancy in Sicily in the Imperial period, the influence of Latin punctuation practices seems a more likely source for the punctuation strategy of these two inscriptions. This seems all the more likely given the other signs of the influence of Latin punctuation practices in evidence, namely, the interchange <V>/<Y> in *ISic001320*, and the use of abbreviation in *ISic001231*. If so, the multilingual and multiscriptal environment on Sicily is likely to be at least in part responsible for the adoption of prosodic punctuation practices.

Word-level punctuation in Latin

The Sicilian evidence has shown that both prosodic and morphosyntactic punctuation strategies are available in Latin. A major finding is that prosodic word-based punctuation goes beyond the generally recognised non-punctuation of prepositions and pronouns, to include the non-punctuation of other function words (including the verb 'to be'). Rather, therefore, than see such punctuation as fundamentally of the same ilk as our own, albeit with the idiosyncrasy that prepositions and pronouns are not punctuated, we can instead analyse punctuation in these documents under a fundamentally different, prosodic, framework, one with its roots in the spoken language.

The presence of morphosyntactic word division in *ISic000133* raises the question of when such a word division strategy was first employed. The fact that this word division strategy can be found as far back as the second millennium BC in a subset of Ugaritic texts (see Crellin 2022) renders more plausible its use in Classical Latin. The questions of when and why it was introduced I leave to future research.

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Chapter 12

Speculative Syllabic[1,2]

Charles 'Pico' Rickleton

In a way, this project started the moment I pulled Andrew Robinson's *Lost Languages* (Robinson 2009) off the shelves of a second-hand bookshop in Bloomsbury, London. I took it home, lazily flicked through it while sitting at the kitchen table and came across the pages on Cyprus. At the top of the page was an image of a stone 'bilingual' with two lines of Greek alphabetic inscription followed by a line of Cypriot (Fig. 12.1). Prior to this, I hadn't known that Cyprus had once had its own writing system – let alone multiple systems – and I immediately searched for it on

Fig. 12.1. Drawing by Philip Boyes of the stone bilingual that was featured as a photograph in the book Lost Languages *by Andrew Robinson.*

[1] Thank you to Pippa, Philip and the rest of the CREWS team. Also big thanks to Chrysso Cosmas, Ralou Kondyli, Priya Mistry, Marisa Di Monda, Kyriacos Karseras, Shoni Lavie-Driver, Susanne Turner, Michael Pecirno, Sebastian Koseda, Bernie Webb and Flying Object, all of whom have contributed or helped in some way.

[2] Editors' note: This chapter is an essay on an artistic project by Charles 'Pico' Rickleton, who was a CREWS Visiting Fellow from October to December 2021. As such, it differs in style and approach to the other chapters in this volume and has not been subject to external peer review.

Table 12.1. The common variant of the Iron Age Cypriot syllabary.

		t	*g*	*k*	*p*	*l*	*m*	*n*	*r*	*s*	*w*	*x*	*j*
a	𐠀	𐠈	𐠊	𐠋	𐠌	𐠎	𐠏	𐠐	𐠒	𐠓	𐠔	𐠕	𐠖
e	𐠁	𐠉		𐠍	𐠑	𐠒	𐠓	𐠔	𐠕	𐠗	𐠘	𐠙	
i	𐠂	𐠊	𐠋	𐠍	𐠑	𐠓	𐠔	𐠕	𐠖	𐠗			
o	𐠃	𐠌		𐠎	𐠒	𐠔	𐠕	𐠖	𐠘	𐠙	𐠚	𐠛	𐠜
u	𐠄	𐠌		𐠏	𐠓	𐠔	𐠕	𐠖	𐠘	𐠙			

Wikipedia. The syllabary stared at me from the screen, appearing like a language glimpsed on the console of an alien ship in a sci-fi movie. It looked intentional and designed – unfamiliar and elegant, but easy to reproduce. I had seen lots of Linear B before, but it didn't look like that. It wasn't marred by characters that were so complex that they became impossible to reproduce at smaller sizes. It had a bit more breathing space and, at least to my eyes, looked curiously modern. I excitedly messaged my Cypriot friend a picture of it and asked if she'd ever heard of it or seen it before – she hadn't.

Reading on, I gleaned the basic picture. It had been used to write Greek and hung around for most of the first millennium BC before eventually going extinct, remaining undeciphered until the nineteenth century. I started trying to write basic Modern Greek words with it, splitting them up into syllables; μακαρόνια (ma-ka-ro-ni-a), τίποτα (ti-po-ta), καφενείο (ka-fe-ni-o), etc. (see Table 12.1). They looked strange. Modern words being carried in an Iron Age vehicle. Looking at these words, written right-to-left in biro in my sketchbook, made a flurry of questions come into my head. What if this writing system had never died? What if, for whatever reason, it had remained in use as the primary way to write the Greek language on the island of Cyprus up until the present day? How would it look, having been pushed through all the various technologies and means of production associated with writing that have prevailed over the last 2,500 years? Some time after this, I started searching online for someone who could help me understand the writing system and its context. That was how I found Pippa and got involved with CREWS.

Despite my interest in these fields, I have no formal training in classics, archaeology or linguistics. My background is in art direction and design. The area of design my work is most concerned with is 'speculative design', a term coined by Anthony Dunne and Fiona Raby as a sub-category of the broader 'critical design' (Dunne and Raby 2013). I would briefly describe this as an investigative design culture more concerned with provoking debate than creating commercial products. It is characterised as a process of using informed speculation to imagine alternative futures, but can also be applied to imagine alternative trajectories of history. This is the approach I have taken with my project, *Speculative Syllabic*. Applying the tools of a designer to the aforementioned questions with the hope of creating something that

provokes, for the audience, a broader discussion about literacy, early writing systems and the role that writing plays in the conception of cultural identity.

At the time of writing this, the project is still very much a work in progress. My time in Cambridge was brief and each week the scope of the project seemed to expand as opposed to focus. My hope is to eventually be able to create something like a timeline for the syllabary, documenting the speculative history I have proposed for it. I have conceptualised this as a divergent timeline from a parallel universe, one in which the syllabary has adapted and survived up until the present. The end goal I envision for this is to exhibit the research alongside fabricated objects from this 'history that never happened' – objects that show the writing system in a particular context and time; fragments of a vellum manuscript, an early typeset pamphlet, a computer keyboard and suchlike.

At the end of this chapter are a few of the photos that I have made in collaboration with friend and designer Chrysso Cosmas. They were all taken in January 2022 in Nicosia, Larnaka and Lefkara. The photos are incidental snaps of everyday scenes in Cyprus that contained Greek writing. We have then digitally removed the Greek alphabet and replaced it with a version of the syllabic script that I have adapted to work with the contemporary Cypriot Greek dialect.[3] They are intended to be a stubbornly unglamorous glimpse into the everyday graphic landscape of Cyprus, as viewed by a pedestrian in a parallel universe. Alongside these, I am also presenting some images of the process and thinking that has gone into imagining the syllabary in the 21st century – this includes various typographic experiments, thoughts and half-thoughts that have occurred along the way.

It is important to note that Greek speakers in Cyprus live in a state of diglossia where the written language is Standard Modern Greek and the spoken language is Cypriot. In reality, it is somewhat more complex than this; however, it is not necessary to further expand on this point in order to engage with the project. Where possible, I have tried to use Cypriot as opposed to Standard Modern Greek for the contents and examples I am presenting here. I imagined that if the syllabary had remained in use for all these years it would have been developed to describe the sounds that come out of the mouths of its inhabitants, as opposed to the inhabitants of the Greek mainland. Aside from logical extrapolations of history, I have done this because I am keen that the outcome has a distinctly Cypriot flavour and offers the opportunity to acknowledge the unique sound of the dialect and its distinct qualities. As of today there is no official way to write Cypriot in either the Greek or Roman alphabet. Having said that, it would be an incomprehensibly strange move for the government of Cyprus to adopt, as an official writing system, a local syllabic script that hasn't been actively used for thousands of years. However, I do feel that the exercise of working with Cypriot, as opposed to Standard Modern Greek, provokes interesting questions about the way we perceive speech aurally in relation to writing.

[3] Contemporary Cypriot Greek dialect henceforth referred to as Cypriot.

Making the syllabary sound like Cypriot

The first challenge of this project has been to map the sounds of Cypriot on to the syllabary and in doing so make decisions about exactly how unambiguously the writing system expresses the spoken language. Every syllabic writing system throughout history has had to find a balance between accurately expressing the phonological units of the language and the total number of unique characters it contains. At one end of the spectrum, you can have a syllabary that distinguishes every possible sound of the target language. However, depending on the number of possible sounds and sound combinations in the language, in a syllabic script this could mean hundreds of unique characters, all of which have to be easily distinguishable from each other. On the other end of the spectrum, a syllabary could have fewer characters if it doesn't distinguish all sounds but instead groups some together to be represented by a single character or set of characters. The latter leads to greater ambiguity, requiring the reader to infer the exact meaning through the context of the text. However, a smaller set of characters is easier to memorise, creating fewer barriers to literacy.

In the Iron Age, the Cypriot Syllabary fell heavily on the side of fewer characters but greater ambiguity. For example, the sounds that would be expressed in the Greek alphabet as *T, Δ,* and *Θ* were all represented by the same consonant series. Hypothetically, if you were to write *ταδαθα* (not an actual word) in syllabic script it would have been written as 𐠈𐠈𐠈, the same character repeated three times with no visible distinction. It is evident that in context this was not causing too many issues for overall comprehension as it persisted in this manner throughout its use.

I feel that if Cypriot were to be communicated in a syllabary today it would need to be more exact in the way in which phonemes are differentiated. I believe this for a couple of reasons. Firstly, the Greek spoken in Cyprus in the first millennium BC is different to the Greek spoken there now. The modern Cypriot dialect is particularly rich in consonants, with differentiation between stops and fricatives – alongside unique sounds not found in Standard Modern Greek, such as [ʃ], the *sh* sound in the English word *show*. Secondly, the context of writing today is different to that of the Iron Age. In the twenty-first century we burden writing with a staggering number of tasks, requiring it to perform these tasks in a vast array of contexts. It has to scale from the tiniest fine print on a packet of paracetamol to being emblazoned across the side of an aeroplane as an airline's logo. It must carry our imaginations through the pages of a novel and also convince us to buy a particular brand of deodorant as we pass a billboard for a split second from a moving train. I feel the diversity of conditions in which we now experience writing requires graphic systems that are somewhat more precise than those used by our ancestors. This need for clearer distinction of different phonemes in writing, as the scope of what is being written and read increases, is visible in the history of other syllabic writing systems. The Ge'ez script, used to write various languages in modern-day Ethiopia and Eritrea, was originally composed of 26 characters. However, with the advent of Christianity in the fourth century AD, and subsequently the need for codices containing Christian texts, the syllabary was

Table 12.2. The full syllabary adapted for the modern Cypriot Greek dialect including all diacritic possibilities. Consonants are shown in IPA and in one of the many unofficial but commonly understood systems for writing the modern Cypriot Greek dialect in the Greek alphabet.

		α [æ]	ε [e]	ι [ɪ]	ο [ɒ]	ου [u:]
τ	[d]					
ττ	[tt]					
θ	[θ]					
θθ	[θθ]					
δ	[đ]					
κ	[g]					
κκ	[kk]					
χ	[x]					
γ	[ɣ]					
γγ/γk	[ŋk]					
π	[b]					
ππ	[bb]					
φ	[f]					
λ	[l]					
μ	[m]					
μμ	[mm]					
μπ	[mb]					
ν	[n]					
νν	[nn]					
ντ	[nd]					
σ	[s]					
σσ	[ss]					
σι	[ʃ]					
ζ	[z]					
ρ	[r]					
β	[v]					
τζ	[dʒ]					
ζζ	[ʒ]					
τσ	[tʃ], [ts]					

adapted to differentiate vowel sounds by the invention of a system of ligatures. This increased the number of unique characters approximately sevenfold.

After numerous experiments and iterations, the way I finally decided to design my system for an updated Cypriot syllabary was partly inspired by the history of the Ge'ez script (Table 12.2). Excluding ligatures and regional variants, the original Cypriot

syllabary had 55 core characters. I didn't want to create entirely new characters to achieve the disambiguation I needed, so like the Ge'ez script I imagined my alterations to be a layer that is added to existing characters. Unlike the Ge'ez script I needed a system to distinguish related consonants as opposed to vowels. I made a spreadsheet with every basic consonant-vowel combination in Cypriot and assigned them to the original 55 syllabic characters. In the Ge'ez abugida the syllables that are unaltered from the original form of the script are referred to as the 'inherent vowels'. I applied the same idea, appointing 10 'inherent consonants' and numerous other consonants that were sharing the same syllabic characters, with in some instances five differing consonants phonemes all being represented by the same character. I arranged the syllabary so that the 'inherent consonants' (*i.e.* the base values of each sign without any diacritic) all corresponded to their original characters, with the exception of the [v] and [dʒ] syllable series, which I assigned to the remaining 10 'stray' characters, all of which originally belonged to incomplete sets of consonants. I then examined the qualities of what I was referring to as the 'non-inherent consonants' and identified five conditions under which these occurred, assigning each one a different diacritical mark:

1) an unvoiced fricative (*e.g.* [θ] as in English 'thick'), represented by a single dot
2) a voiced fricative (*e.g.* [ð] as in English 'they'), represented by two dots in the manner of an umlaut
3) an unvoiced double or long stop (*e.g.* [tt] as in English 'bit torrent'), represented by an inverted breve
4) an unvoiced double or long fricative (*e.g.* [θθ] as in English 'both theatres'), represented by a dot with an inverted breve above
5) a nasal is combined with a following consonant (*e.g.* [ŋg] as in English 'angle'), represented by an overring

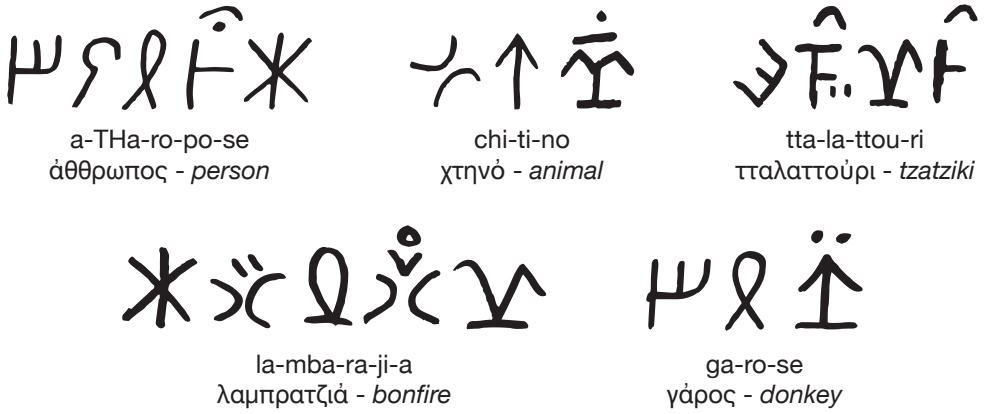


Fig. 12.2. Some examples of words in the modern Cypriot Greek dialect written in the adapted version of the syllabary. Each word shows a different one of the five possible diacritic/diacritic combinations I designed in order to better differentiate the different consonant sounds.

I envisaged that there may be contexts where the diacritics weren't necessary for comprehension, in the same way that vowel markers in Modern Arabic and Hebrew are usually omitted. However, when I started to transliterate chunks of Cypriot text into this new system, they did appear to perform a useful function.

The updated syllabic chart (Table 12.2 above) is by no means perfect in terms of the way I have adapted it to the modern dialect. Getting any writing system to represent the sounds of a given language, and continuing to do so as the sounds in that language shift over time, is a real challenge, one that is to some extent visible in the orthography of most modern languages around the world. You may notice in my chart that I adapted the original w-series to become the [v] series as there is a relationship between these two phones. In Greek, the [v] sound, represented in Standard Modern Greek by the letter β, started out its life as a [b] sound. I asked Pippa to help me work out how this use of the w-series to replace the v-series might be the case in my parallel universe and we came up with the following solution: By the third to second centuries BC, the [w] sound was becoming weak and was sometimes being lost, as we can see from hypercorrect spellings and omissions of [w], but there is clearly still a memory of the w-series signs as they continue to be used (occasionally inaccurately) in the last historically attested Cypriot syllabic inscriptions. By perhaps the first century AD (using the Egyptian evidence for comparison), we know that in some Greek-speaking areas the sound [b] was undergoing a change and becoming the fricative [v], although admittedly the exact timing is very difficult to pin down. We imagined that Cypriot Greek speakers started trying to reflect the new pronunciation using the old w-series signs, which were no longer used in spelling because the /w/ phoneme had completely disappeared by now, but they were still remembered as part of the syllabic repertoire.

While [b] > [v] is reflected by this use of different signs, there is nothing available for [d] > [ð] or [g] > [ɣ]. With this in mind we speculated that [ð] and [ɣ] would be covered by the t- and k-series signs respectively, while [v] had had a different historical trajectory. Whether this is a truly plausible solution I can't say, but the process of trying to meet these challenges provoked exactly the kind of creative conversations between Pippa and myself that I had hoped the project would.

At some point during the height of my confusion at how to address the task of mapping the syllabary onto the modern Cypriot dialect, Pippa, Chrysso and I got on a Zoom call to try and figure out some of the ambiguities in the system I was trying to design. The wonderful two-hour conversation that ensued did the exact opposite. The only book I had been able to find designed for Modern Greek speakers to learn the Cypriot dialect (Pissourios 2019) described the difference between, for example, what is often written as τ and ττ as [t] and [t^h] respectively – or at least that is how I understood it. However, when we asked Chrysso, a native Cypriot speaker, to say a word with a τ in it, it sounded more like a [d]. As we moved through the phonemes we came across the same ambiguity multiple times, with κ sounding more like a [g] and π sounding more like a [b].

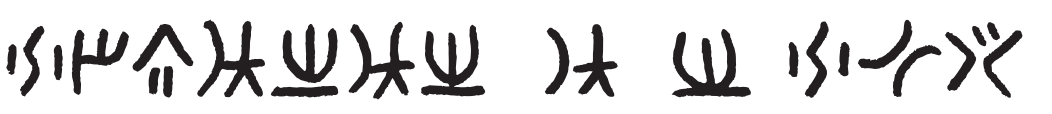
It seems that these sounds have undergone further shifts in more recent history but because of the dialect's relationship to Standard Modern Greek, while these sound a bit different to their mainland counterparts, a Cypriot κ is still sort of conceptually a [k] even if in reality it now sounds more voiced and closer to a [g]. The main thing that I took away from this conversation was that language is fluid and slippery. The job of a writing system to accurately express the sounds of a language is somewhat doomed to imperfection, as language itself is a moving target, constantly changing and never static.

In terms of how the syllabary is used practically, I have retained many of its original features. I kept the writing direction as right-to-left, in line with the common variant of the historical syllabary at the time of its decline. It felt like an unrealistic overhaul for an established writing system to have flipped its writing direction at some point long into its history. There was at one point a significant variant of the syllabary that was written left-to-right; however, it was much more geographically restricted, and linked with a particular local power base at Paphos that had waned in influence by the end of the fourth century BC.

I also retained the use of dummy vowels for closed syllable endings and consonant clusters. In the Iron Age, the vast majority of Greek words could only end with a vowel or with an [n] or an [s], in which case the *e* form of the syllable was used: 𐠎 *ne* or 𐠓 *se* respectively. These were practically the only possible closed final consonants in Greek. Cypriot today is full of loan words with many possible final consonants. To accommodate this I extended the rule so that any closed syllable at the end of a word uses the *e* form of the syllable for the dummy vowel.

I feel that if Cyprus had persisted with a right-to-left writing system it may have adopted certain punctuation features from its Arabic-speaking neighbours in the Modern Era. Based on this conjecture I have used Arabic question marks (؟), commas (،) and semicolons (؛) throughout any twentieth/twenty-first-century examples of text I have mocked up.

Consonant clusters are where a syllable contains two consonants consecutively without a vowel in between. In this case I have kept the historical orthographic feature of 'vowel echoing', whereby the previous vowel from the same word is repeated as a dummy vowel. There are a few exceptions to this such as for words that start with a consonant cluster, in which cases the following vowel is used as the dummy vowel, but this quickly begins to feel natural when using the writing system. When designing my updated version of the syllabary, I tried to wipe my brain of any knowledge of Modern Greek orthography and focus wholly on the sounds. Along with the Greek alphabet comes the baggage of history. It is deeply intertwined with Greek identity and as a result there has been a strong historical reluctance to alter it in any way, despite significant phonetic shifts. For example, this has resulted in three characters that represent the [i] sound, two that represent the [ɒ] sound and no individual characters for [g], [b], [d] or [ŋ]. This leads to examples of orthography that range from creative to clumsy. I have a distinct memory, from when I first started learning Modern Greek, of



ji-no-ne pou sou pou-sou-pou-sou-ri-se-ne
τζείνον που σου ψουψούρισεν - *that thing he/she/it whispered to you*

Fig. 12.3. An example sentence in modern Cypriot Greek dialect showing how ψ would be treated as two separate consonants ([p] and [s]), leading to some interesting looking orthography due to the requirement of a dummy vowel in between.

staring at the words *ΜΠΟΜΠ ΝΤΙΛΑΝ* on a poster for about a minute before realising it was just a transliteration of *Bob Dylan.* With this in mind I didn't assign any individual characters to the consonant clusters that are represented with single letters in the Greek alphabet. In the Modern Greek version of the game *Scrabble* ψ and ξ are the highest scoring letters, each being worth 10 points, therefore the least commonly used letters in the alphabet.[4] If you were to invent an alphabet for any variety of the Greek language today I think you would have to make a very creative argument for [ps] and [ks] consonant combinations to be given their own unique characters but for the same not to be done with other common combinations like [st]. For this reason, in my version of the syllabary, these sounds are treated as any other consonant cluster. This does occasionally lead to some quirky looking sentences. For example, in Cypriot, if you write 'what he whispered to you' – *jeinon pou sou psoupsourisen* – in syllabic, it transliterates as: *ji-no-ne pou sou pou-sou-pou-sou-ri-se-ne* (Fig. 12.3).

There are a few elements of how the original syllabary was used that I have changed. Like the vast majority of written languages in the world today I have used a space to separate words, rather than the word divider of the ancient syllabary. Also, originally the nasals [m] and [n] were not written in words when they were immediately followed by a consonant. Cross-linguistically these are sounds that could be weak or underrepresented in writing. However, this rule makes little sense for Cypriot today, in which nasals are clearly pronounced prior to consonants and also extremely common. It is such a noticeable feature of the dialect that when you see parodies of Cypriot accents performed on Greek television it always involves – alongside indiscriminately switching [k] for [dʒ] sounds – throwing [m] or [n] in the middle of words.

Generally, nasal consonant clusters in Modern Greek occupy a strange space. At least that is to say I have never fully understood how exactly they are 'supposed' to sound. As previously mentioned, in Modern Greek orthography there is no way to write [g], [d] or [b] with single characters. Instead they are written as γκ/γγ, ντ and μπ respectively. When I started learning Modern Greek I was taught that there is an audible nasal sound when reading these letter combinations, particularly when

[4] My research methods are astonishingly rigorous and academic.

they are both preceded by and followed by vowel sounds. Indeed, if you are riding the metro in Athens and hear the dulcet tones of the automated voice announcing the next station is Syntagma, the ντ in the middle of the word sounds very much like the *nd* in the English *syndicate*. However, upon emerging from the network to the world above ground if you ask an Athenian what the name of the square is they will invariably pronounce the ντ as a [d] sound. Similarly, if you input the word Αγγλία (England) or the Greek name Αγγελική into Google Translate and press the text to speech button, the robotic voice will clearly enunciate the γγ as [ŋg] like the *ng* in the English word *angle*, while actually using a [g] without a nasal sound when γκ is used in loan words such as πορτμπαγκάζ (boot/trunk). It may be that I am unable to hear the nuance in these examples, but to my ear in everyday Greek speech these all are more frequently just hard [g] sounds without much noticeable nasality. There may be specific linguistic rules in Modern Greek that I am unaware of, or regional and socio-linguistic factors that affect how nasal these sounds are pronounced, but needless to say, I have always found this particular part of Modern Greek orthography, and how it relates to pronunciation, confusing and a bit clumsy.

Cypriot speech, on the other hand, gloriously embraces the nasal cavity. Nasal sounds are clearly distinguishable in [ŋg], [mb] and [nd] combinations when they are preceded by a vowel inside a word and frequently also at the start of a word, if preceded by a final vowel from the previous word. This is evident in the Cypriot *inta mbou kamneis; (how are you?)*, which, when spoken in natural speech, runs together sounding something like [ɪndæmbu:kamnɪs].

Although this suggests that in Cypriot the nasal and the subsequent consonant, in the case of [g], [b] and [d], are somewhat separate units of sound, I wanted single character solutions for them. They are a distinct feature of Cypriot and I wanted to avoid creating a new but equally clunky orthographic solution such as those of the Modern Greek alphabet. I achieved this by using a separate diacritic, an overring, that combines with the [ɣ], [m] and [n] syllable characters to indicate the nasal hybrids (see Table 12.2 above). Aside from the aforementioned nasals the only other consonant clusters that have been assigned a single character orthography is [dʒ], which in turn made space for [tʃ]. I made this decision primarily because, as previously mentioned, these sounds (in particular [dʒ]) are highly characteristic of Cypriot, and secondly because I wanted a system that could express [dʒe] (the Cypriot for *and*) as a single character. Admittedly the latter reason is somewhat arbitrary; however, I liked the concept of pushing the syllabary as much as possible towards the modern dialect, and also enjoyed the idea that it would render ampersands obsolete.

Typography

Typography is the clothing that writing wears. As I am typing these words into a word processor on my laptop, they are currently wearing *Helvetica Neue*, a sans serif

font.[5] I 'chose' this font because it is the default for this particular word processor and because it has a large character set that will be able to encode any special characters I require. *Helvetica* is probably the most famous font in the world, used in the logos of countless companies including Panasonic, Jeep and Lufthansa, to name a few. It even has a feature-length movie about it. I don't know what font these words will be dressed in by the time you read them: that decision will be the publisher's. Generally, typography functions as an aide to legibility through consistent and considered systems in which writing can be displayed. But alongside readability, different typefaces come with different associations, offering different flavours. Some look serious and academic while others are here for a fun time; some make writing look light and elegant while others are blunt tools for shouting at us. These flavours have all emerged from particular needs, technologies and contexts. For example, the origin of the serif is thought by some to derive from Roman stone carvers, who painted the outlines on first with a brush, resulting in strokes that flare out at the ends. They then followed these brush marks with their chisels and over time these became accentuated and a standard feature of Roman inscriptions. As a result, serif typefaces carry with them an idea of Roman-ness, imparting whatever that means to the reader alongside the semantic meaning of the text.

If the job of this project is to imagine a parallel universe in which the syllabary survived, then typography is one of the best media with which to do this. Our environment is truly saturated with writing – when it is not in front of us it is in our periphery, in our pockets, on our person. By taking a long-extinct writing system and dressing it in new clothes we get a glimpse of the potential it never achieved. But we also get more than this – we get to look at it in a new way, through the lens of a different discipline. When I began making typographic experiments with the syllabary, I started to build relationships between the individual characters and within the system as a whole. I had to think about kerning and leading, whether the characters should have a uniform height and how to coerce 55 characters into consistent looking sets.[6] I am still working through all of these challenges but the following represents some of my process and thinking to date. My hope is that by exploring this with audiences from disciplines other than my own it may provoke ways of looking at ancient writing with fresh eyes.

Because I needed a basis from which to start drawing fonts, I became concerned with the idea of understanding what a 'canonical' form of the syllabary could be. This isn't an easy task as when you start researching the syllabary you find a lot of variation in how the characters looked and how they were used. For example in

[5] A serif is a small line or a stroke at the end of a thicker line within a letter or symbol, such as the small 'flicks' at the top and the base of a capital 'I' in a classical Roman inscription. Sans serif fonts do not have these 'flicks'.

[6] Kerning is the process of adjusting the spacing between characters. Leading is the spacing between lines of type.

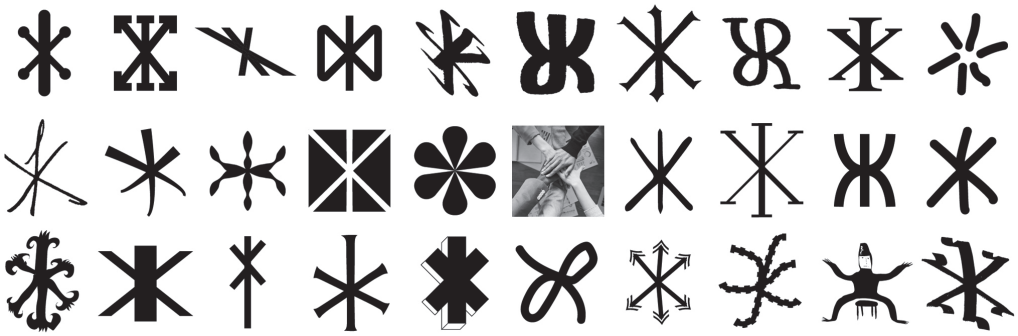


Fig. 12.4. Experiment with different character forms that could be read as a Syllabic 𐠊 character.

Paphos, in the west of Cyprus, there was a much more angular version of the writing system that was written left-to-right and included some entirely different characters. Even within the common variant the same character may have a lot of variation from inscription to inscription and there is often a looseness with the direction in which characters faced. As someone without much experience studying early ancient writing systems, I found this fluidity of shape and direction extremely confusing. I took out every book I could find in the Classics Faculty library that had a chart of the syllabary as I was interested to see how academics had approached drawing their own various 'canonical' versions.

Seeing how others before me had tried to tame the plethora of misbehaving shapes into rational sets of strokes made me reflect on how writing is conceptualised in our brains versus how we experience it with our eyes. During one of our conversations, Pippa and I explored this idea together by drawing the Roman letter *a* in as many ways as we could think of. We all have our own ideas of what an *a* is in our heads. If it is lower-case, it can be double-storey (a) or single-storey (ɑ). If it is upper-case, it is two strokes angled towards each other, touching at the top and with a crossbar somewhere around the middle that joins these two strokes. You might lower or raise this crossbar to give a capital letter a different character or alter the obliqueness of the angles or how symmetrical the overall form is. However, there is a limit to how extreme these manipulations can be and at some point you may reach a point where you are no longer looking at an *a.* We can't know what the given limits of any character in the Cypriot Syllabary were in an ancient writer's mind but I decided to repeat the exercise with the syllabic character 𐠊 to explore what they were for myself (Fig. 12.4).

When designing a typeface in the Roman alphabet there are a myriad of rules that are considered standard practice. These can obviously be challenged by less traditional fonts, but in general they act as a guide to creating legible, consistent systems. For example, the shape you draw for an uppercase H will dictate the subsequent E, F, I, L and T. There are no such existing rules in the Cypriot Syllabary, so I had to examine the relationships between different characters and search for correlations that could exist.

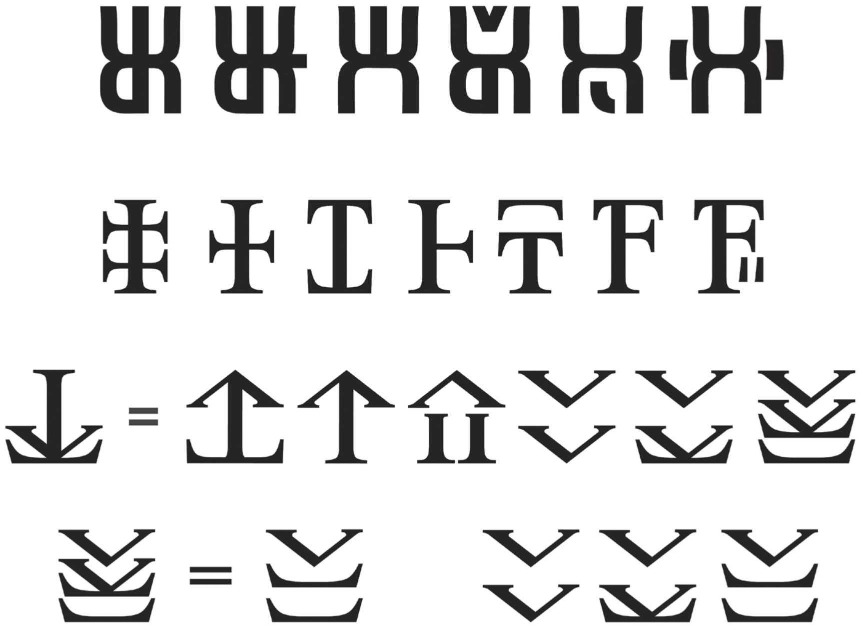


Fig. 12.5. Line 1: Exploring the relationship between the characters ✕, ✕, 𐠂, 𐠁, 𐠀 and ✕ in a sans serif typeface. Line 2: There is a clear correlation between the characters ǂ, ┼, ⌶, ⊦, ⍑, ┼, ꟻ and ꟻ as they can all be constructed from vertical and horizontal strokes. Examples designed in the style of the font Times New Roman. Line 3: The character ⊥ contains all the necessary elements to construct ↥, ↑, ⇑, ≚, 𐠃 and 𐠫. However, 𐠫 is a consistently difficult character to work due to its density. Examples designed in the style of the font Times New Roman. Line 4: The issues that arise with the 𐠫 character could be overcome by using a less dense historic variant. This leads to a more balanced relationship between the three related characters, aiding legibility at smaller sizes.

After spending some time experimenting with the syllabary in typographic contexts, I developed favourite and least-favourite characters. If there was a single character I could replace from the set it would be 𐠫 – *so*, as it is extremely difficult to make it look legible, consistent and appealing alongside the rest of the system. Owing to its density it tends to look cluttered and at small scale it is easily confused with 𐠃 – *o*. Another character that is somewhat problematic is 𐠩 – *se*, which visually looks great, like a little asymmetrical trident, but causes real issues for kerning as it creates a large void of negative space between it and the previous character (read right-to-left). This is particularly awkward as so many words in Cypriot end in an *-s* and *se* is used for the dummy vowel. It would not be such an issue if the character faced the other direction, and it is strange that it faces the same way as its left-to-right cousin in Linear B. A possible solution that I can imagine some fonts developing to tackle this would be to lose the stem altogether and modify the character into something like the Russian letter Ш. As for my favourite characters in the syllabary, I have much less robust and rational reasons for my feelings towards them. I am particularly fond of the vowels 𐠁 – *e*, -𐠀 – *a* and 𐠂 – *i*, as when looking at a

Fig. 12.6. A tub of FAGE brand yoghurt with the logo adapted to the Cypriot syllabary.

text object they seem to stand out as characteristic of the syllabary. Their counterparts in related writing systems aren't quite as 'X-ish', and with them being commonly occurring units of language in both the ancient and modern Cypriot they provide a strong visual feeling for the writing system overall.

Our lives are awash with commercial branding and logos are an interesting context to explore in the pursuit of evoking a parallel world. While logos themselves often contain writing, they function more like symbols that trigger instant associations in our brains. Perhaps you see a particular brand of mayonnaise and suddenly your mind is catapulted back to childhood memories of eating chips in the kitchen after school. Maybe you can feel the texture of a chip being dragged through a dollop of the stuff – or maybe you hated it and can remember the taste that made you wince, sitting there confused as to why adults don't just stick to ketchup. Sometimes our own memories might merge with the way a product is advertised, and all we are left with is an ineffable feeling that evaporates a few moments later. I love looking at logos transliterated into different writing systems. When looking at the Coca-Cola logo coerced into different localisations, you can feel the difficulty of the design challenge. The logo in mainland China is angular but perfectly captures the flowing form of the original, while conversely the Ethiopian version looks like the designers just gave up. I found that by inserting the Cypriot Syllabary into familiar branding contexts it produced objects that feel both beguiling and overflowing with the writing system's unfulfilled potential. I imagined that if Cyprus had hung onto this minority writing system – resisting the temptation to surrender its language to an arguably more practical alphabetic system – then it would not have done so in an atmosphere of nonchalance. It would be deeply enmeshed in the Cypriot identity and perhaps in the modern era would have given rise to laws, as exist in other countries, that require foreign brands to offer localised graphic communication alongside their international branding (Fig. 12.6).

My hope for the project is to make a number of fully functioning fonts for the syllabary, which, while serving the needs of my own project, could also be downloaded for free by anyone who wants to use them. For most of the imagery and experiments to date, Chrysso and I have created only those characters of a given typeface that we required to achieve what we needed to convey. However, during my time in Cambridge I made one complete set of characters, at the suggestion of Pippa, in the style of the Microsoft font Comic Sans.

I jumped at this suggestion for a few reasons; firstly, what better way to launch the syllabary into the twenty-first century than to reimagine it as the most controversial digital font in history, giving it great potential as a way to start a dialogue between

Fig. 12.7. A sign with clipart illustrations and text in syllabic Comic Sans. It translates as 'Don't put food waste in the recycling'. The Cypriot Greek reads: Μεν βάλλετε αποφάγια μες την ανακύκλωση / Men vallete apofayia mes tin anakiklosi.

typography and epigraphy? Secondly, its fixed-width strokes and simple construction made it achievable to create the full character set in a relatively short time, and finally, I am interested in imagining situations where the syllabary would appear in everyday life, not just glossy pieces of well-crafted graphic design but also the less considered text objects that help us to evoke a truly holistic graphic landscape. There is something gloriously surreal in imagining the ancient writing system as a passive aggressive A4 laminated sign in an office, imperatively demanding that the viewer *DO NOT PUT FOOD WASTE IN THE RECYCLING* (Fig. 12.7).

With all this in mind, I opened Adobe Illustrator and imported the Latin, Greek and Cyrillic versions of Comic Sans so I could examine how the original font was designed and then how it had been subsequently adapted for non-Latin alphabets. I then set about drawing my own slightly drunk-looking set of characters, endeavouring to adhere to the fun, askew spirit of the infamous original (Fig. 12.8 and 12.9). Upon reflection, I feel I could have pushed my rendering of the font even further towards the chaotic end of the spectrum, as in the end I based it more on the uppercase letters of the original, which are less unruly than their lowercase counterparts – however, I feel it functions well enough to give the syllabary some anarchic levity.

Fig. 12.8. The syllabary reimagined as the font Comic Sans.

Fig. 12.9. Comic Sans treatment sample.

Writing, both in the ancient world and today, is about communication. At its most fundamental it is shapes that talk to a reader about a particular thing from a particular context. As a culture we analyse texts endlessly to debate their semantic meaning but we rarely put the same effort into exploring a text object's visual and material qualities and how they speak to us beyond the language they contain. Images on the other hand, at least in the West, occupy a different place in society, where the practice of decoding and interpreting them is bolstered by centuries of tradition. But there is so much that can be learned from a text object if we treat it more like an image.

In 2012 I was living in Shanghai and would regularly visit the Shanghai Museum. I spent hours wandering around the various galleries, with the *Gallery of Arts and Crafts by Chinese Minorities*, where you can see an amazing jacket and trousers made out of salmon leather, being a particular favourite of mine. However, the one gallery I spent very little time in was the *Gallery of Ancient Chinese Calligraphy*, the content of which I found completely impenetrable. Hundreds of dimly lit scrolls with characters I couldn't read hanging in glass vitrines, all surrounded by throngs of excited people vying to see them. I didn't grow up in a culture that reveres the shape of writing or text objects more generally in this way and it made me realise that my own view of writing was fundamentally limited by my understanding of it as a functional tool for communication. I would go to the local park and see retirees practising water calligraphy, dipping fat brushes into jars of water before carefully painting their chosen characters on the paving slabs, only for them to fizzle and disappear a short while later in the hot sun. Crowds of people would gather round and watch, moving between the different practitioners, talking amongst themselves and seemingly

discussing the quality of what they saw. I asked a friend what they were writing and she told me it was largely lines from famous poems. But from what I could tell the crowds weren't there to *read*, they were there to *see*. To observe the act of writing, to witness its relationship to the body and to appreciate the individual form of each ephemeral character. It was a really alien concept to me but also an unquestionably beautiful use of public space. I wish I could go to a park in London and see pensioners writing in exquisite brush cursive on the ground, but I can't because writing occupies a completely different space in Western culture.

Graphic design and epigraphy are extremely different disciplines. However, they are similar in that they both take a broad and holistic approach to experiencing and understanding text objects. It has been a privilege to spend time with CREWS and be amongst a community of people who are so dedicated to thinking about writing in a complex and expanded way. During my time in Cambridge I went to a seminar by Dr Annie Burman in which she shared some of the work she'd been doing with a collection of Etruscan squeezes at Uppsala University. It blew my mind. There is a well-established practice of graphic designers, and more specifically typographers, using rubbings to document incised text objects but I had never come across anything like squeezes. In the discussion after the seminar I heard that the Classics Faculty has a collection of Cypriot squeezes and immediately arranged to see them for myself. A few days later I was sitting in a room in the faculty library delicately pulling out strange sheets of thick, bumpy paper from a dusty box, living my Classics fantasy. Holding the squeezes in my hands and laying them out on the table made me feel connected to the original incised objects in a way that no other documentation could, be it photography, 3D scans, plaster casts, rubbings or drawings. I found the squeezes beguiling, insanely beautiful and sort of impossible objects – lumps of stone that should weigh hundreds of kilos can be turned around and manipulated by your fingers. You can flip them over and see the inverse, a nonsensical view that feels like it shouldn't even exist, where this ghost shell of the writing is often picked out by flecks of the original stone or pigments from the lichen that grew on it. They are fragile, flimsy even, but somehow against all logic hold the form and texture of the stones and transport them from thousands of kilometres away to be stacked up in a cardboard box all together, ready to be handled and to tell you stories about the physicalness of ancient writing.

As I was taking the squeezes out of the boxes, there was one that caught my eye: one that I instantly recognised. It was a squeeze of the stone digraphic inscription I had seen in *Lost Languages* almost two years previously, the first image of the Cypriot Syllabary I'd ever seen and the one that prompted me to start this project and to reach out to CREWS. I had assumed the original object was huge, wider than the width of my arm span, but instead it was small, about the length of my forearm, and delicately inscribed. It felt magical. A stone had been cut, shaped and incised over 2,000 years ago, someone had photographed it where I'd seen it in a book and someone else had

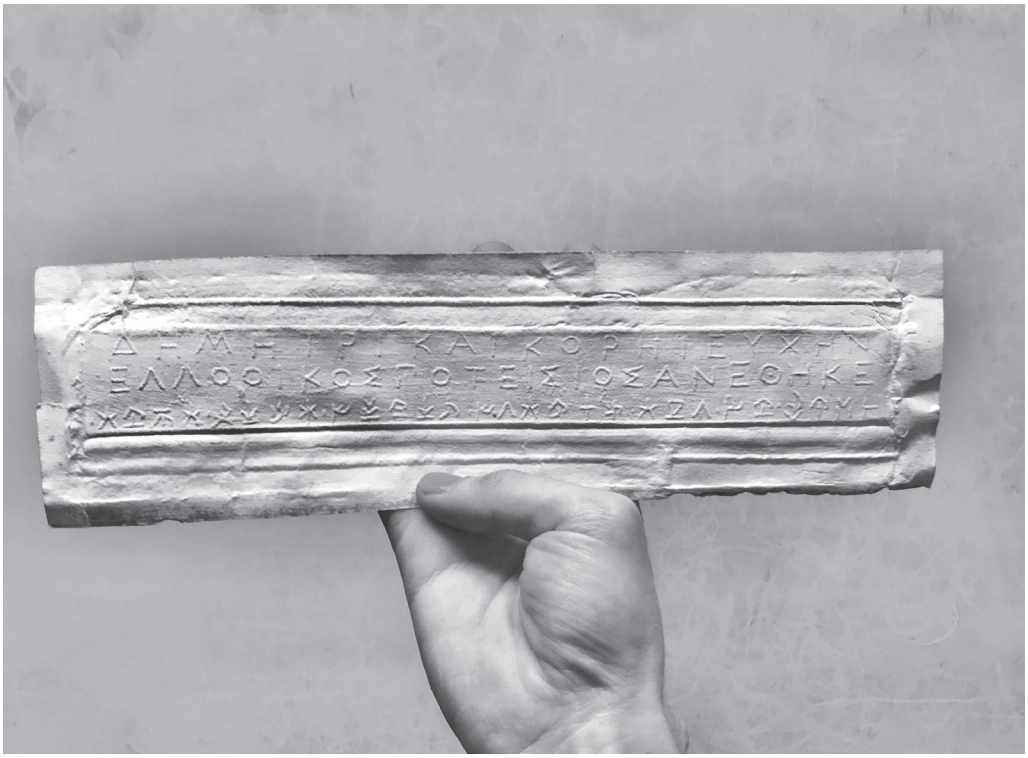


Fig. 12.10. My hand holding a squeeze of the same Cypriot bilingual that is depicted in the book Lost Languages *by Andrew Robinson. The image shows the reverse side of the squeeze and has been mirrored and edited slightly to aid legibility.*

mushed some wet paper into its surface to capture the texture – and there, on the 25th of November 2021, I was standing in the Faculty Library holding this cream-coloured ghost-like whisper of that original stone in my hand, turning it over, understanding its surface, its scale and experiencing the physicality of writing (Fig. 12.10).

As I mentioned at the beginning of this piece of writing, my project is still very much a work in progress. Spending time with the CREWS project has exposed me to whole disciplines and fields of research that are new to me. If what I have written reads as somewhat chaotic or disjointed then I apologise, but it is reflective of the journey I have been on. Every conversation I had with someone from the Faculty or involved with CREWS provoked new ideas and opened up new avenues of inquiry. In a way I got so excited diving into the world of linguistics that I didn't have much time to do the thing that I am actually trained to do – make images. There is more to come and you can follow the progress of the project at www.cypriot.xyz, where you will also be able to see colour versions of the images included here.

We finish with some images of the syllabary out in the wild, in an alternative version of modern Cyprus where the writing system never died.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