The Annual of the British School at Athens, **110**(1), 2015, pp. 27–49 © The Council, British School at Athens, 2015
doi:10.1017/S0068245415000088

THE BEGINNINGS OF WRITING ON CRETE: THEORY AND CONTEXT

by Silvia Ferrara

Department of Archaeology and Classics, Sapienza University of Rome

This article examines the inception of writing on Crete in the second millennium BC *from a fresh methodological perspective. It aims to develop a synoptic understanding of the origin, purpose, experience, and significance of the earliest attestations of writing on the island, to investigate the context of its creation, and to explore the cultural triggers that underlie the application of writing in the context of Middle Minoan Crete. Three key points are considered: the problematic definition of early writing on Crete, the possible identification of the subject matter of the Cretan hieroglyphic inscriptions on sealstones, and the script's level of indebtedness to pre-existing models. These paths of investigation are also crucial points of departure for understanding the phenomenon of early writing in more general terms, from a multidisciplinary perspective that seeks to advocate a synergic collaboration between anthropology, archaeology, epigraphy and sociolinguistics.*

> . . . how it was that this island became at such a very early date a centre of the glyptic art, and was thus able to produce the engraved designs on seals which eventually gave rise, by a gradual evolution, to a conventional system of writing.
>
> A.J. Evans, *Journal of Hellenic Studies* 17, 328

SETTING THE SCENE

This article focuses on the earliest observable attestations of writing on Crete, represented on the one hand by the spuriously termed 'Archanes script', and on the other by a number of engraved multisided sealstones or prisms bearing Cretan hieroglyphic signs.[1] These inscriptions will be also be compared with the evidence provided by the texts inscribed on clay documents, in a more cursive type of Cretan hieroglyphic, found in the archives of Mallia and Knossos.[2] The aim is to propose a new interpretation for the origin of writing on the island, to investigate the context of its creation, and to explore the cultural triggers that underlie the application of writing in the context of Middle Minoan (MM) Crete. As a way of reaching a synoptic understanding of origin, purpose, experience and perception of the earliest attestations of writing on the island, I shall draw upon the comparative evidence of other coeval civilisations and shall investigate the formal relationship between writing and other cultural discourses, such as art and iconography.

Writing, as a subject of academic interest, can be approached from endless possible perspectives, but remains quite a daunting, not well-defined entity (Larsen 1988), sitting rather marginally among other disciplines such as archaeology, anthropology, linguistics and philology. But it is in the very intersection with all these subjects that the study of writing offers a stimulating and promising approach to unexplored questions. If issues related to the origin, nature and practice of scripts have been addressed in other regions and cultural contexts, when it comes to the study of ancient writing in the Aegean Bronze Age, the path is still to an extent

[1] For Cretan chronology, Evans' and Platon's tripartite subdivisions, and abbreviations, are adopted: EM = Early Minoan (Prepalatial); MM = Middle Minoan (Protopalatial); LM = Late Minoan (Neopalatial). While the original term, 'hieroglyphic', used by Evans to describe the system may be potentially biased as it implies a direct connection with Egyptian hieroglyphs, it will still be employed here. Adopting the term 'pictographic' instead would be equally misleading, as it would in principle undermine a phonological reading of the signs.

[2] See Olivier and Godart 1996, who produced the corpus of inscriptions; see Younger 1998 for a fundamental review of the corpus; see also Younger 2005 and 2008 for the administrative documents specifically.

open to further examination – though it is, to be sure, particularly challenging. The reason for this impasse is twofold. On the one hand there is the paucity of the material recovered from the island of Crete; on the other, there are difficulties in the decipherment of the scripts in question (the so-called 'Archanes script', Cretan hieroglyphics and Linear A), with the exception of Linear B. Any comprehensive and balanced approach to the phenomenon of writing needs to take both limitations into account. In the past, the subject has also suffered from an epistemological limitation: there has been a tendency not to go beyond what the evidence can straightforwardly tell us, and to ignore questions relating to how and why scripts emerged on Crete in the second millennium BC, simply on account of the fact that such questions appear to be unanswerable.

The subject of Cretan literacy, seen in a broad perspective, would benefit from a wider scope of analysis than it has hitherto received, to include matters of ethnographic, sociological and anthropological significance, especially as a way of explaining the earliest attestations of writing on the island. Such a unified, interdisciplinary approach has been adopted for the study of other writing systems, such as Egyptian hieroglyphs (Baines 1983, 1989, 2004), the Pre-Columbian scripts (Boone 1994, Houston 1994, 2004a, 2004c), cuneiform (Larsen 1988), Chinese (Boltz 1986, 2001) and others. The circumstances that frame the emergence of writing, that make it possible or necessary, that delineate its origin and purpose, have all been touched upon or discussed, at times very effectively (Schoep 2006, 2007, Bennet 2008, 2013, Whittaker 2005), but their full significance has certainly not been examined to its full potential. This contribution is intended to be another, small step in the same direction.

Having to rely upon a small number of undeciphered documents as our only primary evidence is problematic at best and a considerable deterrent, made all the more compelling by the remoteness of the possibility of a cogent decipherment (Olivier 1989). Admittedly, these formal obstacles prevent a thorough understanding of the phenomenon of writing as a whole, and make any endeavour complicated from the outset. All the same, investigating unexplored issues such as the definition and practice of early literacy on Crete, seeking ways to comprehend the social systems in which they are embedded, and studying writing as a form of communicative activity can all be possible and fruitful trajectories of investigation. The primary emphasis needs to be shifted onto an understanding of the social and cultural factors that influence the ways in which written codes are both conceptualised and used. Other key components include the status and role attributes of participants, the form of the message, the code in which it is communicated, the channel of transmission, and the physical setting in which the message is encoded (Basso 1974), even in those cases in which the message itself cannot be decoded.

This paper will be structured around the following three questions:

1. Is incipient 'writing' on Crete actual writing *stricto sensu*?
2. How was it first used?
3. What are its origin and functions?

Each question will receive separate treatment, both in theoretical terms, and through discussion of the epigraphic data available for Crete and its most immediate archaeological context. Always to be borne in mind are the two problematic factors, namely the limited quantities of hard data at our disposal and the absence of certain decipherment. With such obstacles in mind, what follows will inevitably cross into the realm of speculation, although such views will be supported by comparative evidence.

IMAGINING WRITING

Words and images sometimes appear, fundamentally, to be in a conflicting position. They are not merely different kinds of creatures, but opposite kinds (Mitchell 1986, 47), polarised as dialectical rivals. Recent contributions have become open to possible interpretations of the ways in which ancient texts can particularise images and vice versa, or challenge the reading of an object

altogether (see for instance Newby and Newby 2007). In the apparent cognitive chasm created by the two stands the concept of pictographic writing. How does pictographic writing distinguish itself from the images conceived as art, and what is its relationship with writing?

> Writing does not represent the particulars, but seeks rather the generic, the universal, the uniform, the conventional. When a sign is drawn again, it is not a *new picture,* but rather another instance of the *same sign.* Just as the form of the sign becomes stereotyped, so does its semantics. The sign is now no longer interpretively open-ended in the fashion of a picture; rather, it becomes limited to a few conventional usages. (Hyman 2006, 240–1)

Form and function are thus generalised and their interrelation can be understood only impressionistically: the problem of interpretation is always lurking in the background. In Saussure's radical view, writing is a phenomenon parasitic to speech, a disguise that is degenerative, and used only in its absence, that constricts speech to an imperfect representation (Saussure 1959): any extraction of its 'meaning', of the relationship between 'signifier' and its 'signified', can be inherently deceptive, and ontologically arbitrary. To be sure, graphic notations can be opaque, their accessibility restricted, their symbolism obscure, or at different degrees of separation from true representation (such as Peirce's three typologies of signs – symbols, icons, or indexes: Peirce 1931–58), but this ambiguity does not extend to their social use or cultural conventions, otherwise communication would be impossible. In re-materialising the role of the sign, Derrida turns the relationship developed by Saussure between writing and language on its head. What follows is a simplification, but for Derrida, in brief, writing subsumes language, comes before it, and underlies all the possibilities of signification, of signs written or spoken (Derrida 1976, Yates 1990). Its role goes beyond expressing language alone: words are things, and texts are part of the material world.

Nevertheless, the activity of writing is often considered, basically, a linguistic phenomenon. The tendency is to think of writing as visible speech, with a strong emphasis on phoneticisation, that is its representation through individual symbols reflecting sounds in a specific manner. This produces yet another violent opposition, much akin to the one already mentioned above between images and words. This antagonism casts non-glottographic or semasiographic writing against linguistic or glottographic systems (Hyman 2006, Sampson 1985). In the most exclusionary terms of this view, pictographic writing is abolished as a constituent of writing, because the mediation of spoken language is excised. According to this stance, non-linguistic signs are a contradiction in terms, and, at best, to be considered a limited, dead-end means of communication (De Francis 1989), or outright troublesome and uncomfortable attempts at conveying speech, practised in culturally limited societies (Bloomfield 1933).

There are a couple of arguments for dismissing this opposition as structurally artificial and overly schematic. One argument is systemic, and allows us to speak in an informed way of non-glottographic writing systems, and not just of writing components. As Boone claims, neither sound nor mathematics can be conveyed through the means of speech. They constitute systems of writing (Boone 1994),[3] and though they are extra-linguistic, they require verbal communication in order to be understood. 'Speech sneaks in by the back door' (Hyman 2006, 234), although not through regulated phoneticism. In the same way that writing communicates speech through conventional and permanent marks, semasiographic systems, such as musical or mathematical notations, convey ideas through channels similar to language.

The second argument is structural. Semasiography is today a working component of glottography, hardly to be defined as a deficient representation of language in the most primitive stages of civilisation. In fact, in the modern world, semasiography has expanded progressively, broadening its field of

[3] There is an argument for seeing writing and arithmetic as opposites. According to Damerow (2012, 155 n. 5), 'Writing refers to cognitive constructions by operations within a symbolic system that represents language by phonetic coding. Arithmetic refers to cognitive constructions by operations within a symbolic system, which represent these cognitive constructions themselves by arithmetical symbols and symbolic operations, while language is used only to conceptualize and verbalize these operations.'

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

application, and also achieving iconic sophistication and expansive use (Haas 1976, 206–7). The immediacy of these signs, their iconicity, can be understood when set in a logical context, through images placed in a particular sequence (Trigger 2004); this may be learned by the receiver by repeating the context of their usage. Instances of such context include the use of the Roman alphabet for a variety of ancillary functions entirely separate from the coding of spoken language, such as the a.b.c. sequence used to order, classify, and rank (Hyman 2006), and also the large number of semasiograms that are now incorporated into our writing system, readily available and typed straight from a computer keyboard, such as & % @, or actual logograms such as those for currencies, € or £.

The tendency to over-systematise definitions and create categories has allowed for little flexibility in the definitions that we ought to espouse, and, at the same time, has had the effect of understating the limitations of boundaries that are too tidy and, perhaps, too finicky. Much of this has to do with the assumption that alphabetic notation represents the ultimate communicative tool, a teleological goal in the history of writing.[4] Today we recognise that this logocentrism, or, in Derrida's words, the 'metaphysics of phonetic writing' (Derrida 1976, 11), is an obtrusive concept that has imposed itself as a strict paradigm, framed within the scientific positivism and determinism of the late nineteenth century, fitting into the enduring view that all forms of non-phonetic representations of speech are transitory crises that lead to the alphabet (Saussure 1959, Galgano 2003). Purist notions such as these have highlighted the intellectual necessity of developing a definition of writing, one that can no longer depend, on the one hand, on the reliance and insistence on phonetic representation only, and on the other, on strictly limited structural parameters. On the latter point, Boone (1994) has already advocated an approach that can go beyond the path that 'only with phonological graphemes can we unambiguously identify languages' (Houston 1994, 228). It is thus possible to stretch the semantic range of writing, and perhaps shorten the distance between writing and non-writing, between reading and verbalising. Perhaps writing and image do function, and are able to communicate, in similar ways, the actual message conveyed by both in a coherent unison.

This is all theory, of course, and this provisional hypothesis needs to be tested vis-à-vis the contextual setting in which any form of communication operates. The aim is to understand writing itself, not just in structural or self-contained terms, but within all the possible forms of communication that may accompany it, in a whole visual level that extends beyond verbalised narrative. This iconicity of expression, this *Kulturtechnik*, covers all aspects that add up to the profile of writing, icons and numbers included (Cancik-Kirschbaum 2012).

The development of overarching interpretations of symbolic representational systems is particularly important for scripts that have not been deciphered, since their internal structure can be virtually inaccessible, so all accompanying features, be they iconographic or not, may help to elucidate the role that writing itself assumes in a particular context. The earliest attestations of Cretan hieroglyphic seals, like most writing systems in their early stages, need to be studied with a view to shedding light on all these aspects. It is often the case that an inherent link is created, through the intrinsic structure of writing, between the shape of script and its context of use, through display and iconic expression, and that link creates in turn a connection between verbal and non-verbal forms of communication, borne coherently by the inscribed object as a whole.

It is in this kind of broad material setting that we must seek a definition that will encompass three essential qualities, those of permanence (visible signs), convention (recognition of their meanings) and communication (transference of information), but whose ultimate message goes beyond what is actually written down. The quest for a broad epistemological perspective and a wider setting for the practice and the significance of writing (Damerow 1999) ought to address the problematic nature of the earliest Cretan attestations of writing, whether, as we shall see,

[4] Ideas like the 'principle of unidirectional development' of writing (Gelb 1963, but see also Taylor 1883, Diringer 1962) are one such problem, which has forced writing into shackles that are empirically erroneous (Mignolo 1989, Houston 1994, Boone 1994, Michalowski 1993, Trigger 2004). The validity of a linear sequence in the development of writing is undermined by the evidence that no syllabic script has ever evolved into an alphabet (Sethe 1939), and by the fact that the reverse can indeed be observed (Justeson and Stephens 1993).

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

they fall into the more maximalist definition of writing, that embraces semasiography, or into the most minimalist, which entails phonetic reading.

CRETAN 'PICTOGRAMS' REVISITED

The graphic repertoire of the Cretan hieroglyphic system, attested for the duration of the Protopalatial period (MM IB–III) on multisided sealstones and clay sealings (fewer than 200 examples), administrative documents (fewer than 200 examples) and other non-administrative documents such as inscribed vessels (fewer than 20), is highly naturalistic in the way the sign-shapes appear. This quality is most evident in the signs engraved on the sealstones rather than the syllabary used on clay documents (bars, tablets, medallions *etc.*), where signs are naturally more stylised and linear, in harmony with the documents written in the other Aegean scripts.

Evans was the first to point out that the quality of the sealstones is, essentially, 'pictographic' (Evans 1894). He also recognised that the consistent attestation of a well-distinct set of signs (96), on the other hand, indicates that the Cretan hieroglyphic script has a clearly syllabic structure, and that the signs, in essence, do not represent pictures. In fact, the appropriate definition is 'logosyllabary', because, especially in the repertoire of signs found on the clay administrative texts, more than 30 logograms are attested (Olivier and Godart 1996, 17), which, to complicate matters further, can be found in the double function of logogram and syllabogram (a third of the total repertoire, in other words, is logosyllabographic). What distinguishes either function is the context of the document.

Thus, the script is not pictographic in the strictest sense, as it seems to have had a phonological structure at least on the clay documents (albeit substantively unknown to us). Some of the signs of the Cretan hieroglyphic repertoire, at first glance, may betray a somewhat 'naturalistic' appearance, but are definitely not depictively realistic in the most figurative sense. This view has been over-emphasised by the tendency in the literature to obstinately use terms such as 'the glove'  , 'the bee'  , 'the calf's head'  to describe them, in the very same vein that Evans used in 1909 (Evans 1909, 181–231), to define signs that have, instead, a syllabographic function. Cretan hieroglyphic writing, on sealstones and on clay alike, is at an already well-defined stage of style and abstraction, if ever it can be cogently proved there was a preceding stage that was systemically pictographic in shape and function. Even the signs that can be singled out as logograms inscribed on clay as attested in administrative documents, have an essentially stylised appearance.[5]

This does not make definitions any easier. Whether the repertoire of signs engraved on the sealstones is embedded in a pre-existing iconography or not, it is still particularly difficult to determine what elements represent ornamentation versus what elements point to bona fide writing. As Olivier himself claimed, some years before producing the first corpus of Cretan hieroglyphic inscriptions (Olivier and Godart 1996), 'il n'y a pas de règles pour déterminer ce qui est écriture et ce qui ne l'est pas, pour la raison que nous n'avons sans doute pas affaire à une écriture *stricto sensu*, mais à une écriture *ornementale*' (Olivier 1981, 106, emphasis his own; see also Palaima's review of the corpus, Palaima 1998).[6] What he means is that, to different degrees of complexity, the individual signs of this graphic system are inherently difficult to separate from the iconography, rendering whatever message was recorded utterly obscure. Almost invariably, the combination of the two fills the space available on the surface in no neat patterns: elements can be reduplicated, embellished, often in no defined direction or order. This effect panders to a Minoan *horror vacui*, which juxtaposes, and often entangles, signs with ornaments and fillers, with the result that the lines between them are often very blurred.

[5] The use of logography in the sealstone writing is limited to three or four signs overall (Olivier and Godart 1996, 17, table).

[6] This view was slightly modified by Olivier (2000, 13) in phraseology, but not in semantics.

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

The overall effect is one where the disjunction in terms of style between iconographical elements and possible syllabograms is often so fluid that it would be justifiable to assume that writing and iconography are part of the same ensemble, that representation and sign-sequences are actually meant to converge and the message to be conveyed in synergy, without a defined separation between the two, and without a conventionalised system that would aid a possible 'reading'. In this way, Cretan writing on sealstones is very different from Egyptian hieroglyphic, where script and figures, and representation and writing, are consistently kept separate and seem not to engender any confusion in the reader (Baines 1989).

In the light of this complexity, what are we to make of the relationship between all of these elements? Can Cretan hieroglyphic on sealstones and sealings pass for arbitrary groupings of decorative signs (Olivier 1986) or strings of logographs combined together to express a specific thought process, obviously unavailable to us (Grumach 1963), which ultimately may not represent speech? Is there truth in the claim that we do not have coherent sequences but a series of 'typical hieroglyphic pirouettes with signs changing their positions and alternating … in ways that hardly seem phonetic', in a sort of administrative shorthand (Weingarten 1995, 304)? Does this mean that that phoneticism was not represented by the sealstones corpus? In brief, is this not writing?

There are clues that point to the Cretan hieroglyphic being glottographic, which implies that linguistic notation was recorded. One resides in the fact that some formulas are attested both in the administrative documents and in the seals, and these sequences, with a few exceptions, happen to appear quite frequently in both corpora (Olivier 1990, 15–16). Their presence in the archival documents, which incontrovertibly testify to bona fide writing, could partly legitimate their status as phonographs on the seals as well,[7] but this is conjectural and dependent on what the formulas actually meant in the archival documents themselves. To understand this, their placement and order in those documents should be studied more in depth, together with possible patterns of coherence in the orientation and alignments of the signs on the sealstones. In such a small corpus, this endeavour is constrained, but not impossible (Younger 1990). Elements that cannot be represented at the graphemic level (that is, the process of linguistic recording) should be analysed, namely diagrammatical signs that can indicate further ordering of information, like punctuation, marks that denote the end of phrases, or the segmentation of paragraphs to signpost contextual boundaries. Similar clues can indicate that the expectation was for an accurate, and close, 'reading' practice (inverted commas used advisedly, see below).[8]

This is as much as can be said, given the meagre numbers. However, there is a possibility that the painstaking endeavour of seeking patterns of repetition, of charting coherent arrangements and decoding a predictable rationale to prove linguistic registering falls short of appreciating the message conveyed by these objects in their entirety. The nature of the evidence and the sequences of sign-groups already prompt us to claim without hesitation that there is no developed syntactical complexity in Cretan hieroglyphic that we can speak of, be it on the sequences on sealstones or those on clay tablets or bars: writing is never continuous, and inscriptions are indexical, or self-contained within a seal face or medallion. There is hardly any instance of 'words' written consecutively. Within longer inscriptions in the archival documents, sign-sequences are characterised by a pattern of 'items', such as lists on inventory records, mostly followed by numerals (on bars, or on the very few instances of tablets). On the longer texts on the sealstones, instead, sign-sequences are marked by a strong tendency to be formulaic (see for instance the agate eight-sided prism from Neapolis, no. 314, where each side has a separate, self-contained formula). Thus the documents preserved in Cretan hieroglyphic represent an extremely limited instrument, which did not express continued discourse and full

[7] Note that this cannot be stated with any certainty. More difficult to ascertain is the status of the self-contained single signs on sealings: are they significant phonologically, or are they supposed to be read as logograms (Weingarten 1995)?

[8] See stiktograms 𐄷 and 𐄀 (Olivier and Godart 1996, 13 and 17).

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

syntax. This is to be expected, as it is the case in most instances of the earliest stages of any writing system (Baines 1989, Houston 2004b, Trigger 2004).[9]

While this is suggestive of the level of literacy in MM Cretan societies, the issue of whether phoneticism existed or not, whether lexical information was conveyed or not, misses the point of establishing parameters to define if Cretan hieroglyphic represents writing. This is especially the case if we accept, as advocated above, that a broad definition of writing should be embraced.

The writing on the Cretan hieroglyphic sealstones is often only one aspect of the message conveyed, and the focus of analysis should shift to interpreting all elements on the sealstones as a whole, including those that represent ornamentation or decoration. This implies that the entirety of each individual seal, the iconographic ingredients indicating its essential iconicity, and the lexemes too, need to be examined together. This is particularly important because iconography and writing on these objects often amalgamate, to the extent that marking the boundaries between individual components is difficult at best, and recognising what constitutes an inscription, and what does not, is particularly complicated. Perhaps this process of differentiation was not even the original intention of the engravers. Olivier may be right when he claims that the writing on seals was not meant to be read (Olivier 1981, 114), but just to be seen, not spelt out phonetically, but to be recognised. This does not make it any less 'writing' than a fully language-specific instrument used to exploit all possibilities of linguistic expression.

In this light, the function of the seals is essentially iconic as semasiographic notation is, and as such it represents the process of branding a specific icon. It would be a plausible hypothesis, albeit a working one, to therefore assume that writing and non-writing, sign-groups and iconographic elements are part of the same multimodality and, possibly, part of the same perception, equalised in their capacity to be inherently representative. So, whatever the definition to be attached to the Cretan hieroglyphic that we find on seals, the specific statement that was being made in the act of impressing a 'message' on clay is significant in itself, beyond writing, and represents, in the confines of a seal face, the totality of the encapsulated message. This is not uncommon in the earliest stages of literacy in other traditions: as Baines claims for the earliest Egyptian (the U-j material in late Pre-dynastic and Early Dynastic periods, 3300 BC), 'syntax was offered by the object itself and the meaning was associative' (Baines 2004, 165). The message is wholly context-dependent.

It must be noted that this stage of development may not necessarily direct itself towards the path of systematic phonography. It is equally possible that, in a similar way to Mayan writing, a link existed between signs and language only for noting down proper names (Houston 2004b). No effort whatsoever is made to write phrases (with only one extant exception: see n. 9). As a result, the way in which the Cretan sealstone was perceived is another issue, to which we shall now turn.

'READING' CRETAN SEALS

The question of the perception of the message encapsulated on the sealstones deserves some attention. What was the effect that these messages were meant to induce? Can we calibrate a definition of 'reading', as a response to the definition of writing sought out above? Unravelling these questions is particularly difficult. If literacy is limited to entailing a direct link between language and script, the short reply is resoundingly negative: the earliest Cretan writing, at least, cannot tell us anything about the former (and is arguably under-representative of the latter). If, however, we assume that literacy refers to a more punctuated and flexible relationship between production of writing and varied responses to it (Houston 1994, 28–9), then we can turn to what the earliest attestations of Cretan script may have meant.

[9] There is, however, a remarkable exception, represented by the stone offering table from Mallia (no. 328), which is inscribed with 16 signs of text. The subject matter of the inscription could be a dedication, and may represent a whole sentence.

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

An aspect of writing that is worth considering further is that it may have had a visual impact rather than a documentary one, and that inscriptions may have been understood aside from what was written on them:[10] coming into contact with such objects and not 'reading' them may have been the most common experience individuals had of writing. It may be possible that too much emphasis has been placed on the idea that writing needs to be meaningful essentially and exclusively for the message that it carries, that the experience and reception of writing is fundamentally significant only if the encoded message that is carried is effectively and fully decoded. It is, conversely, possible that the result would not have been dissimilar to 'take care of the sense, and the sounds will take care of themselves', as put by Lewis Carroll.

This slant is undoubtedly influenced by the ways in which modern studies of literacy appraised reading and writing in the ancient world. For a long time, literacy has been framed in technical terms, and writing considered a technology of the intellect, capable of predictable cognitive advancement, structurally endowed with a potential to transform reasoning and argument. Such a view has been very influential, advocated by social theorists (Goody 1968), linguists (Ong 1982), psychologists (Olson 1988) and even philosophers (Rousseau 1966). This trope of literacy-as-technology presupposes that writing can, and should, function as an autonomous entity, complete in itself and intrinsically charged with producing a determining impact in the development of social complexity. In this way, it forms an intellectual base for civilisation, a unique feature that propels humanity away from its otherwise primitive state (Gelb 1963): it constitutes a technology that, by the sheer fact of its existence, determines change.[11]

All 'literacies are, instead, situated. All uses of writing can be seen as located in particular times and places' (Barton, Hamilton and Ivanic 2000, 1), their effects unpredictable and not predetermined by their specific structure. Writing practices have a purpose and are embedded into social goals; they are not free-standing systems (Houston and Stuart 1992). On the other side of the equation, people's reactions to them can vary and their understanding of them can differ as widely: even the illiterate interacted with, and reacted to, texts (Moreland 2006).

Marked by a strong poststructuralist stance, the ideological model of literacy that reacted against the autonomous one predictably allows power dynamics to play a big role (Street 1993). If literacy practices are linked to power structures in society, any account of literacy will need to attest its significance in terms of authority and social differentiation. As it happens, however, these can be biased and redolent of the author's own interpretation of these entities. The definition of 'power' may well be deceptive, especially in view of the practice-theory insistence on seeing it as a propulsive, concentrated force that compels and orders through the agency of an external, top-down, authority (Bourdieu 1977, 186–7). Power is often made to be the power of bureaucracies, states, and empires, and writing its physical representation, in the form of the all-engulfing central archive. However, even in the most bureaucratic of states, such as the Mesopotamian or the Roman, writing did not manifest itself only as a technology of power, but it was used in a more personal fashion (Brosius 2003, Moreland 2006), manifesting itself in relations and situations, rather than central authorities.

[10] Whitt 1995, but see also Gagarin 2008, 68, who downplays the importance of the visual impression exercised by monumental legal inscriptions.

[11] This narrative of progress and aspiration to civilisation is largely dependent on the assumption of a supposedly revolutionary effect (or even more tendentiously, 'consequence') induced by the Greek alphabet specifically. Its phonetic structure, so goes the argument, encouraged widespread literacy and triggered a process of 'democratization' (Havelock 1982, Goody and Watt 1963). This tendentious view of the presumed supremacy of a specific system takes writing as a neutral mechanism of utilitarian function, a necessary implementation of the state, 'a technology to be acquired by sufficient proportions of the population to ensure the mechanical functioning of the institutions' (Street 1993, 11). Archaeological evidence proves this point wrong. The alphabet, albeit completely devoid of the deflections and artifice attributed to logography (Gelb 1963), had hardly a universal and unifying impact, its effects hardly determined by its simplicity. The early stages are idiosyncratic both in graphic configuration and in distribution: fragmented into epichoric varieties (Jeffery 1990), its uses are marked by regionalism and local preferences (Stoddard and Whitley 1988). Moreover, its alleged efficiency in application was instead restricted and limited to noting personal names and proprietorial concerns (Johnston 1983).

Perhaps more nuanced terms can also be adopted, less imbued with modern attitudes to it that define it as a force for repression and containment (Larsen 1988), or more congruent with the way the written word can interact with people, both illiterate and literate, to produce quite different results (Moreland 2006). Perhaps its 'microscopic dimensions, small, intimate, everyday dimensions' need to be emphasised, 'the stuff out of which senses of identity, senses of self as a private individual as well as social entity in a given time and place, are composed and recomposed' (Collins and Blot 2003, 5).

The earliest Cretan writing appears on bone sealstones. Their use was significant as sphragistic devices. They were, essentially, used for sealing purposes. Under this broad function lurk other purposes, namely to control, guarantee, authorise or label (Krzyszkowska 2005, 21). This was done by pressing a lump of clay over the rim of a container, the ends of strings or folded parchment, or pommels to shut a door or a chest. However, it would be dismissive to see their significance as ending in the purely administrative function. Seals (and not sealings) serve as items of personal status. Some of the seals that we class as such may have been used sphragistically, but also as personal possessions, especially at the very beginning of writing, in view of their funerary context. Indeed, the likelihood is that the impetus for script creation may not have been linked only to a specific form of administration, and its purpose may not have been merely sphragistic, but also symbolic (Schoep 2006, 2007).

The cemetery of Phourni at Archanes, close to the site of Knossos, is one of the most important cemeteries in the Aegean, in use from the beginning to the end of the Bronze Age. On site there are 26 buildings, among which are five tholoi, mostly used for funerary deposition (Sakellarakis and Sapouna-Sakellaraki 1997, Karytinos 2000). In the transitional phase at the very end of the Prepalatial period (EM III to MM IA), a new type of seal makes its appearance at the site, engraved with signs belonging to a script named 'Archanes' (Yule 1980). The precise dating is not straightforward and the evidence supporting a definite Prepalatial period is dubious (Macdonald and Knappett 2007, 137 and n. 51, Webb and Weingarten 2012, 94 and n. 72, Younger 1998, 380–1 and n. 6).[12] The corpus is extremely small, as it comprises four (Olivier and Godart 1996) to seven (Sakellarakis and Sapouna-Sakellaraki 1997) sealstones, distributed between Burial Building 6, Burial Building 3, and Burial Building 7 (Sakellarakis and Sapouna-Sakellaraki 1997, 326–30) (Fig. 1).[13]

The essential reason for singling out this micro-corpus is stylistic, as these seals share a similar glyptic style (the so-called 'Border/Leaf Complex', Yule 1980, 209–10), but more importantly palaeographical, as they all attest the same five-sign formula. Incidentally, this formula is not unique to the Archanes micro-corpus. Other sealstones dating to a later period (MM II) do not bear the same formula in its entirety, but parts of it. They were recovered in other sites on Crete (Moni Odigitria, Gouves and Pangalochori) and also beyond (Samothrace) (Schoep 2006) (Fig. 2).[14]

Ascribing the sealstones from the Archanes-Phourni cemetery to a self-contained writing system or incorporating it into another is probably only a question of terminology, and most likely makes the identification of this group as a separate writing system highly doubtful. The arguments for its separation, on account of an earlier chronology or a handful of signs that do not seem to have a clear counterpart in the later Cretan hieroglyphic system, seem artificial and uneconomical, as most of the signs can be easily normalised into their Cretan hieroglyphic counterparts,  and, more

[12] See also Weingarten's Bryn Mawr Classical Review of K. Galanakis, *Minoan Glyptic: Typology, Deposits and Iconography from the Early Minoan Period to the Late Minoan IB Destruction in Crete* (<http://bmcr.brynmawr.edu/2007/2007-02-03.html> accessed July 2015).

[13] Olivier and Godart (1996) catalogue only four sealstones with inscriptions in what has been termed the 'Archanes script' (nos. 202, 251, 252 and 315), excluding three sealstones that the excavators of the site describe as bearing a single hieroglyphic sign each, namely a sistrum (Sakellarakis and Sapouna-Sakellaraki 1997, 329, figs. 288–90), and therefore not qualifying as formal inscriptions.

[14] These are nos. 313 (Moni Odigitria), 292 (Gouves), 201 and 205 (Crete?) and two seal impressions nos. 134 and 179 (Knossos, one dating to MM IIA), 135–7 (Samothrace) (Olivier and Godart 1996) and an example from Pangalochori (Godart and Tzedakis 1992, 108, 121–2).

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

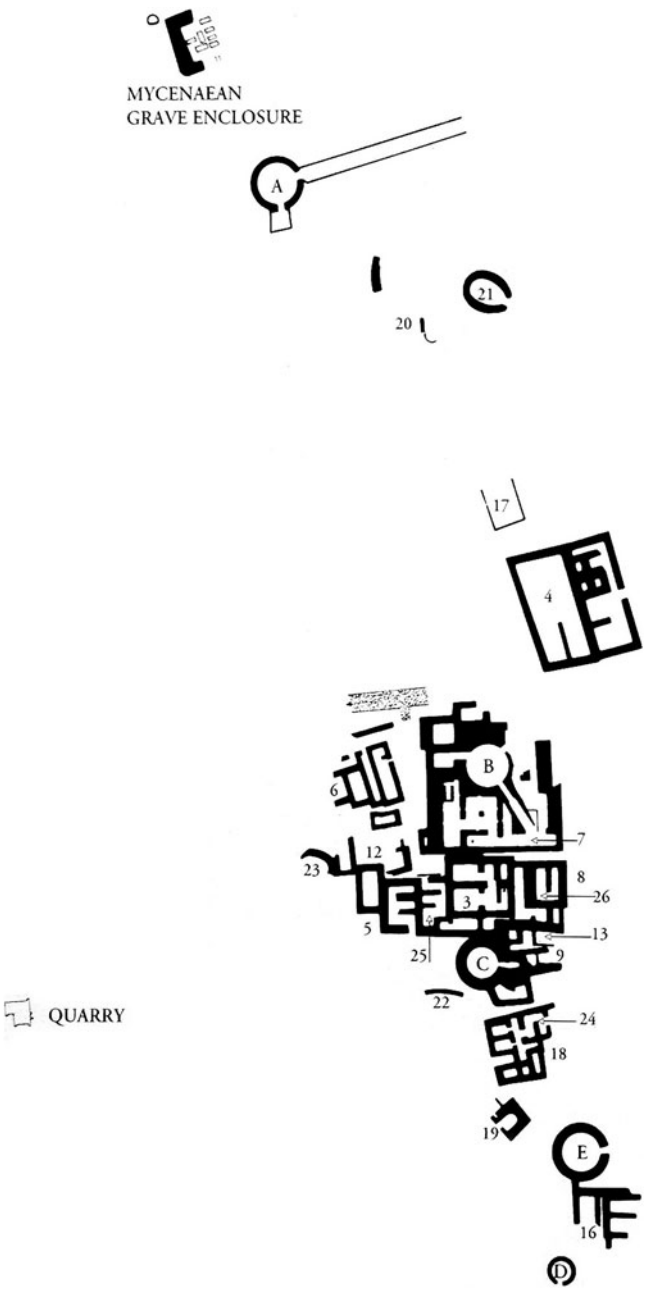

Fig. 1. Cemetery of Archanes-Phourni (after Sakellarakis and Sapouna-Sakellaraki 1997, 151, drawing 35).

convincingly, they also reappear later, slightly modified, in Linear A as the much discussed *a-sa-sa-ra-me* 'libation formula'.[15]

Turning to the contextual situation of these inscriptions, it is important to stress that they do not necessarily correspond to the first stages of the inception of writing; they are simply the earliest we can observe – which by no means implies that they were the first produced: archaeological context,

[15] Although Linear A remains, too, undeciphered, this sequence is 'read' applying the known phonetic values of Linear B to Linear A. The fact that this formula belongs also in the Linear A system has led Godart to ascribe the Archanes script to Linear A (Godart 1999).

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

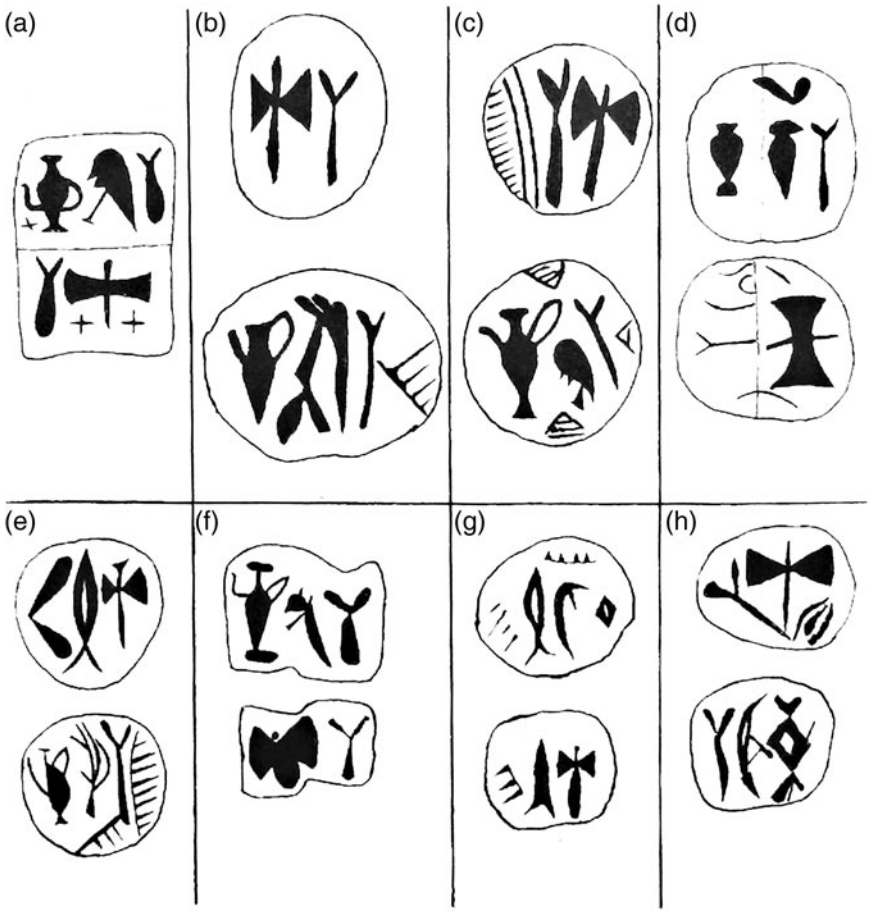

Fig. 2. The 'Archanes formula' on sealstones from Crete: (a) Crete no. 205, (b) Archanes-Phourni no. 252, (c) Archanes-Phourni no. 202, (d) Archanes-Phourni no. 315, (e) Knossos no. 203, (f) Gouves Pediados no. 292, (g) Archanes no. 251, (h) Moni Odigitria no. 313 (edited, after Brice 1997, 94, fig. 1).

the vagaries of preservation and excavation history will perforce produce a skewed and limited picture of what remains. It can still be inferred that these sealstones appear to be associated with particular groups, clans or families, that buried their dead in the buildings at the cemetery and could be related in some way (Karytinos 2000). The individual character of the seals highlights a particularly well-defined relationship with the owner, pointing precisely not only to his identity, but also to his status.[16] Sealstones, whether inscribed with writing or not, were not only prestige items, but also personal ones, possessions of individuals. They were buried with their owners and repositioned with the skeletons in secondary burials (Magiddis 1998), each of them unique in iconography and motif. In these early instances they were found before and outside the establishment of the palace bureaucracy, as instances of conspicuous consumption (Schoep 2006). The script was introduced outside a strictly centralised economic realm. But what was the ultimate message of the sealstones as inscriptions?

If we look closely at the most intricate and complex specimen, a rod with fourteen sealing faces, no. 315 (Fig. 3), we may gain some insight as to the use and significance of these objects. Each side of the rod has three seal surfaces. The hieroglyphic inscription, most likely, involves only two faces

[16] That the sealing practice was used to emphasise identity and status is clear from a clay coffin from Phourni, from Building 5 (Karytinos 1998): three identical stamped seal impressions were found around the handles. Karytinos maintains that the seal of one of the dead buried in this coffin was used to stamp it.

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

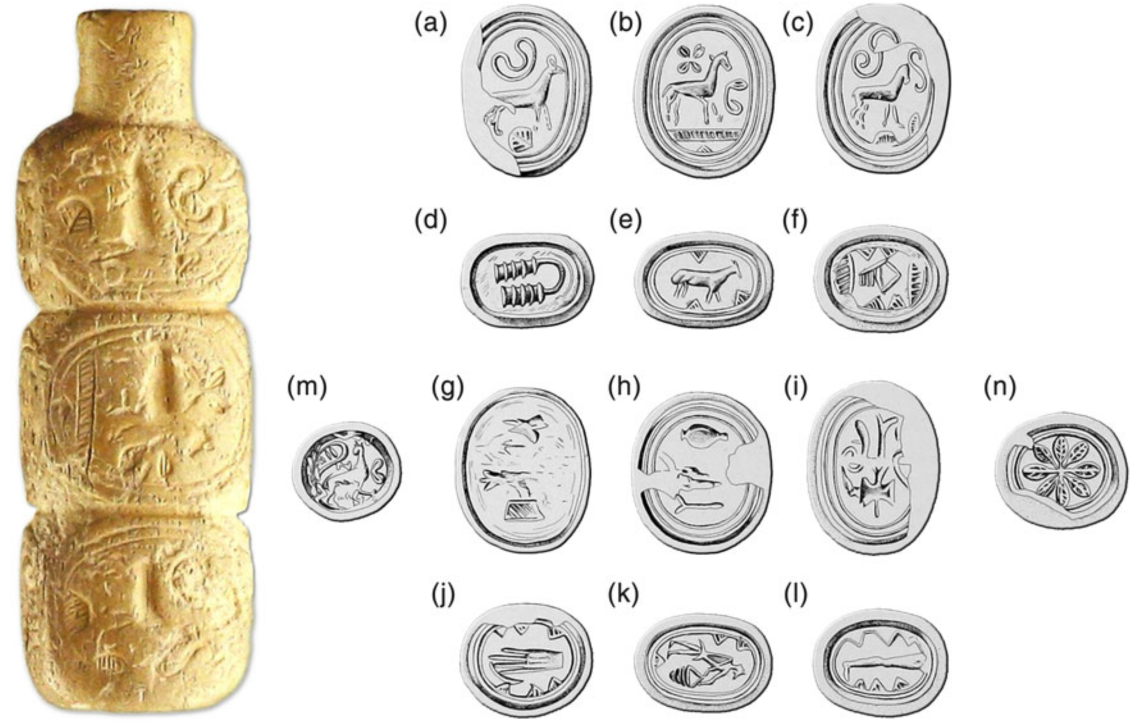

Fig. 3. Fourteen-face sealstone from Archanes no. 315, with drawing of its engraved faces (edited, after Sakellarakis and Sapouna-Sakellaraki 1997, 327, fig. 283 and 328, fig. 284).

of one side (h–i), as it is doubtful whether the third face of the side in question (g) is inscribed or not. Another side seems to have two individual hieroglyphic signs in isolation (j and l). The other sides all have iconographic details. Since each side had to be used as a unit, the act of stamping with this object conveyed a message that went beyond sealing the inscription's meaning only – it conveyed it in tandem with other iconographic information as well. Signs and iconography on the objects may have, therefore, coexisted as icons or emblems, and whoever approached this writing did it possibly without actually 'reading' it, but recognised and understood the object as a whole. To corroborate this point, on two other three-side prisms from Archanes, nos. 251 and 252, the [illegible] formula is split across the sides, and the inscription is broken down, as it were, so that only a three-step process of impressing would make sense: there is no instance of sealings stamped three times, so the likelihood is that this type of object made sense in its tridimensional quality, as a physical object to be worn and displayed, as well as stamped.

This frames the question of the accessibility of these objects: the fact that we are observing several set formulas, which are repeated in a third of the corpus of hieroglyphic seals as a whole, indicates that they are inherently more recognisable than they would be had the sequences been highly variable. In cognitive psychology it seems that word recognition can follow two routes: it may bypass phonological coding and go straight to the lexical item directly, or it may rely on close phonological reading, the latter happening always when we see a written word for the first time (Dehaene 2009). If we have encountered individual words before, we will recognise them with little or no phonological effort, given that our capacity to detect words is hardly dependent on the analysis of their overall shape (Dehaene *et al.* 2004, Dehaene 2009). Yet neither of these specimens at any level conforms to a stylistically normalised or graphically conventionalised set of rules. Each hieroglyphic inscription is individually wrapped up in its special seal package. Each represents an attempt at a highly individualised manipulation of a system of communication. Writing is not so much a technology as a symbol in itself, probably as much linked to display as it was to a formally utilitarian application in the administration. This is what Baines calls 'the symbolic salience of writing'

(Baines 2004, 152), tied to the knowledge on the part of the receivers that writing was present, and that it was meaningful, an ingredient in the complexity of high visual culture that was of crucial value to those elite groups that possessed the seals (see also Flouda 2013).

WHAT'S IN A NAME?

So what is the content of these extremely brief inscriptions? Evans noted that the sphragistic usage of the seals to authenticate documents and secure property might give clues as to the nature of the inscriptions on the seals, but can their ultimate function be tied to an analysis of the sign-sequences attested?

There are two striking aspects related to the occurrence of sign-sequences (or 'words') on sealstones: first, the high incidence of three- or four-sided prisms that bear one or more sides engraved with hieroglyphic signs and, second, the fact that these sign-sequences are highly repetitive in the corpus, so as to constitute proper 'formulas'. Eight separate formulas have been observed (Poursat 2000 and Olivier 2000), together with the Archanes formula already mentioned above (which occurs less than 10 times). Among these, two are very frequent: formula no. 1  (signs 044–049), appearing *c.*70 times across seals and sealings and archival material, and the formula no. 2  (signs 044–005), appearing 30 times on seals and sealings, and twice on archival material (Olivier 2000, 153). Overall, a third of the seal inscriptions record one of these two formulas.

Olivier sees a possible meaning of these two formulas in reference to the 'palace' and 'temple' institutions respectively (Olivier 1990; see also Poursat 2000, 187, and Weingarten, 1995, 303, who slightly tweaks the interpretation and resorts to the signification of 'royal' versus 'bureaucratic', in view of the fact that both formulas can appear on the same seal).[17] This is so far as the two most frequently observed sequences are concerned. Before these interpretations, Evans had already suggested that the sequences may represent official titles and 'badges' or what he had called *cognomina* (Evans 1909, 264). He goes so far as to advance a possible hypothesis of the actual significance of a series of signs that recur in formulas, which does not seem to be language-bound, so that the actual individual signs are to be interpreted as semasiographic (Evans 1909, 268, fig. 120, for instance, sign 038  representing logographically a 'gate', that is taken to mean 'guardian or keeper', or sign 005  that is taken to mean 'overseer or governor').[18] It is to be inferred from such instances that Evans assumed that the rebus principle applied here, at least as far as the repeated formulas are concerned. Whatever their ultimate phonological meaning (if it existed at all), in any case it seems clear that these designations reflect a somewhat defined pattern; from the distribution of the eight most recurring formulas, an ordered hierarchic system appears to be at play: certain formulas are borne only on hard stone prisms that already have some sides engraved with formulas. The attestation of such recurring patterns is, as it were, cumulative: one sequence will appear only if another is already attested on one side of a prism (Poursat 2000).

This blueprint, and the patterns of repetition, may be indicative and significant in themselves, and may represent institutional designations in the way that Olivier and Weingarten interpreted them. But what may be of interest is to compare what is repeated against what is not repeated, and come to a complementary appreciation of the sign-sequences on the seals and sealings that are not part of the formulaic repertoire. Can the single occurrences, the *hapax graphomena* in the repertoire, as it were, shed some light on a possible interpretation of their subject matter?

First, we need to separate what is repeated from what is not, and detach the corpus of sealings (57 in total) from that of the engraved sealstones (136). Out of a total number of 280 individual

[17] See nos. 247, 253, 259, 261, 266, 274, 277, 283, 297, 298, 299, 301, 305, 308, 311 and 314 (Olivier and Godart 1996). See also a further correspondence (Olivier 2000).

[18] The inferences lead to the possibility of having identified a 'Minoan dynast' in a sealing from Knossos, stamped twice with a prism seal bearing the frequent sequence  .

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

sign-sequences in the repertoire of Cretan hieroglyphic on seals, 158 sequences are represented by a formula: this accounts for 56.3% of the whole subject-matter repertoire. Of the sealings repertoire, out of a total number of 57 sequences on as many sealings (no sealing bears more than one sequence), 26 specimens bear one of the formulas,[19] accounting for 45% of the total. This means that both the sequences on seals and those on the sealings are roughly balanced in representing formulas.[20] The remainder of the sequences is thus not repeated.

Out of the total number of sealstones, only 26% of the total bear no formula whatsoever.[21] It is undoubtedly noteworthy that half of these *hapax graphomena* are found specifically on one-sided sealstones.[22] This means that the function of these particular one-sided seals was to have that particular, non-repeated, sequence engraved only and uniquely there. This works also for those three-or four-sided seals that have only one side engraved with a sequence that is not repeated elsewhere (on two-sided seals with only one sequence, the sequence is invariably a formula). These unique words are, to put it briefly, not associated with a formula, even though the space to add it would have been available: instead, geometric motifs (no. 225, Olivier and Godart 1996, 238; no. 236, Olivier and Godart 1996, 244) or animals (no. 243, Olivier and Godart 1996, 246) or even a maiden with a flowing mane (no. 280, Olivier and Godart 1996, 266) are encapsulated on the other, not inscribed, faces of the seal. There are also four-sided seals that have no formula whatsoever and bear unique attestations as sequences on all sides (nos. 289 – albeit damaged, 294,[23] 304, 306, 307, Olivier and Godart 1996).

In brief, we can observe sequences that are unique attestations, more often than not isolated, inasmuch as we have sequences that are repeated to a high degree of formulaic structure, often (on four-sided prisms especially) in association with uniquely attested sequences. What do we make of this? From a macro-perspective, if we look at the actual appearance of the 'inscriptions', and not their deftly normalised transcriptions (Olivier and Godart 1996), we get a sense of how individualised the signs are, adhering to no particular stylistic repertoire or detail, and no element repeated or standardised within a template: these objects, albeit serving the same function, are not only far from having been serially produced, but they are also individually personalised. The details in the engraved formulas – features that one would expect to be recognised at a moment's glance – are custom-made, tailored to alternating degrees of embellishment. What lexical elements can dictate such wilful intention to personalise?

There has, in the literature, been a certain tendency to shy away from offering interpretations of what it is that Cretan hieroglyphic records, before and in lieu of a proper decipherment. Assuming that these non-repeated sequences can represent 'personal names' would, no doubt, constitute a tentative assumption, but one no less tantalising for all its speculative nature. The fact that the repeated words can correspond to institutional activities of the administration, be they related to temples or bureaucracy (though the former is quite unlikely), would not impinge on such a reading. The juxtaposition of a *hapax graphomenon* with a repeated formula would point to a further detailed mention of the role of a specific individual within the institution, or realm of activity, which is rendered by the formula itself. Equally, the *hapax graphomena* that are not associated with any formula – be they represented by a single sequence on one-sided seals, standing out in splendid solitude, or found spread out on four-sided seals in longer sequences – may indicate simple personal names on the former seal type, or personal names with other designations added (titles, specific designations *etc.*) in the latter. In brief, these

[19] Not all the formulas attested on the sealstones are attested on the sealings: for instance, formulas nos. 4b, 6 and 7 are not attested.

[20] Although for the sealings repertoire, the most frequently attested is formula 2 (8 times), as opposed to the most attested formula on the seals' repertoire, which is formula 1 (58).

[21] Thirty-five sealstones have no formula.

[22] In the sealstones corpus: one-sided prisms present 16 *hapax graphomena*, two-sided ones only one case (but it is represented by logograms: this is no. 206 [Olivier and Godart 1996, 229]), three-sided ones have nine (nos. 255 and 273 in Olivier and Godart 1996, 255 and 263 respectively, are uncertain), four-sided ones have eight cases of *hapax graphomena* (one is a logogram, however: no. 291, Olivier and Godart 1996, 275).

[23] This may be a case *sui generis*, since it is one of the very few instances of longer text.

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

sequences need not be signatures in all instances, but their inherent *raison d'être* would be to name people, designating them both as individuals and as officials in their institutional role.

Comparative evidence for texts being nominal or titular in nature abounds. In pre-writing or proto-writing phases, the encoding of proper names appears to have been an important stage. Proper names are indexical in function (they pick out an individual) but do not operate via deixis (they do not have contextual elements that define them better): they stand in isolation with no syntactical specification or proper verbalisation. This is, for instance, the earliest unambiguous evidence for writing in Mesoamerica (Houston 2004c). If all of this is correct, a decipherment, much glorified as a solution for the texts' interpretation, will, in fact, complicate the picture to even more frustrating degrees. Finding out that exactly half of the 'words' in the corpus represent morphologically insignificant segments that hardly help to identify language affiliation or to reconstruct internal structure would constitute the ultimate academic irony for all would-be decipherers.

CRETAN 'HIEROGLYPHS' REVISITED

All this helps to frame a definition of Cretan writing, its perception and use as a tool within Cretan society, but does not explain how and why this writing system came to be created. The last section of this contribution seeks to explore its origins and the cultural triggers that led Cretan hieroglyphic to come into being.

There has been continuous debate on the origin of the earliest Cretan writing, starting from Evans' palaeographic analysis of possible sign correspondences that link it with Egyptian hieroglyphic (Evans 1909), whose similarity is taken to be so evident as to justify the borrowing of the name 'hieroglyphic' itself. The view that writing could have had a different origin has not been entertained at all, no doubt for reasons of empirical caution. Moreover, the background to writing on Crete goes *pari passu* with the source responsible for the emergence of glyptic tradition on the island: the issue of how to reconcile the methods of sealing directly from a Near Eastern template (Weingarten 1990) with an Egyptian source for writing has not been subjected to critical scrutiny (Palaima 1990, 117–18). All this frames what has been accepted uncritically, namely the fact that the Minoans cannot have been responsible for inventions *ex nihilo*, but must have adopted both traditions from elsewhere, to varying degrees of indebtedness, whose measure we cannot infer.

Tracing the origin of writing systems is problematic for two reasons: the first is that we have to rely on the earliest attestations, dependent on archaeological excavation, rather than the first moments of writing or its very points of origin. From this it follows that whatever documentation is observable may belie advanced development in graphic representation occurring at a local level. The second problem concerns the degree of borrowing from a template to a new system: what elements were specifically transmitted, what level of phonographic innovation was implemented, what dynamics of transmission enacted? Even when a model script is identifiable with accuracy, the actual reconstruction of the activity of borrowing can still be fraught with contextual problems, concerning location, chronology, bilingualism *etc.* The evidence of transmission of the Linear A system for the development of Linear B (Palaima 1988, Palaima and Sikkenga 1999, Olivier 1979), and the Phoenician template for the Greek alphabet (Woodard 1997, Powell 2002), are all cases in point. The spectrum of possible levels of indebtedness to pre-existing models is broad, ranging from stimulus or influence of one system on another, to the reinvention of techniques of writing prompted by the diffusion of incomplete information about the model system, to the independent development in different cultures with similar conditions that induced the emergence of literacy (Damerow 2012).

How indebted, then, is Cretan hieroglyphic to pre-existing writing systems, such as Egyptian, generally assumed to be its template (Evans 1909, 240, fig. 105) despite some misgivings in admitting its formative influence (Olivier 1986; see also, and especially, Olivier 1996)? The graphic parallels that Evans sought to strike between the two types of hieroglyphic system cannot

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

lead us far. As Powell puts it bluntly, 'the shapes of the signs [of Cretan] have nothing to do with Egyptian signs' (Powell 2009, 109). In grappling with this palaeographic problem, Olivier suggests that the Cretans would have needed to borrow the day-to-day bureaucratic tool of the archives, namely the hieratic system, rather than the monumental Egyptian hieroglyphic (Olivier 1996), for the development of a parallel administrative function. Unfortunately, hieratic, too, does not share any graphic matches with Cretan. Even structurally, Egyptian hieroglyphic and hieratic are nowhere near the syllabic configuration that we assume was the basis of Cretan: Egyptian writing is not syllabic, but logoconsonantal; this means that a core element represented by the logogram system is juxtaposed with a system of phonographic consonants (biliterals or triliterals) with no vowel notation, and a set of determinatives, which are used as category indicators. To the very end of its literary tradition, Egyptian is riddled with a complex system of incorporated mixed elements (Coulmas 2003) that strike a stark contrast with the agile Cretan system.

Chasing graphic parallels with other coeval scripts is an equally fruitless endeavour, bound to fall prey to methodological circularity. It is speculative to claim that some Cretan hieroglyphic signs may have 'Egyptian, Anatolian or Syrian parallels' (Palaima 1990, 118 [Kopcke in discussion]): overlap may just be the result of coincidence rather than of indirect borrowing. If, then, we cannot prove that the Cretan system was derivative, and cannot plausibly reconstruct its palaeographic source, is it the case that the view of a vague, indirect diffusion would serve us better than any other explanation?

INVENTING WRITING

The current view on the origin of early writing holds that what can be defined as incontrovertible primary inventions took place only four times, in Sumer (Michalowski 1994, Schmandt-Besserat 1989, Green 1989), China (Boltz 1986 and 2001, Bagley 2004, but see Bottéro 2004 for a creation by diffusion for Chinese), Egypt (Baines 2004) and Mesoamerica (Houston 2004c). These conclusions presuppose, by sheer absence of empirical evidence to the contrary, that all other ancient writing systems must have represented secondary offshoots of these four inventions, as derivative systems developed through direct influence (Michalowski 1993) or indirectly (Kroeber 1940). This is a move from the monogenetic view, according to which writing was an original invention that took place in one temporal and geographic setting (Sumer, towards the end of the fourth millennium BC: Michalowski 1994, Coulmas 2003) and was used as the template for all other scripts (Gelb 1963, Schmitt 1980). That this common origin (*Urerfindung*) was fashionable still in recent times is rather surprising (Boltz 2001, Gaur 2000, Senner 1989, Houston 2004b), and this long-enduring position may still prove an obstacle to assuming a more open-minded perspective to the possibility that writing may have been invented afresh (Vanstiphout 1995).

Proving independence of creation should not be a goal in itself, as it would go against a sound scientific methodology. However, it remains the case that a traditional diffusionist stance still imbues our perception of how writing came into being, and setting out to prove that the emergence of such a phenomenon was more indebted to autonomous stimuli and internal triggers than derivative and external ones is still a stone left, to an extent, unturned. What makes writing possible is the nexus linking the visual with the auditory perceptions (Robertson 2004, 19) and it is no coincidence that pictographic symbols are the frequent foundation for the initial breakthroughs in the development of writing systems. Vision in its iconicity makes the development into symbol possible: this is the way that pictograms become logograms. From a cognitive standpoint, the assumption is that there is an intrinsic difficulty in the human mind in putting the above into practice, namely in conceptualising the relationship between image and word that will translate into a direct phonetic representation: this is what one can call 'phoneticisation' or 'verbalisation'. This means that the step by which the representation of a thing will become the representation of the word for that thing is cognitively difficult. And in turn, the process of shifting that meaning to a different word, through rebus or pun or polysemy,

is equally arduous. Is this really such an intellectual obstacle that the primitive human mind should have overcome it so rarely? And what are the cognitive preconditions that enable such a kind of process to happen?

It appears that writing grew out of drawing (Coulmas 2003, 196), and while not all drawing must by necessity turn into writing, it is true that a pre-existing pictorial tradition as foundation for writing can point to independent creation, and the iconic origin of many scripts may suggest local roots (Houston 2004b, Boltz 2001). Cretan writing appears within a setting embedded in iconographic display and symbolism, where the integration between art and writing suggests a predisposition to orderly representation. This has many ties with the non-inscribed glyptic tradition: in the case of Crete, it truly appears that writing may have been linked by some kind of morphological logic with the pre-existing designs on seals (Kenna 1962). Thus the direct prompt that prefigured the advent of writing would reside in the iconography of seals, and by paving the way for transducing symbols into writing, it marks the beginning of an autonomous development that follows insular schemes and original expressions.

Writing, however, does not necessarily need to be the end result of an evolutionary process stemming from seal iconography. It may well be an invention, and the result of a momentary occurrence (Boltz 1986, 432) that visibly marks the realisation that a sign can stand for a word (in the case of logography) or a sound (in the case of phonography). It may be a punctual event, not a gradual process. The glyptic context that subsumes this invention is, overall, a system that works in parallel with it, but is quite separate. Therefore, whether we accept that some of the glyptic tradition that we find on Crete is to an extent derivative of Near Eastern practices (Weingarten 1990, at least as far as Phaistos and Monastiraki sealing systems are concerned) or not,[24] there can be no doubt that the earliest instances of Cretan writing are resoundingly original, and whether or not the Cretan inventors knew of a template for writing, in the widest sense of 'a system for recording information indirectly through the combination of signs belonging to a specific repertory' (Baines 2004, 150–1), they did not adopt it as their model.

This does not imply that the creation of the Cretan hieroglyphic script can be ascribed exactly to the same independent and autonomous process that prompts primary inventions, but, rather, that the context of its creation may have been much more disengaged from a pre-existing model than hitherto assumed. This hypothesis cannot objectively be proved on the available scanty evidence, especially in view of the fact that secondary script creations have not yet been mapped theoretically (Houston, pers. comm.): what degrees of indebtedness are observable when scripts are borrowed from pre-existing templates?

We could argue that Cretan hieroglyphic may have been created in the context of a general awareness of pre-existing literacy active in its vicinity. Individual Early Bronze Age Cretans must have been directly exposed to the two great writing systems of that era: cuneiform and, in particular, Egyptian hieroglyphs. But the Cretan sign repertoire, fed by the glyptic tradition that flourished by its side, may well have stemmed from inherent local triggers and autonomous cultural dynamics. There are several factors that would point towards this direction. If, as argued above, the earliest instances of writing on Crete are to be taken as writing *stricto sensu* (as well as broadly speaking), their internal structure is essentially logosyllabic, with a limited use of logography. It is known from cognitive psychology that an explicit awareness of syllables developmentally precedes phonemic awareness across languages. Non-literate individuals are readily able to syllabify words, so that they can be broken up without difficulty into their constituent syllables, but are less able to single out syllables into the constituent phonemes (Kroeber 1940). This has to do with phonetic evolution: the model takes the protosyllable, a

[24] See also Pini (discussion in Palaima 1990, 117): 'I think the Minoans did not take over the sealing system directly. They only got the idea, and they created something of their own on the island. Weingarten's first upheaval shows immediately new types which are not Near Eastern. During the transitional phase between EM and MM, the Minoans imported seals from Egypt, but these did not seriously affect the development of Minoan glyptic art. The Egyptian influence was restricted to a small group of seals. The Minoans immediately developed their own rich repertory of typically Minoan seal shapes and seal motifs which have nothing to do with the Near East. The overall system was also a Minoan creation.'

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press

single cycle in the repeated closed–open cycles of the mandible in a primate call, as the original unit of both articulatory action and meaning (Studdert-Kennedy 2000). It is also the case that children learn more readily through syllabification than through phoneticisation, whether in a syllabically simple language such as Japanese or the slightly more syllabically complex Korean, or a syllabically varied language such as English. This tendency is sufficiently essential to be extremely common in modern languages, with the CV syllable being the only universal syllable type. According to MacNeilage's form/content theory, the syllable frame came first, and was gradually differentiated as the vocal organs came under voluntary control (MacNeilage and Davis 2000). Not surprisingly, then, invented writing systems tend to be either syllabaries or logosyllabaries, and not segmentally based alphabets. This, of course, does not make *any* logosyllabary an autonomous creation, or cannot provide incontrovertible evidence that Cretan was one such punctuated act of invention, but it certainly does not detract from the tantalising possibility that sometime at the end of the third millennium BC, the realisation of the syllabic unit as the basic cognitive principle was put to use on Cretan soil.

WHERE ALL ENDS MEET

The earliest occurrence of writing in Mesopotamia has played a disproportionate role in attempting to understand all other processes of ancient script creation. The idea of a monogenesis of writing, that sees all ancient systems other than the Sumerian deriving directly or indirectly from it, has also given rise to assumptions about the finality of writing in general. The Mesopotamian shadow cast on all writing is so long that the bookkeeping function suggested by the earliest texts is taken as a paradigm, and as a functional model for other epigraphic traditions, so that writing and administration are flipped as sides of the same coin, tying the two faces of writing, its origin and function, within a purely technocratic dimension. The definition of writing as a tool for administrative ends has, in turn, generated much debate on whether it served as cause or effect of economic complexity, whether it emerged to manage centralised power, or functioned as its very enabler (Bagley 2004, Cooper 2004, Larsen 1988, Postgate, Wang and Wilkinson 1995, Schmandt-Besserat 1992). Either way, this view makes origin and purpose coalesce conceptually, with a consequent assumption that writing impacted and regulated human activity to a great extent (Bowman and Woolf 1994). That the Mesopotamian case represents the most stubbornly bureaucratic use of writing (Larsen 1988), and should therefore be treated as *sui generis*, has not weakened the assumption that all early writing is invented out of economic necessity. Cretan hieroglyphic has been included in the count, as have all Aegean systems of the Bronze Age. To be sure, it is true that Linear A and Linear B are overwhelmingly administrative in nature (Palaima 1990, Weingarten 1995 *etc.*), but, as stressed above, the early Cretan sealstones were also meant to convey a personal and symbolic message, aside from their sphragistic function.

Are we thus entitled to claim the same for all writing traditions, regardless of the individual contexts of their earliest attestations, even if the evidence speaks for a more complex, multivalent purpose for early writing? Some scholars ground their conclusions on the hard evidence at our disposal, and on the claim that the extant inscriptions occur on status-oriented, prestige-laden objects that carry texts intended for posterity, made with durable material, as opposed to the more mundane day-to-day administrative documents in papyrus or wood that are now lost (Postgate, Wang and Wilkinson 1995). One such interpretation is represented by the function attached to the first writing in China, represented by the Anyang inscriptions, which manifest a strong display-oriented function, but still have been swallowed by the administrative über-explanation, to justify the cumbersome efforts, and the imposition of a regulated canon, involved in the act of script creation (Bagley 2004, 235).

To tie uncritically the multiple creations of writing to one purpose fosters an oversimplification that dodges minute complexities of specific context and equally levels up diverse cultural triggers at play when writing is created. Explanations therefore are to be sought not so much in a mechanistic fashion, as within the specific setting of creation. In doing so, it appears that not only does early

writing predate the emergence of the bureaucracy-heavy centralised state in Egypt or China, but its first applications in several regions also often seem to be concerned with more general needs to 'name things and people' (Houston 2004a). This onomastic theory needs to be explored further, not because of any urgency to replace the technocratic model, but because it fits *some* of the extant evidence for the inception of writing in several regions. In such cultural contexts, the particular interests of specific individuals that are intent on making specific statements of identity and group affiliation are emphasised, through marks of ownership, or through the recording of personal names. While this should not freewheel us into ignoring any element of constraint on the development of literacy, examples of particular interest are plentiful. Archaic Greece records an almost obsessive interest in such display, which went hand in hand with the intent of proclaiming the prerogative of skilled knowledge over the illiterate (Stoddard and Whitley 1988). Old Germanic runes were used to personalise various objects with names and markers' formulas, as efficient means of marking alliances and elite membership (Williams 2004). Etruria displayed literacy as a preserve of the elite and inscriptions represented arenas where ideological manipulation could be enacted, through the formulaic character of the texts, with its dual mode of communicating with group peers while distancing the rest: 'at one level, the inscriptions may name individuals, at another level, they represent the power of the community of which they are part' (Stoddard and Whitley 1988, 768).

The situated context of Cretan hieroglyphic plays out along the same lines. Despite the evidence for its later use in palatial economies, the emergence of writing on Crete may not have been linked only to an identifiable and incontrovertible economic urgency, but may have also resided in the symbolic value attached to the sealstones, such as those from the cemetery of Archanes-Phourni, deposited in high-status burials, whose social importance was emphasised by the presence of such objects (Karytinos 1998). From the very beginning, but even at a later date, hieroglyphic sealstones may have served the double function of administrative tools as well as mini-monuments of status, reflecting the elite affiliation of select individuals whose intention was to mark ownership and identity through, if my analysis is correct, the signature stamping of these precious items. That these instruments were co-opted by the bureaucracy should not overwhelm the symbolic value attached to them as physical objects (Wengrow 2008). Furthermore, the fact that the early stages of writing are linked to groups at Archanes-Phourni that may predate the inception of the palatial structure (Schoep 2006) suggests that writing was not merely born out of the necessity to manage a macro-economy, but was also the result of elite group efforts which sought to establish their position in life, and in death, by making specific statements about themselves.

Understanding the introduction of writing on Crete can not only provide a profitable path of investigation for its own microcosm and the context in which it was used, but can also play a role in contributing to the discourse on the origins of writing in more general terms. To this end, two considerations spring to mind. There is no logical reason why we should be looking for a common context for the invention of writing or seek an umbrella explanation, and even if there were, we would not find a convincing one in purely economic motivations. Nor is there a reason to justify the social and economic investment required to propagate and maintain a writing system (Cooper 2004). The effort involved in the creation of a formalised codification system such as writing is not dissimilar to the creation of any other type of significata that may have symbolic connotations: writing may be the result of less concerted efforts than we would like to admit, and may be less conditioned and influenced by external elements or imperious internal needs than we wish to accept, to the extent that, perhaps, it may constitute in all regions and periods, a localised, self-contained and even intimate process of creation.

CRETAN WRITING: A SYNTHESIS

Three concerns have been articulated in this contribution: to establish a definition of the earliest Cretan writing, to place it in its situated context of use, and to seek its origin and the reasons

behind its introduction. The method of investigation adopted relies less on diffusion-imbued, mechanistic derivations and technocratic explanations, and makes space for a more sophisticated degree of creative input to be involved in the instance of script origination on Crete. This concluding synthesis is brief, to prove that, similarly to what the short inscriptions of the Cretan sealstones aim to do, a lot of information can be packed in little space.

ACKNOWLEDGEMENTS

I am thankful for the gracious assistance received from John Bennet, Orazio Cappello, Georgia Flouda, Stephen Houston, Anna Margherita Jasink, Felipe Rojas, Helena Tomas, Olga Tribulato and Judith Weingarten, who read preliminary drafts of this paper and contributed (some repeatedly and incessantly) with their attention, acumen and insight. The anonymous referees were especially helpful and constructive. I am also thankful to the co-editor of this journal, Peter Liddel, who assisted with precision and care during the last phases of revision. This paper was researched, discussed and written during a very productive and intense study period in the stimulating environment of the British School at Athens, where I spent the winter of 2013 as Early Career Fellow. It is to the generosity of the School, and the support of its former Director, Catherine Morgan, that I owe a particular debt of gratitude. All remaining shortcomings remain my own responsibility.

silvia.ferrara@uniroma1.it

REFERENCES

Bagley, R.W. 2004. 'Anyang writing and the origin of the Chinese writing system', in Houston, (ed.) 2004b, 190–249.

Baines, J. 1983. 'Literacy and the ancient Egyptian society', *Man* 18 (3), 572–99.

Baines, J. 1989. 'Communication and display: The integration of early Egyptian art and writing', *Antiquity* 63, 471–82.

Baines, J. 2004. 'The earliest Egyptian writing: Development, context, purpose', in Houston, (ed.) 2004b, 150–89.

Barton, D., Hamilton, M. and Ivanic, R. 2000. *Situated Literacies. Reading and Writing in Context* (London).

Basso, K. 1974. 'The ethnography of writing', in Bauman, R. and Sherzer, J. (eds.), *Explorations in the Ethnography of Speaking* (Cambridge), 425–32.

Bennet, J. 2008. 'Now you see it; now you don't!': The disappearance of the Linear A script on Crete', in Baines, J., Bennet, J. and Houston, S.D. (eds.), *The Disappearance of Writing Systems* (London), 1–29.

Bennet, J. 2013. 'Epilogue', in Piquette, K.E. and Whitehouse, R.D. (eds.), *Writing as Material Practice: Substance, Surface and Medium* (London), 335–42.

Bloomfield, L. 1933. *Language* (New York).

Boltz, W.G. 1986. 'Early Chinese writing', *World Archaeology* 17, 420–36.

Boltz, W.G. 2001. 'The invention of writing in China', *Oriens Extremus* 42, 1–17.

Boone, E.H. 1994. 'Introduction: Writing and recording knowledge', in Boone, E.H. and Mignolo, W.D. (eds.), *Writing without Words. Alternative Literacies in Mesoamerica and the Andes* (Durham and London), 3–26.

Bottéro, F. 2004. 'Writing on shell and bone in Shang China', in Houston, (ed.) 2004b, 250–61.

Bourdieu, P. 1977. *Outline of a Theory of Practice* (Cambridge).

Bowman, A.K. and Woolf, G. (eds.) 1994. *Literacy and Power in the Ancient World* (Cambridge).

Brice, W.C. 1997. 'Notes on the Cretan Hieroglyphic script', *Kadmos* 36, 93–6.

Brosius, M. (ed.) 2003. *Ancient Archives and Archival Traditions* (Oxford)

Cancik-Kirschbaum, E. 2012. 'Writing, language and textuality: Conditions for the transmission of knowledge in the Ancient Near East', in Renn, J. (ed.), *The Globalization of Knowledge in History*, 125–151.

Collins, J. and Blot, R.K. 2003. *Literacy and Literacies. Texts, Power, and Identity* (Cambridge).

Cooper, J. 2004. 'Babylonian beginnings: The origin of the cuneiform writing system in comparative perspective', in Houston, (ed.) 2004b, 71–99.

Coulmas, F. 2003. *Writing Systems: An Introduction to their Linguistic Analysis* (Cambridge).

Damerow, P. 1999. 'The origins of writing as a problem of historical epistemology' (Preprint 114 of the Max-Planck-Institut für Wissenschaftsgeschichte, Berlin).

Damerow, P. 2012. 'The origins of writing and arithmetic', in Renn, J. (ed.), *The Globalization of Knowledge in History* (Berlin), 153–173.
De Francis, J. 1989. *Visible Speech: The Diverse Oneness of Writing Systems* (Honolulu).
Dehaene, S. 2009. *Reading in the Brain: The New Science of How We Read* (London).
Dehaene, S., Jobert, A., Naccache, L., Ciuciu, P., Poline, J.B., Le Bihan, D. and Cohen, L. 2004. 'Letter binding and invariant recognition of masked words: Behavioural and neuroimaging evidence', *Psychological Science* 15, 307–13.
Derrida, J. 1976. *On Grammatology* (Baltimore and London).
Diringer, D. 1962. *Writing* (New York).
Evans, A.J. 1894. 'Primitive pictographs and a Prae-Phoenician script from Crete and the Peloponnese', *Journal of Hellenic Studies* 14, 270–372.
Evans, A.J. 1909. *Scripta Minoa*, vol. 1 (Oxford).
Flouda, G. 2013. 'Materiality of Minoan writing: Modes of display and perception', in Piquette, K.E. and Whitehouse, R.D. (eds.), *Writing as Material Practice: Substance, Surface and Medium* (London), 143–174.
Gagarin, M. 2008. *Writing Greek Law* (Cambridge).
Galgano, M.B. 2003. 'Derrida's *De la grammatologie* and hieroglyphic writing', in Morra, L. and Bazzanella, C. (eds.), *Philosophers and Hieroglyphs* (Turin), 140–58.
Gaur, A. 2000. *Literacy and the Politics of Writing* (Bristol).
Gelb, I.J. 1963. *A Study of Writing* (Chicago).
Godart, L. 1999. 'L'écriture d'Archanès: hiéroglyphique ou linéaire A?' in Betancourt, P.P., Karageorghis, V., Laffineur, R. and Niemeier, W.D. (eds.), *Meletemata. Studies in Aegean Archaeology Presented to Malcolm H. Wiener* (Aegaeum 20; Liège and Austin), 299–302.
Godart, L. and Tzedakis, Y. 1992. *Témoignages archéologiques et épigraphiques en Crète occidentale du néolithique au minoen récent IIIB* (Rome).
Goody, J. (ed.) 1968. *Literacy in Traditional Societies* (Cambridge).
Goody, J. and Watt, I. 1963. 'The consequences of literacy', *Comparative Studies in Society and History* 5 (3), 304–45.
Green, M.W. 1989. 'Early cuneiform', in Senner, (ed.) 1989, 43–57.
Grumach, E. 1963. 'Neue hieroglyphische Siegel', *Kadmos* 2, 7–13.
Haas, W. 1976. 'Writing: The basic options', in Hass, W. (ed.), *Writing Without Letters* (Manchester), 131–208.
Havelock, E.A. 1982. *The Literate Revolution in Greece and its Cultural Consequences* (Princeton).
Houston, S.D. 1994. 'Literacy among the Pre-Columbian Maya: A comparative perspective', in Boone, E. Hill and Mignolo, W.D. (eds.), *Writing without Words. Alternative Literacies in Mesoamerica and the Andes* (Durham and London), 27–49.
Houston, S.D. 2004a. 'The archaeology of communication technologies', *Annual Review of Anthropology* 33, 223–50.
Houston, S.D. (ed.) 2004b. *The First Writing. Script Invention as History and Process* (Cambridge).
Houston, S.D. 2004c. 'Writing in early Mesoamerica', in Houston, (ed.) 2004b, 274–309.
Houston, S.D. and Stuart, D. 1992. 'On Maya Hieroglyphic literacy', *Current Anthropology* 33 (5), 589–93.
Hyman, M.D. 2006. 'Of glyphs and glottography', *Language and Communication* 26, 231–49.
Jeffery, L.H. 1990. *Local Scripts of Archaic Greece* (Oxford).
Johnston, A. 1983. 'The extent and use of literacy: The archaeological evidence', in Hägg, R. (ed.), *The Greek Renaissance of the Eighth Century BC: Tradition and Innovation* (Stockholm), 63–8.
Justeson, J.S. and Stephens, L.D. 1993. 'The evolution of syllabaries from alphabets: Transmission, language contrast, and script typology', *Die Sprache* 35, 2–46.
Karytinos, A. 1998. 'Sealstones in cemeteries: A display of social status?', in Branigan, K. (ed.), *Cemetery and Society in the Aegean Bronze Age* (Sheffield), 78–86.
Karytinos, A. 2000. 'The stylistic development of seals from Archanes-Phourni throughout the Prepalatial period – style and social meaning', in Pini, I. (ed.), *Corpus der minoischen und mykenischen Siegel.* Beheift 6. *Minoisch-mykenische Glyptik: Stil, Iconographie, Funktion* (Berlin), 123–34.
Kenna, V.E.G. 1962. 'Seals and script', *Kadmos* 1, 1–15.
Kroeber, A.L. 1940. 'Stimulus diffusion', *American Anthropologist* 42, 1–20.
Krzyszkowska, O. 2005. *Aegean Seals. An Introduction* (London).
Larsen, M.T. 1988. 'Introduction: Literacy and social complexity', in Gledhill, J., Bender, B. and Larsen, M.T. (eds.), *State and Society: the Emergence and Development of Social Hierarchy and Political Centralisation* (London), 173–91.
Macdonald, C.F. and Knappett, C. (eds.) 2007. *Knossos. Protopalatial Deposits in Early Magazine A and the South-West Houses* (British School at Athens Supp. Vol. 41; London).
MacNeilage, P.F. and Davis, B.L. 2000. 'Evolution of speech: The relation between ontogeny and phylogeny', in Knight, C., Studdert-Kennedy, M. and Hurford, J.R. (eds.), *The Evolutionary Emergence of Language: Social Function and the Origins of Linguistic Form* (Cambridge), 146–60.
Magiddis, C. 1998. 'From polis to necropolis: Social ranking from architectural and mortuary evidence in the Minoan cemetery at Phourni, Archanes', in Branigan, K. (ed.), *Cemetery and Society in the Aegean Bronze Age* (Sheffield), 87–102.
Michalowski, P. 1993. 'Tokenism', *American Anthropologist* 95, 996–9.
Michalowski, P. 1994. 'Writing and literacy in early states: A Mesopotamianist perspective', in Keller-Cohen, D. (ed.), *Literacy: Interdisciplinary Conversations* (Cresskill), 49–70.
Mignolo, W.D. 1989. 'Literacy and colonization: The New World experience', in Jara, R. and Spadaccini, N. (eds.), *1492/1992: Rediscovering Colonial Writing* (Minneapolis), 51–96.
Mitchell, W.J.T. 1986. *Iconology. Image, Text, Ideology* (Chicago).
Moreland, J. 2006. 'Archaeology and texts: Subservience or enlightenment', *Annual Review of Anthropology* 35, 135–51.
Newby, Z. and Newby, R.L. (eds.) 2007. *Art and Inscriptions in the Ancient World* (Cambridge).

Olivier, J.-P. 1979. 'L'origine de l'écriture linéaire B', *Studi Micenei ed Egeo-Anatolici* 20, 43–52.
Olivier, J.-P. 1981. 'Les sceaux avec de signes hiéroglyphique. Que lire? Une question de définition', in Pini, I. (ed.), *Studien zur minoischen und helladischen Glyptik: Beiträge zum 2. Marburger Siegel-Symposium, 26–30. September 1978* (Berlin), 105–15.
Olivier, J.-P. 1986. 'Cretan writing in the second millennium BC', *World Archaeology* 17 (3), 377–89.
Olivier, J.-P. 1989. 'The possible methods in deciphering the pictographic Cretan script', in Duhoux, Y., Palaima, T.G. and Bennet, J. (eds.), *Problems in Decipherment* (Louvain-la-Neuve), 39–58.
Olivier, J.-P. 1990. 'The relationship between inscriptions on hieroglyphic seals and those written on archival documents', in Palaima, T.G. (ed.), *Aegean Seals, Sealings and Administration* (Aegaeum 5; Liège), 11–24.
Olivier, J.-P. 1996. 'Les écritures crétoises: sept points à considérer', in De Miro, E., Godart, L. and Sacconi, A. (eds.), *Atti e Memorie del Secondo Congresso Internazionale di Micenologia. 14–20 ottobre 1991* (Rome), 101–13.
Olivier, J.-P. 2000. 'Les sceaux avec des inscriptions hiéroglyphiques. Comment comprendre?', in Perna, M. (ed.), *Administrative Documents in the Aegean and their Near Eastern Counterparts: Proceedings of the International Colloquium, Naples, Feb 29–March 2*, 1996 (Rome), 141–91.
Olivier, J.-P. and Godart, L. 1996. *Corpus Hieroglyphicorum Inscriptionum Cretae* (Paris).
Olson, D. 1988. 'Mind and media: The epistemic functions of literacy', *Journal of Communications* 38 (3), 254–79.
Ong, W.J. 1982. *Orality and Literacy. The Technologizing of the Word* (New York).
Palaima, T.G. 1988. 'The development of the Mycenaean writing system', in Olivier, J.-P. and Palaima, T.G. (eds.), *Texts, Tablets and Scribes: Studies* in *Mycenaean Epigraphy and Economy Offered to Emmett L. Bennett, Jr.* (Minos Suppl. 10; Salamanca), 269–342.
Palaima, T.G. (ed.) 1990. *Aegean Seals, Sealings and Administration* (Aegaeum 5; Liège).
Palaima, T.G. 1998. 'Review of J.P. Olivier and L. Godart, *Corpus Hieroglyphicarum Inscriptionum Cretae*', *American Journal of Archaeology* 102, no. 2, 434–5.
Palaima, T.G. and Sikkenga, E. 1999. 'Linear A > Linear B', in Betancourt, P.P., Karageorghis, V., Laffineur, R. and Niemeier, W.-D. (eds.), *Meletemata: Studies in Aegean Archaeology Presented to Malcolm H. Wiener* (Aegaeum 20; Liège and Austin), 507–11.
Peirce, C.S. (1931–58). *Collected Writings* (Cambridge, MA).
Postgate, N., Wang, T. and Wilkinson, T. 1995. 'The evidence for early writing: Utilitarian or ceremonial?', *Antiquity* 69, 459–80.
Poursat, J.C. 2000. 'Les sceaux hiéroglyphiques dans l'aministration minoenne: usage et fonction', in Perna, M. (ed.), *Administrative Documents in the Aegean and their Near Eastern Counterparts: Proceedings of the International Colloquium, Naples, Feb 29–March 2, 1996* (Rome), 187–91.
Powell, B.B. 2002. *Writing and the Origins of Greek Literature* (Cambridge).
Powell, B.B. 2009. *Writing. Theory and History of the Technology of Civilization* (Oxford).
Robertson, J.S. 2004. 'The possibility and actuality of writing', in Houston, (ed.) 2004b, 16–38.
Rousseau, J.J. 1966. 'Essay on the origins of language', in Moran, J.H. and Gode, A. (eds.), *On the Origin of Language: Two Essays by Jean-Jacques Rousseau and Johann Gottfried Herder* (New York), 5–88.
Sakellarakis, Y. and Sapouna-Sakellaraki, E. 1997. *Archanes. Minoan Crete in New Light* (Athens).
Sampson, G. 1985. *Writing Systems* (London).
Saussure, F. de. 1959. *Cours de linguistique générale* (Paris).
Schmandt-Besserat, D. 1989. 'The precursors of writing: Plain and complex tokens', in Senner, (ed.) 1989, 27–41.
Schmandt-Besserat, D. 1992. *Before Writing* (Austin).
Schmitt, A. 1980. *Entstehung und Entwicklung von Schriften* (Cologne and Vienna).
Schoep, I. 2006. 'Looking beyond the First Palaces: Elites and the agency of power in EMIII–MMII Crete', *American Journal of Archaeology* 110, 37–64.
Schoep, I. 2007. 'The social and political context of Linear A writing on Crete', in Lomas, K., Whitehouse, R.D. and Wilkins, J.B. (eds.), *Literacy and the State in the Ancient Mediterranean* (London), 53–62.
Senner, W.M. (ed.) 1989. *The Origins of Writing* (Lincoln and London).
Sethe, K. 1939. *Vom Bilde zum Buchstaben. Die Entstehungsgeschichte der Schrift* (Leipzig).
Stoddard, S. and Whitley, J. 1988. 'The social context of literacy in Archaic Greece and Etruria', *Antiquity* 62, 761–72.
Street, B.V. (ed.) 1993. *Cross-Cultural Approaches to Literacy* (Cambridge).
Studdert-Kennedy, M. 2000. 'Evolutionary implications of the particulate principle: Imitation and the disassociation of phonetic form from semantic function', in Knight, C., Studdert-Kennedy, M. and Hurford, J.R. (eds.), *The Evolutionary Emergence of Language. Social Function and the Origins of Linguistic Form* (Cambridge), 161–176.
Taylor, I. 1883. *The Alphabet* (London).
Trigger, B.G. 2004. 'Writing systems: A case study in cultural evolution', in Houston, (ed.) 2004b, 39–68.
Vanstiphout, H. 1995. 'Memory and literacy in Ancient Western Asia' in Sasson, J.M. (ed.), *Civilizations of the Ancient Near East* (New York), 2181–96.
Webb, J.M. and Weingarten, J. 2012. 'Seals and seal use: Markers of social, political and economic transformations on two islands', in Cadogan, G., Iacovou, M., Kopaka, K. and Whitley, J. (eds.), *Parallel Lives: Ancient Island Societies in Crete and Cyprus* (British School at Athens Studies 20; Athens), 85–104.
Weingarten, J. 1990. 'Three upheavals in Minoan sealing administration: Evidence for radical change', in Palaima, (ed.) 1990, 105–20.
Weingarten, J. 1995. 'Sealing studies in the Middle Bronze Age, III: The Minoan Hieroglyphic deposits at Mallia and Knossos', in *Corpus der minoischen und mykenischen Siegel.* Beiheft 5. *Sceaux minoens et mycéniens. IVe symposium international* 10–12 *septembre* 1992, *Clermont-Ferrand* (Berlin), 285–311.
Wengrow, D. 2008. 'Prehistories of commodity branding', *Current Anthropology* 49, 7–34.

Whitt, W.D. 1995. 'The story of the Semitic alphabet', in Sasson, J.M. (ed.), *Civilizations of the Ancient Near East* (New York), 2379–97.

Whittaker, H. 2005. 'Social and symbolic aspects of Minoan writing', *European Journal of Archaeology* 8, 29–41.

Williams, H. 2004. 'Reasons for runes', in Houston, (ed.) 2004b, 262–73.

Woodard, R.D. 1997. *Greek Writing from Knossos to Homer: A Linguistic Interpretation of the Origin of the Greek Alphabet and the Continuity of Ancient Greek Literacy* (New York, Oxford).

Yates, T. 1990. 'Jacques Derrida: "There is nothing outside of the text"', in Tilley, C. (ed.), *Reading Material Culture. Structuralism, Hermeneutics and Post-Structuralism* (Oxford), 206–80.

Younger, J. 1990. 'New observations on hieroglyphic seals', *Studi Micenei ed Egeo-Anatolici* 28, 85–93.

Younger, J. 1998. 'The Cretan hieroglyphic script: A review article', *Minos* 31–2 (1996–7), 379–400.

Younger, J. 2005. 'Cretan Hieroglyphic wool units (LANA, double mina)', in Perna, M. (ed.), *Studi in onore di Enrica Fiandra. Contributi di archeologia egea e vicinorientale (Studi egei e vicinorientali 1)* (Paris), 405–9.

Younger, J. 2008. 'Food rations and portions in Cretan Hieroglyphic documents', in Hitchcock, L.A., Laffineur, R. and Crowley, J. (eds.), *Dais. The Aegean Feast. Proceedings of the 12th International Aegean Conference. University of Melbourne, Centre for Classics and Archaeology, 25–29 March 2008* (Aegaeum 29; Liège), 361–5.

Yule, P. 1980. *Early Cretan Seals: A Study of Chronology* (Mainz).

Η αρχή του συστήματος γραφής στην Κρήτη: θεωρία και πολιτισμικά συμφραζόμενα

Το παρόν επιστημονικό άρθρο εξετάζει υπό νέα μεθοδολογική προσέγγιση την αρχή του συστήματος γραφής στην Κρήτη κατά τη διάρκεια της δεύτερης χιλιετίας π.Χ. Επιπλέον, αποσκοπεί στο να αναπτύξει ένα ευσύνοπτο μοντέλο κατανόησης της προέλευσης, του σκοπού, της εμπειρίας και της σπουδαιότητας των πρωιμότερων μαρτυριών περί συστήματος γραφής στη νήσο, να διερευνήσει τα πολιτισμικά συμφραζόμενα της διαμόρφωσής του, και να εξετάσει τα πολιτισμικά αίτια που υπόκεινται της εφαρμογής του συστήματος γραφής στον γεωγραφικό χώρο και το πολιτισμικό πλαίσιο της Μέσης Μινωικής Κρήτης. Τρεις σημαντικές επισημάνσεις συνιστούν αντικείμενο πραγμάτευσης: ο προβληματικός ορισμός του πρώιμου συστήματος γραφής στην Κρήτη, η πιθανή ταύτιση υλικού των Κρητικών ιερογλυφικών επιγραφών με υλικό που αποτυπώνεται σε ενεπίγραφους σφραγιδόλιθους και ο βαθμός οφειλής του γραφέα σε προϋπάρχοντα πρότυπα. Οι εν λόγω ερευνητικές επισημάνσεις συνιστούν επίσης κρίσιμα σημεία αφετηρίας για την εκ μέρους μας κατανόηση του φαινομένου του πρώιμου συστήματος γραφής σε γενικές γραμμές, μέσω διεπιστημονικής προσέγγισης, που εισηγείται τη συνέργεια ανθρωπολογίας, αρχαιολογίας, επιγραφικής και κοινωνιογλωσσολογίας.

https://doi.org/10.1017/S0068245415000088 Published online by Cambridge University Press