Ancient Egyptian writing among other writing systems: An introductory essay

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Abstract

The present essay briefly sketches aspects by which ancient Egyptian writing resembles and differs from other writing systems. Like all pristine writing systems, Egyptian writing is a mixed system, representing both the sound and meaning of language in its signs. Among these pristine systems, it is typologically remarkable for its focus on roots rather than syllables, its uniquely rich development of classifiers/semantic determinatives, and its early and thorough-going phonetization. Beyond language, Egyptian writing is one of a few, mostly genetically unrelated forms of hieroglyphic writing, with other notable examples being Mesoamerican hieroglyphs and Luwian hieroglyphs in Anatolia. The hieroglyphic type of writing is distinguished by the retained pictoriality of its signs, a rich dialogue between language and image, and specific graphic ideologies and conceptions of the hieroglyphic sign. Egypt and Anatolia both show a digraphic situation, with differences. Unlike, for example, cuneiform, Egyptian was not adapted to other languages, but two writing systems were invented in contact with Egyptian writing, in altogether different contexts: Proto-Sinaitic and Meroitic. In entirely different ways, both show aspects of what might be termed a 'quasi-hieroglyphy', providing ancient outside views on hieroglyphic writing and speaking to the enduring allure of Egyptian hieroglyphic writing.

Writing, by definition, blends linguistic and visual dimensions. In the following essay, I discuss ancient Egyptian writing along those two dimensions, pointing at commonalities and differences with other early writing systems. In situating Egyptian writing among other writing systems, I seek to illustrate how Egyptian writing shows variations on common themes as well as differences in other respects. I conclude by commenting more briefly on similar issues in the two writing systems that were devised in situations of contact with Egyptian writing, proto-Sinaitic writing and Meroitic writing. This introductory essay will have served its purpose if it can contribute to suggesting some fruitful themes for further study in a comparative/contrastive spirit or with such a background.

1. Representing language

1.1. Preliminary considerations

Writing is one among several types of graphic communication systems,[1] distinguished among these by its representation of language. Graphic communication systems that are not linked to language, or only limitedly so, serve specific functions: for instance, identity marks in Deir el-Medinah in the New Kingdom and elsewhere,[2] traffic signals in present-day Alexandria, or national flags in front of the United Nations building in New York. Writing, by contrast, can represent any, and therefore the unlimited number of, possible utterances in language. Writing can therefore be, in principle, a general-purpose tool of communication, inheriting this property from language.

In practice, the domains of writing will be limited to culturally meaningful and socially sanctioned applications in a given context at a given time. For instance, while Egyptian writing had developed already in the late fourth millennium BCE, it would take several centuries before any complete sentence was written, in the reign of Peribsen (*c*. 2750 BCE),[3] and it was not until the twenty-sixth century BCE that Egyptian writing was extended to representing fully continuous texts.[4] As far as the system was concerned, sentences and even texts could have been written from very early on, this is demonstrated by sentential names (names consisting in a sentence) found since the early First Dynasty, and which include elements of grammatical morphology represented in writing.[5] The only reason sentences (outside names) and texts were not written for centuries is that the culturally meaningful contexts of practice for doing so had yet to develop.

In early Mesopotamia too, it would take several centuries for applications of writing to develop in which sentences and texts would be written. Early writing in Egypt and in Mesopotamia alike initially developed for specific functions (and very different ones in the two areas) and it was only through successive extensions of its domains that it gradually became a general-purpose tool—writing as we usually think of it. In an apparently stark contrast, the earliest securely attested writing in China, in Anyang in the thirteenth century BCE, immediately shows sentences and texts, in the context of records of divinatory practices. This could imply a very fast and/or a slightly earlier development of writing.[6] Either way, the apparently very rapid application to texts is highly remarkable.

1.2. General typologies

According to one broad typology, the world's writing systems fall into two broad groups: 'mixed', 'logo-phonetic' systems in which individual signs represent *meaning* (notably *words*) and/or *sound*; and 'phonetic' systems, in which individual signs represent *sound* only. The sign inventories of both logo-phonetic and phonetic systems include 'phonograms', standing for *sound*. Only logo-phonetic systems have 'logograms', standing for a *word*, and thereby simultaneously for the meaning and sound of that word. (In Egyptian writing, some logograms are better described as 'radicograms', standing for a lexical *root*, and therefore for the meaning and sound of that root.) In addition, some logo-phonetic systems include another type of signs, variously termed 'semantic determinatives' or 'classifiers': these stand for broader or more narrow classes or domains of meaning, only and can, in the latter case, display affinities with logograms.[7]

Such categories are evidently etic, not emic (no Sumerian or Egyptian scribe would have thought in any such terms nor likely been interested in the associated questions). They are no less indispensible when it comes to comparing writing systems broadly with each other (itself a quintessentially etic exercise that no ancient scribe would likely have been interested in, assuming he would even have had access to the broad variety of writing systems that can be compared in a modern scholar's library). It should be emphasized further that such categories, while making recourse to Greek-based labels, are not any alphabetistic in their underlying ideologies, just as the basic distinction between meaning and sound is not, being given in natural language. Alphabetistic ideologies, tenacious as they are, are found on other levels, of which three may be briefly singled out here.

The first is that a writing system, and alphabetic writing in particular, could be purely phonetic. To be sure, the *signs* of phonetic writing systems represent sound only, but such systems can represent morphology and meaning on other levels: combinations of signs and word spellings. For instance, English comprises many historical spellings making for a deeper, morphographic representation of language (a representation of morphological and lexical structure), which, in view of the varying pronunciations of English across Britain and the world, turns out to be an advantage.[8] Pure phonography (the representation of sound only) is found solely in the International Phonetic Alphabet (IPA), a *notational* system deliberately devised to serve purposes of linguistic description and analysis, not a historically grown *writing* system. Pure semantography (the exclusive representation of meaning) is found among graphic communication systems serving specific purposes; writing, by contrast, is a general-purpose graphic communication system, as recalled initially. Overall, all historically grown writing systems appear to represent the two articulations of language, the semantic articulation (meaning) and the phonetic articulation (sound), in one way or another and to varying degrees. Neurosciences, for their part, show that reading proceeds along two simultaneously activated and mutually reinforcing pathways in the brain: the semantic and the phonetic pathways.[9]

Related to this ideologically driven view that a writing system could be purely phonetic in its functioning, another alphabetistic claim holds that phonetic writing (often reduced to the alphabet itself) represents progress, opening up altogether new venues of social action and human cognition. Yet, as the cases of Chinese or Japanese amply demonstrate, a complex sign repertoire is not detrimental to usage across all domains nor to broad social diffusion. By extension, the varying types of complexity of early logo-phonetic

systems cannot be considered detrimental either; when writing was not used in certain contexts of social action, this was for other reasons (to do with the sociologies of writing, with ideologies of writing, and/or with broader contextual factors), not because of the structure of a given writing system. Related to the preceding ideas, yet another view holds that the invention of alphabetic writing was a watershed and somehow epiphanic occasion: at great last, the "alphabetic principle" had been "uncovered"! This view is directly contradicted by the historically documented early development of alphabetic writing, briefly outlined and discussed in section 3 below.

Turning back to typologies, the world's writing systems are distinguished not only according to how their signs represent language (logo-phonetic vs. phonetic systems: see above). Another typology distinguishes writing systems according to their origins. 'Pristine', or 'primary', writing systems are those that were devised with no prior knowledge of or exposure to writing. 'Secondary' writing systems are those that were derived from, or invented with knowledge of or exposure to, another writing system.

When the two typologies are combined, it appears that all pristine writing system are of the mixed, logo-phonetic type:[10] in Mesopotamia, Egypt, the Indus Valley,[11] the Aegean (Cretan hieroglyphs and Linear A, to name the earliest two),[12] China, Mesoamerica, and on Easter Island (Rongorongo).[13] Among secondary writing systems, some are of the logo-phonetic type: thus, Akkadian cuneiform, adapted from Sumerian cuneiform; or Japanese, adapted from Chinese. Others are of the phonetic type: thus, Proto-Sinaitic and Meroitic, both developed in contact with Egyptian (see below, section 3); or, ultimately descending from Proto-Sinaitic, the vast majority of the world's phonetic systems.

The following generalization can then be made: all purely phonetic systems (systems with only phonetic signs) are historically secondary. Equivalently: only mixed, logo-phonetic systems (systems with different types of signs that represent sound and/or meaning) are found among primary inventions of writing.

Against this background, the difficulties that scholars working on the decipherment of Egyptian writing had to face appear in a strong light (to take up what was the primary occasion for this essay, the 2022 conference at the Bibliotheca Alexandrina celebrating the 1822 decipherment). In our current perspective on writing systems, the logo-phonetic type is one among two broad types. In the early nineteenth century, only one logo-phonetic system was known, Chinese, and misconceptions about the nature of Chinese writing were widespread. All other logo-phonetic systems were either unknown or still undeciphered. According to common ideas of the time, a writing system had to be either 'alphabetic' (i.e., phonetic, representing only the sounds of language, not meaning) or 'symbolic' (representing ideas, not language at all).

While Åkerblad and Young could identify the values of some individual signs or word spellings, the decisive breakthrough, consisting in making a correct hypothesis about the nature of the system, was achieved only by Champollion. It had taken Champollion (who had previously studied Chinese among many languages) two decades of obstinate work to overcome the alternative between 'phonetic' or 'symbolic'. In his own terms, famously: 'It is a complex system, a writing that is at once figurative, symbolic, and phonetic, in the same text, in the same sentence, I would almost say in the same word.'[14] Translated into today's terms, Champollion had come to realize that Egyptian writing, the pictorial forms of hieroglyphs

notwithstanding, could represent language in its two articulations: the semantic (meaning) and the phonetic (sound). In deciphering Egyptian, Champollion did not just open the way for Egyptology: he simultaneously contributed to opening the broad domain of mixed, logo-phonetic writing systems, to which all pristine writing systems with no exception belong.

1.3. Representing sound: a logo-abjadic system

Writing systems vary in how their signs represent sound; and, in the case of mixed systems, in how they also represent meaning. Among phonetic systems, four basic types can be further distinguished.[15] 'Abjads' (such as Proto-Sinaitic, Phoenician, and other Semitic scripts including Arabic) focus on representing consonants and glides (hence the occasion designation as 'consonantal writing'). Vowels (color and length) can be optionally indicated in some such systems. In abugidas (Meroitic, the vast group of Brahmi-derived Indic scripts, Semitic scripts in Ethiopia, and Old Persian), signs represent consonants with a default vowel (Cv_x). Diacritics, less commonly additional signs, signal different vowels or the lack of a vowel. In 'alphabets' (such as Greek and many more), distinct signs stand for vowels and consonants on an equal footing. In 'syllabaries', signs stand for sequences of the type Consonant+Vowel (CV). Historically, all Semitic abjads ultimately derive from Proto-Sinaitic. The distribution of abugidas and abjads reflect patterns of diffusion, themselves the effects of empire and trade. To the east, the Indic abugidas ultimately derive from the Aramaic abjad. To the west, the alphabets ultimately derive from the Phoenician abjad. Historical contingencies, not an alleged superiority of the alphabet, are seen here.

Turning to mixed, logo-phonetic systems, these are often more specifically of a logo-syllabic type. In a vastly simplified(!) description, phonetic signs typically stand for CV segments (Consonant-Vowel) and include a set of V signs (standing for a Vowel alone). Signs standing for VC (Vowel-Consonant) segments and for CVC segments (Consonant-Vowel-Consonant) are less common and found only in some systems. Unlike the other types, CV signs tend to form a (nearly) complete matrix of possible combinations, demonstrating their central nature in such systems. Syllables of the CVC type are most often represented through combinations of signs: as CV + VC or as CV + CV.[16] This avoids the necessity of developing a full set of CVC signs (which, by definition, would be larger than a set of CV signs by one order of magnitude).

Against this background, the phonetic component of Egyptian writing is remarkable on two accounts (thus sub-section and the next). Egyptian is a mixed, logo-phonetic system in which the phonetic component is not syllabic but focuses on consonants, including glides. This phonetic component of Egyptian writing can be described as 'abjadic', by analogy with purely phonetic abjads in Semitic languages such as Phoenician, Arabic, and many more. Like these Semitic languages, Egyptian is a root-and-pattern language: a type of language in which words result from the combination (or 'interfixation', or 'inter-digitation') of two discontinuous morphemes, the consonantal root and an inflectional and/or derivational pattern. In their focus on consonants, abjads can thus be described as 'radicographic' (root-representing). While Sumerian, Maya, or ancient Chinese can be described, broadly, as 'logo-syllabic', Egyptian demonstrates that not all mixed systems are of that type.[17] Rather than as 'logo-syllabic' overall, mixed systems are better described by the more encompassing term 'logo-phonetic' used in the present article, falling into 'logo-syllabic' (Sumerian, Maya, etc.) and 'logo-abjadic' (Egyptian).

Early writing developed in southern Egypt and in southern Mesopotamia around the same time, in the late fourth millennium BCE, independently in both regions.[18] The trajectories to writing, which can be traced in both places, are of an entirely different nature: schematically, an intensification of administrative practices in clay in Mesopotamia; contrasting with an intensification of an increasingly restricted and exclusionary culture with an emphasis on hard materials in Egypt (see below, 1.6). Early writing' in Mesopotamia and 'early writing' in Egypt are not just variations on one common theme: despite the common label, they are objects of an entirely different kinds of graphic communication systems with different kinds of signs and repertoires, different relations to the surrounding broader visual culture, and different social practices and graphic ideologies. These two early graphic communication systems would become more similar only later, as the result of a process of secondary convergence as both were widening their functional scope. The incontrovertible independent origin of Egyptian writing demonstrates that the 'logo-abjadic' type is a possible type of pristine writing just like the 'logo-syllabic' one. Put differently, the claim that the syllable—as the shortest pronounceable segment and a natural object of high psycholinguistic awareness—forms the necessary basis for the first inventions of writing is directly contradicted by the Egyptian case.[19] This claim must be re-stated in a weakened form: the syllable, for the reasons recalled above, plays a distinguished role in the emergence of several writing systems. But other determinants, such as, in the case of Egyptian, the morphological structure of the language, can also be at play. Going further yet, logo-syllabic types themselves need not initially develop as such: as Mesopotamian case demonstrates, the important syllabic component of cuneiform writing is a secondary development in a strongly word-based (logographic) system that itself evolved from an object-based (ideographic) system (see below).

1.4. Beyond the syllable

The second typologically remarkable feature of Egyptian writing, related to the first, is that its repertoire includes a whole set of signs that stand for sequences of two or even three consonants (so-called biliterals and triliterals). Among these, biliteral signs are generally found across several roots and therefore qualify directly as phonograms. In inflected forms, biliteral signs can stand for discontinuous segments that extend across syllable boundaries, without corresponding to complete syllables. Take for instance the verb *nḥm* 'seize', the phonetic component of which is regularly realized with the uniliteral *n* and the biliteral *ḥm* in all inflected forms ( ; *n-ḥm-m*-INTENSIVE.ACTION). (Thus in the following reconstructed Earlier Egyptian forms, '$' signals syllable boundaries, while the boldfaced segments correspond to the radicals represented by the signs for *ḥm*: In the infinitive, */nˇ$ˈ**ħ**aː**m**/; in the subjunctive (with a third person subject pronoun), */nˇ**ħ**$ˈ**m**af/; in the *mrr=f* form, ʔ*/nˇ$ˈ**ħ**vː$**m**ˇf/ or the like. The syllable structure varies between the three forms, the written representation does not. While the biliteral sign for *ḥ-m* corresponds to a syllable in the infinitive, it straddles syllable boundaries in the two other forms.

The case of tri-literal signs is more complex: for a given sequence of three consonants, there is often only one root in the language. Triliterals are accordingly often found with words from the same root, in which case they can be described as 'radicograms' (signs for a root). A root, like any other morpheme, consists of meaning as well as sound; radicograms, therefore, stand for meaning and sound, like logograms. Derivational relations between words of a root can be more or less transparent to he present-day Egyptologist

studying the historical motivation of the signs. Whether these relations were always perceived as such by ancient users of the script is a different matter. When not, for instance in rapid writing, triliteral signs could indeed have been perceived as indications of sound, not roots, by some scribes. Complicating the matter, the pictoriality of the signs could support a recognition of meaningful semantic relations between words derived from the same root.[20] The degree of phonography or logography can therefore reside, not simply in the system, but in the scribes' minds.

The present author does not know of other writing systems with phonetic signs that would stand for segments extending across syllable boundaries on a regular and systematic basis. In Aztec (Nahuatl) writing, a hieroglyphic system strongly focused on names, some signs can stand for continuous segments longer than a syllable. They do so per rebus, often with a degree of phonetic approximation. Specialists debate whether these signs should be analyzed as genuine phonetic values of polyvalent signs or as logograms read out phonetically.[21] Either way, they do not represent a systematic set of conventionalized phonetic values longer than the syllable.

The reason why Egyptian can have a stabilized repertoire of phonograms extending over the syllable is that these represent *discontinuous* segments (unlike Aztec writing, which represents continuous segments, including vowels).. Structurally, an Egyptian biliteral sign combines two phonemes (C_1-C_2), just like a CV sign in a logo-syllabic system does. A near-complete set of C_1-C_2 signs will therefore be roughly equal in size to a near-complete set of CV signs. By contrast, a hypothetical writing system representing consonants and vowels in segments longer than a syllable (such as CVCV) would require a set of phonograms, numbering, if complete, in the thousands. Writing systems with very large sets of signs, numbering in the thousands, are found (such as Chinese or Tangut), but none with such an exceedingly large set of dedicated phonograms.

1.5. A rich class of classifiers/semantic determinatives

One further typologically remarkable feature of Egyptian writing is the broad development of a type of signs that have been variously described as semantic determinatives or classifiers. Among pristine writing systems, semantic determinatives/classifiers are found notably in Sumerian cuneiform[22] and inherited from there in other varieties of cuneiform writing (Akkadian, Hittite, etc.).[23] Sumerian classifiers/determinatives stand for generic categories, for instance types of materials, and are found only with nouns. By contrast, Egyptian classifiers/determinatives are more numerous, not limited to generic categories, and are found with both nouns and verbs. Verbal classification/determination is another typologically remarkable feature of Egyptian writing.

Among hieroglyphic systems specifically, semantic determinatives/classifiers are also found in Luwian hieroglyphs, where their structural principle is perhaps influenced by Hittite cuneiform.[24] In an entirely unrelated context, they have also been described in Aztec (Nahuatl) writing, in the western part of the Mesoamerican area.[25] In the eastern part of the same area, Maya writing has logograms and phonograms, but no semantic determinatives/classifiers.[26] The case of Maya, a mixed, hieroglyphic writing system, shows: (a) that a highly iconic, hieroglyphic type of writing system need not have semantic determinatives/classifiers; and (b) that a mixed, logo-phonetic writing system more generally need not either.

Given this background, there remains the striking fact that in no other writing system classifiers/semantic determinatives are developed and used as extensively as in Egyptian, with several non-exclusive functions and dimensions. Egyptian classifiers/semantic determinatives play a role in reading: often retaining considerable iconicity in Hieratic (and at least a salient formal distinctiveness in Demotic), they prime a domain of meaning.[27] The phonetic elements in the written form of the word simultaneously prime a partial representation of sound, so that both types of priming lead the reader to the word through a simultaneous activation of the mutually reinforcing phonetic and semantic channels. Classifiers/determinatives, moreover, are regularly placed at the end of the word and thus help identify word boundaries. (These effects are also seen negatively, in the deliberate suppression of classifiers/determinatives in some varieties of enigmatic writing. Absent these signs, the reader is left to face a flow of signs standing for purely phonetic information, without immediate indications for segmenting the flat sequence of signs into words.[28])

Egyptian classifiers/semantic determinatives have been studied as reflecting an organization of (culturally mediated) cognitive categories[29] as well as scribal practices and cultural knowledge.[30] (The present author views these two scholarly traditions as complementary rather than mutually exclusive approaches.) Rather than being given in the lexicon once and for all, the assignment of a classifier/determinative to a word can be sensitive to context.[31] Classifiers/determinatives (as well as logograms and radicograms) can express additional nuances of meaning beyond the mere lexical meaning of the word and and thus play a central role in the visual poetics of Egyptian writing.[32]

The richly expressive flexibility of classifiers/semantic determinatives in use—evoked above in the most summary terms—would thus have been one major factor in their development, motivating a continued investment in this dimension of Egyptian writing. The iconic nature of the signs, not only in hieroglyphic but also in hieratic writing, thereby seems to have been another central determinant. Overall, therefore, there seems to be a strong correlation between the rich development of classifiers / semantics determinatives, and the iconicity of Egyptian signs, both in the reading process and in the expressive visual poetics of writing. This correlation is culturally specific: as Maya writing, another hieroglyphic writing, shows, richly iconic types of writing do not necessarily develop a class of semantic determinatives/classifiers, let alone such a rich one as in Egyptian writing.

1.6. On the phonography-logography scale

Mixed systems vary in the proportions of phonograms, logograms, and, when present, classifiers; in how they combine these into word spellings; and, thereby, in their overall degree of logography and phonography. For instance Sumerian cuneiform writing is, generally speaking, strongly logographic, while Akkadian cuneiform is, generally speaking, more strongly phonetic. Within a given writing system, the degree of logography vs. phoneticism is susceptible of considerable variation with time, place, types of texts, and graphic registers.[33] For instance Sumerian could be written in a strongly phonetic way in Susa in the early second millennium BCE, contrasting with the more strongly logographic norms in Nippur, the main center of Sumerian learning, at the same time; Akkadian technical texts (omina, etc.) could be replete with logograms, contrasting with the generally more strongly phonetic Akkadian found in letters. The more

strongly phonetic strategies in Terminal Classic Chichen Itzá (Maya) could point, not only to the presence of multilingualism, but also to changed graphic ideologies.[34] Describing all these mixed systems under the umbrella term 'logo-syllabic writing' obscures these far-going differences and mutes the very variability and plasticity of mixed, logo-phonetic systems.

On this general scale of logography and phonography, Egyptian writing can be placed, schematically, in an intermediate position between Sumerian and Akkadian cuneiform: more phonetic than the former, but more logographic than the latter. The difference between Egyptian and Sumerian cuneiform harkens back to the different origins of the two systems. Writing developed in late fourth millennium BCE Mesopotamia against the background of previous administrative techniques in clay, initially as an object-based (rather than word-based) graphic communication system and an expansion of numeracy.[35] Through the effects of practice, the system gradually became more glottographic (aligned on language), with a high degree of logography and keeping some of its original semasiographic features; systemic phoneticism developed only secondarily, as writing was extended to new functions.

Egyptian writing developed in an altogether different context, as an intensification of a pre-existing visual culture and in relation to to increasingly bold and exclusionary assertions of kingship.[36] The system was rapidly and thoroughly phoneticized, with systemic phoneticism, including purely phonetic spelling patterns, found since the late Dynasty 0.[37] Possible reasons for this remarkable development include the strong onomastic focus of early Egyptian writing notably in funerary contexts (names tend to favor phoneticism) and its use in complementation to images, to add a specifically oral/aural modality to the visual modality of the images. In addition, Egyptian contrasts with early cuneiform by its reluctance to generate new signs through a diacritic differentiation form, or combination of, existing ones. This could have played a role in supporting the initial development of phonetic strategies instead, as new words were committed to writing. The early and thorough development of phonetic strategies in Egyptian writing—a *linguistic* characteristic of the system—could thus have one reason in the specifically *hieroglyphic* nature of Egyptian writing system—a visual characteristic of the writing, to which I move on now.

2. A hieroglyphic writing

A subset among mixed, logo-phonetic writing systems can be described as 'hieroglyphic'.[38] While pristine writing systems begin with a considerable number of pictorial signs (along with varying proportions of schematic signs), in writing systems such as cuneiform or Chinese the shapes of the signs undergo schematization, to various degrees, over the course of the centuries. Hieroglyphic systems, by contrast, retain the pictoriality and iconicity of the signs over the course of their existence and demonstrate a tight and productive relation to a broader visual culture.

Hieroglyphic systems include, notably, Egyptian hieroglyphs, Mesoamerican hieroglyphic systems (comprising Zapotec, Maya, Aztec, and others),[39] and Luwian hieroglyphs.[40] I leave it to specialists to determine whether other writing systems with pictorial sign forms, such as Naxi or Cretan hieroglyphs, qualify as 'hieroglyphic' according to the parameters outlined below. The incontrovertible genetic independence of Mesoamerican and Egyptian hieroglyphic writing, and the likely independent development of Luwian

hieroglyphs, demonstrate that hieroglyphic writing is one fundamental option for writing systems. In its blending of image and language, hieroglyphic writing is of considerable interest for human communication more generally.

2.1. Hieroglyphic signs

Non-hieroglyphic and hieroglyphic writing can be contrasted along a series of interrelated features. In non-hieroglyphic systems, signs consist in discrete combinations of strokes or lines that make up a visual scheme with discrete characteristics such as the crossings of strokes and lines. Hieroglyphic signs, by contrast, present *intensive* forms, defined in relation to a visual referent and not reducible to discrete stroke or line schemata. In non-hieroglyphic systems, new signs can be created through the combination or diacritic modification of existing signs. In hieroglyphic writing, entirely new signs can be created: pointing to new visual referents or modified from existing signs in iconically meaningful ways.[41] In both non-hieroglyphic and hieroglyphic writing, the repertoire of signs can be open; in the hieroglyphic case, it is, for the above reason, open in a more fundamental manner.[42]

To quote from a comparative essay on Maya and Egyptian hieroglyphic writing:[43]

> "Unlike writing systems based on the discrete combination of lines or strokes (such as cuneiform scripts and Chinese after their initial pictorial stages), hieroglyphs are not reducible to substitution classes. They build on shapes, they have outlines, an inside and an outside, even an implied or real three-dimensionality. They possess visual referents beyond the signary itself, steeping themselves in a broader graphic inventory of imagery. Such participation is central to their meaning and use. New signs, like new images, can always be introduced, and paleographic variance may convey subtle ideas in addition to linguistic values (...). Although helpful in some ways, fonts do another disservice by muting scribal wit and ingenuity, and by discounting agentive vitality and the artful use of space, even the specificity of signs—the details of this text, in that place and time, near those images. The graphic dialogue between written language and pictures thus loses its primacy".

2.2. Integration with pictorial representations

The 'graphic dialogue between written language and pictures' just evoked is central to hieroglyphic writing. While hieroglyphic writing can be used in autonomous texts, it is often integrated with pictorial representations, in Egypt, Mesoamerica, and Anatolia alike. Egyptian hieroglyphs are distinguished from pictorial representations through their orientation, their calibration (a sign of writing has roughly the same size as another sign of writing regardless of their respective visual referents, for example an elephant and a bee), and their principled disposition in space.[44] Generally similar principles are seen at work in hieroglyphic writing in other traditions. Writing is thereby easily identified as such within the pictorial field. All the more, the divide between writing and pictorial representations can be blurred deliberately.[45] Elements of a pictorial representation can reach into the domain of text; a sign of writing can be de-calibrated, moving into realm of images; conversely, a pictorial representation can be calibrated relative to

writing, being thus integrated with writing; the signs can be played with, in many modes of what has been termed 'visual poetry'.[46]

One common function of hieroglyphic writing consists in captioning images: for instance, Maya hieroglyphs in codices, on vases, and on stone alike; or Luwian hieroglyphs captioning the figures of gods in the shrine of Yazılıkaya. Aztec hieroglyphic writing is used almost entirely in captioning functions. Captions often add names or other elements of information, identifying or specifying what the image shows, but they can also just repeat what the image shows in an apparently redundant fashion. For instance on the portico of Senedjemib-Inti's funerary chapel at Giza,[47] a *sḫt* -barge is shown, above which a naming caption reads: 'the *sḫt*-barge named *ʿȝ-pḥtỉ-Ỉzzỉ*'; in this barge, a sarcophagus is shown, labelled just *qrsw* 'coffin'. By its mere presence, a caption can have a deictic effect, pointing to, and thereby singling out, a figure or object in a pictorial field. In some cases, writing represents only the phonetic substance of words whose referents are shown pictorially in a scene just below.[48] In one view, the images would function in the manner of classifiers/determinatives to the written word. In an alternative view, likely closer to ancient conceptions, the image, not writing, is primary, showing the action and beings to which writing adds sound. Writing thus insinuates an oral/aural modality, adding to the visual modality of images in an interplay of mutually reinforcing modalities. These few examples may suffice to suggest how fruitful the comparative/contrastive study of captioning in hieroglyphic writing systems could be.

The dialogue with images harkens back to the very origins of Egyptian hieroglyphic writing.[49] For instance on the Bull's palette,[50] dating to a time probably shortly before Narmer, three visual modes are combined and integrated: images (the overall representation, including the king as a bull overthrowing an enemy), emblems (the forces on standards, holding a rope in support of the king's action), and two signs of writing in an enclosure standing for a town. Egyptian writing developed initially out of an already complex and increasingly exclusive aesthetic culture, to which it added yet another layer of exclusionary sophistication.[51] In Mesoamerica as well, a hieroglyphic tradition of writing developed out of, and in tight relation to, a sophisticated and exclusionary aesthetic culture.[52] Luwian hieroglyphs find their background in local iconographic traditions.[53] In southern Mesopotamia and Anyang China, by contrast, aesthetic culture played a much lesser role in the early development of writing.

2.3. Types of digraphic situations

Ancient Egypt presents a famous case of a digraphic culture.[54] Alongside hieroglyphs, a cursive variant, hieratic, developed gradually from the Second Dynasty on and through the Old Kingdom, with increasingly abbreviated forms and ligatures.[55] Although a historically secondary development, hieratic became the primary variety of Egyptian writing: many more texts were produced in hieratic, and for many scribes, this was the only variety they were trained in. However hieroglyphic writing retained a cultural primacy and remained a point of reference for hieratic which thus retained some iconicity, not undergoing schematization as fully as, for example, cuneiform in the early second millennium BCE. Relative to hieroglyphs, hieratic has been described as a 'tachygraphy', or fast writing, ever since Champollion. A reverse perspective seems more appropriate: hieratic was the variety in regular use, written calligraphically or rapidly depending on

the type of text and context of written performance; hieroglyphs, by contrast, were a decidedly slow writing, time-intensive to produce and displaying the material and aesthetic investment involved in making it.

The Egyptian digraphic situation is not directly paralleled in other hieroglyphic traditions. In Mesoamerica, no cursive variety comparable to hieratic ever developed, only hieroglyphs were used. The rounded shapes of Maya hieroglyphs point to these themselves being a primarily painterly writing, extended to lapidary uses. While most perishable materials have disappeared in the wet of the jungle, Maya writing was limited to specific spheres of use. Later second millennium BCE Anatolia presents a digraphic situation, like in Egypt, but with significant differences.[56] Rather than between two varieties of the same system, the contrast was between Hittite cuneiform, adapted from Mesopotamia, and Luwian hieroglyphs, developed out of a local visual tradition. Rather than historically primary, like Egyptian hieroglyphs, Luwian hieroglyphs developed only after cuneiform had already been adopted by the Hittite chancellery. While some structural properties of Luwian hieroglyphs appear to be inspired by Hittite cuneiform, the two writing systems were visually entirely distinct from one another and did not display the type of productive connection observed with Egyptian hieroglyphs and hieratic.

2.4. Graphic ideologies

In analogy to linguistic ideologies—ideologies about the (proper) use, functions, and effects of language—graphic ideologies can be defined as conceptions about what writing is good for, how writing should look like, where and when it can or should be used by whom, and to what effects. In the general absence of much ancient explicit meta-discourse, implicit graphic ideologies associated with hieroglyphic writing can be inferred from practices and from the signs themselves.

The association of hieroglyphic writing with elite culture would have been no small part of its indexical value. Hieroglyphic writing in Egypt, in Mesoamerica, and in Anatolia could be seen in situations of public display, no doubt making a strong impression on viewers. Some directly figurative and iconic signs would have been recognizable even without knowledge of the system. Dense in its visual form and presence, hieroglyphic writing had an impact in society well beyond the very few who could fully understand it. In both the Egyptian and the Maya worlds, and likewise in the Levant next to Egypt, pseudo-hieroglyphs attest to an enduring fascination for hieroglyphic writing by people who were not privy to it.[57]

In non-hieroglyphic writing systems, new signs can be derived through a diacritic marking of existing signs (thus, the *gunû*- and *šessig*-marked signs in Sumerian cuneiform) or through semantic compounding (thus, *diri*-compounds in Sumerian cuneiform and Chinese *huìyì* characters at least in synchronic description).[58] In hieroglyphic writing systems, diacrisis is generally avoided, suggesting that this could have been conceived of as a 'wounding' the visual integrity of the sign. Semantic compounding tends to be limited to those cases yielding a composition of elements that is also visually meaningful. An example is the Maya compound sign PAS 'dawn', consisting of K´IN 'sun' stuck in between *CHAN* 'sky' and *KAB'* 'earth': in addition to combining elements in a semantically coherent way, the composition effectively *shows* the sun emerging from between the sky and the earth. In Egyptian hieroglyphic writing, new signs tend to be either entirely new (pointing to a new visual referent) and/or derived through a relation of differential iconicity to another

sign (a system-internal relation based on the iconic difference with another sign of writing):[59] in all cases, in ways that respect the visual and iconic integrity of the signs. These different modes of sign generation in non-hieroglyphic and hieroglyphic systems is suggestive of native conceptions of the hieroglyphic sign as an inviolable entity.

Hieroglyphic signs have a physical presence: they have volumes, at times colors, and/or a monumental size. They can be the object of an intense aesthetic investment. Idiosyncrasies in their realization show that a sign was conceived not just as the instantiation of a type: rather, '*that* (particular realization of the) sign' mattered. Animate signs were oriented toward the reader/beholder in Egyptian, Maya, and Luwian hieroglyphic writing alike, as if insinuating a face-to-face encounter, a conversation. Egyptian retrograde writing (with the signs instead showing the beholder their back) can underscore a kinetic flow of the text: for instance, accompanying the motion of the solar bark (in Netherworld books); or displaying a written text as if emanating from the seated figure of the king or the vizier (in parts of Hatshepsut's royal cycle at Deir el-Bahari and of the vizieral cycle in the early Thutmoside tombs of Useramun and Rekhmire at Sheikh Abd el-Gurnah).[60] Texts from Ptolemaic temples suggest that hieroglyphic signs could have been conceived of as being animated by the light of the sun and inhabited by the presence of the divine forces they hinted at.[61] Egyptian hieroglyphic signs could sprout arms and legs, further suggesting a conception of the sign as susceptible of animation.[62] In full-figured enigmatic writing of the New Kingdom, focusing on divine figures, the royal name and extended titulary could be turned, sign after sign, into a divine icon.[63] Full-figure signs are also found in Maya writing in select places, where, in a marked contrast to Egypt, they seem to be associated notably with the noisy and indecorous.[64] Beyond the extraordinary graphic virtuosity in making them, they raise issues of a possible vitality of the signs.

In the Roman-period temple of Esna, the manyfold possible relations between the signs were explored as a polyphonic celebration of the created and divine world in what Sauneron aptly termed a 'graphic alchemy' and a 'theology of/in writing'.[65] This suggests a conception of Egyptian hieroglyphic writing as given in the created world. As Meeks submits further, Egyptian hieroglyphic writing could have been conceived as a revealed script, originating in the divine world.[66] As Houston proposes about Mesoamerican writing, but with direct relevance to Egyptian hieroglyphic writing as well:

> Perhaps the most compelling view would be to see the sustained iconicity of hieroglyphic scripts as an existential statement that a signifier carried with it the divisible essence of the signified, or to put this in another way, objects created by artifice could also embody less tangible properties such as vitality and identity, that were not devised by the artificer. The person crafting the image became less an illusionist, a mimetic specialist, than a theurgical practitioner who infused the inanimate with inherent animation. (...) Sustained iconicity in Mesoamerican writing may well have expressed a profound disinclination to separate the icon from the existential world in which it originated and in whose life force it shared.[67]

Egyptian enigmatic writing, flourishing particularly in the New Kingdom, can be seen as a confirmation of some of the above propositions.[68] In different traditions and contexts, enigmatic writing served multiple,

non-exclusive functions such as play and display, the assertion of an exclusive group identity, the solarization of the royal name, or the necessarily oblique representation of a not fully knowable or not fully differentiated underworld. Common signs were replaced with less common ones, often higher in visual resolution. Conventional spelling patterns were altered, causing the reader to pause.[69] In some types of enigmatic writing, the reader must read out aloud what meets the eye, including divine epithets;[70] in others, he is left confronted with an insufficiently differentiated surface of writing.[71] Through the induced delays, he is invited to get absorbed more deeply into writing and to look at the signs more thoroughly: their visual referents and their relation with other signs. In the eye and mind of the beholder, the iconicity of the signs is thereby heightened considerably. Enigmatic writing is not some recondite domain of Egyptian hieroglyphic writing but an intensification of hieroglyphic writing—a 'super-hieroglyphic' writing, as one might put it. Enigmatic writing intensifies what, to the ancient actors, could have been the central aspects and premises of hieroglyphic writing: the iconicity of its signs, and their connection with the realm in which they originated.

To conclude by quoting again from the already mentioned comparative essay on Maya and Egyptian hieroglyphic writing:[72]

> "Like other scripts, hieroglyphic writing represents language, but it is also an encyclopedically dense mode of visual communication, at once inviting and exclusionary, and, at times, even virtuosic in its making and interpretation. Hieroglyphic signs do not just stand for linguistic values: they are inviolable things in their own right, implying a particular ontology and a capacity for performance. Although some of these properties are found in other types of scripts, hieroglyphic writing has them to a concentrated, intense degree".

3. Writing systems invented in contact to Egyptian writing

Secondary writing systems can be classified in two broad types: those adapted from a given language to a new language, with at times far-reaching structural changes (such as Akkadian from Sumerian cuneiform; Japanese from Chinese[73]); and those invented in a situation of contact with another writing system but not directly derived from it. In addition to the linguistic parameters at play—the languages can be related and typologically similar, or unrelated and possibly very different—cultural dimensions are essential in the process. In particular, a new writing system may imitate aspects of the model writing system, or, to the contrary, opt to be deliberately different from it, for instance in the visual appearance of its signs.[74]

Egyptian writing was not adapted to write other languages, except occasionally.[75] Nor was Egyptian writing hardly ever used outside Egypt or the Egyptian dominion.[76] In this respect, Egyptian writing differs markedly from for example cuneiform writing, which was adapted to a whole series of Near Eastern languages. One reason could have been the tight linkage of Egyptian writing to the Egyptian cultural encyclopedia; another. Two writing systems, however, developed in situations of contact with Egyptian writing: Proto-Sinaitic and Meroitic.

Proto-Sinaitic writing appears probably in the reign of Amenemhat III, in the second half of the nineteenth century BCE, at Serabit el-Khadim in the Sinai.[77] Two other inscriptions, at Wadi el-Hôl, in the Theban hinterland, probably date to the late Middle Kingdom as well.[78] This was in all likelihood invented and used by Semitic-speaking populations working along with Egyptians as miners and in the military. Morphologically, the signs of Proto-Sinaitic writing are derived from Egyptian hieroglyphic prototypes in Sinai, from lapidary hieratic ones at Wadi el-Hôl,[79] and arguably include one non-linguistic mark.[80] Like Egyptian writing, Proto-Sinaitic writing represents the consonants, and thereby focuses on the root structure, of the language. Unlike Egyptian writing, Proto-Sinaitic writing is purely phonetic. The phonetic values are derived by retaining only the first consonant of the word in the Semitic language spoken by the inventors of the system. This principle of 'strong acrophony' is not found in Egyptian writing prior to the Roman period temple of Esna.[81] The principle—which could be stated as: 'Read aloud what you see and clip it down to the first consonant'—effectively worked as recognition cue, the letter names thereby also functioning as a mnemonic devices.[82] Along with the non-standardized sign shapes, this suggests that the inventors of Proto-Sinaitic were not professional scribes.[83]

One view sees the abjadic structure of Proto-Sinaitic as inspired by the abjadic component of Egyptian writing.[84] In another view, the fact that the Proto-Sinaitic values are entirely different from those of the Egyptian graphic models is taken as evidence to suggest that Proto-Sinaitic was invented with no knowledge of the workings of Egyptian writing.[85] The structural differences would support the latter view: the purely phonetic nature of Proto-Sinaitic, its use of uniliterals only, and the strong acrophonic principle. Regarding the abjadic principle in common between Proto-Sinaitic and Egyptian writng, this need not have been transmitted. The abjadic principle ultimately reflects an internalized awareness of segments shorter (as well as longer) than the syllable. This is naturally given to speakers of root-and-pattern languages through the morphological processes of derivation and inflection constantly at work in spoken language.

The Serabit el-Khadim was a dense epigraphical landscape. The favorable context of cultural encounters and the presence there of Egyptian hieroglyphs that could have served as the models of the Proto-Sinaitic signs suggest that Proto-Sinaitic writing could have been invented there.[86] The inventors would thus have been exposed to a very partial window on the rich and diverse practices of Egyptian writing in the Nile valley, looking at this extract with their own eyes, concerns, and knowledge. They would have seen that there could be such a thing as graphic signs representing language; that the signs for doing so had pictorial shapes; and that they could be used in a sacral context to write names and short phrases. In a process of creative emulation, they would have invented their own system, based on strong acrophony ('read aloud what you see and clip') and purely phonetic, reinventing the abjadic principle for their own language, similar in morphological structure to Egyptian. Seeing Egyptian writing, they would have inherited not just the idea of writing, but also significant aspects of graphic ideologies attached to Egyptian writing, as seen, understood, and interpreted by themselves: the pictorial shapes and the specific uses in the landscape at Serabit el-Khadim. *Retrospectively* (!), Proto-Sinaitic writing can be seen as standing guard over the history of all alphabetic-like writing. The ancient actors' intentions and experiences were different altogether: inventing their own, '*quasi*-hieroglyphic' writing. An alphabetic-like writing was thus invented without

any of the graphic ideologies that would later come to be associated with the alphabet as an 'efficient and transparent' representation of language.

For centuries, the applications of this new abjad remained marginal. This speaks volumes against teleological views holding that 'alphabet-like' writing, once eventually 'discovered', would have revealed itself as inherently superior to the complex, logo-phonetic systems in existence. In the Late Bronze Age, the new abjad was adopted by some State chancelleries in the Levant, perhaps in part to mark their differences from the contemporary written cultures of Mesopotamia and Egypt. At this point only, the signs, now in the hands of professional scribes, underwent a schematization of their forms through the effects of the intensification of practice, compounded with the no longer required mnemotechnic value of pictorial forms.[87] The Proto-Sinaitic abjad, initially devised as a 'quasi-hieroglyphic' writing, was thus transformed into an altogether unhieroglyphic writing, even as its linguistic structure remained unaltered.

The second case of a writing system invented in contact to Egyptian writing is Meroitic, which appeared in the third century BCE.[88] Meroitic was invented by professional scribes, knowing Demotic. The system is purely phonetic, of the abugida type: with signs standing for a consonant and a default vowel, and further signs (not diacritics morphologically) signalling other vowels or the lack of a vowel. An abugida thus evolved from the abjadic phonetic component of Egyptian writing. The change reflects the morphological type of Meroitic: unlike Egyptian, Meroitic, a North-East Sudanese language, is a language in which lexical roots are continuous segments consisting of vowel as well as consonants. A similar type of change, from abjad to abugida, is attested with the Brahmi-derived Indic scripts. These Indic abugidas are ultimately derived from the Aramaic abjad (itself distantly derived from the Proto-Sinaitic abjad). Like in Meroitic, lexical roots in Indic language are not of the discontinuous, consonantal type found in the Afroasiatic domain. A third case of an abugida evolving from a Semitic abjad is found with the Ethiopian Semitic languages, in this case internally to the Semitic family.[89] In the case of Old Persian, the abugida has a different origin, likely inspired by spelling patterns in Neo-Elamite.[90]

In the second century BCE, another variety of the Meroitic script was invented, with pictorial sign forms derived from Egyptian hieroglyphs (but disregarding the values of these). The structural principle of the script is the same as that of the main, non-hieroglyphic, variety of Meroitic writing. Differences with Egyptian hieroglyphic writing are substantial. Historically, Egyptian hieroglyphic writing had been invented first, with hieratic differentiating from it secondarily; in the Meroitic Kingdom, by contrast, the hieroglyphic writing was introduced secondarily. Meroitic hieroglyphs were limited in use, in royal temples and funerary chapels, contrasting with the broader domains of use of contemporary Egyptian hieroglyphs, for instance on royal and non-royal stelae. While Egyptian hieroglyphs, like Maya and Luwian hieroglyphs, face the reader, Meroitic hieroglyphs show the readers their back. While some Meroitic hieroglyph signs could have been selected for their possible cultural associations (such as the ram, pointing to ram-headed deities), Meroitic hieroglyphs do not carry or embody a dense cultural encyclopedia like Egyptian hieroglyphs do. On these cumulating accounts, the pictorial variety of Meroitic writing is best described as 'quasi-hieroglyphic'. Through the secondary invention of a pictorial variety of Meroitic writing, only the

basic principle of the Egyptian digraphic situation was emulated, in ways that tell how this was seen, and deemed relevant, by the elite circles at the Meroitic court.

The two writing systems invented in contact to Egyptian writing show considerable differences, only briefly evoked above. They also show two aspects in common. Both are strictly phonetic systems, one devised arguably by non-professional scribes in a marginal region (Proto-Sinaitic), the other by professional ones in the context of a State (Meroitic). It was proposed above that the Proto-Sinaitic abjad was initially developed as a 'quasi-hieroglyphic' writing, emulating aspects of the graphic ideologies of Egyptian writing as perceived by the local populations. Later, as it was adapted by State chancelleries, the script lost its pictorial forms. By contrast, the Meroitic abugida was initially developed as a non-pictorial writing system by scribes with knowledge of the non-pictorial Demotic, and at a time when alphabets and abjads had spread in the Ancient World, notably to Egypt itself. The pictorial variety of Meroitic, also a 'quasi-hieroglyphic' script, was a secondary derivation. In altogether different ways and trajectories, Proto-Sinaitic and Meroitic both attest to the enduring allure of Egyptian hieroglyphs.

Endnotes

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1 P. Morin, P. Kelly and J. Winters, 'Writing, Graphic Codes, and Asynchronous Communication', *Topics in Cognitive Science* 10 (2018), 1–17, offer a four-fold typology based on the two intersecting parameters of (i) the linkage, or not, to language, and (ii) the productivity of the system; the typology thus distinguishes between 'emblems' (such as road signs, identity marks), 'speech-bound notations' (mnemomics helping to recall selected parts of speech), 'specialized notation' (such as a mathematical or musical notation), and 'writing'. In Egyptology, a binary contrast is made between 'writing' (linked to language, highly productive) and 'restricted semographies' (not linked to language, specialized in function): P. Vernus, 'Writing and "(Restricted) Semiographies." Clarifying Their Relationships in Light of the Most Ancient Egyptian Data', in L. Morenz, A. Stauder and B. Büma (eds.), *Wege zur frühen Schrift in Niltal und Zweistromland, Thot. Beiträge zur historischen Epistemologie und Medienarchäologie* 3 (Berlin, 2022), 21–55. Along similar lines, 'writing' is contrasted with 'non-textual marking systems': F. Kammerzell, 'Defining Non-Textual Marking Systems, Writing, and Other Systems of Graphic Information Processing', in P. Andrassy, J. Budka and Fr. Kammerzell (eds.), *Non-Textual Marking Systems, Writing and Pseudo Script from Prehistory to Modern Times, LingAeg SM* 8 (Hamburg, 2009), 277–308.

2 For a theoretical and comparative discussion, see B. Haring, *From Single Sign to Pseudo-Script. An Ancient Egyptian System of Workmen's Identity Marks, CHANE* 93 (Leiden/Boston, 2018), 5–118. The remainder of the book offers an analysis of identity marks at Deir el-Medinah. For a synthetic presentation of various types of identity marks across Egyptian history, with extensive references to what has become a vibrant domain of study over the past fifteen years, see B. Haring, 'Identity Marks', in A. Stauder and W. Wendrichh (eds.), *UCLA Encyclopedia of Egyptology* (Los Angeles, 2023); online: https://escholarship.org/uc/item/1854v370 (accessed 28/07/2023).

3 Seals IÄF III, 368 (Peribsen), IÄF III, 325–326 (Nimaathapi), IÄF III, 309–310, 313–314 (as an expansion of the royal name). It has been proposed to recognize a much earlier instance of a written sentence on Wadi Ameyra, Panel V, dating to king Djer: P. Tallet, 'Une inscription du roi Djer au Sud-Sinaï. La première phrase écrite en hiéroglyphes?', *Abgadeyat* 8 (2013): 121–126; P. Tallet, *La zone minière pharaonique du Sud-Sinaï* 2. *Les inscriptions pré- et protodynastiques du Ouadi 'Ameyra (CCIS no 273–335), MIFAO* 132 (Cairo, 2015), 32, doc. 317, pl. 40). The present author has criticized this proposal: see: A. Stauder, 'Paths to Early Phoneticism: Egyptian Writing in the Late Fourth Millennium BCE', in Morenz, Stauder and Büma (eds.), *Wege zur frühen Schrift*, 251–252, n. 140.

4 Earlier multi-sentence texts present an additive or tabular texture, be it on stone—for example Netjerikhet's Heliopolis shrine; Metjen's inscriptions in the time of Snefru—or on papyrus—the Jarf papyri. See J. Stauder-Porchet, *Les autobiographies de l'Ancien Empire égyptien. Étude sur la naissance d'un genre, OLA* 255 (Leuven, 2017), 9–12.

5 Stauder, in Morenz, Stauder and Büma (eds.), *Wege zur frühen Schrift*, 251–253.

6 Different perspectives and discussion: O. Venture, 'La question de l'origine de l'écriture chinoise', in H. Campaignolle-Catel (ed.). *Écritures V. Systèmes d'écriture, imaginaire lettré* (Paris, 2019), 87–99; H. Wang, 'Writing and the City in Early China', in N. Yoffee (ed.), *Early Cities in Comparative Perspective*. 4000 BCE – 1200 CE, *The Cambridge World History* 3 (Cambridge, 2015), 131–157.

7 For a refined typology of sign functions in Egyptian writing, see S. Polis and S. Rosmorduc, 'The Hieroglyphic Sign Functions. Suggestions for a Revised Taxonomy', in H. Amstutz et al. (eds.), *Fuzzy Boundaries. Festschrift für Antonio Loprieno* (Hamburg, 2015), vol. I, 149–174, with further references. S. Polis, 'The Functions and Toposyntax of Ancient Egyptian Hieroglyphs: Exploring the Iconicity and Spatiality of Pictorial Graphemes,' in J.-M. Klinkenberg and S. Polis (eds), *(Essais en) Sémiotique de l'écriture. Signata 9: Annals of Semiotics* (Liège, 2018), 291–363, specifically 301–314.

8 P. Daniels, *An exploration of writing* (Sheffield and Bristol/CT, 2018), 20–24.

9 S. Dehaene, *Reading in the Brain. The News Science of How We Read* (London, 2009). For an application to an ancient mixed, logo-phonetic writing system, Luwian hieroglyphs, see A. Payne, 'Anatolian Hieroglyphic Writing and Meta-Writing: The Name of Kubaba', *Hieroglyphs* 1 (2023), 246'; online:

http://www.hieroglyphs-journal.org/ (accessed 27 July 2023).

10 Overviews of the main such systems from the perspective of their invention: S. Houston, *The First Writing. Script Invention as History and Process (Cambridge, 2004); C. Woods, Visible Language. Inventions of Writing in the Ancient Middle East and Beyond, Oriental Institute Museum Publications* 32 (Chicago, 2010). For writing systems not covered, or less covered in these, see the complementary references in the following notes.

11 J. Kenoyer, 'Origin and Development of the Indus Script. Insights from Harappa and Other Sites', in L. Lashari (ed.), *Studies on Indus Script, National Fund for Mohenjodaro* (Karachi, 2020), 217–236.

12 S. Ferrara, B. Montecchi and M. Valério, 'The Making of a Script: Cretan Hieroglyphic and the Quest for Its Origins', BASOR 386 (2021), 1–22. E. Selgarella, *Aegean Linear Script(s). Rethinking the Relationship Between Linear A and Linear B* (Cambridge, 2020).

13 A. Davletshin, 'The Script of Rapa Nui (Easter Island) Is Logosyllabic, The Language Is East Polynesian: Evidence from Cross-Readings', *Journal of the Polynesian Society* 131.2 (2022), 185–220. On Rongorongo inscriptions likely pre-dating European contact, S. Ferrara, *et al.*, 'The invention of writing on Rapa Nui (Easter Island). New radiocarbon dates on the Rongorongo script', *Scientific Reports* 14, article 2794 (2024); online https://doi.org/10.1038/s41598-024-53063-7 (accessed 17 February 2024).

14 'C'est un système complexe, une écriture tout à la fois figurative, symbolique et phonétique, dans un même texte, une même phrase, je dirais presque dans un même mot' (J.-F. Champollion, *Lettre à M. Dacier*, Paris, 1822).

15 Daniels, *An exploration of writing*, offers an extensive illustration and discussion of this typology, the terminology of which he partly introduced.

16 The former strategy is common in cuneiform, with various ways to indicate vowel length and glottal stops. The latter strategy is generalized in Maya writing, where the vowel in the second sign, if different from that in the first sign—CV_x-CV_y—indicates that the vowel in the spoken syllable is 'complex', long or aspirated: Stephen Houston, David Stuart, and John Robertson, 'Disharmony in Maya Hieroglyphic Writing: Linguistic Change and Continuity in Classic Society', in S. Wichmann (ed.), *The Linguistics of Maya Writing* (Salt Lake City, 2004), 83–101.

17 In his evolutionary view on the history of writing, Gelb stated that Egyptian writing as well must have been logo-syllabic: I. Gelb, *A study of writing* (Chicago, 2nd edition, 1963). The Procrustean claim is simply incorrect and has now long been rejected. If an example were needed, the inflected forms of the *nḥm*, below in the main text, suffice.

18 A. Stauder, Was heißt erfinden? Prozesse und Akteure in der Entstehung der frühen ägyptischen Schrift', in K. Gabler, et al. (eds.), *Formen kultureller Dynamik: Progression – Impuls – Transformation, GOF IV* 68 (Wiesbaden, 2021), 63–64.

19 Contra Daniels, *An exploration of writing*, 136–139, who asserts that the syllable must have been central in all pristine inventions of writing. Given this axiom, Daniels goes on, in a purely deductive way, to claim that Egyptian writing, not being logo-syllabic, must necessarily be secondary to Mesopotamian writing (pp. 141–142). As noted in the main text, this is directly contradicted by the reasons recalled above in the main text and developed in the article cited in the preceding footnote. In addition, it must be observed that Mesopotamian writing, at the time of alleged influence on Egyptian, was *not yet itself* of the logo-syllabic type, a type into which it would develop only gradually over the centuries.

20 The examples discussed in P. Vernus, 'Idéogramme et phonogramme à l'épreuve de la figurativité: les intermittences de l'homophonie', in L. Morra and V. Bazzanella (eds.), *Philosophers and Hieroglyphs* (Torino, 2013), 196–218, are cases in point.

21 For the former analysis, G. Whittaker, Deciphering *Aztec Hieroglyphs: A Guide to Nahuatl Writing* (Oakland, 2021), 126–136, contrasting his analysis with the latter analysis, championed notably by A. Lacadena and M. Zender (especially pp. 127–130). For the latter analysis, see also A. Davletshin, 'Descripción funcional de la escritura jeroglífica náhuatl y una lista de términos técnicos para el análisis de sus deletreos', *Estudios de Cultura Náhuatl* 62 (2021), 68–70.

22 C. Wagensonner, 'Classifiers Between Euphrates and Tigris. On development and use of noun categorization in cuneiform script', in G. Gabriel, K. Overmann and A. Payne (eds.), *Signs–Sounds–Semantics. Nature and Transformation of Writing Systems in the Ancient Near East, Wiener Offene Orientalistik* 13 (Wien, 2022), 171–212. G. Selz,

C. Grinevald and O. Goldwasser, 'The Question of Sumerian "Determinatives". Inventory, Classifier Analysis, and Comparison to Egyptian Classifiers from the Linguistic Perspective of Noun Classification', *Lingua Aegyptia* 25 (2017), 281–344.

23 Another pristine writing system, Chinese writing does not have 'characters' (discrete graphic units) functioning as determinatives/classifiers, but could present elements of a partly comparable phenomenon on another level. One common type of character consists in phono-semantic compounds (*xíngshēngzì*), fusing generally two graphic sub-units, one that stands for a semantic information and one that stands for phonetic information, generally in this order. The graphic sub-unit in a character standing for semantic information, also referred to as 'radical', has been compared with determinatives/classifiers found in other writing systems, thus Z. Handel, 'The Cognitive Role of Semantic Classifiers in Modern Chinese Writing as Reflected in Neogram Creation', in I. Zsolnay (ed.), *Seen Not Heard. Composition, Iconicity, and the Classifier systems of Logosyllabic Scripts*, *ISAC Seminars* 14 (Chicago, 2023), 159–192. In any case, Chinese phono-semantic compounds combine a semantic and a phonetic part, like Egyptian word spellings generally do, but with formal differences. Chinese characters do so within one graphic frame, rather than in a succession of discrete graphic units like in Egyptian word spellings. They do so in a reverse order (semantic, then phonetic information), suggesting that the semantic and phonetic information was likely scanned and activated simultaneously in both systems.

24 A. Payne, 'Determination in the Anatolian Hieroglyphic Script of the Empire and Transitional Period', *Altorientalische Forschungen* 44.2 (2017), 221–234.

25 R. Valencia Rivera, 'The Use of Semantic Determinatives in Nahuatl Writing', *Estudios de Cultura Náhuatl* 61 (2021), 27–41; Davletshin, *Estudios de Cultura Náhuatl* 62, 59–61; Whittaker, *Deciphering Aztec Hieroglyphs*, 74–78.

26 S. Houston and A. Stauder, 'What is a Hieroglyph?', *L'homme* 233 (2020), 11, n. 3; Valencia Rivera, *Estudios de Cultura Náhuatl* 61, 23–27.

27 O. Goldwasser, 'Classifiers as Priming Devices or "Classifiers Tell Us What We Already Know" ', in G. Chantrain (ed.), *Language, Semantics, and Cognition: Saying and Conceptualizing the World from Ancient Egypt to Modern Times, YES* 14 (New Haven, 2024), 75–110.

28 A. Stauder, 'Hieroglyphic Writing Intensified: Practices and Possible Experiences of Egyptian Enigmatic Writing in the New Kingdom', *Hieroglyphs* 2, forthcoming). A. Stauder, 'Visual Otherness and Delayed Reading in New Kingdom Enigmatic Writing', in D. Klotz, A. Stauder (eds), *Enigmatic Writing in the New Kingdom*, *ZÄS Beihefte* 12.1 (Berlin, 2020), 249–265.

29 Emphasizing (culturally mediated) cognitive categories, O. Goldwasser, *Prophets, Lovers and Giraffes: Wor(l)d Classification in Ancient Egypt, GOF IV* 38 (Wiesbaden, 2002). For subsequent developments of this approach, see O. Goldwasser, 'Was There an "Animal" in Ancient Egypt? Studies in Lexica and Classifier Systems, with a Glimpse toward Sumer and Ancient China', in Zsolnay (ed.), *Seen Not Heard*, 121–157, with up-to-date references for this tradition of study.

30 See notably the scholarly tradition championed by Dimtri Meeks and colleagues, with publications in the IFAO series *Paléographie hiéroglyphique*.

31 E.-S. Lincke and F. Kammerzell, 'Egyptian Classifiers at the Interface of Lexical Semantics and Pragmatics,' in E. Grossman, S. Polis and J. Winand (eds.), *Lexical Semantics in Ancient Egyptian*, *LingAeg SM* 9 (Hamburg, 2012), 55–122, thus distinguish between referent classification (sensitive to discourse) and lexical classification.

32 For various aspects and illustrations of the phenomenon, see H. Rashwan, 'Ancient Egyptian Image-Writing: Between the Unspoken and Visual Poetics', *JARCE* 55 (2019), 137–160; A. McDonald, 'The curiosity of the cat in hieroglyphs', in D. Magee, J. Bourriau, and S. Quirke, (eds.) *Sitting beside Lepsius: Studies in honour of Jaromir Malek at the Griffith Institute, OLA* 185 (Peeters, 2009), 361–380. A. McDonald, 'A Metaphor for Troubled Times: The Evolution of the Seth Deity Determinative in the First Intermediate Period', *ZÄS* 134.1 (2006): 26–39; M. Broze, *Mythe et roman en Égypte ancienne: les aventure d'Horus et Seth dans le Papyrus Chester Beatty I, OLA* 76 (Leuven, 1996), 129–156.

33 For changes over time in cuneiform writing, see N. Veldhuis, 'Cuneiform Writing: Changes and Developments', in S. Houston (ed.), *The Shape of Script: How and Why Writing Systems Change*

(Santa Fe, 2012), 3–23, and C. Woods, 'The Cuneiform Writing System and the Mesopotamian Languages', in G. Rubio (ed.), *Handbook of Ancient Mesopotamia* (Boston/Berlin, forthcoming); in Maya writing, S. Houston, 'Maya Writing: Modified, Transformed', in Houston (ed.), *The Shape of Script*, 187–208.

34 Houston, in Houston (ed.), *The Shape of Script*, 205–206.

35 G. Selz, 'The Puzzling Logogram. Writing and Reasoning in Early Mesopotamia', in Gabriel, *et al.*, (eds.), *Signs–Sounds–Semantics*, 27–47; id., 'Beyond Speech. Advocating a non-logocentric view on the evolution of Cuneiform writing', in D. Wengrow (ed.), *Image Thought, and the Making of Social Worlds, Freiburger Studien zur Archäologie & Visuellen Kultur* 3 (Heidelberg, 2021), 213–249; M. Krebernik, 'Early Cuneiform: Writing and Language', in Gabriel, et al., (eds.), *Signs–Sounds–Semantics*, 9–21; H. Nissen, 'Early Administration Practices and the Development of Proto-Cuneiform Writing', in J. C. Moreno García (ed.), *Naissance de l'État, naissance de l'administration : le rôle de l'écriture en Égypte, au Proche-Orient et en Chine = Archéo-Nil* 26 (2020), 33–48. C. Woods, 'The Earliest Mesopotamian Writing', in: C. Woods (ed.), *Visible Language. Inventions of Writing in the Ancient Middle East and Beyond, OIMP* 32 (Chicago, 2010), 33–50. With a focus on the immediately preceding phase, J.-J. Glassner, 'Antérieurement à l'Uruk 5. La première écriture en Mésopotamie', in Morenz, Stauder and Büma (eds.), *Wege zur frühen Schrift*, 57–106.

36 Stauder, in Gabler, et al. (eds.), *Formen kultureller Dynamik*; Stauder, in Morenz, Stauder and Büma (eds.), *Wege zur frühen Schrift*; J. Darnell, *Egypt and the Desert* (Cambridge, 2021), 65–69; R. Bussmann, 'Civilization and Writing: A View from Early Egypt', in H. Zhao (ed.), *Dialogue of Civilisations: A Comparison between Centres of Different World Civilisations* (Shanghai, 2020), 181–219; P. Vernus, 'La naissance de l'écriture dans l'Égypte pharaonique : une problématique revisitée', in Moreno García (ed.), *Naissance de l'État, naissance de l'administration*, 105–134; J. Baines, 'Aesthetic culture and the emergence of writing during Naqada III', *ArchéoNil* 20 (2010): 134–159. The author disagrees with views that see the origins of Egyptian writing in administrative practices: such as J. Kahl, 'Die frühen Schriftzeugnisse aus dem Grab U-j in Umm el-Qaab', *Chronique d'Égypte* 78 (2003), 112–135; G. Dreyer, *Umm el-Qaab I: Das prädynastische Königsgrab U-j und seine frühen Schriftzeugnisse. Mit Beiträgen von Ulrich Hartung und Frauke Pumpenmeier, AVDAIK* 86 (Mainz, 1998).

37 The issue is developed in detail in Stauder, in Morenz, Stauder and Büma (eds.), *Wege zur frühen Schrift*.

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39 Introducing the rich and diverse world of Mesoamerican writing and signing systems, E. Boone and G. Urton (eds.), *Their Way of Writing. Scripts, Signs, and Pictographies in Pre-Columbian America* (Dumbarton Oaks, 2011).

40 A. Payne, *Schrift und Schriftlichkeit. Die anatolische Hieroglyphenschrift* (Wiesbaden, 2015); ead., *Hieroglyphic Luwian. An Introduction with Original Texts, SILO* 2 (Wiesbaden, third revised edition, 2014).

41 D. Meeks, *Les architraves du temple d'Esna. Paléographie, Paléographie hiéroglyphique* 1 (Cairo, 2004), x-xviii; id., 'La paléographie hiéroglyphique: une discipline nouvelle', *Égypte, Afrique & Orient* 46 (2007), 3-14.

42 P. Collombert, 'Combien y avait-il de hiéroglyphes?' *Égypte, Afrique & Orient* 46 (2007), 35–48.

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44 S. Polis, 'The Functions and Toposyntax of Ancient Egyptian Hieroglyphs: Exploring the Iconicity and Spatiality of Pictorial Graphemes,' in J.-M. Klinkenberg & S. Polis (eds), *(Essais en) Sémiotique de l'écriture. Signata 9: Annals of Semiotics* (Liège, 2018), 291–363, specifically 314–349, including extensive references. P. Vernus, 'Form, Layout, and Specific Potentialities of the Ancient Egyptian Hieroglyphic Script', in V. Davies and D. Laboury (eds.), *The Oxford Handbook of Epigraphy and Epigraphy* (Oxford, 2020), 20–23.

45 P. Vernus, 'Script and Figurativity: Modelling the Relationships between Image and Writing in Ancient Egypt', in Morenz, Stauder and Büma (eds.), *Wege zur frühen Schrift*, 335–421.

46 L. Morenz, *Sinn und Spiel der Zeichen: visuelle Poesie im Alten Ägypten* (Köln, 2008).

47 E. Brovarski, *The Senedjemib Complex, Part 1: The Mastabas of Senedjemib Inti (G 2370), Khnumenti (G 2374), and Senedjemib Mehi (G 2378), Giza Mastabas* 7 (Boston, 2003), text Figure 4, 104–105.

48 H. Fischer, *L'écriture et l'art de l'Égypte ancienne : quatre leçons sur la paléographie et l'épigraphie pharaoniques* (Paris, 1986), Fig. 2.

49 J. Baines, 'Communication and display: the integration of early Egyptian art and writing', *Antiquity* 63 (1989), 471–482; Stauder, in Morenz, Stauder, and Büma (eds.), *Wege zur frühen Schrift*, 262–267.

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51 See the references given above, §1.6.

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53 T. van den Hout, *A History of Hittite Literacy. Writing and Reading in Late Bronze-Age Anatolia (1650–1200 BC)* (Cambridge, 2020); Payne, *Schrift und Schriftlichkeit*, 59–68.

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Hornung, in F. Abitz, *Baugeschichte und Dekoration des Grabes Ramses' VI., OBO* 89 (Fribourg/Göttingen, 1989), 93.

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68 See the studies collected in D. Klotz and A. Stauder (eds.), *Enigmatic Writing in the Egyptian New Kingdom. Revealing, Transforming, and Display in Egyptian Hieroglyphs, ZÄSB* 12.1 (Berlin, 2020), with references to the previous literature.

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70 Klotz, in Klotz and Stauder (eds.), *Enigmatic Writing*, 49–99.

71 A. Stauder, 'The Visual Otherness of the Enigmatic Text in Some Netherworld Books of the New Kingdom', in Klotz and Stauder (eds.), *Enigmatic Writing*, 249–265.

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74 S. Houston and F. Rojas 'Sourcing Novelty: On the "Secondary Invention" of Writing', *RES*: *Anthropology and Aesthetics* 77–78 (2022), 250–266.

75 J. Quack, 'Egyptian writing for non-Egyptian languages, and vice versa: A short overview', in A. de Voogt and I. Finkel (eds.), *The Idea of Writing. Play and Complexity* (Leiden/Boston, 2010), 315–326. An example is P. Amherst 63, an Aramaic text written in a near-alphabetic form of Demotic: K. van den Toorn, *Papyrus Amherst* 63, *AOAT* 448 (Münster, 2018).

76 One exception is Egyptian writing used by local rulers at Byblos in the Middle Bronze Age: see Haring *Hieroglyphs, Pseudo-Scripts and Alphabets*, §5.2, with references. Egyptian writing was also used by Napatan kings before the invention of Meroitic writing: C. Peust, *Das Napatanische* (Göttingen, 1999). In this specific context, Egyptian hieroglyphs were adapted to writing the names of the rulers: F. Breyer, Schrift in *Afrika. Multiliteralismus und Schriftadaption in den antiken Kulturen Numidiens, Ägyptens, Nubiens und Abessiniens* (Berlin, 2021), 213–225.

77 L. Morenz, *Sinai und Alphabetschrift. Die frühesten alphabetischen Inschriften und ihr kanaanäisch-ägyptischer Entstehungshorizont im Zweiten Jahrtausend v.Chr., Studia Sinaitica* 3 (Berlin, 2019). O. Goldwasser, 'The Advantage of Cultural Periphery: The Invention of the Alphabet in Sinai (circa 1840 B.C.E.)', in G. Sela-Sheffy and G. Toury (eds.), *Culture Contacts and the Making of Cultures: Papers in Homage to Itamar Even-Zohar* (Tel Aviv, 2011), 251–316; ead., 'Canaanites reading hieroglyphs: Horus is Hathor? The invention of the alphabet in Sinai', *Ägypten & Levante* 16 (2006), 121–160; G. Hamilton, *The Origins of the West Semitic Alphabet in Egyptian Scripts* (Washington, 2006). Further important studies are cited below. B. Haring, 'Ancient Egypt and the Earliest Known

Stages of Alphabetic Writing', in P. Boyes and P. Steele (eds.), *Understanding Relations Between Scripts II: Early Alphabets* (Oxford, 2020), 53–67, provides a synthetic overview of the controversies surrounding many aspects of Proto-Sinaitic: its date and place of invention, the characterization of its inventors, the role of Egyptian writing as a model, the readings of individual inscriptions, the assessment of palaeographic variation.

78 J. Darnell, et al., 'Two early alphabetic inscriptions from the Wadi el-Hôl: new evidence for the origin of the alphabet from the Western Desert of Egypt', *AASOR* 58 (2015), 63–124.

79 Darnell, et al., *AASOR* 58; id., Egypt and the Desert, 72–73; Hamilton, *The Origins of the West Semitic Alphabet*, 7–11; 270–276.

80 G. Selz, 'The Proto-alphabetic Origin of Tāw and Its Meaning. From  and  to  and ת (ת >) to the Letter Name and Its Cultural Background', *Hieroglyphs* 1 (2023), makes a cogent argument that one sign—the *tāw*—is not derived from an Egyptian sign but from a pan-Near Eastern mark used in branding livestock in pastoral cultures.

81 P. Vernus, 'Écriture hiéroglyphique égyptienne et écriture proto-sinaïtique: une typologie comparée. Acrophonie « forte » et acropohonie « faible »', in C. Rico and C. Attuci (eds.), *Origins of the Alphabet. Proceedings of the First Polis Institute Interdisciplinary Conference* (Newcastle 2015), 142–175.

82 O. Goldwasser, 'From the iconic to the linear: the Egyptian scribes of Lachish and the modification of the early alphabet in the Late Bronze Age', in I. Finkelstein, C. Robin and T. Römer (eds.), *Alphabets, texts and artifacts in the ancient Near East: Studies presented to Benjamin Sass* (Paris, 2016), 118–160.

83 O. Goldwasser, 'The Early Alphabetic Inscriptions Found by the Shrine of Hathor at Serabit el-Khadem: Palaeography, Materiality, and Agency," *Israel Exploration Journal* 72 (2022), 14–48; ead, *Ägypten & Levante* 16, 134. In differing interpretations, Darnell, *Egypt and the Desert*, 73, sees the invention of the script in the interaction between Egyptian scribes and Semitic-speaking auxiliaries, while Haring, *Hieroglyphs, Pseudo-Scripts and Alphabets*, §5.2, proposes that the inventors were fully, or at least semi-literate.

84 Haring, in Boyes and Steele (eds.), *Understanding Relations Between Scripts* II, 63–67, with references to other authors favoring this line of interpretation.

85 This is the view championed notably by Goldwasser and Morenz in the studies cited above.

86 L. Morenz, *Die Genese der Alphabetschrift: ein Markstein ägyptisch-kanaanäischer Kulturkontakte, Wahrnehmung und Spuren Altägyptens* 3 (Würzburg, 2011), 223–242; Goldwasser, Ägypten & Levante 16, 132–133. Different interpretation by Haring, *Hieroglyphs, Pseudo-Scripts and Alphabets*, §5.2, commenting on the presence of writing also Wadi el-Hôl and the small size of both corpuses.

87 Goldwasser, in I. Finkelstein, C. Robin and T. Römer (eds.), *Alphabets, texts and artifacts*.

88 On the invention of the system, C. Rilly, 'Reducing polyvalency in writing systems: from Egyptian to Meroitic', in A. de Voogt and I. Finkel (eds.), *The Idea of Writing. Play and Complexity* (Leiden/Boston, 2010), 221–234. On the system itself, C. Rilly, *La langue du Royaume de Méroé, Collections de l'EPHE* 344 (Paris, 2007), 231–358; synthetically, C. Rilly and A. de Voogt, *The Meroitic Language and Writing System* (Cambridge, 2012), 35–61. Partly different views in Breyer, Schrift in Afrika, 225–263.

89 Breyer, *Schrift in Afrika*, 269–276.

90 The author thanks Philip Huyse, p.c., 2022, for this information.