CHAPTER 43

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SCRIPTS

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REPRESENTING LANGUAGE:
GENERAL PRINCIPLES

WRITING differs from, while also overlapping with, non-linguistic marking systems such as identity marks of various sorts that are found alongside writing throughout Egyptian history.[1] Like writing, non-linguistic marking systems are conventionalized modes of visual communication that make use of well-defined repertoires of signs and their combinations. Unlike writing, these ancient marking systems aimed at identifying limited sets of extra-linguistic referents or persons; as a result, non-linguistic marking systems remained functionally specific and were often limited to specific communities of users. Writing, by contrast, targets language and can therefore, in principle, represent any linguistic message in a largely non-ambiguous, context-independent way.

Writing expresses both less and more than language. It expresses less because it leaves suprasegmentals (prosodic features) and all embodied dimensions of linguistic interaction unrepresented. It simultaneously expresses more because it has an inherent visual dimension, as well as being an index of (pointer to) specific socially situated practices. Egyptian writing focused phonetic representation phonetic representation on consonantal phonemes to the detriment of vowels and syllable structure, thereby reflecting the morphological structure of the Egyptian language with its salient lexical root morphemes. Simultaneously, significations beyond the linguistic sequence could be conveyed through the styles of writing, the visual outlook of an inscribed field, and the pictoriality of the signs themselves, the last opening a whole domain of ludic or enigmatic practices of writing.

In spite of notable structural differences and historical change, the various Egyptian scripts (hieroglyphs, hieratic, demotic) share the fact that they target both meaning and sound, that is, both the semantic and the phonetic articulations of language. They can therefore be described typologically as mixed, logo-phonographic systems, comparable for the general principle to various types of other notably pristine writing systems such as cuneiform,

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[1] On these, see Haring 2018; Budka et al. 2015; Andrássy et al. 2009; Haring and Kaper 2009. On the distinction, as well as overlaps, between writing and non-linguistic marking systems, Vernus 2016.

Chinese and Sinitic, or Mesoamerican writing. General principles of Egyptian writing are illustrated below with hieroglyphic spellings from classical periods; major differences in other periods and types of writing are signaled subsequently.

Categories of signs

When individual signs are considered, three basic categories are schematically distinguished.[2] 'Phonograms' represent sound, but no meaning. 'Logograms' (word-signs) represent both linguistic meaning and sound (a word, as a linguistic sign, is itself a pairing of sound and meaning). 'Determinatives', or 'classifiers' as these are also described, represent meaning, but no sound in a direct manner. Determinatives/classifiers can be subdivided into specific determinatives/repeaters (associated with one word only) and general determinatives/ classifiers (with more general meaning). Logograms and determinatives/classifiers can be grouped together as 'semograms' or 'semantograms' (because they bear meaning). Under this definition, a logogram is a sem(ant)ogram that also carries sound.

Depending on the contexts in which it is used, a sign can belong to one or the other of the above categories, e.g. ⊶ is a common phonogram in many words, but also a logogram in ẖ.t 'belly'; or 𓀀 a logogram in z(j) 'man' (Old Kingdom), but a general determinative/ classifier in a variety of other words and in personal names. The logographic use of a sign, generally for a value associated with its visual referent (the entity it depicts), is signaled by the 'logographic stroke', e.g. ⍑ pr 'house'. Conversely, so-called 'phonetic complementation' of the same sign often serves to signal that the 'complemented' sign stands for its phonetic value, e.g. 𓉐𓂋 pri 'go out' (pr⁻ʳ-MOTION, with ⌒, r, pointing to the fact that the group 𓉐, pr⁻ʳ, is to be read phonetically.) Such 'phonetic complements' commonly have also a eugraphic function, filling the lower part of an ideal square or 'quadrat'.

A logogram can stand not only for one word, but also for various etymologically related words: in this case, a description as 'radicogram' (root-sign) is more appropriate.[3] In other cases, a logogram can stand for various words that are semantically, but not etymologically, related: in this case, the sign may be described as a polyvalent logogram, or as an ideo- gram, e.g. 𓂋 in 𓄔𓂋 sḏm 'hear' (EAR-m), 𓄘 jdi 'be deaf' (j-d-EAR) and 𓄟𓊃𓂋 msḏr 'ear' (ms⁻ˢ- ḏr⁻ʳ-EAR).

The boundaries between the three above categories can be blurred. While so-called 'triliterals' are traditionally described as phonograms, there are only so many homophonous tri-literal roots in the language, often only one. Accordingly, triliterals are often best described as logograms or radicograms, conveying both meaning and sound. (A similar comment extends to some biliteral signs.) The boundary between logograms and determinatives/ classifiers is also blurred in the category of specific determinatives/repeaters: in the spelling of a word, these occupy the final position after the phonetic representation (like a determinative/classifier), yet they are uniquely associated with one word or root (like logograms or radicograms).

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[2] For further discussion, see Polis and Rosmorduc 2015; Schenkel 2003; 1984; and 1971; Goldwasser 2002.
[3] Schenkel 2003.

The word level

The majority of spellings include both phonetic and semantic information. This follows a characteristic ordering. The phonetic information tends to come first, followed by the semantic information; within the latter, specific semantic information (logograms, specific determinatives/repeaters) tends to precede more generic semantic information (generic determinatives/classifiers), e.g. 𒍝𒌋 *wḥꜥw* 'fowler, fisherman' (*wḥ*ꜥ-ʷ-fowl_ and_fish—agentive_action—man). Exceptions to this generalization are, for example, spellings that consist of logograms that are complemented phonetically, e.g. *sḏm* 'hear' (EAR-*m*).

Only a few among the great many logically possible combinations of phonograms, logo-grams, and determinatives/classifiers are regularly attested for any given word (in any particular script, period, and type of written text). Mixed, phono-semantographic spellings such as in *wꜥr* 'flee' (*w-ꜥ-r*—LEG—MOTION) are the more common ones. However, purely phonetic spellings, as well as purely logographic ones, are also found, mostly with basic vocabulary, culturally salient names, and common phrases. Examples of the former include common nouns and verbs (e.g. *rn* 'name'; *ḏd* 'say'), prepositions (e.g. *m* 'in', *ḥnꜥ* 'with'), or divine names (e.g. *ptḥ* 'Ptah'). Examples of the latter include common words (e.g. *ḥr* 'face', fem. *njwt* 'town'; *jri* 'do'), titles (*ḥm-nṯr* '(funerary) priest'), epithets (*nṯr-nfr* 'young god'), or phrases (*rꜥ nb* 'daily'). Idiosyncratic spellings are found in such words and names as *jt* 'father', *nsw* 'king', *wsjr* 'Osiris'.

In spellings that combine phonetic and semantic information, the realization of the phonetic component is itself often prescribed: e.g. (*prr*-MOTION), rather than (*p-r*- MOTION), for *pri* 'go out'; similarly, the phonetic part of *nḥb* 'yoke' was split into *nḥ-b*, contrasting with *nḥm* 'take away', split into *n-ḥm*, never into **nḥ-m*. Significantly, the repertoire of bi-consonantal phonograms ('biliterals') was never systematized into a complete set for representing all sequences of two consonants found in the language. With some phonetic sequences, moreover, whole groups of signs could be transferred from one word to other ones: for example, the group as in *jb* 'kid' recurs in the etymologically unrelated *jbi* 'be thirsty' or *jb* 'think' (but not in *jb* 'heart', from which *jb* 'think' is derived); note that alone (without) does not have the phonetic value *jb*. Accounting for their origin as determinatives in other words, such uses are traditionally—and incorrectly—described as 'phonetic determinatives'.

While a given spelling can always be broken down analytically into its component signs, every word at a given time is thus associated with a limited set of typical, historically determined spellings. This was even more strongly the case in cursive varieties, in which orthographic variation tends to be more limited. Egyptian writing thus has a strong logo-graphic dimension at the word level itself, beyond the individual graphic forms that make up the written words. These conventionalized visual images associated with words—or 'schematograms'[4]—represent the combined product of historical spellings, analogical pressure, and functional determinations (such as distinctiveness in representation). Significantly, a special subsystem of notation—described as 'group writing' or 'syllabic

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[4] Schenkel 1971, 91. Note that schematography—logography at the word level—plays a crucial role in the historically based, 'deep orthographies' of the alphabetic scripts of languages such as English and French.

orthography'—was used for names and words that lacked historically motivated spellings, notably loanwords, foreign names, or native words not previously committed to writing or re-committed to writing after a discontinuation.[5]

Determinatives/classifiers

The category of signs described as determinatives or classifiers is a remarkable feature of Egyptian writing. While present in other complex writing systems (such as cuneiform,[6] but not in Maya writing, for instance), the class of determinatives/classifiers is vastly more developed in Egyptian. Their functions, for which neither term can fully account, are multiple.

In reading, the broad semantic information conveyed by determinative(s)/classifier(s) helps to prime a semantic class or field, which is narrowed down to a word through the incomplete representation of sound (the discontinuous root morpheme).[7] Particularly with words inscribed in isolation, determinatives/classifiers can have a disambiguating function, between words of homophonous roots or between words derived from the same root.[8] In continuous text, determinatives/classifiers are crucial in signaling word boundaries. This is because, as noted above, signs conveying (more general) semantic information effectively tend to stand at the end of the word.[9]

In relation to their pictoriality and iconicity, logograms and determinatives/classifiers can convey significations supplemental to linguistic meaning.[10] They regularly express aspects of the cultural encyclopedia associated with words, and embedded in the graphic signs themselves. Variations in determinative/classifier selection for a given word can also be exploited pragmatically, pointing to significant contextual features. Determinatives are also described as a system of 'classifiers', by analogy with linguistic classifiers found in a variety of the world's languages.[11] In this tradition of research, which draws on prototype theory, cognitive linguistics, and cognitive metaphor theory, classifiers are analyzed as reflecting cognitive categories in knowledge organization. In very broad terms, the relations can be vertical, expressing the conceptual category to which a word belongs ('taxonomic,' or inclusive relation) or horizontal, expressing the conceptual category with which it is associated ('schematic,' or metonymic relation). While initially developed for noun classification, the approach now extends to verbal classification as well, with classification bearing notably on the participants in the event in various semantic roles. Variations in the classifier

[5] Kilani 2020; Quack 2010a; Zeidler 1993; Schneider 1992: 360–402; Schenkel 1986. On the metatextual functions of the A2 and T14 classifiers occasionally marking a word as foreign, see Allon 2010.

[6] Selz, Grinevald and Goldwasser 2017.

[7] Note that words were arguably scanned as wholes, so that both channels of reading, the semantic and the phonetic, would have been simultaneously active.

[8] In continuous text, this function would have been less crucial, as disambiguation was already powerfully effected through syntactic and semantic context.

[9] Historically, it is significant that determinatives/classifiers become more common during the Old Kingdom at the time when continuous text itself (hence requirements of segmenting the continuous chain into words) become more widespread. Note also that the Meroitic word or phrase divider developed from the plural determinative/classifier.

[10] See, e.g. Meeks 2007; McDonald 2007; Loprieno 2003; Van Esche 1997.

[11] General presentations: Goldwasser and Grinevald 2012; Goldwasser 2002; Linke and Kammerzell 2012; Linke 2011. Case studies in the series GOF IV/38; Allon 2007.

selection for a given word are described as referent classification (pointing to the extra-linguistic referent), in addition to the more common lexeme classification (pointing to the word in the lexicon).

HISTORICAL SKETCH

Origins and early development

A major step in the path leading to the emergence of Egyptian writing is demonstrated by the U-j inscriptions in a proto-royal burial (Abydos/Umm-el Qaab, c.3200 BC).[12] The inscriptions on the tags display significant features of the visuality of writing (such as regimentation of forms, orientation, miniaturization and calibration of relative size). They do not, however, evidence representation of language, and are best interpreted as a non-linguistic marked system, used alongside other non-linguistic marking systems found in tomb U-j.[13] The signs, which recur in contemporary visual culture, are highly exclusive, and probably powerful.[14] Material aspects of the inscriptions suggest that the signs mark or brand, and thus contribute to the life histories of, the goods to which they were attached, in a context that can be reconstructed as ceremonial.[15]

Egyptian writing proper appears not long after the U-j inscriptions, by the late Dynasty 0 (c.3100 BC), at the same time as modes of pictorial representation coalesce into what has been variously described as 'canonical tradition', or 'decorum'. Writing thus developed as a major component and vehicle of the simultaneously emerging Egyptian formal culture (see Chapter 28 in this volume). Early inscriptions consist of names and short phrases; they do not include predicative sentences, let alone continuous text, but are often associated with pictorial representations. These short inscriptions derive much of their significations from their relationship with the material object on which they are inscribed and the associated practices.[16] While ceremonial functions and funerary contexts broadly understood remain central, the use of writing for administrative purposes is indirectly, but securely, documented by the First Dynasty (c.3000–2890 BC), and may have emerged slightly earlier. The use of papyrus (no later than the mid-First Dynasty) also represents an innovation, insofar as this is a material manufactured purely in order to support writing, with no other primary function. A remarkable feature of Egyptian writing is its early, rapid and thorough phoneticization. A near-complete set of mono-consonantal phonograms developed as early as the early/mid-First Dynasty, and a steadily growing set of biconsonantal phonograms appeared during the following period.[17] The strong initial focus of Egyptian writing on names arguably played a role in the initial phoneticization of the script.

[12] Dreyer et al. 1988.
[13] Stauder forthcoming b, Vernus 2016. For earlier, more linguistically oriented interpretations, see e.g. Kahl 2003; 2001. On the rise of writing in a comparative perspective, see the studies in Houston 2004.
[14] Darnell 2017; Baines 2010; 2004; Morenz 2004; Kemp 2000: 232–6; Dreyer et al. 1998: 173–7.
[15] Wengrow 2008a, 2008b; for slightly later material, see also Vernus 2011.
[16] E.g., Piquette 2018, for ceremonial tags of the First Dynasty.
[17] Kahl 1994 (with a sign list and values); for a palaeographical study of early Egyptian writing, Regulski 2010.

In addition, as writing developed a broader functional range, phoneticization permitted the representation of new words in the lexicon as these came to be committed to writing. By the Third and Fourth Dynasties (c.2686–2498 BC), a sizeable amount of early signs fell out of (regular) use, while new ones were introduced, for example in the category of men (Gardiner A), bearing witness to a systematization of writing after an initially more experimental phase.

A principally linguistic model of the origins and early development of Egyptian writing would, however, be inappropriate. Egyptian writing was initially highly restricted in terms of its functions, the places in which it was deployed, and the number of people involved. Hieroglyphic writing, specifically, was a scarce resource, concentrated in very few places, and an object of competition among the elite. In early times, hieroglyphic writing was also made more visible in some places in society through its presence on seals where, however, it functioned more as a visual motif and an index of the central power and elite.[18] During the third millennium BC, writing extended its ranges of uses, both ceremonial and utilitarian ones, and gradually disseminated across the country. Sentences are first notated by the late Second Dynasty (c.2750 BC) and continuous sequences of speech appear by the early Old Kingdom (c.2600 BC),[19] while written genres diversified during the third and early second millennia BC. As in other cultures and places, early writing in Egypt only secondarily aligned on the sequence of speech. It created its own domains of use rather than reproducing those that existed in orality. Its significations were grounded in its restricted distribution and the resulting social indexicality, in its relation to the objects, places, and images to which it was attached, and in the social practices (ceremonial, funerary, or mundane) with which it was associated and which it contributed define or redefine.

Hieroglyphic writing

Hierolgyphic writing presents a distinguished association with the lapidary sphere, and is characterized by its material and aesthetic investment, and its sacralizing function (see dicussion below). In terms of its structural history, hieroglyphic writing in the Old Kingdom (c.2686–2160 BC) is characterized by its numerous logograms, or specific semantograms, and its relative freedom in phonetic complementation.[20] In the context of a regionalization of writing, inscriptions in the First Intermediate Period (c.2160–2055 BC) include new signs and sign forms that point to productive experimentation.[21] Reflective of a broader and more centralized sociology of writing, Middle Kingdom writing sees a relative standardization of spellings. Except for common words and phrases, logographic spellings tend to be augmented by full phonetic notation of the root. Erstwhile logograms thereby increasingly functioned as determinatives/classifiers while specific semantograms tended to be replaced by generic ones, resulting in a reduction in the overall number of regularly used signs. Strategies for phonetic complementation also underwent regimentation, with a tendency to

[18] Bussmann forthcoming.   [19] Stauder-Porchet 2017: 9–33.
[20] Edel 1955–64: §24–102; Schweitzer 2005; Collombert 2010.
[21] E.g. Callender 2019; Morenz 1999.

complement only the final part of a sign: compare e.g. OK 匚�� (*s-ḏ*-EAR-*m*) → MK ✍
(EAR-*m*), *sḏm* 'hear'.

Hieroglyphic spellings in the Ramesside period (*c.*1295–1069 BC) are influenced by contemporary hieratic spellings to various degrees, more strongly so in texts that are less bound by inherited traditions in genre, formulation, and language. Beginning in the Third Intermediate Period, various new sign values, including phonetic ones, develop, and in the Late Period some texts increasingly display spellings that break away from inherited conventions.[22] For example, in the Naukratis Stele, from the time of Nectanebo II (360–343 BC), *jb* 'heart' is written with the received logographic spelling, ♡ (col. 5), also in a purely phonetic one, ⫯⫰ (*j-b*, col. 3), and playfully, in the plural, as ⫯⫰ (through punning with *jb* 'kid', col. 7). The great number of creative spellings on this stela play with the reader's expectations, as well as turning writing itself into a tribute to the deity.[23]

'Ptolemaic' writing (a term that refers essentially to hieroglyphic writing found in Ptolemaic and early Roman temple inscriptions and to a lesser degree in contemporary stelae, see Chapter 58 in this volume) represents a further development of these tendencies, fully exploiting general principles that were inherent in the old sacred script.[24] Contrasting with the more standardized nature of orthography in other and earlier varieties of Egyptian writing, Ptolemaic writing is characterized by a high degree of variability in spelling, as well as variation from temple to temple. Ptolemaic spellings often break away from inherited word-forms, and can be either fully logographic—with an erstwhile semantogram standing alone for the word—or strongly phonetic, in which case they tend to be based on monoconsonantal signs. New sign variants, sign combinations, and at times entirely new forms, are introduced.[25] Additional values (for some signs as many as twenty, some regular, some occasional or even unique) are derived from the inherited values of signs (phonetic and semantic), their visual dimensions (shapes and visual referents), as well as through the exploitation of phonetic changes in language, and, further, via covert relations between signs such as formal similarities that obtained only at the level of their cursive equivalents.

Linear hieroglyphs

While simplified forms of hieroglyphs are found from the inception of Egyptian writing itself,[26] linear hieroglyphs (less correctly described as 'cursive hieroglyphs') are first

[22] Schweitzer 2003; Jansen-Winkeln 1996: 9–31; Der Manuelian 1994: 61–100; Engsheden 2014.

[23] Von Bomhard 2012: 90–92.

[24] Introductions: Kurth 1983, 2007; Leitz 2009. Foundational studies: Sauneron 1982; Fairman 1945 and 1943. General sign lists: Daumas et al. 1988, Kurth 2007; Leitz 2009 (a concise list of most frequently encountered signs); for specific corpora, Meeks 2004; Cauville 2001.

[25] Note that the traditional appreciation of a dramatic increase in numbers of signs in the Ptolemaic Period ('7,000' as opposed to '700' in classical periods) is an artifact of comparing modern fonts, the Montpellier (Daumas et al. 1988) and Gardiner (1957) sign lists, respectively. While the Montpellier font was devised for incorporating as many graphic variants as possible, the Gardiner font was aimed at giving only the main variants and signs. When compared according to more commensurate criteria, Ptolemaic (*c.* 2,000 signs in regular use) only slightly exceeds Old Kingdom writing (*c.* 1,500 signs), for instance (Collombert 2007).

[26] Regulski 2009, 2010.

documented in early Fourth-Dynasty documentary texts, alongside hieratic (Pap. Jarf).[27] Linear hieroglyphs were used notably in funerary compositions on coffins and papyrus (Coffin Texts, the New Kingdom Book of the Dead, etc.),[28] in ritual texts (e.g. the hymns to Sobek on Pap. Ramesseum VI), in Late-Period texts of sacerdotal knowledge (e.g. Pap. Jumilhac), and, from the New Kingdom onwards, to inscribe compositions such as the Amduat on the walls of tombs. Linear hieroglyphs are also found on the so-called Vorlagenostraka (preparatory ostraca) used as aids for inscribing tombs.[29] Very occasionally, they could be used in administrative contexts, notably in the Old Kingdom, and rarely for literary texts (although not on papyrus).

Unlike hieratic, linear hieroglyphs are deployed only in vertical columns, oriented both right-to-left and left-to-right, and include no ligatures or abbreviations.[30] While the sign forms are linearized, they remain close to hieroglyphic ones, and show little palaeographic evolution over time. Linear hieroglyphs thus pertain to the hieroglyphic domain, contributing to sacralize the text they write down.[31]

Hieratic

The bulk of ancient written production—in the spheres of administration, private business, literature, knowledge, and even some domains of ritual action[32]—was executed in cursive scripts: hieratic and later demotic (see below). Ancient scribes were trained in cursive varieties first, and only a minority was further introduced into the hieroglyphic script, which was associated with the more restricted domains of ideology and sacerdotal science. Differing from hieroglyphic writing, hieratic and demotic were only written from right to left. While hieratic (and to a lesser degree demotic) retained a significant amount of iconicity (notably in logograms and determinatives), these scripts lay outside the complex interaction with the pictorial sphere characteristic of hieroglyphs. Hieratic and demotic were generally drawn on perishable or disposable portable media (e.g. papyrus, writing boards and ostraca),[33] but also include graffiti ('secondary epigraphy') on tomb and temple walls.[34] Hieratic could also be incised on clay (only under special circumstances[35]) and on natural rock ('lapidary hieratic').[36] Both hieratic and demotic were occasionally used on stelae (e.g. epigraphic hieratic for administrative documents monumentalized for exposition from Dynasties 21 to 26, c.1069–525 BC, with a peak in the Libyan period).

Hieratic proper (as opposed to mere drawn forms of hieroglyphs, documented as early as Dynasty 0) emerged during the early third millennium BC. Consistent patterns for

[27]   Tallet 2017; Verhoeven 2015b: 33, 38.

[28]   Lucaralli 2020.

[29]   For the last, e.g. Lüscher 2013; further the studies by Lüscher, Haring, and Graefe in Verhoeven 2015a.

[30]   Allam 2007.

[31]   Vernus 1990: 41–5; see also the distribution of linear hieroglyphs and hieratic in the 'Ramesseum library' (Parkinson 2009: 146–60).

[32]   For the last, e.g. Donnat-Beauquier 2014.

[33]   On the materiality of hieratic writing, Verhoeven 2015b: 25–8; Eyre 2013: 22–54.

[34]   E.g. Ragazzoli 2017 and 2013; Navrátilová 2015.

[35]   In late Old Kingdom Balat, perhaps due to a shortage of papyrus in the oasis: see Pantalacci 2005.

[36]   Already documented in the Old Kingdom (Vandekerkhove and Müller-Wollerman 2001), lapidary hieratic peaked in the Middle Kingdom (Ali 2002; Gasse 2015).

abbreviating signs, through emphasis on visually distinctive traits and diacritic features, are found from the Second Dynasty onwards,[37] and ligatures (groupings of common sign combinations into a single hieratic sign form) develop in the Old Kingdom.[38] Middle Kingdom hieratic witnessed more significant changes in sign forms and a transition from writing in columns to writing in lines. A difference between a book-script (or 'uncial') used for scientific, religious and literary texts, and a more cursive script used for administrative and business purposes became manifest in the later Middle Kingdom record, and then again in Ramesside times.[39] In the Third Intermediate Period, Theban business hands became increasingly more cursive[40] and ultimately evolved into 'abnormal hieratic' (see below). By contrast, the simultaneously developing 'late hieratic' is an uncial exclusively, and follows an independent development with calligraphic forms partly oriented on earlier models.[41] In Roman times,[42] hieratic was restricted to ritual, funerary, and sacerdotal texts—a situation strongly contrasting with its original scope, and reflected in its designation as 'sacerdotal script' (*hieratica grammata*) by Clement of Alexandria, in the second century AD.[43]

Based on extant palaeographies, the standard repertoire of hieratic is estimated at around 500–550 signs, less than hieroglyphs, due to notably fewer specific semantograms. The partly reduced distinctiveness of hieratic sign forms is compensated by less variability in spellings of individual words, strongly suggesting that reading was done on a word basis. In Ramesside times, phonetic changes in the language had resulted in a loosening of phoneme-grapheme correspondences of individual signs; partly compensating for this, groups of signs are then transferred as such to other words, to indicate their pronunciation more accurately.[44] Such different spelling traditions notwithstanding,[45] individual hieratic signs largely stand in a one-to-one relation to hieroglyphic ones, and some signs specific to hieratic found their way back into hieroglyphs,[46] as did some spellings. Moreover, the iconicity of hieratic signs was not lost, and could be exploited to express supplemental meanings, notably in the generally more calligraphic New Kingdom hieratic.[47]

Besides producing detailed palaeographies,[48] current research on hieratic increasingly engages the material dimension of the script, its material supports and layout, brush usage, order of lines, ink dippings, and corrections.[49] It addresses issues such as styles and individual hands, when possible, scribal practices more generally, and the place of writing in society.[50]

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[37] Regulski 2009.

[38] For Old Kingdom hieratic, Goedicke 1988; Dobrev et al. 2011, and the ongoing 'Old Hieratic Palaeography' project (IFAO and Charles University, Prague).

[39] Fischer-Elfert 2020; Wimmer 1995.

[40] Gasse 1994: 237–44 and pls. 1–29; Vleeming 1993.   [41] Verhoeven 2001.

[42] On Roman-period hieratic, Quack 2015.

[43] For designations of Egyptian scripts in the Classical tradition, Winand 2005; Depauw 1997: 19–21.

[44] Junge 2008: ch. 1.

[45] Modern hieroglyphic transcriptions of New Kingdom hieratic are a scholarly convention aimed at representing the hieratic original rather than at producing genuine hieroglyphic spellings: cf. Gardiner 1929; for Late hieratic, see Vleeming 1989.

[46] See, e.g. Meeks 2007: 6–10; Kurth 1999.

[47] Broze 1996, 129–56.

[48] Gülden et al. 2018; Verhoeven 2015b: 48–54. The standard, but now outdated, work is Müller 1909–12; for reference to corpus and period palaographies, see above.

[49] E.g. Parkinson 2009: 90–112; Allen 2002: 76–85, 193–242; Allen 2011: 9–18.

[50] See the studies in Verhoeven 2015a; Ragazzoli 2019; and Polis 2020.

Abnormal hieratic and demotic

Abnormal hieratic, which evolved from the increasingly more cursive southern business hands in the Third Intermediate Period, was used during the Twenty-fifth and Twenty-sixth Dynasties in Thebes, parts of Upper Egypt, and the oases for administration, letters, oracles, informal writings, and exceptionally for literary texts.[51] Demotic[52]—*sš n š't* 'the script of documents'—is first attested in the north under Psamtek I (595–589 BC), having probably evolved out of northern business hands.[53] It spread to the south in the wake of the administrative reunification of the country under Saite rule, and wholly superseded abnormal hieratic by the reign of Ahmose II (570–526 BC). Initially restricted to documentary texts, demotic expanded to literary texts no later than the fourth century BC, and to funerary, religious, and sacerdotal texts in the first century BC. In early Roman times, demotic lost ground to Greek as the language of official legal and business affairs, and the demotic script is increasingly confined to sacerdotal milieus and personal piety. Like hieratic in the same period, Roman demotic is characterized by regionalization, with divergent local orthographic and palaeographic norms.[54]

While early demotic (dating to the Saite and Persian Periods) can still be related to hieratic models, albeit in a significantly more cursive form,[55] Ptolemaic demotic follows an autonomous path of development. Sign forms undergo schematization according to recurrent patterns, resulting in a reduced number of visual forms, and many new ligatures are developed. As a result of these combined developments, the script undergoes a thorough restructuring, making any back-transcription into hieroglyphs an artificial exercise.[56] The number of demotic signs has been estimated at around 350, not including hieratic special forms. These include mono-consonantal signs, a reduced set of determinatives/classifiers, and 'historical groups'. 'Historical groups' incorporate erstwhile phonograms, logograms, and in part determinatives in units that cannot be split into discrete components anymore. They are used with words derived from one root (radicographically), but occasionally also as parts of other words. Historical groups are also used in a new type of phonetic complementation, at the beginning or end of a word to represent not only consonants but also vocalic features of that word. Other spellings, particularly with common words, are nonsegmentable altogether (e.g. ⲣ *rmṯ* 'man').

Roman demotic is characterized formally by more sharp-edged sign forms resulting from the adoption of the Greek stylus. In the sacerdotal sphere, productive interactions with contemporary hieratic (and even hieroglyphs) are manifest in the reintroduction of a number of specific determinatives, often with explicit iconic overtones. A noteworthy development were 'unetymological spellings', consisting in the use of words or phrases in the spelling of other, homophonous words. Particularly frequent at Soknopaiou Nesos (Dime) but not limited to this site, unetymological spellings are found within ancient words

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[51] Current state of the art: Donker van Heel 2020, 2015; Vittmann 2015 major earlier studies: Malinine 1953/1983; Parker 1962; for a literary text, P. Queens, Fischer-Elfert 2013.

[52] Quack et al. 2020; Johnson 2001; Depauw 1997. On the distinction between Demotic as a stage of language and Demotic as a script, with various cases of non-congruency between the two, Quack 2010d.

[53] On the origins of Demotic, Vleeming 1981; El-Aguizy 1992.   [54] Quack 2017b.

[55] Pestman 1994, Vleeming 1992; El-Aguizy 1992; 1998.

[56] The following is based on Quack 2014, 2010b. See, further, Vleeming 2013.

that had no fixed demotic spelling (for example in transcribing ancient rituals and in glosses to these), for expressing additional phonetic information, as well as to express supplemental meaning (often in divine names, epithets and other sacred matters).[57] Unetymological spellings in demotic derive from the same sacerdotal milieus that produced Ptolemaic temple inscriptions; both are tokens of theological speculation in-and-through writing, as well as indices of in-group exclusivity.

Cultural contacts and influences

Unlike cuneiform, which was adapted to notate a wide variety of unrelated languages across the ancient Near East, Egyptian writing remained strongly tied to Egyptian language and culture. Within Egypt, personal and geographical names of foreign origin were notated in Egyptian scripts from early times on, but continuous strings of speech in foreign languages were hardly ever committed to Egyptian writing in dynastic times.[58] Rare exceptions consist notably in short magical spells, embedded in Egyptian texts, and for which sound counted arguably more than meaning.[59] A singular case is an extended text in Aramaic language written in 'alphabetic demotic' with classifiers/determinatives (Pap. Amherst 63).[60] Outside Egypt, Egyptian scripts were not adapted for notating other languages,[61] but the high prestige of Egyptian scripts is shown by pseudo-hieroglyphs on amulets in the Levant; shorter royal inscriptions in Egyptian commissioned by the Middle Bronze Age local governors/ rulers of Byblos in Egyptian style; and longer inscriptions created for Napatan rulers around the mid-first millennium BC.

Also indicative of such prestige, two other writing systems emerged through cultural contact with Egyptian scripts. The earliest Semitic consonantal script is documented in the early second millennium BC in the Western Desert near Thebes (Wadi el-Hôl) and, slightly later, in the Sinai (hence its traditional designation as 'proto-sinaitic').[62] The script—from which all further consonantal and alphabetic scripts are historically derived—originated in the context of interactions of Semitic speaking groups with Egyptian expedition scribes, in a cultic context in the Sinai. From Egyptian scripts, early Semitic scripts inherited the focus on representing the consonantal root to the detriment of vowels.[63] Sign forms were arguably derived from both lapidary hieratic (in the Wadi el-Hôl inscriptions[64]) and hieroglyphs (in the Sinai). Values were acrophonically derived: e.g. the sign of a hand standing for k (< Northwest Semitic kp 'palm') rather than standing for its Egyptian values d or drt. Further contact with the Semitic world is evinced by the ordering of phonemes as documented

[57] Widmer 2014 and 2004, 672–83; Quack 2011; on ludic writings in Demotic, also Pestman 1973; Malinine 1967.

[58] For other languages occasionally written down in pre-Greek times, in their own writing systems, Quack 2017a: 28–30 (Akkadian, Persian, Aramaic, Carian).

[59] Quack 2010c. See also Steiner 2011 (disputed).

[60] Vleeming and Wesselius 1985–90; references to the discussion: Quack 2010c: 319–20.

[61] 'Palestinian hieratic' (Wimmer 2008), witnessing to Egyptian influence on Iron Age Levant, is limited to numerical signs.

[62] Darnell et al. 2005 for the former; Morenz 2019 and 2011 for the latter.

[63] Vernus 2015.

[64] Darnell 2013: 6–7; contrary view: Goldwasser 2006.

mostly in a series of late Egyptian sources, and now also in the early New Kingdom.[65] This ordering is related to the contemporary South-Semitic *H-L-Kh-M*, and differs from the Northwest-Semitic *A-B-Kh-D* (from which the Western *A-B-C-D* is derived).

In the middle Nile Valley, the Meroitic script is documented from the early second century BC onward and was used in a variety of utilitarian and ceremonial contexts until slightly after the demise of the Meroitic state in the fourth century AD, with one last royal inscription in the early fifth century AD.[66] It notates a Northeast Sudanic language (included in the hypothetical Nilo-Saharan macro-phylum) entirely unrelated to Egyptian. The sign forms are adapted from demotic, but the system represents an autochthonous development. The latter is based on the *devanagari* principle, otherwise found in Indic scripts notably: a limited number of signs (24) stand for consonant–vowel sequences, the vowel being further specified by some additional vocalic sign whenever differing from /a/, e.g. *qa* for /q^{w}a/, but *qa + o* for /q^{w}o/. A more pictorial variety of the Meroitic script was secondarily developed in the late second century BC, with sign shapes drawn from hieroglyphic models but with values reproducing the ones found in the ordinary Meroitic script. Meroitic hieroglyphs were restricted to inscriptions associated with the ruling family. Its secondary derivation from the regular Meroitic script is also shown by its orientation, not facing the reader, unlike in primary hieroglyphic scripts.

Obsolescence

The latest hieroglyphic temple inscriptions date to the mid-third century AD, and demotic was still in use for third-century AD mummy labels and magical texts. The latest known dated inscriptions are tokens of personal piety in graffiti from the far southern temple of Philae, which appears to have been an isolated hold-hout (hieroglyphs, AD 394; demotic, AD 452). Egyptian scripts had been superseded by Greek for most business purposes in early Roman times, leading to a situation in which native scripts were largely confined to local communities and the sacerdotal sphere. In the latter context, the high-points in complexity observed in both hieroglyphic and demotic spellings in Roman times point to a cultivated in-group exclusivity.[67] The native scripts disappeared when their already restricted sociology fell below a critical mass of people necessary for sustaining the institution of writing. This was roughly concomitant with the discontinuation of state funding for temples.[68]

In his *Hieroglyphica*, written in Greek allegedly in the fifth century AD, Horapollo still demonstrates some knowledge of the semantic values and motivations of individual hieroglyphic signs, but interprets these exclusively in symbolic and allegorical terms.[69] Such Late

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[65] Schneider 2018; Fischer-Elfert and Krebernik 2016; Haring 2015. On the ordering of signs in Demotic sources and the so-called bird alphabet, see Devauchelle 2014 and Quack 2003.

[66] Rilly 2007: 231–358; Rilly and de Voogt 2012: 35–61; rise: Rilly 2010; obsolescence: Rilly 2008.

[67] Stadler 2008.

[68] For comparative perspectives on script obsolescence, Baines et al. 2008.

[69] For text, see Thissen 2001; for discussions, see the studies in Fournet (ed) forthcoming, von Lieven 2010, Van de Walle and Vergote 1943; on (neo-)Platonic construals of Egyptian writing, Pries 2017.

Antique misconstruing of Egyptian writing, entirely ignoring its strong phonetic underpinnings, was to define Western reception[70] until Champollion's decipherment in 1822.[71]

Coptic

Sporadic attempts to notate the Egyptian language in Greek letters only intially remained confined to mostly low prestige settings; usually described as 'Greco-Egyptian', they extended beyond proper names from the third century BC onwards.[72] As useful devices in instructional contexts, supralinear glosses could be added to traditional formulae and old words in Roman times.[73] While one glossing system was based on the demotic writing system ('late syllabic group writing'), another one was based on Greek letters, complemented by demotic signs of various derivations for those phonemes not present in the Greek language. The second system—described as 'Old Coptic'—was extended to write whole texts during the first three centuries AD.[74]

In Old Coptic glosses and texts, the additional signs of demotic derivation are variable, and in part different ones, or different in shapes, from the ones later standardized in Coptic proper. Coptic writing was standardizing in the fourth century AD in scriptoria in which texts of the new traditions (Gnostic, Manichean, Christian) were translated, with the number of graphemes borrowed from demotic being generally fixed at six or seven.[75] Coptic writing was subsequently extended to a variety of domains, including business matters, poetry and private graffiti.[76] Reflecting its native roots, Coptic letter names have their origins in bird names by which they were memorized.[77] As a result of the influence of the Coptic church, the Coptic script was subsequently adapted to Old Nubian, a Northeast-Sudanic (Nilo-Saharan) language spoken in southern Lower Nubia (eighth–fifteenth centuries AD).

PICTORIALITY AND ICONICITY

The hieroglyphic script comprises a majority of pictorial sign forms. Signs of writing, however, are visually distinct from pictorial representatioms on a number of levels defining a specific field of writing.[78] Their size is adjusted (or calibrated) irrespective of the relative sizes of their visual referent:[79] thus, as signs of writing, a giraffe (𓃱) and a beetle (𓆣) have the same size. Rather than following the logic of pictorial composition, signs of writing mirror

[70] See, e.g., Iversen 1961; Morra and Bazzanella 2003; Winand 2013.
[71] Parkinson 1999: 12–45.
[72] On the prehistory of the Coptic alphabetic, Quack 2017a; Richter 2009: 411–15.
[73] See also Dieleman 2005: 69–80; Osing 1998: 40–64.
[74] Text types include prayers, horoscopes, and magical texts (Quack 2017a: 55–74; Satzinger 1991). A singular instance of a text in Traditional Egyptian written in Old Coptic letters is Pap. BM 10808, for which, see Osing 1976.
[75] Kasser 1991.   [76] For an overview, see Bosson and Aufrère 1999.
[77] Quack 2017a: 74–5; Zauzich 2000. On the demotic 'bird alphabet', see above, in relation to the Halakham.
[78] Vernus 2020.   [79] Vernus 2001: 19–22.

the linear sequence of speech.[80] They are orientated to face the reader when having an animate referent, and disposed in visually harmonious ways in ideal rectangles within lines and columns known as 'quadrats'.

Iconicity is to be distinguished from pictoriality, and refers to the way in which the value of a sign is motivated in relation to its visual referent, the entity a sign depicts.[81] Initial motivation must be distinguished from motivation (or lack of such) as perceived by subsequent users in different types and practices of writing, and by diverse users with various levels of expertise or interest in the script as such. The relation is said to be 'iconic' when some resemblance or likeness, direct or indirect, is observed between visual referent and linguistic value. Beyond direct iconic representation, an indirect iconic relation is often involved, based on metaphor (the transfer of qualities based on perceived similarity or analogy: e.g. 🐾 in knd 'be furious') or metonymy (the perceived contiguity or intimate associate: e.g. ⌢ in 3bd 'month'). So-called triliteral phonograms, as well as some biliteral ones, are apparently rebus-based, but in effect mostly found in etymologically related words (see above, 'radicograms'), thus sharing some common semantics.[82] As a result, some indirect iconic relation, often metaphorical in nature, obtains: for example, 𓄟 in dšr 'flamingo' (direct representation), but also in dšr 'red' and dšr.t, 'desert' (literally, 'the red one'). Not uncommonly, the iconic relation can also be internal to the writing system itself ('differential iconicity'): for example, the one-barbed harpoon ⌐ for wʿ 'one' as opposed to the two-barbed spear-head ⌐ for sn 'two'.[83]

Combinations of extant signs into new ones—composite hieroglyphs—display a general evolution from pictorially meaningful (e.g. 𓈙 for jni 'bring') or visually appropriate (e.g. 𓏏, with the palm branched rooted on the soil by the bread sign) combinations in early times to pictorially less motivated ones from the First Intermediate Period onward (e.g. 𓊹).[84] In all these cases, harmonious disposition of the component signs along various typically symmetrical patterns are observed, and the individual components of composite hieroglyphs retain their individual forms and values. While hieroglyphs are not uncommonly derived from other hieroglyphs,[85] diacritic derivation—derivation through the addition of a formal mark that is not itself meaningful—is at best marginal (it is found only in hieratic, rarely feeding back into hieroglyphs). Keeping the visual integrity of the signs thus seems to have been a major concern, setting Egyptian hieroglyphic writing apart from other logo-phonetic traditions such as the cuneiform or Sinitic writing systems but bringing it close to notably Maya writing.

In its living reality, the historically evolving repertoire of signs was intrinsically an open one.[86] Since Egyptian writing represented not only the phonetic but also the semantic articulation of language, the number of signs was not bounded by the inventory of

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[80] Deviations occur notably with 'honorific anteposition' of signs referring to high-status entities, see Peust 2007.

[81] Vernus forthcoming.   [82] Vernus 2003; Schenkel 2003.   [83] Stauder 2018b.

[84] Fischer 1977b.

[85] Lacau 1954: 54–76.

[86] On the impossibility of giving a figure for the total number of hieroglyphic signs, see Collombert 2007. For the ongoing project 'Paléographie hiéroglyphique', see Meeks 2004: I–XXV; Meeks 2007, and the various monographs already published in the related IFAO series; in addition to these, see, e.g., Griffith 1898; Lacau 1954; Le Saout 1981; Fischer 1996: 177–236; der Manuelian 2003; Moje 2007; Regulski 2010; and Arnaudiès et al. 2015.

Egyptian phonemes or combinations thereof. Given the enduring pictoriality of signs throughout history, new signs, and combinations of extant signs into new ones, could always be introduced. Variants of signs embodied aspects of cultural knowledge or expressed some further level of contextual signification, and occasionally developed into structurally significant ones.

High-cultural dimensions

Registers of writing in a di(/tri-)graphic culture

At any given period in time, Egyptian writing existed in multiple varieties. The fundamental contrast is between hieroglyphs (including linear hieroglyphs) and hieratic (later also demotic). In each script, moreover, internal differentiations are observed, such as between more or less formal varieties of hieratic, or between realizations of hieroglyphs with more or less aesthetic, material, and/or semiotic investment. To these internally differentiated varieties of Egyptian scripts, values were attached, forming a complex, historically shifting, cultural code.[87] In principled ways, to be played with by users, the varieties of the script correlated with material support and placement, visibility and circulation, type of text, and register of language.[88] Along with its media, contents, and language, hieroglyphic writing in particular contributed to the process of sacralizing the texts that it was used for, inserting these enduringly into the ordered world.

A hieroglyphic tradition

Hieroglyphic writing displays a productive integration with pictorial representations and was subject to complex rules of orientation in relation to architectural space and/or associated pictorial compositions.[89] Particularly in earlier times, figures in pictorial scenes could function as determinatives/classifiers to words written in the captions to such scenes,[90] and signs of writing could recur as elements of an associated visual composition in the same visual field. The pictoriality of signs can be enhanced through aesthetic investment, decalibration, or otherwise.[91] The threshold between depiction and writing was explored from the earliest times, in 'emblematic' modes of composition of signs with animate referents acting upon other signs or representations.[92] In later times, it was also teased out in

[87] Emphasizing various dimensions of a complex problematic, von Lieven and Lippert 2016, Baines 2012; Parkinson 1999.
[88] Vernus 1990.
[89] Fischer 1986 and 1977a; Baines 1989; Vernus forthcoming.
[90] Fischer 1986: 27–8; Schenkel 2011: 131–3.
[91] For the second, e.g., van Esche 1997; on ground lines of signs in the Old Kingdom, Collombert 2015.
[92] Baines 1989.

inscriptions largely focused on full-figured animate signs.[93] Moreover, hieroglyphic texts could themselves be laid out in such ways that made them themselves dimensional visual compositions as much as verbal ones.[94]

Hieroglyphic writing emerged in highly exclusive contexts and carried prestige in direct relation to its restricted nature (see above). Particularly in earlier times, when it was even more restricted than later on, hieroglyphic writing was indicative of the formal culture of which it was a part. Pseudo-hieroglyphs, already documented in the First Dynasty, demonstrate such prestige obliquely.

The deeper understanding of hieroglyphs—*mdw-nṯrw* 'the gods' words'—belonged to the domain of restricted knowledge (*št3*, thus Irtysen, *c.*2000 BC, in a context with strong ritual overtones).[95] Documented by manuscripts dating mostly to Roman times, the Demotic composition referred in Egyptology as the 'Book of Thoth' is an initiatory dialogue into the arcane nature of scribal art, described with much figurative language.[96]

Hieroglyphic signs carried power of their own and could be conceived of as places for divine indwelling.[97] Mutilations of signs with animate referents in funerary texts were aimed at neutralizing their potentially dangerous power.[98] Conversely, signs of writing could be 'animated' through the addition of arms and legs. Signs of writing could also be promoted to the status of protective or otherwise efficient emblems or symbols, as in the case of the ⚓ sign.[99] Writing could be touched or incorporated for magical effect: for example in the Late Period, water was poured over hieroglyphic inscriptions of Horus-stelae (*cippi*) and subsequently drunk by people wishing to be healed (see Chapter 53 in this volume). Egyptian hieroglyphic writing demonstrates an enduring pictorial commitment and is one of two major hieroglyphic traditions, alongside the Mesoamerican writing systems.[100] Hieroglyphic scripts (Egyptian or Maya, to take the main Mesoamerican example) are characterized by their sustained pictoriality, by sign forms that are not reducible to stroke, line patterns or fonts, and by a tight integration with a broader aesthetic culture. Hieroglyphic writing represents language, but it is also an encyclopedically dense mode of visual communication, at once inviting and exclusionary. 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. Rather than effacing itself behind language, hieroglyphic writing is excessive in its visual and semantic expression and presence, and, at times, virtuosic in its making and interpretation. Although some of these properties are found in other types of scripts, hieroglyphic writing presents them to a concentrated degree. That the two major traditions of hieroglyphic writing should develop in two places, Egypt and Mesoamerica, in entire independence is of additional interest.

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[93] Klotz 2020 and see below.
[94] Stauder-Porchet forthcoming a, b; Stauder forthcoming a.   [95] Stauder 2018a.
[96] Zauzich and Jasnow 2014, Quack 2007, Jasnow 2011.
[97] Pries 2016.   [98] Schenkel 2011: 133–52; Kammerzell 1986; Lacau 1913.
[99] Baines 2004: 473–5, Fischer 1972; Vernus 2003, 213.
[100] Houston and Stauder 2020.

Ludic dimensions and enigmatic writing

The many facets and visual dimensions of Egyptian signs of writing were explored further in a variety of practices described as ludic or 'sportive' writing, 'visual poetry', 'cryptography', or 'enigmatic writing', most prominently in hieroglyphs but extending to hieratic and demotic as well (see above). In these practices, supplemental levels of meaning are expressed and writing is foregrounded as such, beyond its instrumental function of representing language.[101] Ludic writing in its various forms also provides what amounts to an implicit meta-commentary on the ways in which expert native users viewed their writing.

Enigmatic writing is an extension of the regular principles of Egyptian writing.[102] In the delayed reading it induces, enigmatic writing amazes; it foregrounds the pictoriality and semiotic thickness of the signs as signs, over their representational function as mere vehicles of some linguistic value. As a display of scribal competence, enigmatic spellings, generally limited to a few signs, a word, or a phrase, are found notably on scribal palettes and on private monuments, primarily in the New Kingdom. On the latter, they entice the passerby and cause him to engage with the monument, and, ultimately, to recite an offering for its owner. In royal contexts, Ramesside monumental friezes consist of full sequences of highly pictorial signs, notably full-figured divine representations.[103] Inscribed in places that are often highly visible, these 'enigmatic texts' could simultaneously both be read as textual inscriptions (sometimes accompanied by transcription into regular writing) and viewed as pictorial representations. Differing from the above, the sequences of enigmatic writing found in New Kingdom royal Netherworld books had their ultimate locus of inscription in sealed-off places. They achieve visual otherness both through breaking away from the traditional spelling of a word, and through the substitution of individual signs with other, less common and/or more highly pictorial ones following various phonetic, semantic or visual principles. Both types of royal enigmatic writing are interpreted as oblique expressions of contents that could not be conveyed directly, whereby writing itself, in its otherness, was instrumental in establishing an indicative continuity with the otherness of the contents pointed at.

Highpoints of playfulness and graphic virtuosity are found in the sociologically restricted contexts of Ptolemaic temples.[104] As texts with graded difficulty suggest, priests were also playing games with their peers.[105] In some 'bandeaux inscriptions', a concentration on animate forms results in a visual otherness of writing that attracts attention to writing as such.[106] Like in the Naukratis stela (see above), writing is made to celebrate the deity in its various aspect, as well as to serve to divine indwelling the signs themselves. In the litanies of the

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[101] Complementary perspectives: Morenz 2008; Darnell 2020; 2004. Note that the term 'cryptography' is a misnomer, because no key for decoding was required, and because such practices of writing were not intent on hiding contents.

[102] See the studies in Klotz and Stauder 2020; for lists of enigmatic values: Roberson 2020; Manassa 2004; among previous studies not mentioned in the previous footnote, Manassa 2006; Werning 2008; Roberson 2013 and 2012: 65–99 (Netherworld books); Espinel 2014; and Klotz and Brown 2016 (enigmatic writing on private monuments).

[103] Klotz 2020.   [104] E.g. Klotz 2014, 2010; Richter 2016: 39–63; Gutbub 1953.
[105] Klotz 2015.   [106] E.g. Cauville 1990; 2002.

Roman-period temple of Esna, recurrent divine names and epithets important to the local theology were subjected to ever more varied spellings, based on multiple, often simultaneous, associative levels: phonetic, visual and allegorical.[107] Relations between signs were not perceived as historically or culturally contingent, but as phenomena that were given in the created and ordered world, and thus relevant for expressing and exploring contiguities between entities graphically denoted or evoked. Such complex resonances resulted in graphic texts that were substantially denser than any possible transcription of the same. This late sacerdotal 'theology of writing' (as it was termed by Sauneron) expressed the world polyphonically, and thus performatively recreated it as a multivalent system of signs, analogically reflected in hieroglyphic writing and the Egyptian language.

Unetymological spellings found in Roman demotic texts partly embody similar sacerdotal speculations and playfulness (see above). Elucidations of individual signs, usually with reference to some mythical grounding, are given in the demotic *Myth of the Sun's Eye* and in Pap. Carlsberg VII, a fragmentary treatise on hieroglyphic signs.[108]

SUGGESTED READING

On various aspects of the digraphic, or even multigraphic, nature of Egyptian written culture and writing as a cultural code, see von Lieven and Lippert 2016, Baines 2012, Parkinson 1999, Vernus 1990. On categories of signs, see Polis and Rosmorduc 2015, Schenkel 2003, Vernus 2003, and Goldwasser 2002. Standard hieroglyphic sign lists are Gardiner 1957³, 438–548, and Borghouts 2010, II, 10–195. For introductions to hieroglyphic palaeography, see Meeks 2007; for Ptolemaic, see Kurth 1983; for hieratic, see Verhoeven 2015b and the studies in Verhoeven 2015a; and for demotic, see Johnson 2001 and Quack 2014. On the pictoriality of Egyptian writing and its integration with art, see Vernus 2003, Baines 1989, and Fischer 1986. On enigmatic and ludic writing, see the studies in Klotz and Stauder 2020, Morenz 2008, and Darnell 2004. For a dialogue with the other major tradition of hieroglyphic writing, Maya writing, see Houston and Stauder 2020.

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[107] Sauneron 1982; Leitz 2001 and 2008; Morenz 2002.
[108] De Cenival 1988 and Iversen 1958, respectively; see also von Lieven 2010.

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