HIEROGLYPHS 2 (2024), 157–196

Received December 10, 2024
Accepted January 20, 2025
Published online April 6, 2025

The Semiotic Functions of Semantic Classifiers in Ancient Egyptian and Ancient Chinese Scripts: A Comparative Essay

(with Some Remarks on Semantic-Semantic Compounds–*Huìyì*)

Yànrú Xú and Orly Goldwasser

Institute of Archaeology and the Ancient Near East, The Hebrew University of Jerusalem

Abstract. The ancient Egyptian and ancient Chinese writing systems represent two of the most sophisticated and complex scripts of antiquity. Although these systems developed independently, both employ semantic classifiers—unpronounced signs that categorize and contextualize their associated words. This study examines the semiotic functions of semantic classifiers in these two scripts, highlighting their similarities while also addressing their distinctive features. The analysis is conducted through multiple lenses, including the positional distribution of classifiers, the parts of speech they classified, their interchangeability, instances of multi-classification, and the semantic relations between classifiers and their host words. Furthermore, particular attention is given to the unique role of classifiers denoting concepts of "missing ability" or "deficiency." The article concludes with a comparative discussion of **S**emantic-**S**emantic compounds (referred to as *huìyì* in traditional Chinese grammatology) and their capacity to generate pictorial scenes within compound signs in the ancient Egyptian and ancient Chinese writing systems.

Keywords. Semantic classifiers in writing systems, ancient Egyptian scripts, ancient Chinese scripts, comparative grammatology, **S**emantic-**S**emantic compounds (*huìyì*).[1]

1 We are grateful to Zev Handel for making all this possible. We also thank two anonymous reviewers for their insightful comments, which have greatly improved this study. Our thanks go to Prof. Dèng Zhāngyìng [鄧章應] for many fruitful discussions. We are indebted to Dr. Jorke Grotenhuis for many suggestions on different readings in *The Maxims of Ptahhotep*. Any remaining errors or oversights are solely our own.

1. Introduction[2]

Ancient Egyptian and Chinese *languages* exhibit striking dissimilarity across nearly all linguistic dimensions, encompassing phonology, morphology, and syntax. Ancient Egyptian (3000 BCE–1300 CE) is a branch of the Afroasiatic language family, characterized by several general linguistic features, for example, the ability to be inflected in various ways and the presence of bi- and tri-consonantal lexical roots (Loprieno 1995: 1–8, Satzinger & Stefanović 2021: 1–18). The chosen Egyptian corpus in this article, *The Maxims of Ptahhotep*, is a wisdom text placed within the phase of Ancient Egyptian known as Middle Egyptian (ME or Classical Egyptian, 2000 BCE–1450 BCE[3]), but also shows later versions in the New Kingdom. Old Chinese (OC, or Archaic Chinese), refers to the language in the late Shāng dynasty (1250 BCE–1046 BCE) down to the beginning of the Qín-Hàn period (221 BCE–156 BCE) in the broad sense. Old Chinese belongs to the Sinitic branch of the Sino-Tibetan language family (Baxter & Sagart 2014: 1, Schuessler 2018). It is a monosyllabic language, as most words consist of a single syllable corresponding to a single Chinese character in the script. It lacks any systematic or productive form of inflection and is a flexible word-class system, allowing words to function in multiple parts of speech without any marking (Norman 1988: 24, 105–133, Sūn 2020: 27–66, Bisang 2023: 590). The selected Chinese corpus in this article, the *Chǔ Bamboo Manuscripts Excavated in Guōdiàn*, belongs to the phase of Classical Chinese (or Late Archaic Chinese), which is the written language employed in the philosophical and historical texts of Confucius, Mencius, Lǎozǐ, and other authors from the 5th to the 3rd centuries BCE (Norman 1988: 105–106).

Writing renders language visible and enhances both cultural memory and communication. Writing enables the recording and transmission of information beyond time and space constraints. Different writing systems may exhibit similarities even when the spoken languages they represent are markedly distinct if they use the same semiotic mechanism. This is especially true for complex writing systems, such as ancient Egyptian and ancient Chinese scripts. Ancient Egyptian scripts encompass signs in hieroglyphs, cursive hieroglyphs, hieratic, and demotic. Specifically, our chosen Egyptian corpus in this article is written in hieratic, in ink (with a brush), on papyrus, ostraca, and

2 All original examples from ancient Chinese scripts were collected by Yànrú Xú from the Guōdiàn bamboo manuscripts retrieved from the *Intelligent Retrieval Network Database of Chinese Characters*, developed by the Center for the Study and Application of Chinese Characters in the East China Normal University. We are grateful to Prof. Zāng Kèhé [臧克和] and Prof. Liú Zhìjī [劉志基] for providing access to the digitized corpus of the Guōdiàn bamboo manuscripts. Some examples from oracle-bone inscriptions are cited from *Jiǎgǔwén Héjí* 甲骨文合集 (*Collection of Oracle-Bone Inscriptions*, abbreviated as "H"), while examples from bronze inscriptions are cited from *Yīnzhōu Jīnwén Jíchéng* 殷周金文集成 (*Compendium of Yīn and Zhōu Bronze Inscriptions*, abbreviated as "J"). All examples from the different manuscripts of the Egyptian wisdom text (*The Maxims of Ptahhotep*) were also collected by Xú. Goldwasser supplemented some additional examples from other Egyptian sources.

3 See Polis 2023: 10.

a wooden tablet. Ancient Chinese scripts (1250 BCE–156 BCE) contain oracle-bone inscriptions, bronze inscriptions, bamboo manuscripts, and signs on other writing materials such as stone, metal, and jade. Our chosen Chinese corpus was written in ink on bamboo strips during the Warring States period (475 BCE–221 BCE). The reasons for the choice of this corpus are discussed below in Section 2.

Ancient Egyptian and Chinese writing systems share some important common semiotic features. Signs in ancient Egyptian and ancient Chinese scripts have three essential functions: logograms, phonograms, and classifiers (Goldwasser & Handel 2024, Polis 2018, Stauder 2020).[4]

Classifiers in written language, as a shared feature of both writing systems, are unpronounced signs with additional motivated semantic information about the host words (Goldwasser & Handel 2024). For instance, in the word  *ḥm.t* "wife" (4389, pPrisse, 10,3),[5] the unpronounced classifier  [WOMAN] suffixes to the written representation of the lexeme *ḥm.t*, the host of the classifier. The lexeme is written by a biconsonantal phonogram *ḥm*, and the monoconsonantal phonogram *t* which is a grammatical marker indicating the gender. In Ancient Egyptian, the classifier is always in post position. The analysis of "determinatives" as classifiers was initially delineated in ancient Egyptian scripts by Goldwasser 2002, 2006, 2023a,[6] Kammerzell 1993, 2015, and Lincke & Kammerzell 2012 and subsequently expanded to cuneiform Selz et al. 2017, Anatolian hieroglyphs Payne 2017, 2024 and ancient Chinese scripts (Xú 2024, Chén 2016, 2024; for the modern Chinese script, see Handel 2023).[7]

4 Polis 2018 mentioned three other functions in Egyptian scripts: pictograms, morphograms (refers mainly to ancient Egyptian roots or radicograms), and interpretants (traditionally called "phonetic complements"). The last two sign functions are not active in ancient Chinese scripts.

5 The source of each example in Egyptian is cited in this format: the token ID in the corresponding databases in *iClassifier*, the abbreviation of the text, and its coordinates in the original text. The coordinate numbers in the citation of each example refer to the column number of the text and the line number where the word is located. For instance, the coordinate (10,3) in this example indicates that the word "wife" is on the 10th column and 3rd line in the papyrus Prisse.

6 For an important contribution to classifiers in Middle Egyptian with a classifier list and lists of classified words for each classifier, see Winand & Stella 2013: 131–178. For a discussion of the classifier lists and a classifier list collected in the Middle Kingdom text called today *The Story of Sinuhe*, see Goldwasser & Soler 2024.

7 Schwartz 2019 uses the terminology "classifier" for the analysis of Chinese characters.

In ancient Chinese scripts, the character  [8] 婦[9] (9660, *Liùdé*, 23,10)[10] is used to write the word "wife" (*fù*, OC **bəʔ*).[11] In this compound character, one can see the semantic element  女 "woman" on the left-top position and the phonetic element  帚 (*zhǒu*, OC **tuʔ*[12]) on the right position. The semantic element , which is prefixed to the phonetic element, is what we call the semantic classifier [WOMAN]. Classifiers in Chinese scripts can be in different positions within the written representation of the lexeme. In this compound sign , the classifier [WOMAN] is unpronounced but provides additional semantic information for the host word "wife".[13] According to this character, a wife in ancient China during the Warring States period (475 BCE–221 BCE) typically belongs to the category [WOMAN].

2. The corpus

This research is conducted within the framework of Corpus Linguistics (Biber et al. 1998, Paquot & Gries 2020). Unless otherwise stated, all examples in Egyptian presented in the article are quoted from the text known today as *The Maxims of Ptahhotep* (Žába 1956). There are eight extant copies of this text (or parts of it), preserved on various materials such as papyri, ostraca, or a writing tablet from different periods (Middle Kingdom and New Kingdom).[14] The text belongs to the genre of

8 All characters in the *Chǔ Bamboo Manuscripts Excavated in Guōdiàn* were sourced from images of ancient signs and cropped from the *Sign List of Chǔ Bamboo Manuscripts Excavated in Guōdiàn* (Zhāng et al. 2000).

9 In this article, the allograph in modern Chinese script (early 20th century-present, see Huáng 2014: 11–12) is presented after the ancient form as a standard transcription of the ancient form.

10 The source of each example in Chinese is cited in the same format as in Egyptian, but the coordinate numbers in Chinese indicate the bamboo strip number in the text and the character's position within that strip. For example, the coordinate (23,10) shows that this character is in bamboo strip no. 23 of the text *Liùdé* and is the 10th character in this bamboo strip.

11 Both the sound values of Modern Chinese (or Mandarin Chinese, for different opinions on the dating of Modern Chinese, see Wáng 2013: 35, and Peyraube 2017) and reconstructed Old Chinese are presented sequentially for convenience. Among the various reconstruction systems of Old Chinese, Schuessler 2009 is cited in this article for the sake of reader-friendliness, as suggested by Zev Handel.

12 The reconstructed sound value of the phonetic element 帚 **tuʔ* in Old Chinese is not close to the sound value **bəʔ* of the word 婦 "wife" in Schuessler's system. However, the reconstructed sound values proposed by Baxter & Sagart 2014, 帚 **[t.p]əʔ* and 婦 **mə.bəʔ*, exhibit a notable phonetic similarity. Several reconstruction systems of Old Chinese have been practiced, as stated by Schuessler 2018: "Therefore OC reconstruction is to some extent a matter of judgment that depends on methods, assumptions, interpretations of the material, and on the cultural background and native language of the researcher and any other languages he may be familiar with."

13 For the English translation "wife; lady; woman", see the online dictionary *Multi-function Chinese Character Database* on this site: https://humanum.arts.cuhk.edu.hk//Lexis/lexi-mf/search.php?word=%E5%A9%A6 (accessed: 20.1.2025). We adopt the Cognitive Linguistics approach, which conceptualizes words as mental representations. The conventions of complex writing systems permit elements of these mental representations to manifest in written form through classifiers, logograms, and Semantic-Semantic compounds, see Aitchison 2003: 41–42 and passim.

14 The copies and their approximate dates are as follows: Papyrus BM 10371+10435 (=L1)—12th Dynasty; Papyrus BnF 186–194 (=Prisse)—late 12th Dynasty; Tablet Cairo JE 41790 (=Carnarvon)—17th Dynasty; Papyrus BM EA 10509

wisdom texts, typically comprising "teachings" (Quack 2021) addressed by a high-ranking father to his son.[15] The total number of tokens, or occurrences, is approximately 6,300. This text was chosen as a *pilot comparative corpus* to the Chinese corpus because of its contents, which are somewhat parallel to the topics of the selected Chinese corpus. Its two primary manuscripts date to the "classical" period of the Egyptian language and script—the Middle Kingdom. The later manuscripts, dating to the New Kingdom, exhibit some significant diachronic changes in the classification, pointing to a fruitful future research direction.[16] Another research was conducted by Soler[17] on another literary manuscript from the Middle Kingdom, *The Story of Sinuhe*. Both texts have shown a list of classifiers very similar to the list (based on dictionary materials) compiled by Winand & Stella 2013.[18] These results fit one of the central premises of Corpus Linguistics, suggesting that every text (according to its length) will show the basic rules of the language and script of the particular system they use (see recently Grinewald 2024: 66–69).

Most examples in this article in ancient Chinese scripts are from the *Chǔ Bamboo Manuscripts Excavated in Guōdiàn* (Jīngmén Museum 1998, abbreviated as "Guōdiàn bamboo manuscripts", see fig. 1) composed of 18 texts. They relate to the philosophical texts of Taoism and Confucianism (Meyer 2012). The Guōdiàn bamboo manuscripts are excavated texts containing approximately 12,000 tokens written on over 730 bamboo strips. They were found in a single tomb but exhibited a few different handwritings. Other bamboo manuscripts come from unknown sources, and their authenticity has been questioned by a few scholars.[19] The exact date of each text in the Guōdiàn bamboo manuscripts is unknown, but it should be prior to the date of the burial in the tomb (mid-4th century BCE to early 3rd century BCE).[20]

The literary themes in these two distinct cultural contexts are not identical; however, we focus on their similarities. Both corpora in Egyptian and Chinese convey the educational and social expectations of decorum in these two ancient societies. They offer rules for ideal behavior with assumed correct personal qualities, such as leadership, loyalty, and maintaining proper relations with family. Both corpora are "moral self-cultivation" texts (Meyer 2012: 5).

(=L2)—late 18th Dynasty; Papyrus Turin 54014—19th Dynasty and Ostraca DeM 1232/1233/1234—late 19th or early 20th Dynasty, see Hagen 2012: 129–187.

15 For a recent study of *The Maxims of Ptahhotep*, see Hagen 2012.

16 The full results of the classifier study on *The Maxims of Ptahhotep*, including a classifier list, will be published in Xú forthcoming.

17 Soler published part of her results in Goldwasser & Soler 2024. A full detailed publication is included in Soler forthcoming.

18 Winand & Stella 2013: 129, 127–178 did not provide references to texts in their elaborate lists.

19 e.g., the Shànghǎi collection of Chǔ manuscripts, see Kern 2019: 8–9.

20 See the excavation report published by Jīngmén Museum 1997.

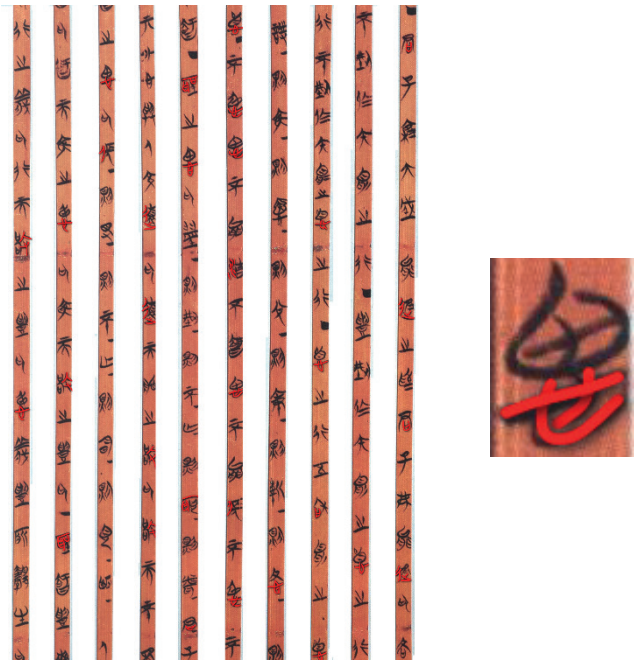


Fig. 1. A sample of classifier markings on the original Guōdiàn bamboo manuscripts, published by the Jīngmén Museum in 1998, highlighted in red by Xú. These bamboo strips are part of the text *Wǔxíng* 五行 (The Five Conducts), which comprises 51 bamboo strips in total. Each strip measures approximately 32.5 cm in height, 0.6 cm in width, and 0.1–0.2 cm in thickness. The most common classifier in this arbitrary example is the classifier 心 [HEART/SENSES & EMOTIONS]. It embraces the category of cognition and emotions and is the most prominent category in the Guōdiàn texts (Xú 2024). The enlarged image on the right shows the word 思 (*sī*, OC **sə*, "think"). 心 is the semantic classifier. The original logogram 囟 (*xìn*, OC **sens*, "top of head") functions here as the phonetic part. Yet the original semantic meaning of is still relevant to the final meaning of "think".

3. The digital tool *iClassifier*

This research was conducted by using the digital research tool *iClassifier* (© Goldwasser, Harel and Nikolaev).[21] The Egyptian and Chinese texts were studied under the same research conditions and methods. The selected texts were imported directly from the *Thesaurus Linguae Aegyptiae* (TLA) developed in Berlin-Brandenburgische Akademie der Wissenschaften, and the *Intelligent Retrieval Network Database of Chinese Characters* (IRNDCC), developed in the Center for the Study and Application of Chinese Characters in the East China Normal University.[22]

4. Positions of semantic classifiers in ancient Egyptian and ancient Chinese scripts

The positions of semantic classifiers in ancient Egyptian and ancient Chinese scripts demonstrate marked differences. In ancient Egyptian scripts, the semantic classifier typically appears at the end

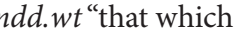
21 For the most recent presentation of *iClassifier*, see Harel et al. 2024.

22 See "Credits" below.

of words or compounds (post-position). Conversely, the position of semantic classifiers in ancient Chinese characters is more complicated, as illustrated in the following examples.

4.1. The position of semantic classifiers in ancient Egyptian scripts

The post-position of classifiers in ancient Egyptian scripts has been examined by Goldwasser 2002 and more recently by Goldwasser & Soler 2024. Additional examples of Ancient Egyptian from *The Maxims of Ptahhotep* are provided below to facilitate a comparative analysis of the position of classifiers in ancient Egyptian and ancient Chinese scripts.

As stated above, classifiers in ancient Egyptian scripts appear at the end of words. For instance, in the word  *mdw* "to speak" (3053, pPrisse, 4,4), the classifier  [SENSES & EMOTIONS][23] is positioned at the end of the word, following the phonological information. The same classifier is consistently found at the end of words derived from the same root *mdw* "to speak", such as  *mdw.t* "speaking" (3300, pPrisse, 5,14),  *mdw.y* "speech" (3697, pPrisse, 7,4) and  *mdd.wt* "that which is said" (3851, pPrisse, 7,9).

As a rule, classifiers in ancient Egyptian scripts precede specific grammatical markers and suffixes in nouns or verbal forms (Goldwasser & Grinevald 2012). For instance, in the clause  *n mdw.n=f* "It (lit. he) does not speak"[24] (pPrisse, 4,4), the sign  *n* functions as a grammatical marker indicating the past tense, and the sign *f* is a 3MS suffix pronoun. In this example, the classifier appears before the tense marker and the suffix pronoun, following the verbal root.

4.2. The positions of semantic classifiers in ancient Chinese scripts

Myers 2019: 50–54 delineates the potential positions of semantic classifiers (called "radicals" by him)[25] within the modern Chinese writing system, drawing upon data from online databases and dictionaries. We base our research on original bamboo manuscripts to stay as close as possible to the original characters.

Compared to Egyptian scripts, the positions of classifiers in ancient Chinese scripts are notably more complex and flexible. Classifiers can appear alongside other signs representing phonological

23 For the classifier , see recently Goldwasser & Soler 2024. Goldwasser 2005 suggested that this classifier reflects the conceptual metaphor [THE BODY IS A CONTAINER] described by Lakoff & Johnson 1980: 29–32. Speeches and acts that engage all senses and emotions, including thought procedures, are conceptualized as dwelling in the "body container". Examples of words in this category, aside from "to speak", include  *mri* "love" (4228, pPrisse, 9,5) and *snḏ* "to fear" (3805, pPrisse, 7,8), and  *kꜣi* "think" (3532, pPrisse, 6,10), and naturally *wnm* "eat" (3641, pPrisse, 7,2).

24 The sentence  *r gr n mdw.n=f* translated by Lichtheim 1973: 63 as "The mouth, silenced. Speaks not". The grammatical formulation *n sḏm.n=f* even if containing the past tense marker *n*, has come to be used as the "habitual present" negation.

25 The term "radical" is not entirely identical to "semantic parts" or "semantic classifiers". Their differences will be discussed in future publications.

information in various positions, such as left, right, top, or bottom of a character. For instance, the classifier 水/氵 [WATER][26] is positioned on the left in the word 江 "river" (*jiāng*, OC **krôŋ*; 46, *Lǎozǐ* A, 2,19) and the phonetic element 工 (*gōng*, OC **kôŋ*)[27] is in the right position. The classifier 戈 [DAGGER-AXE/WARFARE] is located on the right in the word 戰 "war" (*zhàn*, OC **tans*; 5876, *Chéngzhīwénzhī*, 6,14) and the phonetic element 單 (*dān*, OC **tân*) is situated on the left. The classifier 艸/艹 [GRASS/HERB] appears at the top in the word 芳 "fragrant" (*fāng*, OC **phaŋ*; 3576, *Qióngdáyǐshí*, 13,4) and the phonetic element 方 (*fāng*, OC **paŋ*) appears at the bottom. The classifier 日 [SUN/TIME] is found at the bottom in the word 冬 "winter" (*dōng*, OC **tûŋ*; 222, *Lǎozǐ* A, 8,27) and the phonetic element 終 (*zhōng*, OC **tuŋ*) is located on the top. The modern Chinese form of this word, written as 冬 following the scriptal tradition of the Qín Dynasty (221 BCE–207 BCE), no longer contains the [SUN/TIME] classifier.

Other less common positions of classifiers include half-surrounding and surrounding configurations.[28] For example, the classifier 辶/辶 [ROAD + FOOT/MOVEMENT] occupies a half-surrounding (left/bottom) position in the word 從 "to follow" (*cóng*, OC **dzoŋ*; 2386, *Zīyī*, 14,16). It half-surrounds the phonetic part 从 (*cóng*, OC **dzoŋ*). In addition, the classifier 口 [ENCLOSURE] assumes a surrounding position in the word 固 "solid" (*gù*, OC **kâ(k)h*; 939, *Lǎozǐ* A, 34,1). The pictorial representation of the sign depicts a walled enclosure, symbolizing the protection of the enclosed objects.[29] In this context, the classifier is activated not only on a semantic level but also on a pictorial level, visually encircling the element .[30]

In ancient Chinese scripts, a classifier within the same word may exhibit alternative positions without altering the word's meaning, as observed in the word 邦 "state, country" (*bāng*, OC **prôŋ*). For example, the classifier 邑 [AREA/STATE] appears on the right in one instance 邦 (11765, *Yǔcóng* 4, 6,15), and on the left (i.e.,) in another example 邦 (826, *Lǎozǐ* A, 29,21). However, since the Qín dynasty (221 BCE–207 BCE) its position is standardised on the right. The modern Chinese version 邦 continues the Qín tradition. Likewise, in the word 婦 "wife" (*fù*, OC **be?*), the classifier 女 [WOMAN] is situated on the right side of the rare example 婦 (6247, *Chéngzhīwénzhī*, 32,3).

26 The transcription of the classifier in modern Chinese script is 水, but it is usually abbreviated as 氵. The other two modern signs, 艹 and 辶 mentioned below, are also abbreviated forms in modern Chinese script.

27 The pictorial meaning of the sign is identified probably as "carpenter's square", see SWXZ 2014: 381–382.

28 Half-surrounding positions were analyzed by Myers 2019: 50–54 as left/bottom, left/right, top/bottom, top/left, and left/bottom/right, among others. He delineated the surrounding position as top/left/bottom/right.

29 The sign inside the enclosure was a logogram "shield, solid" (*gǔ*, OC **kâ?*) but normally used as a personal name or toponym in oracle-bone inscriptions (e.g., H3826, see SWXZ 2014: 154–155). When the enclosure was added to it, the sign functions as the phonetic component in the word "solid" but simultaneously takes a semantic value in the character .

30 See other examples in Appendix A below. A similar phenomenon is known in the Sumerian script (Selz & Zhāng 2024, Wagensonner 2021). Names of towns and walled settlements are written within a surrounding wall already in the earliest Egyptian texts, see Kahl 1994: 109–110.

We find the common example  婦 (9660, *Liùdé*, 23,10) in the same corpus where the  [WOMAN] classifier is consistently on the left-top position as mentioned above. The left-position convention of the classifier has persisted into modern Chinese script written as 婦.

However, some classifiers exhibit positional constraints influenced by their inherent semantic meanings. For instance, in the word  客 "guest" (*kè*, OC **khrâk*; 236, *Lǎozǐ* A, 9,9), the classifier  [HOUSE/STRUCTURE] consistently appears in the top position, and the phonetic part  各 (*gè*, OC **kâk*) is located at the bottom.[31] In the same way, in the word  均 "equal, even" (*jūn*, OC **kwin*; 551, *Lǎozǐ* A, 19,23), the classifier  土 [EARTH] typically occupies the bottom position,[32] and the phonetic part  匀 (*yún*, OC **win*) is found in the top position. The classifier 土 is on the left position in the modern Chinese character 均, pointing to a loss of positional constraints.

Furthermore, signs in ancient Chinese scripts have not yet been fully calibrated into squares like those in later stages. Therefore, the configurations of classifiers in ancient Chinese scripts exhibit diverse proportions. In certain instances, the proportion between a classifier and a phonetic component within the same character is overtly unbalanced in the original ancient Chinese texts. Such is the classifier  頁 [HUMAN + HEAD], which occupies a right-top position in the word 頌[33] "appearance" (*róng*, OC **loŋ*; 218, *Lǎozǐ* A, 8,23). Here, the classifier is significantly larger compared to the phonetic element  公 (*gōng*, OC **klôŋ*) located in the left-bottom corner. In another case, in the word  和 "harmony" (*hé*, OC **wâi*; 465, *Lǎozǐ* A, 16,23), its classifier 口 [MOUTH] positioned on the left-inner side occupies a much smaller proportion than the phonetic element 禾 (*hé*, OC **wâi*).

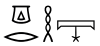
5. Parts of speech classified in Ancient Egyptian and Old Chinese

Nearly all parts of speech in Ancient Egyptian and Old Chinese languages can be classified by unpronounced graphemes within the script systems (Goldwasser & Handel 2024). Comparatively speaking, content words with specific meanings, including nouns, verbs, and adjectives, are more likely to be classified. Adverbs and function words such as pronouns and particles are less frequently classified in both scripts. The case of deverbals carrying classifiers is common in Ancient Egyptian, whereas a similar phenomenon is unknown in ancient Chinese.

31 For pictorial consideration within this character, see Goldwasser & Handel 2024.

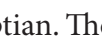
32 In a rare case in the Guōdiàn bamboo manuscripts, this classifier appears on the left in the word  壞 "ruin" (*huài*, OC **grûih*; 5542, *Tángyúzhīdào*, 28,8), and the phonetic part 褱 (*huái*, OC **grûi*) is on the right position.

33 The character 頌 is the modern transcription of the ancient form. In modern Chinese script, however, the word "appearance" is written by the character 容, which is a loaned phonogram, and the character 頌 is a loaned phonogram used to record the word *sòng* "to praise."

Noun–Egyptian: In the written form of the noun  *wgg* "weakness" (3029, pPrisse, 4,3), the classifier  [NEGATIVE] indicates that the word "weakness" is an "example of" the superordinate category [NEGATIVE] (for this category, see Kammerzell 2015). Another example is the noun  *grḥ* "night" (3627, pPrisse, 7,2), where the classifier  [NIGHT] functions as a repeater classifier,[34] depicting stars under the sky, thus representing a nocturnal scene.

Noun–Chinese: In the noun  幼 "the young one" (*yòu*, OC **ʔiuh*; 6301, *Chéngzhīwénzhī*, 34,9), the phonetic element  幽 (*yōu*, OC **ʔiu*) is situated on the top and the classifier  子 [CHILD] is positioned at the bottom. This classifier establishes a schematic relation with the noun "the young one", as being young is an inherent characteristic of [CHILD]. In another noun  忠 "loyalty/fidelity" (*zhōng*, OC **truŋ*; 2524, *Zīyī*, 20,9), the phonetic component  中 (*zhōng*, OC **truŋ*) is located on the top and the classifier  心 [HEART/SENSES & EMOTIONS] is situated on the bottom. In this case, "loyalty" is a good quality advocated in Confucianism and keeps a taxonomic relation to the superordinate category [HEART/SENSES & EMOTIONS].

Verb–Egyptian: In the written form of the verb  *sbꜣ* "to teach" (5331, pPrisse, 15,5), the classifier  [ACTION OF FORCE] shows a taxonomic relation with the verb "to teach", as the word "to teach" is an "example of" the superordinate category [ACTION OF FORCE]. In the verb  *sḏr* "to lie, to sleep" (3034, pPrisse, 4,3), the classifier  [35] [LIE/SLEEP] functions as a repeater classifier, depicting the scene to lie or sleep.

Verb–Chinese: In the verb  教 "to teach" (*jiào*, OC **krâuh*; 4943, *Tángyúzhīdào*, 4,8), the left part is the phonetic element  爻 (*yáo*, OC **grâu*) and the classifier  攴 [HAND + STICK/POWER] is positioned on the right. The verb "to teach" is an "example of" the superordinate category [HAND + STICK/POWER] parallelling the verb  in Egyptian. Those two classifiers,  and  , show that in both cultures, "teaching" involved imposing discipline most probably also by some physical power. In another verb  來 "to come" (*lái*, OC **rə̂*; 11699, *Yǔcóng* 4, 2,10), the phonetic element  來 (*lái*, OC **rə̂*) is located at the top and the classifier  止 [FOOT/MOVEMENT] is positioned at the bottom. The foot is the primary body part for movement and the classifier functions as a superordinate category [MOVEMENT]. Consequently, the verb "to come" is categorized under [MOVEMENT] in a taxonomic relation. The [FOOT/MOVEMENT] classifier is among the most prevalent classifiers in ancient Chinese scripts, encompassing a broad category with numerous members (Xú 2024). It is a conspicuous parallel to the Egyptian classifier  [FEET/MOVEMENT].[36]

34 For the term "repeater," see the table in Section 8 below.

35 The classifier represents a mummy or a man lying on a bed, see Gardiner 1957: 447 (A55) and Goldwasser 1995: 32.

36 The two [MOVEMENT] classifiers in Egyptian and Chinese are discussed in detail, in Xú forthcoming.

Adjective–Egyptian: The word  *mḏ* is known in an adjectival use with the meaning "deep" (FCD: 123). It may take the classifier  [WATER]. "Being deep" is a prototypical characteristic of water. The classifier stands in schematic relations with the host word. The adjective  *bnr/bnỉ* "sweet" (2253, Version L2, 4,16)[37] employs the classifier  [(SWEET) ROOT]. Additionally, it incorporates the  [ABSTRACT/DEFAULT] classifier to convey the abstract meaning of this word.[38]

Adjective–Chinese: In the written form of the adjective  深 "deep" (*shēn*, OC **nhəm*; 8162, *Xìngzìmìngchū*, 23,4), the classifier  水/氵 [WATER] is on the left position and the phonetic part  罙 (*tàn*, OC **nhə̂m*) is in the right position. The pictorial sign  , depicting a flowing river, functions as a classifier for the category [WATER] (cf.  N35 "canal" in Egyptian, see Chén 2016). The adjective "deep" establishes a schematic relation with the concept [WATER] in Chinese as well. Other notable attributes of water or rivers, such as  清 "clean, pure" (*qīng*, OC **tsheŋ*; 3805, *Wǔxíng*, 8,11)[39] and  濁 "muddy" (*zhuó*, OC **drôk*; 254, *Lǎozǐ* A, 9,27),[40] are also classified by the [WATER] classifier.[41]

Adverbs–Egyptian: The adverbs  *ỉ* "here" and  *dy* "here, there" (Gardiner 1957: 155, FCD: 309)[42] may get the classifier  depicting a road. This classifier carries the general meaning [ROAD & DISTANCE]. It maintains a schematic relation with the adverbs "here" and "there", as they represent a specific point within the broader concept of distance.

Adverbs–Chinese: In the written form of the adverb  甚 "most, extremely" (*shèn*, OC **dəmʔ*; 8610, *Xìngzìmìngchū*, 42,12), the classifier  戈 [DAGGER-AXE/WEAPON/WARFARE] is positioned on the right side, compounded with the phonogram  甚 (*shèn*, OC **dəmʔ*; a rare example, as most examples typically show only phonograms).[43] The "sharp" feature of the weapon contains a schematic relation to denote the intensity or degree of thoughts and feelings. Notably, the classifier has not persisted in this adverb in modern Chinese script. It likely belongs to the sphere of classifiers that stand in metaphoric relations to the host word, portraying something as "sharp as a knife".

37 The phonogram *i* in this adjective exists in TLA but not in Žába's version.

38 See Kammerzell 2015 and Goldwasser & Soler 2024 for further discussion on this classifier.

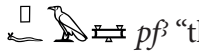
39 The phonetic part is  青 (*qīng*, OC **tshêŋ*).

40 The phonetic part is  蜀 (*shǔ*, OC **dok*).

41 For other examples, see Chén 2024. This valuable article compares schematic classifiers in Old Egyptian, Middle Egyptian and ancient Chinese.

42 It is possible that these are two spellings of the same adverb, see Peust 1999: 101–102. We are grateful to Andreas Stauder for this reference.

43 As a rare case in the Guōdiàn corpus, some scholars doubt whether the element is a classifier. Léi 2021: 277 commented that the element was a decorative mark in the word "most" (e.g., , 8618, *Xìngzìmìngchū*, 42,20) without taking any semantic meaning. Such kind of meaningless decorative mark also appears in the word "one" (*yī*, OC **ʔit*; 7854, *Xìngzìmìngchū*, 9,12) in the same text.

Pronouns–Egyptian: The demonstrative pronoun  *pꜣ* "that" is occasionally classified by the  [road & distance] classifier (Gardiner 1957: 85). This classifier is schematically related to the demonstrative pronoun "that". It potentially implies the spatial separation between the speaker and the object referred to by the deictic pronoun "that" (for further discussion, see Goldwasser & Soler 2024). In contrast, deictic demonstratives referring to "this" in Egyptian typically do not use the [road & distance] classifier, for example,  *pꜣy* and  *pw*. As a rule, "this" typically denotes a spatial proximity to the speaker. In Egyptian, personal pronouns may show pragmatic-referential classifiers referring to the gender (e.g.,  and ), essence (divine) (e.g., and), or status (e.g.,) of the actor (Goldwasser & Grinevald 2012).

Pronouns–Chinese: The demonstrative pronouns "that" and "this" in Old Chinese tell the same story as in Ancient Egyptian. The deictic written pronoun  彼 "that" (*bǐ*, OC **pai*ʔ)[44] is attested in excavated materials on Qín bamboo manuscripts (c. 200 BCE). It was classified by the classifier  彳 [(half) road], an abbreviation form of the classifier 行 [road] on the left position, and the phonetic part 皮 (*pí*, OC **bai*) is located on the right. On the other hand, the pronoun 此 "this" (*cǐ*, OC **tsheʔ*; 9933, *Liùdé*, 35,25) is a logogram depicting a profile of a standing man with the foot, probably indicating where he steps, i.e., "this". The binary concepts "that"—classified by [road]—and "this" that remains unclassified in both ancient cultures, are outstanding evidence of universal knowledge organization in human society.

All third-person singular pronouns in Modern Chinese have the *same sound value tā* (Wáng 2013: 267–269, Qiú 2013: 232–233). As a result, the classifier phenomenon is activated today in third-person singular pronouns in *written* Modern Chinese, which is influenced by the gender system in European language systems. For example, the 3ms pronoun 他 "he" is classified by 人/亻 [man],[45] the 3fs pronoun 她 "she" is classified by 女 [woman], and the third-person singular neutral pronoun 牠 "it" referring to animals is classified by 牛 [ox]. Non-animated objects are referred by 它 "it", and are non-classified. When the third-person singular pronoun refers exclusively to "God", it is written as 祂, with the phonetic part 也, classified by 礻[46] [divine]. This classifier is used in Chinese translations of the Bible, in reference to God. All the above semantic classifiers are *unpronounced*. We learn from these examples that modern Chinese script still uses productively the "semantic classifier" function of the script, creating new classifiers when necessary.

44 This example is cited from *Shuìhǔdì Qínmù Zhújiǎn* 睡虎地秦墓竹簡 (*Qín Bamboo Manuscripts Excavated in Shuìhǔdì*) published in 1990 on the bamboo strip no. 11 in the text *Wéilì Zhī Dào* 為吏之道. It was written as a phonogram 皮 (*pí*, OC **bai*; J425) in the early stage of bronze inscriptions.

45 When the sign is used as a logogram, its meaning could be "human, person". However, when it functions as a classifier in this case, it specifically conveys the semantic value "man, male", in contrast to the classifier 女 [woman].

46 The sign 礻 is the modern form of the classifier [divine/god], while its ancient form (depicting a stone or wooden ancestors' tablet) was normally transcribed as 示, see discussion in Xú 2024.

Particles–Egyptian: Particles in Egyptian are occasionally classified. The particle  *ḥ³* "would that" is accompanied by the classifier  [SENSES & EMOTIONS] (Gardiner 1957: 180). The semantic classifier  in this particle may signify an abstract notion of wish or desire.

Particles–Chinese: The word  唯 (*wéi*, OC **wi*; 1095, *Lǎozǐ* C, 1,9) is a modal particle,[47] classified by  口 [MOUTH] in the bottom position.[48] In this ancient example, the phonetic part 隹 (*zhuī*, OC **tui*) is located on the top. The classifier [MOUTH] in this context conveys implications related to emotions or moods (cf.  A2 in the example in Egyptian mentioned above). It also survived into modern Chinese script as in the character 唯, but the classifier is on the left position.

Deverbals–Egyptian: The verb  *rḫ* "to know" (3587, pPrisse, 7,1) classified by the classifier [ABSTRACT/DEFAULT] denotes an abstract meaning, while the word  *rḫ* "wise man" (5474, pPrisse, 15,12) derived from "to know" is a deverbal noun classified by  [MAN] acting as a category marker. It is also a mark of linguistic (grammatical) nominalizer on the language level (Lincke & Kammerzell 2012). The classifier [MAN] categorizes "wise man" as a member of the large superordinate category [MAN][49]. In contrast, the deverbal  *ḫm* "ignorant (man)" (3198, pPrisse, 5,9) in *The Maxims of Ptahhotep* derives from the verb  *ḫm* "to not know" (3520, pPrisse, 6,9) classified by the classifier [NEGATION]. In both cases, the classifier  acts simultaneously as a graphemic classifier and nominalizer.

Deverbals–Chinese: A similar phenomenon is unknown in Chinese. In Old Chinese, the morphological process for subject-nominalization is suffixation. Each of the syllabic morphemes (the verbal roots or the derivational suffixes) involved already has a conventional written form, so these forms are simply employed unchanged to write the derived word.[50] For example, the verb "to learn" 學 (*xué*, OC **grûk*; 1137, *Lǎozǐ C*, 3,8) was followed by the pronounced nominalizer 者[51] (*zhě*, OC **taʔ*; 1138, *Lǎozǐ C*, 3,9) to construct the deverbal word 學者 "one who learns" (*xuézhě*, OC **grûk-taʔ*).

6. Interchangeability of semantic classifiers—Alternative classification

6.1. Alternative classification in ancient Egyptian scripts

In ancient Egyptian scripts, classifier interchangeability is common (Goldwasser & Soler 2024). For example, the verb *whi* "to escape, to fail" can be classified by the classifier [ARM-RELATED

47 For this word, see Wáng 2001: 466–467. The translation is uncertain.

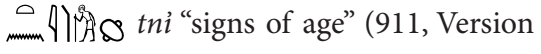
48 It was positioned on the left, left-bottom, or rarely the right(-bottom) in bronze inscriptions.

49 For superordinate categories in the Egyptian script, see Goldwasser 2002: 29–33.

50 We are grateful to Zev Handel for this remark.

51 https://humanum.arts.cuhk.edu.hk//Lexis/lexi-mf/search.php?word=%E8%80%85, in: MFCCD (accessed 20.1.2025). It was translated as "that which", "he/she/those who."

movement/action] written as  (5237, pPrisse, 14,12), or by a variant classifier  [negative] written as  (4341, pPrisse, 9,13) both in papyrus Prisse. The verb  *whh* is a geminated form of *whi* "to escape, to fail" to indicate a present participle, which is translated as "the one who fails". The word  "to escape, to fail" is an "example of" the superordinate category [arm-related movement/action] while the alternative classifier [negative] reveals its negative semantic meaning. It assigns the verb to the large superordinate category [negative] (Winand & Stella 2013: 130, 149–150).

In another example, the noun  *tnỉ* "signs of age" (6149, tCarnarvon, vso,1; 17th Dynasty) carries two classifiers (for multi-classification, see 7.1 below): the first classifier is  [old] (a semantic repeater) and the second one is [abstract/default] classifier. However, the second classifier was replaced in a little bit later version by another classifier  [illness/suffering], written as *tnỉ* "signs of age" (911, Version L2, 1,2; late 18th Dynasty). The classifier [52] [illness/suffering] assigns the noun "signs of age" to a more specific category than the [abstract/default] classifier. This implies that old age relates to illness.

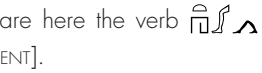
6.2. Alternative classification in ancient Chinese scripts

Alternative classification in the Guōdiàn corpus could be implemented using two distinct classifiers. For example, the character of the written word 欲 "desire" takes the classifier 心 [heart/senses & emotions] in 8 occurrences, e.g., 欲 (*yù*, OC **lok*; 2177, *Zīyī*, 6,15), while 4 other occurrences of this character in the corpus were classified by another distinct classifier 欠 [human + opened mouth], e.g., 欲 (*yù*, OC **lok*; 45, *Lǎozǐ* A, 2,18). All occurrences in the corpus were written with the same phonetic part 谷 (*yù*, OC **lok*).

In addition, in the Guōdiàn corpus, a character could take even three classifier variants. An intriguing example is the word "transgressions" (*guò*, OC **kôih*), classified by three different classifiers. In the example 過 (6359, *Chéngzhīwénzhī*, 36,18), the classifier 心 [heart/senses & emotions] is found at the bottom position. In another example of the same word, the character 過 (1733, *Lǎozǐ* C, 13,17) was classified by the classifier 辵 [road + foot/movement]. Moreover, another example of this word 過 (333, *Lǎozǐ* A, 12,16) carries the classifier 止 [foot/movement] at the bottom position. The phonogram 化 (*huà*, OC **hŋrôih*) is identical in those three examples.[53]

Among those three classifiers, 止[foot/movement] and 辵[road + foot/movement] both belong to the semantic field [movement], which suggests that "transgressions" ("crossing the line") are actions that are against the rules of social behavior or a moral principle and are therefore

52 The sign probably represents a pustule or gland, see Gardiner 1957: 593 (Aa1).

53 Compare here the verb  *thỉ* "to transgress" (FCD: 300) in Egyptian, which also gets the classifier [feet/movement].

wrong. However, the classifier [HEART/SENSES & EMOTIONS] emphasizes that those behaviors may be driven by the heart, suggesting the human agency of the wrongdoing.

7. Multi-classification

Multi-classification refers to a word that can take more than one classifier, which is a highly productive phenomenon in Egyptian scripts. Conversely, Chinese characters are predominantly classified by a single classifier. Therefore, multi-classification is much less prevalent in Chinese scripts. Nevertheless, some ancient Chinese characters exhibit multiple classifiers due to diachronic developments within the scripts.

Fig. 2. The word *mnmnt* "herd" takes five classifiers of five different quadrupeds in papyrus Boulaq 17, 6,7, in Goldwasser & Grinevald 2012.
For this kind of classification see Thuault 2020. Read from right to left

7.1. Multi-classification in ancient Egyptian scripts

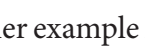
Previous studies on multi-classification in ancient Egyptian scripts reveal that up to five classifiers (e.g., fig. 2 above) can coexist in a single word. In addition, the order of co-existing classifiers in a word is rule-governed in most cases, i.e., classifiers that stand in schematic relations to the host word would precede classifiers in taxonomic relation.

The written word *wḥ‘* "fowler"[54] shows five classifiers. The [DUCK] and the [FISH] are the patients of the activity of fowling; the [ABSTRACT/DEFAULT] classifier marks a shift to the "agent classifier" mode [ACTION OF FORCE] and, finally, the most generic classifier [MAN]. Here, we can see the rule mentioned above, which is seldom broken in Egyptian. In multi-classification cases, classifiers that stand in schematic relations to the host word will appear first, and classifiers that stand in taxonomic relations will follow next. The most inclusive taxonomic category will be in the end (Goldwasser 2002: 16–17, Goldwasser & Grinevald 2012, Goldwasser & Soler 2024).

In *The Maxims of Ptahhotep*, for instance, the word *ḏ³is.w* "councilor, sage" (3225, pPrisse, 5,10) employs two classifiers. The first classifier [SENSES & EMOTIONS] indicates a distinguishing feature of this occupation, which stands in schematic relation to the host word.

54 https://thesaurus-linguae-aegyptiae.de/sentence/IBUBd0iaVjzNZUp8tV0p1rrVgQ0, in: *Thesaurus Linguae Aegyptiae* (accessed: 20.1.2025). Note that in this example the phonetic part of the word *wḥ‘*, the boat , adds information to the final meaning. The action is done from a boat (Goldwasser 2024). If analyzed as a Chinese sign, this is a Ps compound. The Phonetic part also offers some semantic information.

Councilors and sages should think about and feel situations. This classifier encompasses the modern notion of "emotional intelligence".[55] The second classifier which represents a generic Egyptian man  [MAN], stands in taxonomic relation to the host word, denoting that a "councilor or sage" is an "example of" the superordinate category [MAN].

Another example in *The Maxims of Ptahhotep* is the verb  *sk*³ "to plow" (3706, pPrisse, 7,5). The first classifier  [PLOW] represents the instrument used in this action, demonstrating a schematic relation to the verb "to plow". The role of the second classifier  [ARM] probably has two explanations: it might refer to the main body part involved in performing the action, which is schematically related to the verb. Another more likely analysis would be that the classifier indicates the action "to plow" is an "example of" the superordinate category [ARM-RELATED MOVEMENT/ACTION] (see 8.1 below).

7.2. Multi-classification in ancient Chinese scripts

A Semantic-Phonetic (SP) compound that can contain more than one semantic component in Chinese characters is very rare. Statistically, around 75 SP compounds with two or three semantic components were found in *Shuōwén Jiězì*, a dictionary containing 9353 characters, which accounts for about 0.8 percent (Péng & Féng 2014). This classical dictionary is based on the small seal scripts of the Qín dynasty (221 BCE–207 BCE). The dictionary, authored by Xǔ Shèn (58 CE–147 CE), the renowned scholar of Chinese script, represents the earliest scholarly analysis of Chinese character structure, based on the *liùshū* 六書 (Six principles of writing).

Multi-classification in ancient Chinese scripts occurs for different reasons.[56] Firstly, it could be caused by adding a more generic semantic component to an existing SP compound. For example, the written verb  奉 "to offer" (*fèng*, OC **phoŋ*^{B}; 9642, *Liùdé*, 22,13; see Qiú 2013: 155) in the Guōdiàn corpus is compounded by the phonetic element  丰 (*fēng*, OC **phoŋ*) on the top position and the semantic element  廾 [DOUBLE HAND] on the bottom position. Later in the small seal script, another semantic element  手 [HAND] was added to the verb "to offer", which did not change the meaning of the word. In this case, the verb "to offer" is written as  with double classifiers,  廾 [DOUBLE HAND] and 手 [HAND], both indicating a schematic relation as either a single hand or two hands are the main body part to complete the action. However, the added classifier could probably be considered a label of a superordinate category [HAND-RELATED MOVEMENT/ACTION], similar to the Egyptian superordinate category discussed above 7.1.

55 Both the notions of intelligence and feelings are classified under the classifier . For "Emotional Intelligence", see Goleman 2020.

56 For more discussions of multiple semantic elements in Chinese scripts, see Qiú 2013: 154–156 and Zhāng 2006.

In addition, multi-classification could be formed by adding a phonetic sign to a Semantic-Semantic (SS) compound[57] or even a Semantic-Semantic-Semantic (SSS) compound. For instance, the word 寶 "treasure" (*bǎo*, OC **pûʔ*, see SWXZ 2014: 593–594) in oracle-bone inscriptions was written as  (H3919), composed of three semantic elements:  "house" (*mián*, OC **men*[58]),  "shell (money)"[59] (*bèi*, OC **pâts*), and  "jade" (*yù*, OC **ŋok*), which depict prototypical treasures stored at a house. Gradually, a *phonetic* sign  缶 "vessel" (*fǒu*, OC **puʔ*) was added to the SSS compound . In bronze inscriptions, we find the same word written as  (J2144).[60] If is considered as a phonetic part, the written word "treasure" shows in bronze inscriptions three semantic classifiers, namely [HOUSE], [JADE], [SHELL/MONEY/WEALTH], classifying the phonetic part . However, the phonetic sign "vessel" probably contained also an additional semantic meaning of "vessel" that could be part of the treasure. If so, this new character can be considered as an SSSPs.[61] In the later Chǔ bamboo manuscripts, the word "treasure" was written as (Bāoshān 221).[62] It was composed of the same three semantic elements ([HOUSE], [JADE] and [SHELL/MONEY/WEALTH]) and one phonetic/semantic element "vessel" (see additional discussion on this word in appendix A below).

Moreover, a transformation of a semantic element in an SS compound could result in multi-classification, such as the word 聖 "sage" (*shèng*, OC **lheŋh*). It was written as  (H14295) in oracle-bone inscriptions,[63] which was composed of three semantic elements:  "a standing man (face to the right)",  "ear" and  "mouth". The SSS compound character depicted a person having a prominent ear and mouth, referring to "a person who is hearing when someone is talking",

57 Boltz 1994: 71–72 thinks that SS compounds do not exist in Chinese scripts. He believes that at least one of the elements in an SS compound serves as a "phonetic indicator", see the discussion below in Appendix A.

58 The reconstructed sound value is cited from Zhèngzhāng's system from the website *Gǔyīn Xiǎojìng*古音小鏡 http://kaom.net/ny_word8.php (accessed: 20.1.2025).

59 During the Shāng dynasty, shells served as a form of currency (Dai et al. 2022: 1).

60 A procedure of adding phonological elements to logograms probably to ascertain a correct reading is a common diachronic development in Egyptian. In fig. 4 in appendix B, the  *nw* vessel is added as a phonetic element to direct the reader more firmly to the reading *nw* "hunter". In the Egyptian case, the iconic meaning of the vessel should be dropped. The Chinese example is way more sophisticated. The meaning of the vessel must not be dropped and can be taken pictorially to be part of the elements that make the treasure in the house.

61 For all possible variations of this compound in ancient Chinese scripts that could not be discussed here, see *Gǔwénzì Lèibiān* 古文字類編 (Gāo & Tú 2008: 308).

62 This example is cited from *Bāoshān Chǔjiǎn* 包山楚簡 (*Chǔ Bamboo Manuscripts Excavated in Bāoshān*) published in 1991.

63 In oracle-bone inscriptions, the character used to write the word "sage" is not well attested due to damaged or limited contexts. The character was attested for recording the written word 聽 "hearing", which normally was written as (H5298), see the discussion in appendix A. However, it is widely accepted that the character is the form created for the word "sage" (see SWXZ 2014: 840, Lǐ 2012: 1047). We are grateful to Dr. Yuán Lúnqiáng [袁倫強] (Institute of Chinese Language and Literature, Southwest University, China) for this remark as well as many discussions in the seminar on oracle-bone inscriptions led by him during the autumn semester of 2024.

which best defines the ideal "sage". Being able to listen to complaints (ear) and being able to advise others (mouth) is the essence of the sage concept in ancient cultures (Chén 1986). What seems to be a deliberate prominent size of the ear above the man may indicate the crucial ability to listen carefully (Lǐ 1982: 3519, Qiú 2013: 132). From the bronze inscriptions on, the semantic part  "a standing man" changed into  "a person standing upright (face to the left)" (e.g.,  J271). The compound character is composed of two semantic parts  耳 [ear][64] and 口 [mouth], while the element "a person standing upright" (*tǐng*, OC **lhêŋʔ*) functions as a *phonetic* element. Thus, the character changed from an SSS compound into an SSP compound. In the new character , [ear] and [mouth] could be analyzed as two semantic classifiers. Yet one cannot ignore the additional *semantic* information carried by the new phonetic element . The sage is indeed an upright man! The phonetic part possibly carries some additional semantic information and thus should be described as Phonetic (+semantic). So, we actually have a combination of two (+one) semantic elements and a clear phonetic element (SSPs) in this character. Moreover, the combined character shows pictorial sensitivity to the semantics of the three components that make the sign. The "ear" and the "mouth" appear on the upper part of the character, respecting their relative position in the human body. In the Guōdiàn bamboo manuscripts, the word is written in the same way as an SSPs compound character, for example,  聖 (68, *Lǎozǐ* A, 3,13). It consists of two semantic parts,  耳 [ear] and  口 [mouth], with a phonetic/semantic element  "a person standing upright".

8. Host-word and classifier relations in semantic classifiers

Several possible semantic relations exist between host words and their classifiers, such as taxonomic, taxonomic-repeater, taxonomic-metaphoric and various schematic relations (Goldwasser 2002: 15–18). Goldwasser recently published a host and classifier relations table in the Egyptian script (Harel et al. 2024). To compare the possible classifier-host relations in ancient Egyptian and ancient Chinese scripts, a new table was created (see table 1 below). Examples from ancient Chinese and Egyptian were added by Xú.

64 This is the typical form of the ear character in bronze inscriptions, see SWXZ 2014: 873.

Classifier-host relations	Examples
Taxonomic A classifier in taxonomic relation is a chosen prototype of a superordinate category that represents the category as a whole.[65] Its hosts are members of the superordinate category standing in an "**example of**" relation to the classifier (Goldwasser 2002: 15–16, 29–33; 2009: 22–23; Lakoff 1987).	**Classifiers:** [FEET/MOVEMENT] & 止 [FOOT/MOVEMENT] The word *swtwt* "to walk about, to travel" (FCD: 218) is an "example of" the superordinate category [FEET/MOVEMENT]. The word 來 "to come" (*lái*, OC **rə*; 11699, *Yǔcóng* 4, 2,10) is an "example of" the superordinate category 止[FOOT/MOVEMENT]. The word 過 "transgressions" (*guò*, OC **kôih*; 333, *Lǎozǐ* A, 12,16) is classified by the 止 classifier (see discussion 6.2 above). **Classifiers:** [HOUSE/HABITAT] & [HOUSE/STRUCTURE] The word *iḥ.w* "stable" (FCD: 29) is an "example of" the superordinate category [HOUSE/HABITAT], a "type of" building or house (see Goldwasser 2023: 125). The word 廟 "temple, shrine" (*miào*, OC **mrauh*; 4967, *Tángyúzhīdào*, 5,7) is an "example of" the superordinate category [HOUSE/STRUCTURE] in ancient Chinese scripts.
Taxonomic-repeater A *repeater* is a hieroglyph repeating the same signified already presented phonetically in the word. It *repeats* the phonological information recorded by the phonograms with a semantic classifier, hence the name "repeater."[66] The relations are still taxonomic, e.g., in Egyptian *msḥ* "crocodile" is an "example of" the category [CROCODILE].[67]	**Classifiers:** [WOMAN] & 女 [WOMAN] In the word *ḥm.t* "woman" (5124, pPrisse, 14,4), the classifier [WOMAN] repeats the semantic information presented by the previous hieroglyphs functioning as phonograms. It represents the same information in the pictorial sign. In the word 婦 "woman" (*fù*, OC **bəʔ*; 11881, *Yǔcóng* 4, 10,13), the classifier 女 [WOMAN] repeats the semantic information presented by the phonogram 帚 (*zhǒu*, OC **tuʔ*).

65 A particular exception is the [HIDE & TAIL] (animal) classifier, see Goldwasser 2023.

66 For repeaters in classifier languages (pronounced repeaters), see Allan 1977, Senft 2002: 61–69, and Goldwasser & Grinevald 2012.

67 This category includes other examples of words referring to crocodiles, such as *ḫnty* "crocodile (as Seth)" or the crocodile god *sbk* "Sobek", or a voracious spirit *ʿḥm* "Horrifier (crocodile demon)" in the form of a crocodile (Gardiner 1957: 475, DZA 21.977.480). The same hieroglyph can function as a classifier in different semantic relations, e.g., as a metaphoric classifier in the verb *ʾd* "to be angry," hence the classification assigns the action to the crocodile as a metaphorical agent, highlighting a certain type of dangerous anger "to be angry as a [CROCODILE]" (See Goldwasser 1995: 105).

Classifier-host relations	Examples
Taxonomic-metaphoric A classifier can be linked to its host by metaphorical relations (Goldwasser 2005). In this case, the mute classifier represents a prototype of another, ad hoc category. The host word becomes temporarily a member in this category. (See Goldwasser 1995: 83–84 for "ad hoc" categories).	**Classifiers:** [PUFFER FISH] & 羊 [SHEEP/GOAT] In the word *špt* "to be angry"(FCD: 265)[68] the hieroglyph of the puffer fish stands as a prominent exemplar for the category [ANGRY SWOLLEN CREATURES], which is an ad hoc category. The angry person in a crowd of men is compared to this kind of fish in the crowd of fish. "He swells with anger like a puffer fish" (detailed discussion in Goldwasser 2005: 106–107). In the word 群 "assemble, gather together"[69](*qún*, OC **gwən*; 1057, *Lǎozǐ* A, 38,8), the classifier 羊 [SHEEP/GOAT] is a prominent exemplar of the ad hoc category [HERD ANIMALS]. The crowd of humans is compared here to a herd of sheep.
Schematic (metomymic) Various types of schematic (metonymic) knowledge relations may exist between a word and its classifier, such as *the component/integral object (part-whole)* or *the stuff/object ("made of")* relation (Goldwasser 2002: 33–35).	**Classifiers:** [HOUSE/HABITAT] & [HOUSE/STRUCTURE] The word *sšd* "window"[70] (FCD: 249) is a "part of"/ "component of" [HOUSE]. Various words for elements of the house stand in schematic (metonymic) relation to the category [HOUSE]. The word 室 "room" (*shì*, OC **lhit*; 1067, *Lǎozǐ* A, 38,18), is also a "part of"/ "component of" [HOUSE]. It is classified by [HOUSE/STRUCTURE] classifier, which is at the top position. In this character the phonogram 至 (*zhì*, OC **tits*) is on the bottom. **Classifiers:** [WOOD] & 木 [WOOD] The [WOOD] category features both taxonomic and schematic members (Goldwasser 2002, Chapter 2). An example of schematic relations with items "made of" [WOOD] is *w³s* "scepter" (5287, pPrisse, 15,2), a symbol of the power of the king. In ancient Chinese scripts, for example, 板 "board" (*bǎn*, OC **prânʔ*; 3404, *Qióngdáyǐshí*, 4,2) is "made of" 木[WOOD].

Table 1. Possible classifier-host relations in ancient Egyptian and ancient Chinese scripts

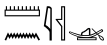
68 e.g., in DZA 30.047.890, in a text from the 6th Dynasty (2345–2181 BCE). For a discussion with a picture of the live fish, see Goldwasser 2005.

69 The position of the classifier [SHEEP/GOAT] is on the bottom in bamboo manuscripts. However, it is in the right position in modern Chinese script. The probable reason is that bamboo strips were crafted into narrow, vertical slips, but later on, writing materials such as stone and paper had more space for characters.

70 The window is conceptualized into the superordinate category [EYE]. The window may be understood as "the eye of a house", as one typically looks out of the window (Goldwasser 2005).

The special case of verb classifiers

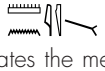
Kammerzell 2015 offered a detailed set of possible relations between a host verb and its classifiers in Egyptian. He proposed the relations AGENT, UNDERGOER (PATIENT), INSTRUMENT, SOURCE, GOAL, LOCATION, EXPERIENCER, MOVER, ZERO, CAUSEE and ABSENTEE.[71] Among them, AGENT, UNDERGOER (PATIENT), and INSTRUMENT relations are more frequently detected in both ancient Egyptian and ancient Chinese scripts.

In Ancient Egyptian, the written representation of the verb  *ḫnn* "to trouble" (1322, Version L2, 2,7) carries the classifier  [SETH], which is an image of the Egyptian god Seth, who masters storms, disorder, and warfare (Te Velde 1977). Therefore, when functions as a classifier, it is presented by the script as the AGENT who creates chaos and trouble. The second classifier  [ACTION OF FORCE] represents the superordinate category to which the action belongs. However, it can be understood as hinting to the AGENT as well. In this case, the trouble is caused by the intervention of Seth and its human agents (Goldwasser 2005, Allon 2007). In the verb  *stj* "to shoot" (3568, pPrisse, 6,11), the classifier [ARROW] portrays the INSTRUMENT as it is the tool to implement the action of shooting. In addition, more than one relation can coexist in one verb, such as the word  *mnj* "to moor" (3432, pPrisse, 6,6). The first classifier  [MOORING POST][72] functions as the INSTRUMENT, whereas the second classifier [BOAT] is a typical AGENT, indicating the activity "to moor" is done by boats.[73] In another verb  *skꜣ* "to plow" (3706, pPrisse, 7,5), the semantic role relation of both classifiers, [PLOW] and [ARM], is the prototypical INSTRUMENT. However, the second classifier [ARM] could be considered as a "part of" a human being. Therefore, it may also be interpreted as an AGENT. It could also function as a taxonomic classifier, see above 7.1.

In ancient Chinese scripts, the word 蠚 "to sting" (*hē*, OC **nhag*;[74] 926, *Lǎozǐ* A, 33,14) takes the classifier 虫 [INSECT] in the bottom position. It indicates that the insect is the prototypical AGENT of the action "to sting". The phonetic part 若 (*ruò*, OC **njag*) is in the top position. In the verb 馭 "to ride, to drive" (*yù*, OC **ŋah*; 6105, *Chéngzhīwénzhī*, 16,10), the classifier 馬 [HORSE] is the prototypical chosen UNDERGOER/TOOL in the royal and military circles. Its phonetic part 午 (*wǔ*, OC **ŋâʔ*) is in the bottom-right corner. The word 誅 "to kill, to punish" (*zhū*, OC **tro*; 11853, *Yǔcóng* 4, 8,4) was classified by 戈 [DAGGER-AXE/WARFARE], a traditional weapon of warfare in ancient China, which is the INSTRUMENT. The phonetic part 豆 (*dòu*, OC **dôh*) is in the left position.

71 See Lincke 2011 for these relations in the Pyramid Texts.

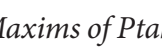
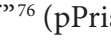
72 TLA encoded the sign as Aa 28, but it might be P11.

73 In the Coffin Texts, the verb  "to moor" (*CT* IV: 308,c,spell 335 (B9C)) has the variant classifier [DEATH] instead of [BOAT]. It indicates the metaphorical concept of "dying is mooring (the boat of life)". For the conceptual metaphor [LIFE IS A JOURNEY ON THE NILE] in the Egyptian script, see Goldwasser 1995: 97–98.

74 The reconstructed sound value is cited from Zhèngzhāng's system from the website *Gǔyīn Xiǎojìng* 古音小鏡 http://www.kaom.net/ny_word8.php (accessed: 20.1.2025).

9. The special case of classifiers of a "missing ability/element" —  "to be deaf"[75]

An intriguing phenomenon that exists both in Egyptian and Chinese texts is that a classifier could denote a missing ability or quality. In some cases, two words may appear in the same clause, and the classifier in one of the words shows the "missing ability".

In *The Maxims of Ptahhotep*, there is an interesting clause:  *ʿnḫ.wy ỉmr* "The two ears are deaf"[76] (pPrisse, 4,4). Both words in the clause,  *ʿnḫ.wy* "(pair of) ears" and *ỉmr* "to be deaf", were classified by the same classifier  [EAR]. The classifier in the first word *ʿnḫ.wy* "(pair of) ears" is a repeater that appears twice (or the two ears are one classifier [DOUBLE EARS]). However, the second word *ỉmr* "to be deaf" also takes the schematic classifier [EAR], indicating a deficiency ("unable to hear") or a "missing ability/element" (see Goldwasser & Soler 2024).[77] In oracle-bone inscriptions, we find a very similar example. In the spelling of the word  聾 "deaf" (*lóng*, OC **rôŋ*; H21099), the semantic part 耳 [EAR] is positioned on the left and the phonetic part 龍 (*lóng*, OC **roŋ*) is located on the right. The sign functions as a classifier for the word "deaf". The pictorial sign depicts the imaginary sacred animal "dragon" in ancient China, but it functions as a phonetic component in the SP compound character "deaf".

Another example is found in the Guōdiàn bamboo manuscripts. In the context *dé yǔ wú shúbìng* 得與亡孰病 "Gain or loss, which is more debilitating?" (*Lǎozǐ* A, 36)[78] both words 得 "gain" (*dé*, OC **tə̂k*; 996, *Lǎozǐ* A, 36,3) and 亡 "loss" (*wú*, OC **ma*; 998, *Lǎozǐ* A, 36,5) were classified by the same classifier 貝 [SHELL/MONEY/WEALTH]. The word "loss" is classified by the "shell" , the "absent element". Another example is the sentence *hòucáng bì duōwú* 厚藏必多亡 "Profuse hoarding inevitably leads to considerable loss" (*Lǎozǐ* A, 36),[79] in which the two words 藏 "hoard, store" (*cáng*, OC **dzâŋ*; 1007, *Lǎozǐ* A, 36,14) and 亡 "loss" (*wú*, OC **ma*; 1010, *Lǎozǐ* A, 36,17) were both classified by the same classifier 貝 [SHELL/MONEY/WEALTH]. However, other occurrences of the written word "loss" (*wú*, OC **ma*) in the Guōdiàn bamboo texts are written only by a phonogram, for example, (*wú*, OC **ma*; 1046, *Lǎozǐ* A, 37,26).

75 See Goldwasser 1995: 92–93. A similar phenomenon exists in Anatolian hieroglyphs, see Payne 2017.

76 Lichtheim 1973: 63 translated as "ears deaf".

77 Chén 2024 brings Chinese parallels to "blind" and "deaf", with examples from the dictionary *Shuōwén Jiězì*.

78 The English translations of the Guōdiàn bamboo manuscripts are cited from Cook 2012: 281.

79 Cook 2012: 281.

Conclusions

Graphemic semantic classifiers[80] in ancient Egyptian and ancient Chinese scripts exhibit similarities in their parts of speech assignment, alternative and multi-classifications, and their relationships with their host words. In both scripts, the semantic classifiers are unpronounced. Only much later did the Chinese language develop a system of *pronounced numeral classifiers* that should be discussed separately.[81]

In ancient Egyptian scripts, classifiers are always post-positioned, whereas, in ancient Chinese scripts, classifiers are not only post-positioned (i.e., right and bottom positions) but also appear in pre-positions (i.e. left and top positions, see discussion above 4.2). Additionally, surrounding and half-surrounding positions of classifiers are observed in ancient Chinese scripts. It indicates that classifiers' positions are not necessarily confined to the end or the beginning of the written representation of host words in Chinese.

Both content words (nouns, verbs, adjectives and adverbs) and function words (pronouns and particles) may be classified in ancient Egyptian and ancient Chinese scripts. However, in Chinese, adverbs and function words are classified with lower frequency.[82]

Alternative classification is common in ancient Egyptian and ancient Chinese scripts. Written words classified by different classifiers reflect different categories, forming a complex and dynamic categorization network. They mirror the complex challenge of conceptualizing the world. With the standardization of the script by the Qín-Hàn period (221 BCE-156 BCE), most alternative classifications were discontinued.

Multi-classification is much more frequent in ancient Egyptian scripts than in ancient Chinese scripts. The presence of more than one classifier in a single word provides rich semantic information, indicating that the host word belongs to multiple categories simultaneously.

Relations between host words and classifiers in ancient Egyptian and ancient Chinese scripts include taxonomic, taxonomic-repeater, taxonomic-metaphoric and schematic relations, all exemplified in the table above. Taxonomic relations are the most frequent in both writing systems, followed by schematic and taxonomic-metaphoric relations.[83] Taxonomic-repeater is a rare phenomenon in Chinese but very common in Egyptian. In addition, the semantic roles of verb classifiers, such as AGENT, PATIENT, and INSTRUMENT, are frequently identified in both scripts. Furthermore, the special case where classifiers indicate a lack of ability of the classified is present in both writing systems.

80 "Phonetic classifiers" are not discussed in this contribution. For this term, see Goldwasser 2024, Chapter 6.1 and Werning 2018: § 13.

81 See Peyraube 1991. The spoken classifiers are a later phenomenon that probably appeared sporadically around the first century BCE and became more prevalent during the 9th-10th century CE.

82 More statistics will be published in Xú forthcoming.

83 For statistic information, see Xú forthcoming.

The reconstruction of the mental organization of the ancient world hinges predominantly on the analysis of material culture and the textual evidence preserved in diverse manuscripts and inscriptions. However, studying classifiers within complex writing systems opens a novel avenue of inquiry into the cognitive and cultural universe of ancient societies. As an emic source par excellence, graphemic classifier systems offer direct insight into how these cultures categorized and conceptualized knowledge. Scholars can undertake comparative studies across different writing systems by focusing on the structural and functional features of classifiers, unveiling cross-cultural patterns in knowledge organization.

The comparative analysis of semantic classifiers in the writing systems of ancient Egypt and China illuminated *both shared cognitive tendencies and distinctive cultural perspectives* of these civilizations. Such an investigation underscores the convergences in how these societies understood and classified the world around them and highlights the unique modalities through which each civilization constructed and transmitted meaning. These lenses offer a deeper understanding of the intricate relationship between language, cognition, culture, and script in the ancient world.

Appendix A

Supplementary Visual Scenarios or "Scene Characters": Examples from Semantic-Semantic (SS, *Huìyì*) Characters in the Oracle-Bone Inscriptions

Pictorial signs in ancient complex writing systems fundamentally differ from images, even if they are based on images. When they become signs in a writing system, they show calibrated sizes, accommodating relative positions, standardized forms, and may fill a few different semiotic functions (Goldwasser 1995: 80–103, Goldwasser 2016, Polis 2018, Goldwasser & Handel 2024). While the Egyptian hieroglyphic script remained iconic until the very last stages of its use, the earliest Chinese inscriptions on oracle bones that came down to us are comparatively more cursive and show a lower level of iconicity. Yet many of the characters in these early texts can still be identified pictorially.[84] In appendix A, we discuss, from a comparative perspective, examples of a special type of ancient Chinese characters called Semantic-Semantic (SS) compounds or *huìyì* in traditional Chinese scholarship.

Oracle-bone inscriptions are the earliest palaeographic evidence of the established ancient Chinese writing system as we know it today, dating back to c. 1250 BCE.[85] They are divinatory in content and are commonly inscribed on turtle plastrons (flat bottom shells) and the scapulae of oxen. So far, around 4,000 characters (around 6,000 if variants are included) have been attested in oracle-bone inscriptions and about half of them were safely deciphered (Shěn & Cáo 2001: 24–163).

In Egyptian hieroglyphs, almost all periods of the script (3150 BCE–394 CE)[86] show inscriptions of relatively high iconicity. Hieroglyphic inscriptions are commonly found on architectural elements, statuary, and a wide variety of objects, ranging from large to very small in scale (e.g., scarab seals). The content of the hieroglyphic inscriptions is mostly non-administrative.[87]

Semantic-Semantic (SS) *huìyì* compounds in Chinese

In ancient Chinese scripts, SS or SSS compounds (*huìyì*) are characters composed of two or more pictorial elements, each possessing an independent semantic value. These constituent components

84 e.g., examples of the written logogram "dog" in oracle-bone inscriptions,  (H1045) and  (H6485). Yet, pictorial features may still be active in the reading process of modern Chinese script. Until today readers of Modern Chinese identify some of the pictorial meanings of the characters such as "roof", "water", and "human".

85 For possible earlier precursors of the Chinese scripts, see Demattè 2022 and Baines & Cao 2024. On different semographies in early Egypt, see Stauder 2023.

86 See Stauder 2020: 880.

87 Administrative texts are usually written by a cursive variation of the hieroglyphs called "hieratic", see Grandet 2023: 62–69. Hieratic shows some different tendencies in classification, but guards all semiotic rules of classification known from the more iconic versions of the script.

may function autonomously within the script as logograms. However, when combined into a single character, they form a novel compound logogram, whose semantic meaning is modified and whose phonological value diverges from that of its individual constituents.

For example, the written word  聽 "hearing" (*tīng*, OC **lheŋ*; H5298) was compounded by three semantic elements: an ear  耳 (*ěr*, OC **nəʔ*) and two mouths  (口 *kǒu*, OC **khôʔ*). The sign "ear" is larger than the "mouth", which may highlight the ear's function. Given the intention to create the concept of "hearing", it is presented by the written character as a sense that one uses to hear human sounds. Therefore, two human mouths are depicted as combining with the prominent ear. The "mouth" was probably duplicated to depict more than a single voice. The duplicated mouth also creates an aesthetic balance. However, "hearing" was sometimes alternatively written only with a single mouth, as (H7768).[88]

Xǔ Shèn (58 CE–147 CE), the eminent early scholar of the Chinese scripts who laid the grounds for Chinese semiology, strongly believed in the existence of *huìyì* as stated in the post-face in his famous work *Shuōwén Jiězì* (Bottéro & Harbsmeier 2008, Lù 2015: 48–50). We find similar opinions in modern scholarship (e.g., Handel 1998, 2016, Qiú 2013: 124–137). In his highly influential study, Boltz (1994) fundamentally challenged the existence of Semantic-Semantic (SS) compounds in the Chinese script, a notion widely accepted by Chinese scholars. He contended that all compound characters traditionally analyzed as comprising two semantic elements must have originally contained a phonological value inherent in one of their components, even if this phonetic dimension can no longer be reconstructed. Consequently, Boltz argued that such characters should not be classified as SS compounds but rather as Semantic-Phonetic (SP) compounds, thereby redefining the structural principles underlying the script's composition. In the following discussion, we present a semiotic analysis of select *huìyì* characters in ancient Chinese scripts, wherein the *spatial* arrangement of constituent signs conveys meaning beyond the mere aggregation of individual elements. In certain SS or SSS characters, *positionality* functions as an additional dimension of signification, mirroring real-world scenes and enhancing the expressive power of the script.[89]

88 The related word 聞 "to hear" (*wén*, OC **mən*) normally was written as  (H5004), a logogram depicting a seated man with a prominent ear with his hand covering his mouth (see SWXZ 2014: 842, Lǐ 2012: 1048–1049, Niè 2022).

89 Positionality is a developed semiotic device in the hieroglyphic script system from the very beginning of the script; it will be discussed in a future publication. Given the high iconicity of the hieroglyphs, it is almost a given semiotic procedure. We find examples of compound elements creating the visual information "inside" (e.g.,  *Ḥw.t-Ḥr* "Hathor", the goddess is considered to be the mother of the falcon god Horus, so he was "inside" her). However, both elements cary phonological information and thus cannot be paralleled to *huìyì*. Sign TSL_1_4375, http://thotsignlist.org/mysign?id=4375, in: *Thot Sign List*, http://thotsignlist.org.

Example 1— "Scene Character":

The written form of the word  "treasure" (*bǎo*, OC **pûʔ*; H3919) in oracle-bone inscriptions is a Semantic-Semantic-Semantic (SSS) compound, which is composed of three distinct semantic elements:  "house" (*mián*, OC **men*),  "shell (money)" (*bèi*, OC **pâts*), and  "jade" (*yù*, OC **ŋok*). During the Shāng dynasty (1600 BCE–1046 BCE), both shells and jade held exceptional value: shells functioned as currency, while jade was esteemed as the quintessential precious stone and a highly sought-after material for elite use. The representation of these three elements—whose actual dimensions vary considerably in reality—was carefully calibrated in accordance with the fundamental principles governing the composition of the script.

However, in this case, we witness more than calibration. The character  is also sensitive to the *spatial* arrangement. The sign  is always positioned *above,* while the other two signs  and  are always below and *inside***.** The "shell" and "jade" are always put *inside* the house, i.e., their visual arrangement includes the concept of **inside**, creating a ***scene***. From this character, we learn that "treasure" means "currency and precious stones put **inside** the house". The conscious arrangement of the various elements in the compound character supplies additional visual information. On the addition of a phonetic part to this character in the bronze inscriptions, see discussion above 7.2.

Example 2— "Scene Character": "pen-raised animals (as offerings)"

Other pictorial sensitive scenic arrangements of semantic elements in compound charaters in oracle-bone inscriptions were also found in the word  牢 "pen-raised animals (as offerings)" (*láo*, OC **rûʔ*; H34165).[91] The character was compounded by two semantic elements:  "enclosure (of animals)"[92] and  牛 "(head of) ox" (*niú*, OC **ŋwə*; Lǐ 2012: 72, Shàn 2020: 122–123). The ox plays the role of the prototypical quadruped (see below). Here the combination of the two semantic elements "pen" and "ox" acquire *additional scenic information*—"the ox is **inside** the pen". The intriguing point in this example is that the object animal inside the enclosure could also be a sheep  (H15595). The competing prototypes tell us that the essence of this character's meaning is not the mere combination of "ox" and "pen" but the more general idea of "pen-raised animals". The

90 See the fn. 59 above.

91 For the discussion of "pen-raised animals", see Schwartz 2019 and Ottaviano et al. 2024.

92 The sound value of the "enclosure" sign is uncertain. The "enclosure" sign as a logogram was attested in very few examples in oracle-bone inscriptions (e.g., H33631). Some scholars suggest that the character is an SP compound and that the animal is a semantic classifier (SWXZ 2014: 92). In this case, the enclosure would be a metonymic representation of the "pen-raised animals". However, almost all examples show a combination of the enclosure and a prototypical animal.

compound character presents additional pictorial information about man's relation with these animals—he keeps them inside a man-built structure for his utilization.[93]

Statistically, "sheep" was more popular than "ox" in the early stage of oracle-bone inscriptions (see table 2 below). However, "ox" gradually becomes the predominant animal in the written representation of the word "pen-raised animals" at the later stage of oracle-bone inscriptions (Zhū 2019). The sign has already been standardized with an "ox" prototype from the Western Zhōu dynasty (1046 BCE–771 BCE). The "ox" is the "winning prototype" and continues into the modern Chinese character 牢.

Stages Forms	First Stage	Second Stage	Third Stage	Fourth Stage	Fifth Stage
牢–OX	157	9	330	505	670
宰[94]–SHEEP	835	320	168	105	21

Table 2. The table above, created by Zhū 2019 and translated into English by Xú, shows the number of examples of the word "pen-raised animals" in five stages in oracle-bone inscriptions. The oracle-bone inscriptions are divided into five periods by Dǒng 1933. The table shows that the character 牢 "pen-raised animals" with the 牛 "ox" inside the structure gradually becomes the dominant variant in the later stage (670 examples), while the number of examples of the sign 宰 with 羊 "sheep" inside the structure decreased dramatically (21 examples). The "ox" clearly defeated the "sheep".

93 On the relation of man and sacrificial animal in ancient China, see Sterckx 2019.

94 The sign 宰 is a transcription of the ancient form but is not in use nowadays.

Appendix B

Hunters and Dogs, and a "Walking Pot"—in the Search of *Huìyì* in the Egyptian Writing System

The hunter and the dog

In oracle-bone inscriptions, the verb 獸"to hunt"[95] (*shòu*, OC **hjuh*; H28773) was an SS compound (*huìyì)* created by two separate semantic elements: 單 "hunting tool" (*dān*, *OC *tân*) and 犬 "dog" (*quǎn*, OC **khwîn?*). In this case, we see the two essential elements for hunting according to the ancient Chinese scripts. It tells us that the dog was indispensable for the hunter, as much as his hunting tool. Interestingly, the agent—the hunter himself—is not represented in the Chinese SS character. The reader has to combine the hunting tool and the dog in his mind to create the "hunting" concept. Perhaps the fact that the dog and the tool could not create a combined correct meaning of "to hunt" without a human agent made the latter appearance superfluous. Only man could hunt with a dog and a hunting tool.

What seems to be the earliest example recording the word "hunter" in ancient Egypt is a pictorial logogram showing a walking man holding a stick, with a dog behind him  (a drawing by Kahl 1994: 923,[96] and the original fig. 3 below).

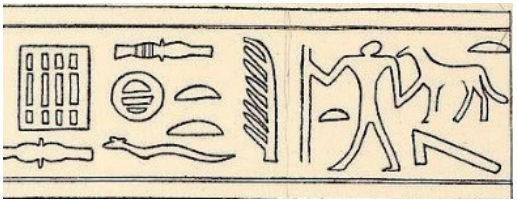


Fig. 3. The hunter hieroglyph on an early seal, after IAF no. 387

This Egyptian example (fig. 3) is close to the SS (*huìyì*) compound in Chinese. The standing man holding a stick, as well as the dog, are two hieroglyphs that can function independently as logograms in this period with the readings *sr* "dignitary" and *ṯsm*[97] "dog" (Kahl 1994: 923,

95 The character 獸 in the oracle-bone inscriptions acquires a different meaning in later Chinese texts. In the Classical Chinese literature, it extends to the object of hunting, namely wild animals 獸, especially quadrupeds (see Lǐ 2012: 1270). As a result, the verb "to hunt" is written in modern Chinese script by a different character 狩 *shòu* which is an SP character. In this character, the dog sign 犭 has the semiotic *function* of a classifier [DOG/ANIMAL]. It still marks the unbreakable conceptual connection between the dog and hunting.

96 Kahl reads here *nw* "hunter". The seal may already show a phonetic complement *nw*, itself an adze that may be relevant to the final meaning (U20/19 on the Gardiner list); see Sign TSL_1_6101, http://thotsignlist.org/mysign?id=6101. It could be compared to the Chinese hunting tool. The two *t* signs may relate to the reading of the adze as *nw.t* or *nw.ty*.

97 The phonological value of the dog hieroglyph in this early period is not certain.

Regulski 2010: 88, A21: d). However, when these two hieroglyphs are put together, they create a *new signified* "hunter" with a new phonetic value—*nw*. Due to the high iconicity level of the hieroglyphic script (unlike the two Chinese characters that are put one by the other, with no apparent visual connection), the man and the dog create a miniature realistic scene (fig.3).[98] The man *holds the dog on a leash*. The little image-hieroglyph keeps the relative size of the man and the dog. It looks as if he is walking the dog.[99] The compound hieroglyph presents the reader, on the *pictorial level*, with a visual specification of the *relations* between the hunter and the dog. "Hunter" in the earliest Egyptian script is not only "man"+"dog," but the hunter is *leading* the dog that accepts his authority.

A few hundred years later, the hunter-compound hieroglyph appears twice in an elaborate inscription carved in stone in the tomb of Metjen in Abusir (fig. 4a[100]). The hunter walks the dog on a leash. Yet, the hieroglyph functions now as a repeater classifier, as the full phonetic representation of the word is added before the compound classifier. The explanatory phonograms assert the correct phonological reading of the word *nw*, but only the classifier tells us about the dog.

Fig. 4a

Fig. 4b

Fig. 4a. The tomb of Metjen, a detail of the hieroglyph "hunter", from the inscription above the false door. Fig. 4b. A photograph of the sign in Fig. 4a, offering chapel of Metjen. https://upload.wikimedia.org/wikipedia/commons/0/07/Mastaba_-_tomb_of_Metjen_from_the_Old_Kingdom_04.jpg (accessed: 20.1.2025)

98 For this phenomenon in the hieroglyphic script, see Goldwasser 2009 and Goldwasser 1995. For earlier discussions of this phenomenon, see Fischer 1977a and Vernus 1987.

99 A careful beholder would observe that the man seems to hold one of the dog's legs.

100 This drawing was done by the Lepsius expedition in Egypt between1842–1845 CE. For other examples in the Old Kingdom, see Fischer 1977: 3–4 and n. 4.

Fig. 5a

Fig. 5b

Figs. 5a an 5b. The "overseer of the hunters". The complete scene offers additional information on the tomb owner's life (the hunter). It presents some possible patients of the hunt (drawing after Baines & Cao 2024: 110, Fig. 24, taken from Lepsius). In this early hand copy of the Lepsius expedition of the same hieroglyph, the dog walks without "pushing forward," his ears are upright, and his tail does not curl on his back as in the original. The Tomb of Metjen, a detail in color from the inscription of the left side of the false door. Offering chapel of Metjen in Berlin https://upload.wikimedia.org/wikipedia/commons/0/07/Mastaba_-_tomb_of_Metjen_from_the_Old_Kingdom_04.jpg (accessed: 20.1.2025)

The second example is located on the left side of the false door within the tomb (fig. 5a and 5b), occupying a more prominent position. It integrates three hieroglyphic elements—a hunter, a hunting tool, and a dog—into a dynamic composition. In this version, the man, wielding a large hunting implement, is depicted in a crouching stance that strikingly recalls the posture of the soldier hieroglyph 𓐍, rather than that of a dignitary. This positioning imparts a heightened sense of "alertness" to the combination of these three icons.

As in the former examples, the crouching hunter holds the dog on a leash; however, here, the leash is rendered with remarkable realism, coiled within his palm (fig. 5b). The hunting tool, resembling an oversized throw stick, replaces the walking staff seen in earlier instances. The dog incorporated into this composite sign is the prototypical canine representation used to denote "dog" in

hieroglyphic script for millennia.[101] Yet within this miniature "hieroglyphic scene," the dog exhibits a forward-thrusting motion, extending its neck in a gesture instantly recognizable to any dog owner. This movement is further accentuated by the positioning of the dog's ears, which are angled backward. Such a subtle variation intensifies the tension inherent in this hieroglyphic composition, imbuing it with a remarkable sense of dynamism.

Fig. 6. A facsimile image drawn by Jorke Grotenhuis from the original coffin (CT I,80,k, MC105, right side)[102]

Fig. 6 transports us to the Middle Kingdom, presenting an ink inscription on a wooden coffin. The hieroglyphic scriptolect[103] exhibited here is more cursive in style, closely resembling the ink script of the Chinese bamboo texts (see fig. 1 above).[104] In this linear example, the "hunter+dog" hieroglyph, which also functions as a repeater classifier, recalls the instances observed in fig. 3 and 4a–b. However, in this particular inscription (fig. 6), the man and the dog are arranged vertically, one above the other, and calibrated to the same scale. Unlike the former representations where the dog appears smaller, here it is depicted as equal in size to the man. The figure of the man, holding a walking stick, appears to "stand" atop the dog's back in a manner that defies naturalistic depiction. Rather than forming a pictorial scene, this variant adheres more rigorously to the fundamental principles of the writing system, wherein hieroglyphic images remain independent and do not engage in visual interaction. The meaning in this example (fig. 6) is created in a process somewhat similar to the Chinese SS character  presented above. The reader's mind makes the new semantic meaning by combining two semantic components: a dignitary with a stick and a dog.[105] It is important to note, that the Egyptian *nw* hunter was never an actual SS compound. Already in the earliest example, a phonetic element is added ( *nw*). The word in fig. 3 is already an SSP combination.In the later examples, the phonetic representation is strengthened by an additional phonogram—the *nw* vessel. It turned the hunter and his dog into a classifier.

101 The  represents the prestigious, "correct dog" of the Old Kingdom elite society (Goldwasser 2002: 91–110).

102 We are grateful to Jorke Grotenhuis for providing us with this example.

103 For this term, see Winand 2022.

104 For cursive hieroglyphs, see Konrad 2023: 58–61.

105 A full discussion of the diachronic development of the hunter hieroglyph will be presented in the future publication.

The "Walking Pot" 𓇍

Of special interest for comparing Egyptian character formation and Chinese character formation is the compound hieroglyph 𓇍 *inị* "bring, fetch". This *pictorial* combination creates a new, slightly surrealistic image, yet clear and attractive, of a 𓇍 "walking pot". It is built of the compounding of two independent logograms 𓎛 *nw* "pot"[106] and 𓂝 *iw* "to come". The compounded image 𓇍 read *inị*, provides pictorially meaningful information on the concept "bring" = "pot"+"come".[107] Until here, one could suggest that this is a case of an Egyptian *huìyì*. Yet, unlike the Chinese *huìyì*,[108] the alluring 𓇍 "walking pot", carries not only Semantic-Semantic information, but also abundant phonological information. The hieroglyph 𓎛 *nw* is a logogram that carries at once the semantic information "pot" and the *phonetic* information *nw*. As the Egyptian script system presents mostly consonants, when 𓎛 enters the compounded hieroglyph 𓇍 it provides not only an image of the patient but also brings along its *original phonetic meaning*, providing the consonant *n* for *inị*. As such 𓎛 in 𓇍 is a Sp,[109] as phonetic information is also encoded by it alongside the semantic meaning. The 𓂝 "walking legs" logogram may also contribute some phonological information, as its original reading is *iw*. So 𓇍 should be analysed as an SpSp compound and not a *huìyì*. Grammatically, the image presents the basic arguments of the verb—a human, an animated AGENT (walking human legs, schematic representation), and an inanimated prototypical PATIENT/UNDERGOER (*nw* pot, full representation). The walking legs simultaneously indicate the semantic property MOVEMENT. By the Late Period, nearly 3,000 years after 𓇍 earliest attestations, we observe an intriguing written variation of the word. In this instance, the hieroglyphic sign shifts toward a concrete and visually descriptive form 𓀀𓎛, with the agent fully represented and the 𓎛 pot explicitly depicted as the quintessential object being brought by the agent. This deliberate reversion to a non-systematic, idiosyncratic iconic representation underscores the script's enduring interplay of scriptural semiotic rules and pictorial fluidity. The "Return to the Icon" constitutes a significant—perhaps even regressive—development in the historical trajectory of the Egyptian writing system. In contrast, the Chinese script, which exhibited a more linear character from its inception (e.g., Baines & Cao 2024), never reverted to its earlier, more pictorial origins. Instead, it maintained a more systematic and ongoing evolution, resisting the seduction of the image.

106 Gardiner 1957: 531 (W34). This hieroglyph is mostly used as a phonogram, see TSL_1_6571, http://thotsignlist.org/mysign?id=6571, in: *Thot Sign List*, http://thotsignlist.org, edited by Université de Liège and Berlin-Brandenburgische Akademie der Wissenschaften.

107 For the definition of "pictorially meaningful," see Stauder 2020: 882.

108 𓇍 was defined as *huìyì* in Gǒng et al. 2009: 243.

109 Sp=Semantic-phonetic. The capital letter S signals the primary function in this case – Semantic. The secondary function is marked by the small letter p which marks the phonetic information still active in this case.

Credits

Digitized texts: Ancient Egyptian

Thesaurus Linguae Aegyptiae, Peter Dils, with contributions by Altägyptisches Wörterbuch, "Die Lehre des Ptahhotep" (Object ID PG6PVAQFHND67GCROZAIT3AA64), https://thesaurus-linguae-aegyptiae.de/object/PG6PVAQFHND67GCROZAIT3AA64, in: *Thesaurus Linguae Aegyptiae*, Corpus issue 19, Web app version 2.2.0, 11.5.2024, ed. by Tonio Sebastian Richter & Daniel A. Werning on behalf of the Berlin-Brandenburgische Akademie der Wissenschaften and Hans-Werner Fischer-Elfert & Peter Dils on behalf of the Sächsische Akademie der Wissenschaften zu Leipzig (accessed: 12.6.2024). Imported into *iClassifier* by Dmitry Nikolaev. Classifier marking and analysis by Yànrú Xú.

Digitized texts: Ancient Chinese

The Guōdiàn bamboo manuscripts, courtesy of *The Intelligent Retrieval Network Database of Chinese Characters* (East China Normal University, Shànghǎi). Digitized by Liú Zhìjī et al. Imported into *iClassifier* by Dmitry Nikolaev. Classifier marking by Yànrú Xú.

***iClassifier* digital tool**

Conceptualization – Orly Goldwasser; Computational realization, Research coordination – Haleli Harel; Programming – Dmitry Nikolaev; Financing – Orly Goldwasser.
iClassifier project reports. Edited by O. Goldwasser, H. Harel and D. Nikolaev. https://iclassifier.pw/reports (accessed: 7.12.24).

Authors' contributions

Yànrú Xú: Collection, analysis, and discussions of all Chinese characters; collection, analysis, and discussion of all Egyptian examples from *The Maxims of Ptahhotep*.
Orly Goldwasser: Classifier theory, additional examples from Egyptian texts, Appendix B.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors gratefully acknowledge the financial support of the China Scholarship Council (CSC no. 202008280003). The work was supported by ISF grant number 2408/22 "Exploring the Minds of Ancient Egypt and Ancient China". PIs Orly Goldwasser and Zev Handel. The *ArchaeoMind Lab*, https://archaeomind.huji.ac.il/, Institute of Archaeology, The Hebrew University of Jerusalem.

Bibliography

Aitchison, J. 2003. *Words in the Mind: An Introduction to the Mental Lexicon*, 3rd ed. Oxford, Blackwell.

Allan, K. 1977. "Classifiers," *Language* 53: 285–311.

Allon, N. 2007. "Seth is Baal – Evidence from the Egyptian Script", *Ägypten und Levante/Egypt and the Levant* 17: 15–22.

Baines, J. & Cao, D.Z. 2024. "Material, Spatial, and Social Contexts of Early Writing: Egypt and China", *The Ancient World Revisited: Material Dimensions of Written Artefacts*, Studies in Manuscript Culture 37, ed. by M. Betrò, M. Friedrich, C. Michel: 71–127. Berlin, Boston, de Gruyter.

Baxter, W.H. & Sagart, L. 2014. *Old Chinese: A New Reconstruction*. New York, Oxford University Press.

Biber, D., Conard, S., Reppen, R. 1998. *Corpus Linguistics: Investigating Language Structure and Use*. Cambridge, Cambridge University Press.

Bisang, W. 2023. "Word Classes in Classical Chinese." In: *The Oxford Handbook of Word Classes*, ed. by E. van Lier: 590–612. Oxford, Oxford University Press.

Boltz, W.G. 1994. *The Origin and Early Development of the Chinese Writing System*. New Haven, American Oriental Society.

Bottéro F. & Harbsmeier, C. 2008. "The 'Shuowen Jiezi' Dictionary and the Human Sciences in China", *Asia Major*: 249–271.

Chén, Y.S. [陳永生] 2016. "The Prototypical Determinatives in Egyptian and Chinese Writing," *Scripta* 8: 101–126.

Chén, Y.S. [陳永生] 2024. "The Metonymic Determinatives in Egyptian and Chinese Writing," *Journal of Chinese Writing Systems* 8(2): 1–9.

Chén, W.Z. [陳煒湛] 1986. "Shèngzì Biéyì '聖'字別議 (Other Meanings of the Character 'Shèng')," *Yǔwén Jiànshè* 語文建設C1: 122–123.

Cook, S. 2012. *The Bamboo Texts of Guodian: A Study & Complete Translation.* New York, Cornell East Asia Series.

Dai, J., Peng, L. & Chen, X. 2022. *The Cultural Exchange History of Ancient Currency between China and Other Countries*. Newcastle upon Tyne, Cambridge Scholars Publishing.

Demattè, P. 2022. *The Origins of Chinese Writing*. Oxford, Oxford University Press.

Dǒng Z.B. [董作賓] 1933. "Jiǎgǔwén Duàndài Yánjiū Lì 甲骨文断代研究例 (A Case Study on Dating of Oracle-Bone Inscription)." In: Càiyuánpéi Xiānshēng Liùshíwǔsuì Qìngzhù Lùnwénjí 蔡元培先生六十五歲慶祝論文集 (*Essays on the Celebration of Mr. Cai Yuanpei's Sixty-Fifth Birthday*), ed. by Guólì Zhōngyāng Yánjiūyuàn Lìshǐ Yǔyán Yánjiūsuǒ Jíkān Wàibiān 國立中央研究院歷史語言研究所集刊外編: 323–424.

Fischer, H.G. 1977. *The Orientation of Hieroglyphs. Part 1, Reversals*. New York, The Metropolitan Museum of Art.

Fischer, H.G.1977a. "The Evolution of Composite Hieroglyphs in Ancient Egypt." *Metropolitan Museum Journal* 12: 5–19.

Gāo, M. & Tú, B.Q. [高明&涂白奎] 2008. Gǔwénzì Lèibiān 古文字類編 (*Paleography of Ancient Chinese Scripts*). Shànghǎi 上海, Shànghǎi Gǔjí Chūbǎnshè 上海古籍出版社.

Gardiner, A.H. 1957. *Egyptian Grammar: Being an Introduction to the Study of Hieroglyphs*. Oxford, Griffith Institute.

Goldwasser, O. 1995. *From Icon to Metaphor: Studies in the Semiotics of the Hieroglyphic Script*. Göttingen, Orbis Biblicus et Orientalis: Universitätsverlag Freiburg Vandenhoeck & Ruprecht.

Goldwasser, O. 2002. *Prophets, Lovers and Giraffes. Wor(l)d Classification in Ancient Egypt.* Wiesbaden, Harrassowitz.

Goldwasser, O. 2005. "Where is Metaphor? Conceptual Metaphor and Alternative Classification in the Hieroglyphic Script," *Metaphor and Symbol* 20(2): 95–113.

Goldwasser, O. 2006. "A Comparison between Classifier Language and Classifier Script: The Case of Ancient Egyptian." In: *A Festschrift for Hans Jakob Polotsky*, ed. by G. Goldenberg et al: 16–39. Jerusalem, Magnes Press.

Goldwasser, O. 2009. "La force de l'icône – le 'signifié élu'." In: *Image et conception du monde dans les écritures figuratives*, ed.by N. Beaux, B. Pottier, N. Grimal: 336–362. Paris: AIBL-Soleb.

Goldwasser, O. 2016. "From Iconic to Linear – The Egyptian Scribes of Lachish and the Modification of the Early Alphabet in the Late Bronze Age." In: *Alphabets, Texts and Artefacts in the Ancient Near East, Studies Presented to Benjamin Sass*, ed. by I. Finkelstein, C. Robin, T. Römer: 118–161. Paris, Van Dieren.

Goldwasser, O. 2023. "Was There an 'Animal' in Ancient Egypt? Studies in Lexica and Classifier Systems, with a Glimpse Towards Sumer." In: *Seen Not Heard: Composition, Iconicity, and the Classifier Systems of Logosyllabic Scripts,* ed. by I. Zsolnay: 121–158. Chicago, The Oriental Institute.

Goldwasser, O. 2023a. "From Determinatives to Classifiers: Categorisation in the Ancient Egyptian Writing System." In: *Guide to the Writing Systems of Ancient Egypt*, ed. by S. Polis: 192–199. Cairo, Institut Français d'Archéologie Orientale.

Goldwasser, O. 2024. "Classifiers As Priming Devices, or 'Classifiers Tell Us What We Already Know'." In: *Language, Semantics and Cognition: Saying and Conceptualizing the World from Ancient Egypt to Modern Times*, Yale Egyptological Studies 14, ed. by G. Chantrain: 75–108. New Haven, Yale University.

Goldwasser, O. & Grinevald, C. 2012. "What Are Determinatives Good For?" In: *Lexical Semantics in Ancient Egyptian*, ed. by E. Grossman, S. Polis, J. Winand: 17–53. Hamburg, Widmaier.

Goldwasser, O. & Handel, Z. 2024. "Introduction: Graphemic Classifiers in Complex Script Systems," *Journal of Chinese Writing Systems* 8(1): 2–13.

Goldwasser, O. & Soler, S. 2024. "Semantic Classifiers (Determinatives) and Categorization in the Ancient Egyptian Writing System: Rules, List of Classifiers, and Studies by *iClassifier* on the *Story of Sinuhe*," *Journal of Chinese Writing Systems* 8(1): 34–58.

Goleman, D. 2020. *Emotional Intelligence: Why It Can Matter More Than IQ*. Bloomsbury Publishing.

Gǒng, Y.S Yán, H.Y. & Gě, Y.H. [拱玉書&顏海英&葛英會] 2009. Sūměiěr, āijí jí Zhōngguó Gǔwénzì Bǐjiào Yánjiū 蘇美爾、埃及及中國古文字比較研究 (*The Ancient Writing Systems from Sumer, Egypt and China—A Comparative Perspective*). Běijīng 北京, Kēxué Chūbǎnshè 科學出版社.

Grandet, P. 2023. "Hieratic." In: *Guide to the Writing Systems of Ancient Egypt*, ed. by S. Polis: 62–69. Cairo, Institut Français d'Archéologie Orientale.

Grinevald, C. 2024. "The 'Determinatives' of Ancient Egyptian Hieroglyphs are 'Roots Classifiers': How Egyptology and Linguistics Met to Show It." In: *Signs of Life*, ed. by N. Allon: 63–74. Turnhout, Brepols Publishers.

Hagen, F. 2012. *An Ancient Egyptian Literary Text in Context: The Instruction of Ptahhotep*. Leuven, Peeters.

Handel, Z. 1998. "In Defense of *Huìyì*: The Case for the Phonetic-less Character," unpublished manuscript. Downloaded from Academia.edu website. https://washington.academia.edu/ZevHandel (accessed: 20.1.2025)

Handel, Z. 2016. "Does Xǔ Shèn's Huìyì Category Reflect Historical Reality? An Argument for the Existence of Compound Graphs Lacking Phonophorics," *New Horizons in the Study of Chinese Dialectology, Grammar, and Philology: Studies in Honor of Professor Anne Yue*: 581–598. Xianggang, Chinese University Press.

Handel, Z. 2023. "The Cognitive Role of Semantic Classifiers in Modern Chinese Writing as Reflected in Neogram Creation." In: *Seen Not Heard: Composition, Iconicity, and the Classifier Systems of Logosyllabic Scripts*, ed. by I. Zsolnay: 159–192. Chicago, The Oriental Institute.

Harel, H. Goldwasser, O., Nikolaev, D. 2024. "*iClassifier*: A Digital Research Tool for Corpus-based Classifier Networks", *Journal of Chinese Writing Systems* 8(1): 79–101.

Húběishěng Jīngshā Tiělù Kǎogǔduì [湖北省荊沙鐵路考古隊](ed.). 1991. Bāoshān Chǔjiǎn 包山楚簡 (*Chǔ Bamboo Manuscripts Excavated in Baoshan*). Běijīng 北京, Wénwù Chūbǎnshè 文物出版社.

Huáng, D.K. [黃德寬] 2014. Gǔhànzì Fāzhǎn Lùn 古漢字發展論 (*On the Development of Ancient Chinese Scripts*). Běijīng 北京, Zhōnghuá Shūjú 中華書局.

Jīngmén Museum [荊門博物館]. 1997. "Jīngmén Guōdiàn Yīhào Chǔmù 荊門郭店一號楚墓 (Chǔ Tomb No. 1 at Guōdiàn, Jingmen)," *Wénwù* 文物 7: 35–48.

Jīngmén Museum [荊門博物館]. 1998. Guōdiàn Chǔmù Zhújiǎn 郭店楚墓竹簡 (*Chǔ Bamboo Manuscripts Excavated in Guōdiàn*). Běijīng 北京, Wénwù Chūbǎnshè 文物出版社.

Kahl, J. 1994. *Das System der ägyptischen Hieroglyphenschrift in der 0.–3. Dynastie*. Wiesbaden, Harrassowitz.

Kammerzell, F. 1993. "Aristoteles, Derrida und ägyptische Phonologie: Zur systematischen Verschiedenheit von geschriebener und gesprochener Sprache." In: *Sesto congresso internazionale di egittologia*, *Atti*, vol. II, ed. by G.M. Zaccone & T.R. di Nestro: 243–251. Turin, International Association of Egyptologists.

Kammerzell, F. 2015. "Egyptian Verb Classifiers." In: *Proceedings of the Tenth International Congress of Egyptologists, 22–29 May 2008*, *Rhodes,* ed. by P. Kousoulis & N. Lazaridis: 1395–1416. Leuven, Peeters.

Kern, M. 2019. "'Xi Shuai 蟋蟀' ('Cricket') and its Consequences: Issues in Early Chinese Poetry and Textual Studies, *Early China* 42: 39–74.

Konrad, T. 2023. "Cursive hieroglyphs." In: *Guide to the Writing Systems of Ancient Egypt*, ed. by S. Polis: 58–61. Cairo, Institut Français d'Archéologie Orientale.

Lepsius, R. 1849–1859. *Denkmäler aus Aegypten und Aethiopien*. Berlin, Nicolaische Buchhandlung.

Lakoff, G. 1987. *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind*. Chicago, London, The University of Chicago Press.

Lakoff, G. & Johnson, M. 1980. *Metaphors We Live By*. Chicago, University of Chicago Press.

Léi, L.M. [雷黎明] 2021. Zhànguó Chǔjiǎn Zìyì Tōngshì 戰國楚簡字義通釋 (*A Comprehensive Explanation of the Meanings of Characters on Chǔ Bamboo Manuscripts during the Warring States Period*). Shànghǎi 上海, Shànghǎi Gǔjí Chūbǎnshè 上海古籍出版社.

Lǐ, X.D. [李孝定] 1982. Jiǎgǔwénzì Jíshì 甲骨文字集釋 (*Analysis of Characters in Oracle-Bone Inscriptions*). Táiběi 臺北, Zhōngyāng Yánjiùyuàn Lìshǐ Yǔyán Yánjiūsuǒ 中央研究院歷史語言研究所.

Lǐ, X.Q. [李學勤] (ed.). 2012. Zìyuán 字源 (*The Origins of Chinese Characters*). Tiānjīn 天津, Tiānjīn Gǔjí Chūbǎnshè 天津古籍出版社.

Lichtheim, M. (ed.). 1973. *Ancient Egyptian Literature*. Berkeley, Los Angeles, London, University of California Press.

Lincke, E.S. 2011. *Die Prinzipien der Klassifizierung im Altaegyptischen*. Wiesbaden, Harrassowitz.

Lincke, E.S. & Kammerzell, F. 2012. "Egyptian Classifiers at the Interface of Lexical-Semantics and Pragmatics." In: *Lexical Semantics in Ancient Egyptian*, ed. by E. Grossman, S. Polis S, J. Winand: 55–112. Hamburg, Widmaier.

Loprieno, A. 1995. *Ancient Egyptian*. Cambridge, Cambridge University Press.

Lù, Z.D. [陸宗達] 2015. Shuōwén Jiězì Tōnglùn 說文解字通論 (*A General Theory of Shuōwén Jiězì*). Běijīng 北京, Zhōnghuá Shūjú 中華書局.

Meyer, D. 2012. *Philosophy on Bamboo: Text and the Production of Meaning in Early China*. Leiden, Brill.

Myers, J. 2019. *The Grammar of Chinese Characters: Productive Knowledge of Formal Patterns in an Orthographic System*. London, Routledge.

Niè, J.N. [聶潔娜] 2022. "Gǔwénzì Zhōng 'Shèng' 'Tīng' Zìjì Guānxì Lùnxī 古文字中'聖''聽'字際關係論析 (Analysis of the Relation between the Character of 'Sheng' and 'Ting' and the Words They Recorded)," *Yǔyán Yǔ Wénhuà Yánjiū* 語言與文化研究 2: 40–44.

Norman, J. 1988. *Chinese*. New York, Cambridge University Press.

Ottaviano, L., Kelley, K., Cartolano, M., Ferrara, S., 2024. "Metaphors and the Invention of Writing," *Topics in Cognitive Science*: 1–19.

Paquot, M. & Gries, S.T. 2020. *A Practical Handbook of Corpus Linguistics*. Switzerland, Springer Nature.

Payne, A. 2017. "Determination in the Anatolian Hieroglyphic Script of the Empire and Transitional Period," *Altorientalische Forschungen* 44(2): 221–234.

Payne, A. 2024. "Layers of Meaning: Iconicity Patterns in Anatolian Hieroglyphic Inscriptions." In: *Signs of Life*, ed. by N. Allon: 39–49. Turnhout, Brepols Publishers.

Péng, X. & Féng, Y.T. [彭霞&馮玉濤] 2014. "Shuōwén Jiězì Xíngshēngzì Zhī "Duōxíng Duōshēng" Wèntí Fēnxī: Jiānlùn Xíngshēngzì Xíngchéng de Céngcìxìng 《說文解字》形聲字之 '多形多聲'問題分析: 兼論形聲字形成的層次性 (Analysis of Multiple Phonetic and Semantic Elements in SP Compounds in Shuowenjiezi: And Discussion of the Hierarchical Nature of the Formation of SP Compounds)," *Huáqiáo Dàxué Xuébào* 華僑大學學報1: 142–154.

Peyraube, A. 1991. "Some Remarks on the History of Chinese Classifiers," *Santa Barbara Papers in Linguistics* 3(1): 106–126.

Peyraube, A. 2017. "Periodization." In: *Encyclopedia of Chinese Language and Linguistics Online*, ed. by W. Behr, Yueguo Gu, Z. Handel, C.-T. James Huang, J. Myers. Leiden, Brill.

Peust, C. 1999. *Egyptian Phonology: An Introduction to the Phonology of a Dead Language*, Vol. 2. Göttingen, Peust und Gutschmidt.

Polis, S. 2018. "The Functions and Toposyntax of Ancient Egyptian Hieroglyphs. Exploring the Iconicity and Spatiality of Pictorial Graphemes," *Signata. Annales des sémiotiques/Annals of Semiotics* 9: 291–363.

Polis, S. 2023. "The Languages and Writing Systems of Ancient Egypt: Chronological and Terminological Guidelines." In: *Guide to the Writing Systems of Ancient Egypt*, ed. by S. Polis: 10–17. Cairo, Institut Français d'Archéologie Orientale.

Quack, J.F. 2021. "Wisdom In Egypt." In: *The Oxford Handbook of Wisdom and the Bible*, ed. by W. Kynes: 103–120. New York, Oxford University Press.

Qiú, X.G. 2013. Wénzìxué Gàiyào 文字學概要 (*Chinese Writing*). Běijīng 北京, Shāngwù Yìnshūguǎn 商務印書館.

Regulski, I. 2010. *A Palaeographic Study of Early Writing in Egypt*. Leuven, Peeters.

Satzinger, H. & Stefanović, D. 2021. *Egyptian Root Lexicon*. Hamburg, Widmaier.

Schuessler, A. 2009. *Minimal Old Chinese and Later Han Chinese: A Companion to Grammata Serica Recensa*. Honolulu, University of Hawaii Press.

Schuessler, A. 2018. "The Old Chinese Language." In: *Routledge Handbook of Early Chinese History*, ed. by P. Rakita Goldin: 199–216. Routledge, Taylor & Francis Group.

Schwartz, A.C. 2019. "Shang Sacrificial Animals: Material Documents and Images." In: *Animals through Chinese History: Earliest Times to 1911*, ed. by R. Sterckx, M. Siebert, D. Schäfer: 20–45. Cambridge, Cambridge University Press.

Selz, G.J., Grinevald, C., Goldwasser, O. 2017. "The Question of Sumerian Determinatives: Inventory, Classifier Analysis, and Comparison to Egyptian Classifiers." In: *Lingua Aegyptia* 25. *Proceedings of the Fifth International Conference on Egyptian-Coptic Linguistics – Crossroads V, Berlin, 17–20 February 2016*, ed. by D. Werning: 281–344. Hamburg, Widmaier.

Selz, G.J. & Zhāng, B. 2024. "Classification in Sumerian Cuneiform and the Implementation of *iClassifier*," *Journal of Chinese Writing Systems* 8(1): 59–78.

Senft, G. 2000. *Systems of Nominal Classification*. Cambridge, Cambridge University Press.

Shěn J.H. & Cáo J.Y. [沈建華&曹錦炎] 2001. Xīnbiān Jiǎgǔwén Zìxíng Zǒngbiǎo 新編甲骨文字形總表 (*A New Sign List of Oracle-Bone Inscriptions*). Hongkong 香港, Hongkong University Press 香港中文大學出版社.

Shàn, Y.C. [單育辰]. 2020. Jiǎgǔwén Suǒjiàn Dòngwù Yánjiū 甲骨文所見動物研究 (*Animal Studies on Oracle-Bone Inscriptions*). Shànghǎi 上海, Shànghǎi Gǔjí Chūbǎnshè 上海古籍出版社.

Shuìhǔdì Qínmù Zhújiǎn Zhěnglǐ Xiǎozǔ [睡虎地秦墓竹簡整理小組]. 1990. Shuìhǔdì Qínmù Zhújiǎn 睡虎地秦墓竹簡 (*Qín Bamboo Manuscripts Excavated in Shuihudi*). Běijīng 北京, Wénwù Chūbǎnshè 文物出版社.

Soler, S. Forthcoming. *Classifier in Ancient Egyptian Scripts: A Digital Study of The Story of Sinuhe*. PhD dissertation, University of Barcelona.

Stauder, A. 2020. "Egyptian Scripts." In: *The Oxford Handbook of Egyptology*, ed. by I. Shaw & E. Bloxam: 869–893. Oxford, Oxford University Press.

Stauder, A. 2023. "The Origins and Earliest Development of Egyptian Hieroglyphic Writing." In: *Guide to the Writing Systems of Ancient Egypt*, ed. by S. Polis: 34–41. Cairo, Institut Français d'Archéologie Orientale.

Sterckx, R. 2019. "Animal to Edible: The Ritualization of Animals in Early China." In: *Animals through Chinese history: Earliest times to 1911*, ed. by R. Sterckx, M. Siebert, D. Schäfer: 46–63. Cambridge, Cambridge University Press.

Sūn, L.L. 2020. *Flexibility in the Parts-of-Speech System of Classical Chinese*. Berlin, Boston, De Gruyter, Mouton.

Te Velde, H. 1977. *Seth, God of Confusion: A Study of his Role in Egyptian Mythology and Religion.* Leiden, Brill.

Thuault, S. 2020. *La dissemblance graphémique à l'Ancien Empire : Essai de grammatologie cognitive*. Hamburg, Widmaier.

Vernus, P. 1987. "L'ambivalence du signe graphique dans l'écriture hiéroglyphique." In: *L'espace et la lettre. Écritures* III, ed. by A.-M. Christin: 61–65. Paris, Retz.

Wagensonner, K. 2021. "Classifiers between Euphrates and Tigris. On Development and Use of Noun Categorization in Cuneiform Script." In: *Signs—Sounds—Semantics: Nature and Transformation of Writing Systems in the Ancient Near East*, Wiener Offene Orientalisitk 13, ed. by G. Gabriel, K. Overmann, A. Payne: 171–212. Münster, Ugarit Verlag.

Wáng, L. [王力] 2001. Gǔdài Hànyǔ 古代漢語 1–4 (*Old and Middle Chinese* 1–4). Běijīng 北京, Zhōnghuá Shūjú 中華書局.

Wáng, L. [王力] 2013. Hànyǔ Shǐgǎo (Wánglì Quánjí 1) 漢語史稿 (王力全集1) (*Introduction to the History of Chinese*). Běijīng 北京, Zhōnghuá Shūjú 中華書局.

Werning, D.A., 2018. *Digitale Einführung in die hieroglyphisch-ägyptischeSchrift und Sprache*. Humboldt-Universität zu Berlin. http://hdl.handle.net/21.11101/0000-0007-C9C9-4?urlappend=index.php?title=%C2%A78%26oldid=630a, (accessed: 3.1.2025).

Winand, J. 2022. "Dialects in Pre-Coptic Egyptian." *UCLA Encyclopedia of Egyp*tology 1(1): 1–22.

Winand, J. & Stella, A. 2013. *Lexique du Moyen Egyptien*. Liege, Presses Universitaires de Liege.

Xǔ, S. [許慎] 1963. Shuōwén Jiězì 說文解字 (*Explaining Graphs and Analyzing Characters*), modern reprint. Běijīng 北京, Zhōnghuá Shūjú 中華書局.

Xú, Y.R. [徐艷茹] 2024. "Semantic Classifiers in Guōdiàn Bamboo Manuscripts: Reconstructing Categories in the Ancient Chinese Mind," *Journal of Chinese Writing Systems* 8(1): 14–33.

Xú, Y.R. [徐艷茹] Forthcoming. *Comparative Study of Semantic Classifiers in Literary Texts in Ancient Chinese Scripts and Ancient Egyptian Scripts*. PhD dissertation, Hebrew University of Jerusalem.

Žába, Z. 1956. *Les Maximes De Ptahhotep*. Prague, Editions de l'Académie Tchécoslovaque des Sciences.

Zhāng, S.Z. Zhāng, X.C., Hǎo, J.W. [張守中&張小滄&郝建文] 2000. Guōdiàn Chǔjiǎn Wénzìbiān 郭店楚簡文字編 [*Sign List of Chǔ Bamboo Manuscripts Excavated in Guōdiàn*]. Běijīng 北京, Wénwù Chūbǎnshè 文物出版社.

Zhāng, S.F. [張素鳳] 2006. "Shuōwén Jiězì Duōxíng Duōshēngzì Chéngyīn Tànxī 《說文解字》多形多聲字成因探析 (Analysis of the Causes of Multiple Phonetic and Semantic Elements in Shuōwén Jiězì)," *Xúzhōu Shīfàn Dàxué Xuébào* 徐州師範大學學報 32(5): 51–54.

Zhū, S.Y. [朱生玉] 2019. "Jiǎgǔwén 'Láo''Xiàn''Kǎn''Chén' 'Zhú' Xì Děng Zìcí Guānxì Zài Yánjiū 甲骨文"牢""陷""坎""沉""逐"系等字詞關係再研究 (Further Research on the Relationship between the Characters on Oracle-Bone Inscriptions 'Offerings,' 'Trap,' 'Bury,' 'Sink,' 'Chase' and Related Words)," *Studies in Language and Linguistics* 39(2): 87–95.

Abbreviations

CT De Buck, A. 1935–1961. *The Egyptian Coffin Texts*, vol. I–VIII. Chicago, University of Chicago Press.

DZA Digitized Slip Archive http://aaew.bbaw.de/tla/servlet/DzaBrowser (accessed: 01.04.2025).

FCD Faulkner, R. 1962. *A Concise Dictionary of Middle Egyptian*, reprinted 1988. Oxford, Griffith Institute.

Gǔyīn Xiǎojìng 古音小鏡 http://kaom.net/ny_word.php (accessed: 20.1.2025).

H Institute of Archaeology in Chinese Academy of Social Sciences [中國社會科學院考古研究所] (ed.) 1978–1982. Jiǎgǔwén Héjí 甲骨文合集 (*Collection of Oracle-Bone Inscriptions*). Běijīng 北京, Zhōnghuá Shūjú 中華書局. All signs of oracle-bone inscriptions in this article are cited from: Liú, Z., Hóng, Y., Zhāng, X.J. [劉釗 & 洪颺&張新俊] 2009. Xīn Jiǎgǔwén Biān 新甲骨文編 (A New Sign List of Oracle-Bone Inscriptions). Fúzhōu 福州, Fújiàn Rénmín Chūbǎnshè 福建人民出版社.

IAF Kaplony, P. 1963. *Die Inschriften der ägyptischen Frühzeit*, Band I, II, III, Ägyptologische Abhandlungen 8. Wiesbaden, Otto Harrassowitz.

IRNDCC The Intelligent Retrieval Network Database of Chinese Characters: https://wjwx.ecnu.edu.cn/ (accessed: 20.1.2025).

iClassifier Xú, Yànrú. Guōdiàn *iClassifier* reports. https://iclassifier.pw/reports/projectreport/guodianimported (accessed: 7.12.24).

Xú, Yànrú. Ptahhotep *iClassifier* reports. https://iclassifier.pw/reports/projectreport/ptahhotep (accessed: 7.12.24).

J Institute of Archaeology in Chinese Academy of Social Sciences [中國社會科學院考古研究所] (ed.) 2007. Yīnzhōu Jīnwén Jíchéng 殷周金文集成 (修訂增補本) (*Compendium of Yīn and Zhōu Bronze Inscriptions*, Revised Version). Běijīng 北京, Zhōnghuá Shūjú 中華書局. Also see "Digital Archives of Bronze Images and Inscriptions," https://bronze.asdc.sinica.edu.tw/rubbing.php?04589 (accessed: 20.1.2025).

MFCCD Multi-function Chinese Character Database: https://humanum.arts.cuhk.edu.hk//Lexis/lexi-mf/ (accessed: 20.1.2025).

SWXZ Jì, X.S. [季旭昇] 2014. Shuōwén Xīnzhèng 說文新證 (*New Interpretation of Shuowen*). Táiběi 台北: Yìwén Yìnshūguǎn 藝文印書館.

TLA Thesaurus Linguae Aegyptiae: https://thesaurus-linguae-aegyptiae.de/home (accessed: 20.1.2025).

TSL Thot Sign List: https://thotsignlist.org/ (accessed: 20.1.2025).