

Yale Egyptological Studies 14

Language, Semantics, and Cognition
in Ancient Egypt and Beyond

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Language, Semantics, and Cognition in Ancient Egypt and Beyond

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edited by

Gaëlle Chantrain

with contributions by

Letizia Cerqueglini, Gaëlle Chantrain, Julien Cooper, Orly Goldwasser,
Haleli Harel, Joanna Popielska-Grzybowska, Claus Jurman,
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Introduction

This collected volume gathers articles stemming from the papers presented at the international and interdisciplinary conference “Language, semantics and cognition. Saying and conceptualizing the world from Ancient Egypt to modern times,” organized at Yale University (online) on April 16–18, 2021.

In the last forty years, several breakthroughs have been made in applying theoretical frameworks from linguistics to the study and description of the ancient Egyptian language. One significant landmark was the organization of the first Crossroad(s) conferences in 1986 and 1990, which initiated an ever-growing trend. In the same theme, several studies have shown how valuable the insertion of ancient Egyptian data (and from other ancient languages) can be for the research in general linguistics, but also in cognitive and semiotic/semantic studies. However, the current state of research constitutes only a preliminary glance at what could be done to insert Egyptology in a broader scientific discourse. These are thus still very new and highly promising directions to investigate, especially with the recent development of digital corpora (on the Egyptological side: *Thesaurus Linguae Aegyptiae*, *Ramses*), which considerably ease the access to a large amount of data. Such corpora, if they are not flawless, allow for a more precise description of the underlying semantic structures of the Egyptian language as well as for easier and more systematic comparisons between languages.

The present volume offers a glimpse at the current state of research in the different fields intersecting with the study of the Egyptian language (lexical semantics, semantic typology, visual semiotics, metaphor studies, cognitive linguistics, classifiers studies) and addresses some main research questions for the future. It lays the foundations of a methodological road map for more effective interdisciplinary research.

The main research questions that were addressed during the conference and are reflected in the contributions to this volume are the following ones: How can the study of Egyptian and other ancient languages and scripts contribute to linguistic, cognitive and semiotic studies? Reciprocally, how can theoretical frames from cognitive linguistics be used for/adapted to the study of ancient Egyptian and other ancient languages? What are the common points and differences that can be observed in world conceptualization cross-linguistically and cross-culturally? How are they translated at the spoken, written and visual levels?

Can recurring conceptual mappings be identified? Are they culturally specific or do they have a more “universal” value? How far are the relations between conceptual level and linguistic/visual level symmetrical or asymmetrical? How transparent do the linguistic/visual manifestations of conceptual mapping appear cross-culturally? In other words, do we have (all) the keys to understand them? Can they be linked to semantic evolution dynamics (if so, to which extent)? In the case of Egyptian, how much can the two latter points influence classification strategies and their evolution in diachrony?

The main themes addressed during the conference were the following ones: physical world perception and categorization; sensory perception; emotions, personal characteristics and social interactions; cognition-related lexicon and compound expressions.

They were treated from the following approaches: intra-linguistic lexical semantics and semantic evolution; lexical typology; semantic typology; conceptual metaphor theory; classifiers studies; visual semiotics and relation between image and text.

The studies included in this volume explore the link between the cognitive level (What are the conceptual categories in which the real is divided? How are they organized?) and the linguistic and written/visual level (How are these concepts expressed in the language/script?) in the frame of the themes mentioned above. They allow for a comparison of the results obtained from the different perspectives and approaches (cf. *supra*, research lines), and for highlighting the differences and/or similarities that can be found cross-culturally and cross-linguistically, in pre-modern and modern languages. They also address the question of the advantages and limits of an interdisciplinary approach and stress the importance of making data from ancient languages and scripts accessible in order to integrate them in a broader scientific dialogue with other fields, for example, linguistics and semiotics.

LIST OF CONTRIBUTORS TO THE VOLUME

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BRIEF OVERVIEW OF THE CONTRIBUTIONS

The article by L. Cerqueglini addresses the similarity of Ancient Egyptian and ‘Azāzmih Arabic (Negev Arabic) color categories.

G. Chantrain's contribution deals with the role of metaphor in colexification and the relation with the classifier system.

J. Cooper discusses the rules that operated in the classifier system as regards placenames and what these classifiers tell us about how Egyptians ordered their space and environment.

O. Goldwasser's article presents the hypothesis that classifiers in classifier languages are in general priming devices and she focuses on the case of Egyptian graphemic classifiers and the cognitive advantage they present.

H. Harel presents a method to gather systematic data about graphemic classifiers and visualize classifier systems as complex dynamic networks and the research tool *iClassifier* developed at the Hebrew University in Jerusalem.

J. Popielska-Grzybowska's paper presents a study on the conceptualisation of senses in the *Pyramid Texts*, more specifically, hearing and listening.

Cl. Jurman's contribution is concerned with the intersection of writing, reading and cognition in the context of social practice as it is deducible from the ancient Egyptian source material. By drawing on examples and case studies from epigraphic material of the Third Intermediate Period the author aims to highlight the social and contextual embeddedness of writing and reading practices and their cognitive underpinnings.

Sh. Shehada's study aims to examine the innovations of the ancient Egyptian language in the reign of Akhenaten, focusing on an analysis of the verbal system. This article also explores the possibility of these innovations occurring as a result of the existence of a dominant local dialect in Amarna.

Finally, J. Winand's article deals with the way world conception and categorization are actualized in the lexicon, the grammar and/or in the script. The author highlights the interplays of the different levels and their evolutionary dynamics through times.



1

Ancient Egyptian Color Categories in ‘Azāzmih Arabic Language, Culture, and Cognition

Letizia Cerqueglini
Tel Aviv University

The Egyptians [...] create winged simulacra of the sun, which do not all have the same color: one, they imagine it of cerulean color; and the other, of clear color. They define the clear one ‘superior’ and the cerulean one ‘inferior.’

Macrobius, Commentarii in Somnium Scipionis, 19: 4

ABSTRACT

I address here the similarity of Ancient Egyptian and ‘Azāzmih Arabic (Negev Arabic) color categories. Previous studies have focused on Semitic color etymology, symbolism, and basic color term systems (BCTs). I compare linguistic and cognitive categories in ‘Azāzmih Arabic elicited from eight women/men over age 70, in the central/southern Negev. Linguistic data comes from spontaneous speech, direct questions, and stimuli that included: (1) naming tasks on a Munsell chart, (2) culture-specific stimuli to elicit color categories’ association with objects/materials; (3) conversational tasks. Linguistic and cognitive results show the coexistence of hue-oriented and desaturated categories, with striking prominence of red, green, white, and black, which constitute the ‘Azāzmih BCTs, as they do in the Ancient Egyptian color system. In both ancient Egyptian and ‘Azāzmih culture, red and green are symbolically and metaphorically opposites, related to each other through a number of opposite meanings. Oppositions are sometimes paradoxical and contradictory, revealing that in both Ancient Egyptian and ‘Azāzmih Arabic, red and green are distinguished from both the light and the dark sides of the light spectrum. The presence of this typologically extraordinary phenomenon in geographically close languages may indicate some contact in antiquity.

KEYWORDS: *Ancient Egyptian – ‘Azāzmih Arabic – basic color terms – metaphor – language and cognition*

BASIC AND NON-BASIC COLOR TERMS IN 'AZĀZMIH ARABIC AND RELATED DIALECTS

Grounded in the human perception of the light spectrum, linguistic color categories apparently follow some universal rules. Based on a set of stimulus material developed by Lenneberg & Roberts (1956), Berlin & Kay (1969) found a universal path of development of the basic color term system (BCT), i.e., chromatic distinctions are encoded in language according to a universal order. According to Berlin and Kay's theory, BCTs, the linguistic representations of colors, are defined by a series of conditions. A BCT must be: 1) basic, i.e., not included in supraordinate taxa; 2) monolexemic, i.e., constituted by one lexemic unit, e.g., 'red,' not 'olive green,' 'red-brown,' or 'dark blue'; 3) monomorphemic, i.e., constituted by the minimal necessary number of morphemes, i.e., 'red,' not 'reddish'; 4) context-neutral, not class-restricted, i.e., applicable to all kind of objects and substances, e.g., 'green,' not 'blond' or 'bay,' which are only applicable to a restricted set of objects (human hair and horse coat, respectively). Berlin and Kay's worldwide survey revealed that BCT series can extend to a maximum of eleven elements, in seven subsequent stages, developing in the following fixed order: 1. All languages contain terms for black and white; 2. If a language contains three terms, then it contains red; 3. If a language contains four terms, then it contains either green or yellow (but not both); 4. If a language contains five terms, then it contains both green and yellow; 5. If a language contains six terms, then it contains blue; 6. If a language contains seven terms, then it contains brown; 7. If a language contains eight or more terms, then it contains purple, pink, orange, or gray. Berlin and Kay's BCT development order has produced a typological classification of seven stages, based on the number of BCTs in each language's inventory.

According to Borg (1999 & 2007), Negev Bedouin Arabic, a koine of Ḥijāzi Bedouin Arabic tribal varieties, including 'Azāzmih, belongs to the fifth stage, with six distinctive BCTs: *abyaḍ* (white), *azrag* (black), *aḥamar* (red), *axāḍar* (green), *aṣfar* (yellow), and *ašhab* (blue). In fact, these six chromatic terms do not correspond exactly to their English translations. For example, *aḥamar*, 'red,' designates focal red, pink, orange, brown, and many shades of sand and soil, animal coats, and other referents, such as the color of tea. Beyond the realm of colors, *aḥamar* means 'dry' for grass and 'unproductive' for soil. *Azrag* is used instead of the more common Arabic *aswad* for 'black,' as *aswad*, being associated with shame, is avoided due to cultural taboos. But *azrag* does not only designate focal 'black.' It is also used for gray, dark brown, dark blue, dark green, and flashing/iridescent, as well as for polychromatic dark-colored entities. For example, a German Shepherd could be designated as *al-kalb al-azrag*, lit. 'the black dog.' *Axāḍar* has many meanings, including the generic 'dark.' Beyond the sphere of colors in the strict sense, it can be used to mean 'rotten,' 'raw,' 'wet,' 'oily,' 'fresh,' and 'hydrated.' The wide polysemy reflected in the 'Azāzmih BCTs, as well as in all conservative Negev Arabic and other Bedouin varieties, may reflect the retention of an earlier diachronic stage of the Arabic color lexicon, reflected in the language of Pre-Islamic poetry (sixth to seventh century CE). Fischer reconstructed for Pre-Islamic Arabic a five-term basic color system based on desaturated, non-focal categories: 'abyaḍ, luminous, shining; 'aswad, black, dark, obscure; 'aḥmar, red, brown; 'axḍar, dark-colored,

blue, green; and *ʿaṣfar*, all color tonalities from clearest yellow and beige to orange and yellowish dark brown (Fischer 1965: 243, 273, 335, 306, 358). In addition to real referents, the six Negev Bedouin color terms have numerous metaphorical connotations. Metaphorical uses, frequently preserved in proverbs, fixed expressions, and oral literature, often refer to older meanings that have otherwise fallen into disuse, and contribute to our understanding of a more complete outline of color categories and their evolution.

Moreover, like many other languages worldwide, Negev Bedouin varieties, including ‘Azāzmih, have a considerable inventory of culturally salient color terms beyond BCTs. These express chromatic qualities possessed by specific referents, e.g., *anmar* ‘spotted dog,’ *ad’am* ‘black-headed sheep,’ *adḡam* ‘grey donkey,’ *aḡāwa* ‘grey donkey with light-colored belly,’ *akḡal* ‘goat with black rings around the eyes,’ and *aṣbaḡ* ‘black goat with white head.’ Borg (1999) observed that chromatic designations that describe the cultural ecology of Arab civilizations are widespread across all traditional varieties of Arabic that developed in the ancestral Bedouin Arabic cultural milieu, including the Old Arabic types represented in pre-Islamic poetry (Fischer 1965). In the lexical inventory of Old Arabic poetry, one finds in relation to canids: *azraq* ‘flashing-eyed dog,’ *aṭlas* ‘muddy-colored jackal,’ *adlam* ‘black wolf,’ *abraḡ* ‘light-colored jackal,’ *aḡbar* ‘sandy-colored jackal,’ *aḡamm* ‘black-flecked jackal,’ *awraq* ‘light grey-sandy jackal,’ *aṭḡal* ‘blue-grey jackal/wolf,’ *aḡbas* ‘grey jackal,’ and *akḡab* ‘muddy-grey jackal.’ As for earth and soil, Old Arabic has *burṣa* ‘white or distinctly different patches in the sands where nothing grows,’ *abraḡ* ‘an area of rugged ground with stones, sand and earth, mainly white or dust-colored,’ *ʿablā* ‘a rock, especially a white rock, a white hill, a strip of land with white stones,’ and *aṣbaḡ* ‘black, inclining to red’ (Groom 1983). In Levantine Arabic vernaculars, the chromatic lexicon becomes more detailed for farm animals, more salient in the cultural landscape of agricultural populations, e.g., *adham*, ‘black horse’ in Damascus, *abraḡ* ‘white-red cow’ among the Galilean Druze, and *ḡmēme* ‘black goat’ and *kaḡla* ‘goat with red ears and eyes’ in Lebanon (Borg 2007).

Comparing the terms common to different Arabic dialects, such as *abraḡ*, shown above in Old Arabic to refer to canids’ coats and soil and in Galilean Druze to refer to cattle, it is clear that the same words developed to indicate different referents in the different Arabic dialects, depending on the adaptive needs linked to local environments and material cultures. In fact, it is apparent that, beyond color, the ecological chromatic categories may also indicate the type, quality, and species of their referents, as in, for example, the English ‘bay,’ ‘roan,’ and ‘chestnut’ for horses.

Therefore, despite the fact that languages differentiate their basic chromatic terminology according to a universal order of progression, the world of linguistic codification of colors, chromatic qualities, and different reactions of surfaces to light is more complex than the qualities expressed by the basic linguistic categories may ever convey. Furthermore, as mentioned, the semantic extent of BCTs varies greatly across languages. Another aspect of cross-linguistic variation is which shade of a certain color category represents the core or its most prototypical example. In fact, Berlin and Kay’s hypothesis has been criticized by various scholars for emphasizing the influence of the universal aspects of color categorization on the unique basis of BCTs’ development and downplaying the cross-linguistic diversity detected in linguistic color representations (Saunders & van Brakel 1997; Everett

2005). In particular, Lucy (1997) and Levinson (2000) found that the methodology Berlin and Kay adopted in their field survey consisted of a succession of questions structured on the basis of the English color system. The translation of these terms into other languages would therefore not have reflected their own systems and uses, but rather the average basic color system of modern European languages, based on a restricted set of focal colors. These observations prompted Kay & Maffi (1999) to publish an extensive revision of Berlin and Kay's original typology. Moreover, aspects of cross-linguistic diversity in the codification of color categories have been detected in cognitive representations, as has happened in other fields of the representation of experience (Boroditsky 2001). Linguistic diversity has largely revealed language's deterministic effects on color cognition (Roberson et al. 2005).

In this study, focusing on linguistic diversity in the semantic domain of colors is particularly important. Since the linguistic sign is arbitrary (De Saussure 1916) and languages vary in the representation of colors, the similarities between different languages cannot be coincidental (Greenberg 1963). In particular, in the case of languages from different families, such as Negev Arabic and Ancient Egyptian, past contact may have induced similarity.

COLORS IN LANGUAGE, COGNITION, AND CULTURE: AIM AND HYPOTHESIS OF THE PRESENT STUDY

Like other semantic domains, such as space, time, kinship terms, and folk taxonomies, colors undoubtedly represent a universally shared experience based on the physiology of the human eye, yet vary in their linguistic and cognitive representations as well as in their metaphorical and symbolic meanings across human cultures. The idea that thought is shaped by language is most commonly associated with the writings of B. L. Whorf (1956). According to Whorf, the distinctions and categories of each language prime in its speakers a way of perceiving and analyzing the world and acting in it (Boroditsky 2000). The strong deterministic view that thought and action are determined by language has long been abandoned in the field. "However, definitively answering less deterministic versions of the 'does language shape thought' question has proven to be a very difficult task" (Boroditsky 2006). Some studies have claimed to find evidence that language influences thought (Boroditsky 2001; Bowermann 1996; Davidoff et al. 1999; Dehaene et al. 1999; Imai & Gentner 1997; Levinson 1996; Lucy 1992). Others report evidence to the contrary (Heider 1972; Malt et al. 1999; Li & Gleitman 2002). In fact, it seems that the constraining force of linguistic categories on cognitive structures is both language-dependent and domain-dependent. Some domains that are more grounded in perception and physiologically determined than others, such as colors, may be less language-dependent.

The aim of this study was to experimentally investigate linguistic and cognitive BCT categories in 'Azāzmih Arabic and compare the experimental results to some cultural meanings attributed to colors in 'Azāzmih Arabic and often also in other Negev Arabic and related Bedouin dialects. Special focus was devoted to the red and green categories. The integration of linguistic, cognitive, and cultural data obtained from both experiments and corpus screening allows us to draw a rather stable and complete outline of the 'Azāzmih chromatic categories and color meanings, supported by comparisons to related tradition-

al Bedouin varieties. Striking similarities are apparent between the ‘Azāzmih chromatic categories and the complex Ancient Egyptian color system, especially in relation to the Middle Egyptian sources. Therefore, I hypothesize that the Bedouin varieties present in the Arabian Peninsula in the period corresponding to Middle and early New Kingdom were influenced by the Egyptian culture. Indeed, according to the archeological findings, the Egyptian penetration into Arabia seems to have taken place via land routes during the second and first millennia BCE (Sperveslage & Eichmann 2011). However, as proposed by Borg (2021), the contact between Ancient Egyptian and nomadic Arabic dialects may have occurred in Egypt as early as the Old Kingdom. Traces of contact-induced cultural transfer are preserved quite clearly in the ‘Azāzmih Arabic chromatic categories, experimentally tested here, yet clues are also found in other Bedouin dialects, whose speakers once dwelled in the Arabian Peninsula, which they left after the Islamic expansion.

This study required a preliminary survey of the research conducted so far on the lexicon of colors and its use in ancient Egypt and across Arabic varieties. The studies cited here belong to diverse disciplinary approaches. Nonetheless, a comparison of linguistic, cognitive, and cultural data on basic color categories has not previously been attempted between any Arabic type and Ancient Egyptian or within any Arabic variety.

Studies on Egyptian color categories have focused on magic and religious symbolism (DuQuesne 1996; Boddy-Evans 2019), decorative motifs (Groff 1893; Quirke 2001), and BCTs (Baines 1985; Takács 1999; Schenkel 2007; Warburton 2007). Studies on Arabic color categories have focused on color terms’ etymology and semantic extension (Bulakh 2007; Fischer 1965; Hess 1920), symbolism (Al-Jehani 1990; Roth 1986; Taine-Cheikh 1989), and basic color terms’ typology (Borg 1999; 2007).

METHODOLOGY

I considered linguistic and cognitive color categories in ‘Azāzmih Arabic elicited from speakers of the traditional language (the variety spoken by elders over age 70) in a number of encampments scattered over the central/southern Negev, all south of Beer-Sheva (Shawarbah 2012). Experiments were conducted with 16 informants, eight women and eight men, over age 70. Due to their ancestral social customs and attachment to the traditional way of life, the ‘Azāzmih confederation is thought of as the most linguistically conservative in the Negev (Borg 1999; 2007; Henkin 2010). Unwilling to assimilate into Western culture, expressed in the institutions of the State of Israel, and intent on continuing to occupy tribal lands to the extent possible, the ‘Azāzmih have renounced the comforts of modernity, continuing to live in zinc shacks and prefabricated houses, often without electricity and running water. They do not register their children with the Israeli Ministry of the Interior or send them to school, and encourage them to marry very young, in accordance with their custom.

In fact, different Negev tribes today represent the continuation of diverse linguistic varieties that have merged into a local koineized form, first described as Negev Arabic by Blanc (1970). Dialectal differences are extensively described in Shawarbah’s grammars of Tiyāha (2007) and ‘Azāzmih (2012). As for color categories, in the 1980s, Borg selected

speakers from the ‘Azāzmih confederation and conducted extensive fieldwork based on spontaneous conversations. The current study enhances the knowledge of ‘Azāzmih colors with linguistic and cognitive experiments. Borg’s data on ‘Azāzmih elders in the 1980s constitute a fundamental touchstone for observing the evolution and stability of the system.

Once I began my survey, I could resort to Berlin and Kay’s methodology (1969) for the World Color Survey (WCS), which was based on naming tasks on the Munsell chart. Majid and Levinson (2007) used the Munsell chart, showing that the informants separated color chips in order to elicit color names and foci and trace chromatic boundaries. Nonetheless, this methodology has several pitfalls. First, not all natural colors are mapped in the Munsell chart; it summarizes only focal hues, according to a Western conceptualization of colors used in industry (Saunders 2000; Lucy 1997). Second, showing the entire map or sequences of contiguous colors triggers unnatural distinctions (see MacLaury 1995 on ‘Vantage Theory’). Third, the task of ‘labeling’ cannot produce adequate knowledge of the language system. Moreover, it is necessary to check which designations are considered color in every given language, as color is not a semantic primitive (Wierzbicka 2006). Neurophysiology shows greater salience for BCTs, yet does not account for the separation of warm and cool colors, overridden in language with a yellow/green/blue color term (Pitchford & Mullen 2006). In his study on Yéli Dnye, Levinson (2000) points out that BCTs emerge through physical objects and words used to signify simultaneous properties such as lightness. Thus, these terms do not cohere as a unique, separable semantic domain denoting hue. Levinson proved the coexistence of hue categories and brightness categories and the semantic contiguity between them. Over time, though, and through processes of semantic change, the hue domain can emerge, as it does in most contemporary European languages. Kay and Maffi dubbed this perspective the Emergence Hypothesis (Kay & Maffi 1999).

I devised a series of comparable linguistic and cognitive stimuli, accounting for different kinds of material and surface effects connected with chromatic experiences. Linguistic data come from spontaneous speech (about animal coats/embroidery/textures/colors of earth/vegetation/human coloring), direct questions (*ayy lawn x?* ‘which color is x?’), and stimuli including:

- 1a. Naming tasks on a Munsell chart ([MC], Majid 2008; Majid & Levinson 2007) (I first submitted color chips randomly, then in MC order);
- 2a. Culture-specific stimuli to elicit colors’ associations with objects/materials (e.g., same color on object and on paper, same color on shiny and matte paper, on a flower and on an object, on paper and on an animal coat);
- 3a. Conversational tasks in which informants A and B sat side by side separated by a screen, facing in the same direction, and Informant A received a configuration of color chips and had to explain to Informant B, equipped with the same chips in random order, how to arrange the chips to replicate the stimulus configuration.

In individual cognitive tasks each informant:

- 1b. observed a sign’s position on the MC. The stimulus was removed, and two minutes later the informant had to place the sign in the same position on a new MC;

- 2b. drew the boundaries between colors on the MC and had to point to the chip that exemplified the color category in the best way (prototype);
- 3b. matched a stimulus chip shown on a computer screen with a response. The response was given ten seconds later, after a rapid distracting task was performed, with two alternative response chips shown simultaneously on the computer screen, one belonging to the same category as in the informant’s language and one belonging to a different linguistic category, yet close to the stimulus. This task was adapted from Winawer et al. (2007).

COLORS IN ‘AZĀZMIH LANGUAGE

The linguistic results show the striking coexistence, within the same set of BCT lexical items, of usages correlated to hue categories and to saturated categories, and to desaturated categories, including brightness/lightness effects (Biggam 2007). In general, as Experiment 2a clearly showed, hue categories are associated, especially among elderly women, with modern objects such as embroidery thread and cloth and contemporary, artificially dyed fabrics and textures. Among men, hue-oriented categories also develop in association with modern referents, especially in the names of car colors, paints and varnishes, and sports teams’ colors, often borrowed from Modern Standard Arabic or translated from Modern Hebrew. Desaturated meanings apply to natural elements, such as earth and soil; coats and plumages of wild and domestic animals; colors of plants and flowers; natural materials such as flour, cotton, seeds, and wool; and qualities of human coloring, e.g., of skin, hair, and eyes. Desaturated meanings resemble the Old Arabic meanings of BCTs, and seem to represent the residue of a material culture of color that existed prior to industrial coloring techniques.

Nonetheless, hue-oriented categories also developed within pre-modern color conceptions, especially when different colors, included in the same desaturated category, had to be distinguished in further detail. In figure 1, for example, I asked a woman informant to talk in detail about the techniques she applied to obtain the complex design of a carpet she had made by hand for her daughter’s marriage. Most of the colors in the carpet were part of the same desaturated *aḥāmar* ‘red’ category, with the exception of some green, blue, and white decorative stripes. ‘Red’ carpets are customarily made on the occasion of a marriage, to be revealed in the newly established households as a sign of prosperity and fertility, marking the fertile period of the couple that begins on their wedding day. Once requested to provide details, the informant resorted to various lexical items meaning ‘yellow,’ ‘orange,’ ‘brown,’ ‘pink,’ and ‘purple,’ and, of course, defining which one was for her ‘red’ proper, the center of the category, as she wanted to provide as many details as possible about the embroidery patterns.

MacLaury observed the progression of the development of different chromatic categories dictated by the need to distinguish different shades within the same lexical macro-category and introduced it in his ‘Vantage Theory’ (1995). According to this theory, languages progressively differentiate color terms and categories on the basis of descriptive needs encountered in specific material contexts. In contact with the modern culture of color,



Fig. 1.1 Describing the ‘red carpet.’

for example, the need to distinguish ever more precise and specific colors increases. In reality, according to Borg (2007), the Bedouins would have developed the hue-oriented categories from the previous desaturated categories in antiquity, probably due to their contact with sedentary civilizations that used dyeing and pigment techniques in a massive and advanced way.

As Levinson demonstrated for the language of color in Yéli Dnye (2000), hue and desaturated categories may coexist. This seems to be true for the ‘Azāzmih system as well. In particular, ‘Azāzmih uses the same BCTs to express both hue-oriented and desaturated meanings.

Aḥāmar, as a hue, stretches on the Munsell chart from brown/dark red to light red, including some saturated pink and orange areas. Used as a desaturated category, *aḥāmar* designates natural colors from pale yellow to light brown, also meaning ‘dry’ (for plants), and light brown for animals, as in *ál-bagar ḥamrá*, ‘the cows are light brown.’ Within the desaturated uses, brightness/lightness effects such as twinkling, flashing, glinting, and iridescence are also associated with *aḥāmar*, which also means colored/polychromatic/dark as opposed to white/clear. For example, within a group of pale-yellow dogs, a black one is defined as *aḥāmar*. This use of *aḥāmar* is thus defined by a contrast.

Undoubtedly distinguished later than ‘red,’ as Berlin and Kay claim, on the Munsell chart, *axáḍar*, ‘green’ as a hue covers only the average European focal green and a few nuances around it, more toward dark and light greens. As a desaturated category, *axáḍar* designates natural colors from dark green to pale yellow and quasi-white, meaning ‘fresh/young’ (for plants, or for the blood of a recent wound), unbaked bread, uncooked meat, and ‘pale’ for facial complexion, meaning sick. *Axáḍar* means also ‘dark’ for men’s facial skin, green-blue (GRUE), with the sea as a referent, and can also mean ‘wet’ for clothes and ‘rotten’ for blood (menstrual blood) and food.

As a hue, *ašhab*, translatable as ‘blue,’ stretches from the average European focal blue to light blue (approximatively from 24 to 32/from E to I, in the Munsell chart). Light blue shades of clothing are described by *abyaḍ*, ‘white’ (some light shades of women’s veils, for example, are called ‘white,’ while they are actually light blue). Used as a desaturated category, *ašhab* designates natural colors from both light and dark grey to desaturated blue, light beige, and light pink. The prototypical cultural referent for this category is the color of fresh-cut, untreated wool. The actual meaning of desaturated *ašhab* could be something like ‘colorless,’ ‘faded,’ or ‘indefinite in color.’ *Abyaḍ*, translated as ‘white’ as a hue-oriented category, and *azrag*, translated as ‘black’ as a hue-oriented category, are also used as desaturated categories to mean bright/luminous, shining/light-colored, and dark-colored (in any shade), respectively.

The situation of yellow is still quite unstable, as far as I could observe. Depending on the material, it is expressed either by *aḥamar* (sand, ripe fruits) or by *axáḍar* (tender leaves). I heard it used distinctively as *ašfar* only for sunflowers and modern yellow shades, i.e., for a very restricted number of referents.

COLORS IN ‘AZĀZMIH COGNITION

In the cognitive results, hue-oriented and desaturated systems apparently coexist, strongly connected to stimulus type and surface quality. Nonetheless, I observed a strong bias toward the interpretation of the categories as desaturated rather than hue-oriented. As is the case in other semantic and cognitive domains in Negev Arabic affine dialects (Cerqueglini 2019), ‘Azāzmih cognition seems to be somehow more conservative than the language, having developed less sensitivity to hue-oriented categories. This bias is revealed by the different, broader category boundaries that exist in cognition compared to those observed in language.

The area that corresponds to the *aḥamar* category on the Munsell chart extends from light, desaturated, pale red shades to dark brown, including orange, parts of the warmer and more saturated yellow areas, and the entire violet spectrum, reaching the boundary with what we define as the blue area, i.e., covering approximately rows C to I and columns 1 to 9 and 32 to 40 of the Munsell chart.

The *axáḍar* category includes light, pale, and deep dark green, green/brown, dark green, and dark blue shades, light blue and turquoise, and the remaining parts of the yellow area uncovered by the red. The cognitive extension of the ‘green’ area to the largest part of the blue spectrum (from row C to I, from column 19 to 25 in the Munsell chart) attests to the cognitive permanence of the GRUE category, a stage of color evolution in which blue and green are not distinguished from each other.

The focal average European blue and grey/light brownish/yellowish desaturated (greyish) shades are attributed to the *ašhab* category. Beyond their focal points, black and white sometimes overlap with both red and green in their darkest and lightest shades, respectively.

Due to the impressive extension of red and green in cognition and the linguistic interplay of their hue-oriented and brightness-based uses, the main question is from what red and

green are differentiated. Indeed, it is usually assumed that red is differentiated from the light spectrum and green from the dark one (Borg 2007), but the ‘Azāzmih experimental data shows that the opposite is also possible. Cultural meanings seem to confirm the unclear origins of both the red and green categories.

COLOR OPPOSITION IN ‘AZĀZMIH AND ANCIENT EGYPTIAN CULTURE

According to Schenkel (2007), the BCTs in Ancient Egyptian are *dšr/tšr* ‘red,’ *kmm* ‘black,’ *ḥd* ‘white,’ and *w3d* ‘green.’ Baines (1985) and Boddy-Evans (2019) list a number of secondary color words used to designate specific materials and tints. Various scholars (Baines 1985; Quirke 2001; Schenkel 2007; Takács 1999; Warburton 2007) have mentioned the interplay of different meanings, hue-oriented and desaturated, for the Ancient Egyptian BCTs.

As shown above, white, black, red, and green play dominant roles in the partition of the color spectrum in both Ancient Egyptian and ‘Azāzmih Arabic. Based on the predominance of these four categories, both these languages can be placed at the third level in the Berlin and Kay developmental typology, even though, as Borg (1999) noted, in ‘Azāzmih yellow and blue are developing over time as autonomous, basic categories, actually more in linguistic than in cognitive performances. Red, green, black, and white are certainly the most prominent categories in ‘Azāzmih cultural imagery and semiotics. The same chromatic categories are important in the ancient Egyptian culture as well. But much more significantly than this, as I will now demonstrate, in both these cultures the four categories are used metaphorically and symbolically in a complex intertwinement of oppositions. The network of symbolic oppositions between red and green, to which I attend specifically here, has paradoxical implications. Surely, both green and red can have positive and negative connotations, as happens in other cultures. For example, in Italian, one can use ‘green’ to convey both the meaning of health (*essere vivo e verde/vegeto*, lit. ‘to be living and green/flourishing,’ i.e., ‘to be alive and well’) and of envy (*essere verde d’invidia*, ‘to be green with envy’). But in the case of Ancient Egyptian and ‘Azāzmih Arabic, the symbolic oppositions reveal a dual nature, dark and clear, for both categories. This is not a widespread phenomenon cross-linguistically and its presence in these two cultures may be explained by some contact that took place between them in the prehistory of Arabic, as Borg (2019 & 2021) recently suggested on the basis of the presence of vernacular Arabic linguistic materials, mainly of the Bedouin type, in Old Egyptian texts.

RED IN THE LIGHT SPECTRUM VS. GREEN IN THE DARK SPECTRUM

ETHNIC AND SOCIAL GROUPS

An interesting parallel between the Ancient Egyptian and Bedouin Arabic use of colors is the expression of social and ethnic designations through color oppositions. Oppositions in terms of ethnic provenance are not related to actual skin colors, but rather based on the opposition dark vs. clear. As Henkin (2010) reported, among the Negev Bedouin, *ḥumrān*, ‘the red ones,’ is used to indicate the opposite of *sumrān*, ‘the light brown ones.’ In fact, as

mentioned above, *aḥamar*, from which *ḥumrān* seems to derive, means red, dark red, and brown. In this context, however, *aḥamar* represents the clear side and *asmar*, from which *sumrān* derives, represent the darker side of the opposition. *Iswid* and *azrag* ‘black’ are never used to designate groups. African former slaves are called *al-‘bīd* ‘the slaves,’ never *az-zurq* ‘the black/dark ones.’ Thus, among the Negev Bedouin, in the opposition *aḥamar* vs. *asmar*, the former connotes a light color and the latter a dark one. In other traditional Bedouin cultures, such as that of the Ḥassānīya Arabic-speakers of Mauritania, the dualistic opposition between Arabs and non-Arabs is indicated by white vs. black, *byād el-eyd* ‘the ones with the white hand palm,’ *byād lə-kra* ‘the ones with the white foot sole,’ *bīdān* ‘les blancs [...] opposé à nègres *al-sūdān*’ (Taine-Cheikh 1989).

RED FOR LIFE AND GREEN FOR DEATH

The bright and positive meaning of ‘red’ is also opposed to ‘green’ in Negev Arabic. Here ‘red,’ distinguished from the bright part of the spectrum, signifies fertility and life, while green, differentiated from the dark section of the spectrum, means infertility, rot, and death. This opposition is connected, according to Borg (1999), to the contrast between warm and cold colors. This distinction is expressed in the decorations embroidered on women’s dresses (*ṭiyāb*), where red, pink, orange, and purple are symbols of the status of a married woman in her fertile years, while green and blue indicate her infertile years, before and after reproductive age. (*A*)*xāḍar* expresses meanings of rot and corruption in common expressions such as *ad-damm al-axāḍar*, lit. ‘the green blood’, i.e., ‘the menstrual blood,’ or *al-ākil xāḍar*, ‘the food is rotten.’

In Ancient Egyptian as well, red was conceptually generated from the bright side of the light spectrum, as shown by examples such as this: ‘his body is red like the color of gold’ (Edfou II, 207, 8 in Schenkel 2007). Red was considered a color of life and protection, derived from the color of blood and the life-supporting power of fire. It was therefore commonly used for protective amulets (Boddy-Evans 2019). In contrast, green was the color of Osiris (‘the black one’ or ‘the green one’), the resurrected god of the dead, and was considered the color of the underworld, where the sun was said to regenerate every night. Black and green were often used on statues and coffins to invoke the process of regeneration ascribed to Osiris (Boddy-Evans 2019).

In this context, the account of nineteenth-century diplomat Sir William Groff (1893) seems quite suggestive:

“[...] during the twelve hours of the night, the sun ‘was a disc of *mfkt*.’ The mineral denoted by *mfk* was green in color; then the sun, from its arrival at the western horizon of the sky, until its rising, was a green sun [...]. The nocturnal sun being supposed to be of a greenish or green color, consequently this color was frequently used to paint representations of Osiris, hence ‘the green Osiris’ [...]. The color of the setting sun, or that which it was supposed to have during the night, was employed to paint other funerary deities; Sokar, the dead form of Ptah, is a mummy whose uncovered face and hands have a green or blue hue

[...]. While the color green is associated with death, the color red seems to be associated with life: Osiris, the vanished Sun, is reborn in Horus, the rising Sun.”

RED FOR DEATH AND GREEN FOR LIFE

The ideas of ‘rot’ and ‘cold’ evoked by ‘green’ in ‘Azāzmih Arabic, distinguished from the dark part of the spectrum, also recall the concepts of humidity and the presence of water and freshness. In this sense, *axáḍar* can be translated in different contexts as ‘wet,’ ‘fresh,’ ‘raw,’ and ‘young’/‘hydrated’ for skin: *wijhy xáḍar... lēš? ana sta‘mil b-zīt zaytūn kull yawm*, ‘the skin of my face is hydrated, why? Because I use (put) olive oil every day’; *al-xubs xáḍar*, ‘the bread is raw’; *malābis xadrā*, ‘wet clothes.’ Also in relation to this semantic area, *aḥámar* assumes opposite meanings, like ‘dry,’ becoming the symbol of drought and death: *al-‘išbih ḥamrā*, ‘the grass is dry,’ *as-sinih al-mir‘iy iḥmarr*, ‘this year the pasture field became red (dry).’

In Ancient Egyptian, as in ‘Azāzmih Arabic, *dšr/šr*, ‘red,’ could indicate the color of dry desert land (*šrt*, ‘desert’), chaos and disorder, the opposite of fertile, cultivated, inhabited, black land (*kmt*). Boddy-Evans notes:

“The hieroglyph for ‘red’ is the hermit ibis, that lives in dry areas. Red was also the color of destructive fire, fury and [...] danger. Through its relation to the desert, red became the color of the god Seth, the traditional god of chaos, and was associated with death. The desert was also regarded as the entrance to the underworld where the sun disappeared each night. In terms of death, it was the opposite of green and black.” (Boddy-Evans 2019)

In contrast, green alternated with black as a symbol of regeneration, differentiated, in this case, from the dark part of the spectrum. According to Boddy-Evans (2019), “Green and black represented different aspects of the process of regeneration. *Kmm* was the color of the life-giving silt left by the Nile inundation, which gave rise to the Ancient Egyptian name for the country: *kmt* – the black land. Black symbolized fertility, new life and resurrection as seen through the yearly agricultural cycle.”

RED IN THE DARK SPECTRUM VS. GREEN IN THE LIGHT SPECTRUM

Interestingly, in Egyptian paintings, *ḥnt* ‘yellow’ is used to represent the color of women’s skin, while red ochre is used for men. Female slaves are also yellow, while male slaves are dark brown. *Ḥnt* was also used to depict the skin color of gods, Libyans, Bedouin, Syrians, and Hittites. *Ḥnt* is the color of the sun and, along with gold, represented perfection. White, gold, and yellow were interchangeable (Boddy-Evans 2019). For example, honey was said to be white (Schenkel 2007). Dark brown represented the skin color of people from the south—Nubians and Kushites (Boddy-Evans 2019). In ancient Egyptian iconography, yellow and white represented the clear side of the dualistic social/ethnic classifications, while red and brown represented the dark side. Indeed, in ancient Egypt, red complemented white, as in the symbolism of the double crown (Boddy-Evans 2019). Thus, as a complement for ‘white,’ ‘red’ derived from the dark part of the light spectrum.

In Bedouin culture, ‘red’ is nevertheless used as the opposite of ‘white’ to differentiate between opposite groups of animals, as in these examples from Ḥassāniya: *l-bəḥšise l-beyda/l-ḥamra* ‘white/red neck,’ *šəkwe beyda/ ḥamra* ‘white/red goatskin,’ and *kesb ebyaḍ/aḥmar* ‘white/red herd.’ Taine-Cheikh aptly explains: “Derrière la paire élémentaire *ebyaḍ/ekḥal* (local term for ‘black’) apparaît donc une opposition secondaire *ebyaḍ/aḥmar*...” (1989: 99). The tests in this study demonstrated the derivation of *aḥamar* from the dark part of the spectrum in ‘Azāzmih. Its meaning is ‘colored,’ ‘dark,’ as contextually opposed to a clear color, as in *al-ḥimār al-aḥamar* ‘a-janb al-abyaḍ’ ‘the dark donkey is beside the white one,’ phrased in this way to mark the contrast. In some rare cases, in ‘Azāzmih, the bright meaning of *axáḍar* can designate ‘pale’ and be used to refer to the face and indicate a symptom of disease.

Interestingly, in Ancient Egyptian as well, red can be distinguished from the dark part of the light spectrum, as shown by these examples: ‘he is red (brown?) (*wnn ft .šr[.w]*), (but) not (entirely?) black (*nkmf*)’ (Edfou II, 208, 4 in Schenkel 2007); ‘his color is red (brown?) (*wn ft .šr[.w]*), and he is very black (*wn fkm[.w]nxt*)’ (Edfou II, 207, 12–13 in Schenkel 2007). As a symbol of chaos, red was indeed considered the opposite of the color white. In particular, ‘black’ and ‘red’ were used interchangeably for ‘colored,’ as in the case of the god Anubis, ‘the red dog,’ and dogs in general. Otherwise, black and blue were used for ‘dark.’ Remarkably, the black dog, *al-kalb al-aḥamar* (lit. ‘the red dog’), is still a central character in Negev Bedouin folklore, and the fur of black dogs is used to perform magic rituals.

Opposite to the dark sense of red, and distinguished from the clear part of the spectrum, in Ancient Egyptian “[g]reen was the color of fresh growth, vegetation [green-yellow] [...]. The hieroglyph for green is a papyrus stem and frond. [...] It also meant to be fresh and to prosper.” (Boddy-Evans 2019). As Schenkel (2007) reports, occasionally the sky and the sea were named ‘green.’ The sea was called ‘the great green.’

To sum up, Ancient Egyptian red and green categories both exhibit a dual nature (light and dark) that generates an exceptional interplay of opposites and overlaps. It is interesting to note that in the *Pyramid Texts*, the ‘red crown’ *dšrt* is occasionally called the ‘green crown’ *w3dt*, with both names accompanied by the same ‘red crown’ classifier (Kosack 2012). Consistently, amulets representing the red crown were often made of green stone (MET 2016.9.37). This evidence seems to confirm that when opposed to ‘white,’ green and red worked as manifestations of the same dark category.

EGYPTIAN BLUE AND GREY AND ‘AZĀZMIH AŠHAB

Sir William Groff (1893) offers a fascinating comment on the use of blue in Egyptian paintings:

“The Egyptians substituted blue for gray almost everywhere. For small objects gray is hardly ever encountered, and even large gray animals are painted blue rather than gray [...] geese and herons are blue; dogs of all colors except gray, sometimes even blue; mice and bats, reddish and even the elephant is adorned with a light red. [...] Among the variegated hieroglyphs, the gray color is never represented.”

This passage indicates that in Egyptian paintings, blue and gray, differentiated from the dark side of the light spectrum at rather late stages of Berlin and Kay's progression, appear undistinguished. They are similarly undistinguished in the system of linguistic categories, where they do not represent BCTs. In 'Azāzmih Arabic, as in other Negev Bedouin varieties, it is exactly *ašhab*, the color of untreated wool, that assumes the focal meaning of 'blue' once *azrag* has become 'black' for reasons connected with cultural taboos.

CONCLUSIONS

On the basis of only the universal aspects of BCT development, it could be said that 'Azāzmih and Ancient Egyptian color systems are typologically similar by pure chance. But the wide extension of both the red and green categories, retained in the bedrock of 'Azāzmih cognition, reflects a more ancient stage than the one represented today by the language. At this stage, a semantic and cognitive convergence with Ancient Egyptian probably took place. Beyond typology, the symbolism and metaphors enshrined in 'Azāzmih folk tales, proverbs, and traditional poetry and narrative attest to a large number of parallels between the two languages. Striking semantic parallelisms are found in the ambiguity of both the red and the green categories, opposed by paradoxically contradictory meanings; at times red means life, while green means death, while in other cases red means death, and green life. Color polysemy exists in all languages, but in this case, red and green are stably treated as opposites, in all polar oppositions, and are quasi-substitutes for black and white in both cultures. Furthermore, as I have shown in this paper, semantic ambiguity and paradox are not random, but rather result from the distinction of both red and green from both the bright and the dark sides of the light spectrum in both cultures under examination. This phenomenon is not cross-linguistically widespread and typologically trivial, and may be explained by significant cultural contact that occurred in antiquity along the shores of the Red Sea. Finally, this contribution invites the scholars in the field to conduct further comparisons of color systems (e.g., Akkadian, Canaanite, Ugaritic), both within and beyond the linguistic and cultural space of the ancient Near East.

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2

Metaphor-Induced Lexical Semantic Evolution and Classification Strategies in Ancient Egyptian

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ABSTRACT

Figurative language is a constant element in the expression of abstract concepts across cultures and languages and Ancient Egyptian makes of course no exception. However, figurative language is notoriously difficult to study for dead languages because the lack of living native speakers usually means that we have to rely on modern interpretation of ancient texts, without having direct access to the ideas and perception of native users. In some cases, though, the language and/or the writing system can help circumventing the problem. This is the case in Egyptian and its classifier system. This study aims at (1) providing an overview of the classifier system in Ancient Egyptian; (2) showing the dynamics between classification strategies and metaphor-induced colexification. The conceptual metaphor theory is used as theoretical framework to analyze the data.

KEYWORDS: ancient Egyptian – conceptual metaphor – colexification – graphemic classifiers

INTRODUCTION

Figurative language is a constant element in the expression of abstract concepts across cultures and languages (Sweetser 1990; Traugott & Dasher 2001: 95); Ancient Egyptian makes of course no exception to that (Di Biase-Dyson 2018; Steinbach-Eicke 2019). However, figurative language is notoriously difficult to study for dead languages because the lack of living native speakers usually means that we have to rely on modern interpretation of ancient texts, without having direct access to the ideas and perception of native users. In some cases, though, the language and/or the writing system can help circumventing the problem. This is the case in Egyptian, thanks to its classifier system, which consists of

graphemic elements “placed after the vowelless root in the Egyptian script, functioning as reading aids but carrying no additional phonetic value” (Goldwasser 2006a). They thus apply to the *written language only*.

This study aims at (1) providing an overview of the classifier system in Ancient Egyptian; (2) showing the dynamics between classification strategies and metaphor-induced *colexification* (François 2008: 171), in other words, “the linking of two senses by a single lexeme in synchrony (*strict* colexification) or in diachrony (*loose* colexification).” The conceptual metaphor theory (Lakoff & Johnson 2003 [1980]; Kövecses 2000a; 2005; 2010) is used as theoretical frame to analyze the data.

Following a brief introduction to the corpus, this article first presents the basic principles of hieroglyphic script, especially the classifier system. This part opens to the presentation of the theoretical frame, which details the two variables that define the interactional scenarios between metaphor and classifiers in the lexicon: classification strategies and colexification types. The last section provides concrete illustrations of the various scenarios from two test domains: COGNITION and (INTER)PERSONAL BEHAVIOR (here meant as an umbrella term for emotion, personality and social interaction). The examples included in this last section have thus in common to illustrate metaphorical paths having COGNITION and (INTER)PERSONAL BEHAVIOR as target domains.

The present study can be of interest for the general discussion about language change for several reasons. Besides providing an in-depth insight into the semantic classification of a dead language and its evolution in diachrony, it also provides concrete evidence for the steps leading to semantic change: contextual metaphorical use and synchronic polysemy. (Evan & Wilkins 2000, on the notion of bridging context to be discussed *infra*). Indeed, Egyptian, thanks to its system of graphemic classifiers, makes this process literally *visible*, which is unique. This article also highlights the fact that cross-culturally well-attested conceptual metaphors present in modern languages are represented in Ancient Egyptian as well, in spite of major cultural and temporal gaps.

BRIEF INTRODUCTION TO THE LANGUAGE, CORPUS, AND TOOLS

This study focuses on classifier use in relation to metaphor-induced colexification in *Late Egyptian*, the vernacular language spoken in Egypt between ca. 1550–525 BCE. It is worth noting that another form of the language, called by Egyptologists *Classical Egyptian*, was also used at the time in parallel, as a language of prestige. Ancient Egyptian displays thus a diglossia phenomenon that is worth mentioning because it impacted the evolution of the lexicon. The time frame under study, spanning almost a thousand years, is a turning point in many respects, both for language and writing. Texts from this chronological range witness an increased use of linguistic metaphors. This may be due in part to the substantially higher number of sources available with respect to other periods, but is also a consequence of (1) semantic evolution processes (in the case of single lexemes) and of (2) a general tendency of the language at becoming more analytic (which manifests, among others, in an increased number of compound expressions). In parallel, important changes in the organization of the classifier system also occur. Both those features—the increased

number of linguistic metaphors and the “reorganization” of the classifier system, detailed below—offer the basis for the present study.

The core corpus used in this study is composed of the Late Egyptian texts from the digital databank *Ramses online*¹ (*Ramses*). In its current state, *Ramses* comprises a corpus of texts of over 510,000 lexical tokens from a time period that spans approximatively 1000 years (ca. 1550–525 BCE). This corpus represents a massive amount of diachronic data from all literary genres. However, sources available for Ancient Egyptian are highly dependent on conservation hazards. As a consequence, genres, language stages, and dialects are unequally represented throughout the corpus. Data have also been cross-checked and completed with the current reference dictionaries for Egyptian (Erman & Grapow 1971 [Wb]; Faulkner 2002; Lesko 2004; Hannig 2006) and with the *Thesaurus Linguae Aegyptiae* (TLA).² The test domains used for this study are INTERPERSONAL BEHAVIOR and COGNITION from which I consider only verbs and verbal adjectives.

KEY NOTIONS ABOUT HIEROGLYPHIC AND HIERATIC SCRIPTS: SUMMARY OF SIGN FUNCTIONS AND CLASSIFIERS

In order to understand the present study, a short introduction to the hieroglyphic script is needed. Egyptian hieroglyphs are organized according to three main sign functions:

- phonograms*: these signs represent only sound(s), they have no semantic value within the word-form;
- logograms*: they represent both sound and meaning;
 - a subcategory of logograms are *radicograms*: they are logograms not used independently but within a word, with other constituents—phonograms and/or classifier(s)—(Polis & Rosmorduc 2015);
- classifiers*: only meaning, no phonetic value within the word-form. They are the main focus of this study.

Some examples:

  : this word reads ʕq – the hieroglyphic script is defective; it notes only consonants – and means “to enter”. The first two signs  and  are *phonograms*, which means that they have only a phonetic value (respectively, /ʕVq/ and /q/, the second sign being a repeater of the second consonant of the first sign) and no semantic value within the word-form ʕq. The last sign  is a *classifier*. It has no phonetic value but tags the word-form as belonging to the lexeme ʕq “to enter” and to the conceptual category MOTION.

¹ Link to the beta version: <http://ramses.ulg.ac.be>. I express here my gratitude to the project’s directors for giving me access to the entire dataset. Last accessed: June 19, 2023.

² Both the new and legacy versions of the TLA were used, respectively at the following links: <https://thesaurus-linguae-aegyptiae.de/home> and <https://aaew.bbaw.de/tla/index.html>. Last accessed: June 19, 2023

𓂏: this word reads *pr* and means “house.” The hieroglyph 𓂏 is a *logogram*: it has both the phonetic value *pr* and the meaning “house.” The small vertical stroke at the end is a sign that stresses the fact that this word is written with a logogram and is countable.

𓂏𓂏𓂏: this word reads *ndm* and means “(to be) sweet.” The first sign 𓂏 is a *radicogram*, in other words, a logogram that is not used independently. It has both the phonetic value *ndm* and the meaning “sweet” (based on a metonymic relation: the sign represents a carob pod, a fruit known for its sweet taste). It is complemented in the spelling by a phonogram 𓂏 (*m*) and a classifier 𓂏 (ABSTRACT/NON-COUNTABLE).

The hieroglyphic script is used mainly for epigraphic texts. The texts considered in the present study are written in its cursive counterpart, called hieratic. The cursive nature of hieratic and its ligatures played an important role in the establishment and the systematization of use of fixed classifier groups, but it is not directly relevant for the present study, and it will not be discussed further.

INTRODUCTION TO THE CLASSIFIER SYSTEM IN ANCIENT EGYPTIAN

Classifiers in Egyptian are somewhat different from what is usually meant by the term *classifier* in linguistics. To begin with, they are *graphemic elements* instead of morphemes and thus apply to the *written language only*. They consist of “pictograms that are placed after the vowelless root in the Egyptian script, functioning as reading aids but carrying no additional phonetic value” (Goldwasser 2006a). Their identification is thus bound to their final position and their semantic function within a particular word-form (Lincke & Kammerzell 2012: 60; Chantrain & Di Biase-Dyson 2017: 42). They provide precious information about the economy of the lexicon and its diachronic evolution and allow for *visually* tracking etymologies.

The denomination of these signs as classifiers is relatively recent and was first proposed in the pioneer works of Goldwasser (2002; 2006a & b), Lincke (2011), Goldwasser & Grinevald (2012), and Kammerzell (2015). In Egyptology, this category of signs has previously been called “determinatives,” a terminology that was inherited from Champollion himself, who first deciphered and described the hieroglyphic writing system (Champollion 1836). The new denomination of “classifier” is still nowadays not unanimously accepted by the Egyptological community, even though the aforementioned studies have been overall well received, and the new terminology is becoming increasingly common. This denomination was suggested on the basis of similarities observed by Goldwasser between the Egyptian “determinatives” and the characteristics of classifiers in classifier languages. She takes as starting point the definition of classifier given by Allan (1977: 285), which consists of two main statements: (a) “they occur as morphemes in surface structures under specifiable conditions”; (b) “they have meaning in the sense that a classifier denotes some salient perceived or imputed characteristic of the entity to which an associated noun refers or may refer”. She observed that the Egyptian “determinatives” easily fit the requirements of a classifier system, the only notable difference being the nature of the semiotic system. The above definition given by Allan thus applies to the Egyptian system, providing that

“morpheme” would be replaced with “grapheme.” Major basic phenomena that occur in the Egyptian graphemic classifier system have indeed parallels in morphemic classifier systems (Goldwasser 2006a: 20). It is also worth noticing that the Egyptian system is particularly detailed and elaborate, as well as semantically transparent and easy to connect with lexical sources, which is, following Aikhenvald (2000: 370), a sign pointing toward a rather new system. The other criterion that likely plays a role in the system’s transparency is its iconic nature, which “keeps the semantic value of the graphemic system alive and slows down depletion, grammaticalization and fossilization by convention,” at least to a certain degree (Goldwasser 2006a). Tendencies to the latter are in fact observed in Late Egyptian, in the hieratic cursive script, which is at the core of this article.

In addition, Goldwasser (2006a & b) and especially Grinevald, in the attached appendix of their joint publication (Goldwasser & Grinevald 2012: 19 and 46–51), listed the basic features of morphosyntactic classifier systems with a semantic profile and compared them to the features found in the Egyptian system. The latter displays, indeed, (1) a taxonomy from general category to individual instance similar to the one observable in classifier languages (detailed *infra*); (2) the existence of repeaters (Allan 1977); and (3) the existence of schematic (metonymic/contiguous) relations between classifier and lexeme (qualified as “extensions” by Aikhenvald 2000: 404). Besides its graphemic nature, the Egyptian system also distinguishes itself from classifier languages in two characteristics: it combines both noun and verb classifier systems—the latter means that, contrary to verbal classification, the verb and not the verbal arguments bear the classifier. A system combining both types of classification does not appear to be attested in any other language.

Finally, most lexemes are susceptible to receive a classifier in Ancient Egyptian—including adverbs and adjectives—but their use is never fully mandatory. For hieratic texts in the period that interests us here, though, they are used with much regularity. Ancient Egyptian also repetitively displays multiple classification (co-occurrence of classifiers). The latter is attested in some classifier languages, but not allowed in all. The different features listed above are detailed in the next section.

GENERAL ORGANIZATION OF THE CLASSIFIER SYSTEM

The Egyptian classifier system can be described according to two axes: a vertical one (taxonomy) and a horizontal one (contiguity/similarity relations). These two axes define the way in which the classifiers are organized and chosen in relation to the meaning of the lexeme. This organization has been described in detail by various scholars (Goldwasser 2002; 2005; 2006a & b; Goldwasser & Grinevald 2012; Lincke 2011; Lincke & Kammerzell 2012; Steinbach-Eicke 2019; Chantrain 2021). The explanations will thus be limited here to key elements necessary for understanding this study and to the author’s own findings on classification strategies.

On the vertical, taxonomic axis, categories are organized according to a hierarchy, from the most abstract/generic term to the individual instance. There are three main levels in the taxonomy: superordinate (SO), basic (BA), and subordinate (SB). The signs categorized on these respective levels meet some specific criteria, which are detailed in the next section. The most obvious case is illustrated by natural taxonomic relations, as noted by Goldwasser

(2002) who based her model on Rosch's (1986). For example, LEGGED TERRESTRIAL ANIMAL as represented by the hide-and-tail sign  is superordinate compared to HORSE, represented by a standardized representation of a horse . The taxonomy principle can be applied to abstract concepts as well (e.g., TIME superordinate to SPECIFIC TIMES), and, to a certain extent, to the hierarchization of actions, in the case of verbs—e.g.,  MOTION is superordinate to  SAIL). This means that a given word may often be written with several classifiers, depending on the level of precision one wants to convey. However, not all three levels of classification are in fact systematically attested for a same lexeme, but often two of them are (BA + SB or SO + BA).

Characteristics of the Three Taxonomic Levels

BASIC LEVEL

The basic level is the intermediate level of the taxonomy and also the only level to have strict lexical equivalents. This means that for the BA level, one classifier can be associated with at least one lexeme that covers the same semantics. This can be explained by the fact that its members are chosen according to the prototype theory (Givón 1986: 78–79). It means that the basic level gathers all elements seen as having the highest degree of membership (Rosch 1978) in the category, the ones chosen to represent the whole subordinate group, which encompasses semantic nuances and formal variations.

SUPERORDINATE LEVEL

These classifiers are used for very general categories that include the BA level members. The concepts expressed by the SO classifiers are *not lexified*, which is a discriminating criterion in assigning the SO status: they stand for very broad abstract concepts whose expression exists *only through the classifier*. For example, in Egyptian there is no general term for action, emotion, cognition, time, space, etc., but only for specific actions, emotions, cognitive activities, time units, portions of space, etc. Yet, SO classifiers represent specifically the first categories of concepts.

The prototype principle also applies to the choice of the SO classifier, as the chosen pictogram is the one considered as the most representative for conveying such general concepts. Finally, SO classifiers are usually BA or SB classifiers that were “upgraded” to a higher category. They went through a semantic evolution process and, from a precise concept (BA level), came to express in addition a more general, over-encompassing one.

Egyptian illustrates perfectly the fact that the choice of the prototype can be highly culturally and environmentally driven. For example, the prototypical member chosen to stand for the SO category WINGED ANIMAL is a duck, which also stands for the BA category BIRD. The first sign used for that purpose is  (Lincke 2011), which is replaced later on with the flying duck  in Late Egyptian hieratic spellings. The choice of the duck may seem surprising to some readers, depending on their own background, but can be explained by the predominant presence of this animal in the Nilotic environment. In modern western Europe, for example, the sparrow, blackbird, or robin would be a likely choice (Armstrong, 2005: 11). Note that the sparrow is in fact used in Egyptian as SO classifier for SMALLNESS/

NEGATIVITY, likely because of its perceived negative impact on agriculture, due to its habit of eating seeds just sown (David 2000).

SO and BA level signs have standardized, canonical shapes, which is not necessarily the case of the SB level. Indeed, in the latter case, their shape varies in order to offer an ad-hoc solution to convey specific contextual nuances. This can be done within the frame of a natural taxonomy (expression of a subspecies or subtype) but often just adds specific features to the general sense of the lexeme. Details and examples of the taxonomy are given *infra*, at the end of this section.

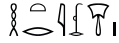
The category of SO classifiers is thus defined by three criteria: not lexified + prototype status + canonical shape. The BA classifiers share with them two criteria: prototype status + canonical shape, but diverge in the last, since the BA level classifiers correspond to entities that are lexified. In other words, to one BA classifier corresponds one concept and at least one lexeme.

SUBORDINATE LEVEL

This level of the taxonomy is composed of very specific signs and expresses individual items without including them in a broader category. Two main configurations are attested: (1) the classifier may stand for a subspecies/subtype in the case of natural taxonomy (e.g., a specific kind of duck, cattle, etc.) or, more frequently for the period that interests us in this study, (2) the SB classifier is a *formal* variant of the BA classifier, which adds semantic features to the basic meaning in order to convey specific contextual nuances. (e.g., prancing horse, child wearing a crown for “prince,” etc.). The category of SB classifiers is thus defined by three criteria: (1) the signs are not bound to represent a prototypical member of any category but are an ad-hoc choice for a specific individual item, (2) they do not necessarily have a canonical shape, and (3) they express features that are beyond what is lexified (= added content on the visual level only).

To give an illustration of the three levels of the taxonomy, let us look at the following sentences including the lexeme *ḥtr* “horse.” The same lexeme, with exactly the same meaning may be written with three different signs. In Ex. 1, the classifier used is a SO one: it stands for the conceptual category LEGGED TERRESTRIAL ANIMAL and is thus not specific to horse. This classifier has no lexical equivalent and has a canonical shape. It does not convey any specific contextual feature nor refers to any specific member of the SO category (in other words, any member of this category may be written with this classifier: horse, dog, cat, cow, mouse, etc.).

Ex. 1

<i>p3</i>	<i>ḥtr</i>	<i>nty</i>	<i>ḥr</i>	<i>ḥm</i>	= <i>f</i>
ART:M.SG	horse	REL-M.SG	under	majesty	=3SG.M
					
	CLF: LEGGED TERRESTRIAL ANIMAL				

“The horse that carried his Majesty” (pChester Beatty 3, v° 3,11)

In Ex. 2, the classifier used is the BA classifier for HORSE. It has a canonical shape, at least one lexical equivalent (even two in the present case: *htr* and *ssm.t*, both lexemes mean “horse”). This classifier does not convey any specific contextual feature, it just stands for the concept of HORSE.

Ex. 2

<i>rh</i>	<i>sw</i>	<i>htr</i>
know: PTCP	3SG.M	horse
		
		CLF: HORSE

“The one who knows horses” (Urk 4, 1279, 13)

Finally, in Ex. 3, a SB classifier is used: it represents a prancing horse with a royal ornament, which reflects the actual attitude of the horse in the figurative scene that accompanies the text. It is thus an ad-hoc classification, with specific contextual features. It does not have any strict lexical equivalent (i.e., there is no specific term in Egyptian that means “prancing horse with royal ornament”).

Ex. 3

<i>ʿn</i>	<i>hr</i>	<i>htr.w</i>
beautiful	upon	horse-PL
		
		CLF: PRANCING HORSE W/ROYAL

“Beautiful upon horseback” (KRI 5, 57, 4)

It is worth noticing that in Late Egyptian hieratic, the use of single SB classifiers to express specific features of the item became recessive. Instead, a different strategy gained in importance: combining two or more classifiers instead of modifying a single one. This strategy is called *composed classification* (author, under review).

The verb *tttt* “to argue” offers a good example of composed classification: it can be written with the simple classifier  for speech, but also with the group $\times + \text{speech}$ for INTERACTION/OPPOSITION + SPEECH (Ex. 4) or with $\text{loud} + \text{speech}$ for LOUD/OUTREACH + SPEECH³ (Ex. 5). The possibility to use different classifier groups for a same lexeme in a same sense is what I call *alternating classification* (author, under review). The principle is as follows: for a given lexeme, a given sense can be decomposed in several semantic features. The principle behind alternating classification is that different semantic features can be selected as salient for a same lexeme in a same sense in a given context. For example, arguing can be described as speaking “in opposition to someone”, or as speaking “loudly”: the selection is on the

³ The categories have been defined on basis of the data collected in the frame of the author’s ongoing study.

feature OPPOSITION (×, Ex. 4) in the first case and on LOUD (≡, Ex. 5) in the second case. In other words, *different classifiers are used for a same lexeme in a same sense*. Only different semantic features are stressed. Alternating classification has to be distinguished from *distinctive classification*, which applies to *different classifiers used for different senses of a same lexeme*. This distinction between the two strategies is not made by Goldwasser (2006) in her initial description, which comprised only alternating classification as umbrella term for both strategies. However, the distinction is relevant here because the two strategies reflect two different realities (colexification vs non colexification).

Ex. 4

<i>m</i>	<i>dd</i>	<i>bjn</i>	<i>r</i>	<i>hn</i>	<i>twt</i>	<i>hrw</i>	<i>tttt</i>	= <i>k</i>
NEG	say:INF	bad	against	friend	2SG.M	day	argue:IPFV	=2SG.M
								
CLF: OPPOSITION+ SPEECH								

Do not say anything bad against a friend on a day you argue (pDeM 1, 3, 7)

Ex. 5

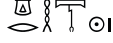
<i>jw</i>	= <i>w</i>	<i>h^c.w</i>	(<i>hr</i>)	<i>tttt</i>	<i>hr</i>	<i>w^c</i>	<i>hd</i>
SUB	=3PL	stand:STAT	(upon)	argue:INF	upon	one	silver
							
LOUD/OUTREACH + SPEECH							

While they were arguing about a loot (pMayer A, v° 9,19 = KRI 6, 821, 14)

In composed classification, typically, the last classifier of the group (usually a SO classifier) indicates the most general conceptual category in which the concept lexified by the lexeme can be included. As for the first classifier of the group, it provides a semantic specification about the nature of the action or about the nature/appearance of the classified item in the case of a noun. This functioning matches the first criterion of what Aikhenvald (2000) described as the general rule in case of multiple classification in classifier languages: one of the classifiers marks the *nature* of the classified item, which is usually the case for the first classifier of the group in Egyptian. It gives indeed some precision about the nature of the item or action expressed by the lexeme (e.g.,  = RELATIVE TO THE NIGHT [Ex. 6]; × = INVOLVING OPPOSITION [Ex. 4]; ≡ = LOUD/OUTREACH [Ex. 5]). The other classifier, according to Aikhenvald's observations, denotes the function of the lexeme. This latter rule does not really apply to Egyptian, except in isolated cases like the classifier  (or the group  ACTION +  MAN/PERSON) which sometimes indicate the *nomen agentis*, as a derivation of the category ACTION. However, in most cases, the second classifier in Egyptian simply expresses the most general category in which the lexeme can be included (e.g., ☉ = TIME [Ex. 6],  = SPEECH [exs. 4 and 5]).

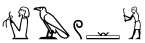
Exs. 4 and 5 above, as well as Ex. 6 below, illustrate this principle for verbs and nouns, respectively. Ex. 7 below illustrates a case of  marking the *nomen agentis*.

Ex. 6

<i>jw</i>	<i>=f</i>	<i>hr</i>	<i>sdr</i>	<i>hn^c</i>	<i>t3y=f</i>	<i>hm.t</i>	<i>m</i>	<i>p3</i>	<i>grh</i>
CORD	=3SG.M	on	sleep:INF	with	POSS:M.SG =3SG.M	woman-F	in	ART:M.SG	night
									 CLF: DARK/NIGHT + TIME

“He slept with his wife that night”

Ex. 7

<i>jw</i>	<i>s3w</i>	<i>h^c</i>	<i>šmy</i>	<i>hr</i>	<i>dšr.t</i>
MCM	guard	personal_name	go:STAT	upon	place_name
 CLF:ABSTRACT + ACTION					

“The guard Kha went to Deir el-Bahari”

Besides the vertical taxonomic organization, one should also mention the motivation principle for the choice of classifiers, which constitutes the horizontal axis. Indeed, except in the case of repeaters, in which the classifier represents the item designated by the lexeme, the choice of classifier is usually motivated by horizontal contiguity/similarity relations with the meaning of the lexeme (Goldwasser 2002: 13–18; Lincke 2011). Most of them are meronymic and metonymic relations. In the case of verbs, the relation classifier–lexeme may also more precisely be described in terms of semantic roles (SR) (Kammerzell 2015), or as simile relations. This is the case for the last example *infra*, where the choice of the crocodile for anger can be understood as experiencer or simile relation (to be angry *like* a crocodile).

Examples:

šmm.t “fever”  (metonymy: brazier with flame for ‘heat’)

Ex. 8

<i>jw</i>	<i>=n</i>	<i>(r)</i>	<i>šd</i>	<i>=f</i>	<i>(...)</i>	<i>r</i>	<i>šmm.t</i>
FUT	=1PL	FUT	protect:INF	=3SG.M		against	heat-F
							 CLF: FIRE/HEAT

“We shall protect him from fever” (pCairo CG 58035, 48)

ds ‘to cut’  (SR instrument: knife for the action of cutting)

Ex. 9

<i>nn</i>	<i>šm</i>	<i>ds.w</i>	<i>jb.w</i>	<i>m</i>	<i>=j</i>
NEG	be_powerful:SBJV	cut:PTCP	heart-PL	in	=1SG
					
CLF:KNIFE/CUT					

“The ones who cut shall not have power one me” (pLeiden I 347, r° VI, 11)

ʒd ‘to rage, to be angry’  (SR experiencer/simile: animal whose aggressive behaviour is reminiscent of manifestations of anger)

Ex. 10

<i>jw</i>	<i>tʒ</i>	<i>=sn</i>	<i>ʒq</i>	<i>ʒd</i>
CORD	land	=3PL	deteriorate:STAT	be_angry:STAT
				
CLF: CROCODILE/AGGRESSIVENESS				

“Their land was deteriorating and raging” (KRI 2, 244, 15)

LINK BETWEEN METAPHOR-INDUCED COLEXIFICATION AND CLASSIFIERS

The relation between classifiers and metaphor in the Egyptian lexicon can be described according to two variables: colexification types and classification strategies. The combinations of these two variables result in several scenarios described in this section.

VARIABLE 1: COLEXIFICATION TYPES

Before going further, a more developed note should be made here regarding the term *colexification* used in the upcoming sections. This term was first proposed by François (2008: 171). As mentioned in the introduction to this study, he defines it as “the capacity, for two senses, to be lexified by the same lexeme in synchrony,” which corresponds to “strict colexification.” He also mentions that the model can then be extended to other cases such as “the linking of two senses by a single lexeme across different periods of its semantic history” (“loose colexification”). In the category “loose colexification” are also included the association of senses in form of doublets and lexical derivation. This term seems thus appropriate to encompass the different steps of the evolutionary path leading to semantic change: *metaphorical sense appearing in a bridging context* (Evans & Wilkins 2000), *synchronic polysemy*, and *semantic change*. This choice of terminology allows to designate the continuum between the three steps in metaphor-induced semantic evolution, which are at times difficult to differentiate for ancient Egyptian, due to the absence of living speakers, combined with the relative scarcity of sources and conservation hazard.

For the presentation of the examples, I make the distinction between colexification of type 1 and type 2. Colexification of type 1 means that, for a lexeme X, a metaphorical sense 2 is lexified in addition to the primary sense 1, but *only* in the frame of a bridging context. As for colexification of type 2, it encompasses polysemy and semantic change. In type 2, the derived sense 2 is lexified by a lexeme X in addition to sense 1 *even in the absence of the bridging context*. It means that the latter is not required anymore for the sense to occur (Evans & Wilkins 2000).

VARIABLE 2: CLASSIFICATION STRATEGIES

Three classification strategies have been identified in association with metaphor-induced colexification:

- *no classifier variation* (i.e., only the context makes explicit the metaphor)
- *distinctive classification* (i.e., a same lexeme is written with different classifiers which explicit the colexification sense 1 vs sense 2)
- *classifier replacement* (i.e., the classifier used for sense 1 is replaced by another one when the lexeme undergoes a semantic change to sense 2)

CASE STUDIES ILLUSTRATING THE DIFFERENT COLEXIFICATION-CLASSIFICATION SCENARIOS

The relations between colexification and classification strategies can be divided in several scenarios that are described and exemplified in this section. All the case studies have (INTER)PERSONAL BEHAVIOR OR COGNITION as target domain. These test domains have been chosen because their high degree of abstraction makes them ideal candidates for metaphor-induced colexification. The obtention of (INTER)PERSONAL BEHAVIOR and COGNITION as target domains is realized through metaphors or metonymy-based metaphors (Goosens 1990; Radden & Kövecses 1999; Radden 2000) and appears to have a strong embodiment anchorage (Damasio 1999; Scherer 2013; Lakoff 2014; Koptjevskaja-Tamm 2015; Zwaan 2021; Di Biase-Dyson & Chantrain 2022). It is worth mentioning here that embodied cognition has been the object of heated discussions in the past years and raises challenges, both in linguistic and interdisciplinary research (Zwaan 2021). This is however not the main topic of this article and will not be discussed further here. The structure of the present section is as follows:

Colexification type 1: synchronic colexification of sense 1 and sense 2 only in a bridging context with exceptional distinctive classification (i.e., metaphorical use).

- *rh* “to know” (Wb. 2, 442.7–445.7)

Colexification type 2: synchronic colexification of sense₁ and sense₂ independent of a bridging context (i.e. polysemy and/or semantic change).

- with distinctive classification ($\text{'}m$; $wh\text{'}$)
 - $\text{'}m$ “to swallow, to learn, to know” (Wb. 1, 183.19–184.15 and Wb. 1, 184.16–22)
 - $wh\text{'}$ “to untie, to (be) released, to understand” (Wb. 1, 348.3–349.15)
- without distinctive classification (wh_3)
 - wh_3 “to search for, to want, to love” (Wb. 1, 353.14–354.7)
- with distinctive classification replaced with classifier replacement
 - sh_3j “to cause to go down, to cheat” (Wb. 4, 207.2–5)

The glossing conventions applied for the examples in this section follow the adaptations to the Glossing *Leipzig Glossing Rules* suggested by Di Biase-Dyson, Kammerzell and Werning (2009).

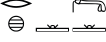
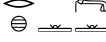
COLEXIFICATION TYPE 1: CONTEXT-BOUND METAPHOR-INDUCED COLEXIFICATION

General description: the lexeme X colexifies a sense 2 in addition to its sense 1 in a specific bridging context (Traugott & Dasher 2002: 35; Urban 2015: 376), but there is not yet established colexification because sense 2 cannot be lexified by the lexeme X without this context. The classifier usually does not vary. In rare cases, though, it can be adapted to reflect the target domain. The difference with cases of established polysemy is that classifier variation remains exceptional, or even unique, as well as the metaphorical sense itself.

Scenario 1. rh (to know): context-bound metaphor-induced colexification (with exceptional classifier variation)

Ex. 11 provides an example of colexification bound to a bridging context. In its primary sense “to learn, to get to know”, the verb rh is written with the classifier — (ABSTRACT/NON-COUNTABLE), or with the group — 𐤓𐤇 (ABSTRACT + COGNITION). In Ex. 11, rh , as verb and as deverbal noun, is used as euphemism and is given the derived sense of “carnal knowledge”. The classification is adapted accordingly: to the expected — (ABSTRACT), the sign 𐤓𐤇 (SEXUAL ACTIVITY) is added to reflect the target domain of the metaphorical extension. This classifier variation is exceptional for rh : this verb is usually written with the classifier — (ABSTRACT), even when used with the derived sense of “carnal knowledge”, as shown in Ex. 12.

Ex. 11

jw	$=f$	(hr)	rh	$=s$	m	rh	n	$\text{'}h_3wty$
PTCL	3SG.M	on	know:INF	3SG.F	in	knowledge	GEN	man
								
			CLF: ABSTRACT + SEXUAL ACTIVITY			CLF: ABSTRACT + SEXUAL ACTIVITY		

“(He slept with her that night) and he knew her in knowledge of man” (P. BM 10682, r° 4, 5 = LES 32, 5)

Ex. 12

<i>jw</i>	<i>jb</i>	=s	(r)	<i>rh</i>	=f	<i>m</i>	<i>rh</i>	<i>n</i>	ḥ3wty
PTCL	heart	3SG.F	to	know:INF	3SG.M	in	knowledge	GEN	man
									
				CLF: ABSTRACT/N-C			CLF: ABSTRACT/N-C		

“Because she desired to know him in knowledge of man” (lit: “her heart was toward knowing him”) (P. Orbiney 3, 6 = LES 12, 9-10)

COLEXIFICATION TYPE 2: ESTABLISHED METAPHOR-INDUCED COLEXIFICATION,
INDEPENDENT FROM THE BRIDGING CONTEXT (POLYSEMY AND SEMANTIC CHANGE)

General description: the lexeme Y colexifies at least two senses in the course of its semantic evolution. In all cases, a metaphor is the trigger of the process. The classifier(s) can either reflect the primary sense of the lexeme and the source domain of the metaphor, or it/they can vary to reflect the derived sense(s) of the lexeme under the target domain of the metaphor.

Scenario 2.1. *metaphor-induced colexification with distinctive classification*

Case 1: ḥm (to swallow, to learn)

When used in its primary sense “to swallow” (= sense 1), the verb ḥm is written with the classifiers 𓂏 for ACTIVITIES OF THE THROAT or 𓂏, which in this case actualizes the semantic category INGESTION. From ca. 1500 BCE onward, the verb ḥm is also found with a new derived sense, the one of “learning, understanding” (= sense 2)—or “knowing” when the verb is in the perfective aspect. The lexeme is written with the classifier of the eye 𓂏 for VISION/COGNITION when assuming sense 2. The underlying metaphorical extension is the expression of LEARNING in terms of SWALLOWING, which links this case study to the conceptual metaphor of the MIND AS BODY and, more specifically, of the BODY AS A CONTAINER (Radden and Kövecses 1999: 39; Kövecses 2010: 108). Metaphors of embodied knowledge are well represented in Egyptian (Di Biase-Dyson & Chantrain 2022), among others through another verb, *dp*, which means “to taste” and can be used in the more general meaning “to experience” (EXPERIENCING IS SENSING, Steinbach-Eicke 2019). Acquiring knowledge is thus conceptualized in terms of food entering the body: the deeper it enters the body, the more the learning process is achieved (TASTE → SWALLOW → HAVING SWALLOWED = EXPERIENCE → LEARN → KNOW). In the first example below from an earlier period than the present corpus (ca. 2000 BCE), ḥm is used in its primary sense of “swallowing” as physical action, which appears explicitly through its collocation with *sbš* “to spit.”

Ex. 13

<i>dj</i>	=s	<i>sbš</i>	<i>njk</i>	ʕ <i>m.n</i>	=f
give=PFV	=3SG.F	spit:SBJV	enemy	swallow-REL-ANT	=3SG.M
					
CLF: THROAT + INGESTION					

“She caused the enemy to spit what he had swallowed” (pBoulaq17, IV, 1)

In Ex. 14, ʕ*m* is used in the metaphorical derived sense of “knowing” and accordingly is written with the classifier . The translation of “knowing” is obtained because the verb is conjugated at the relative form of the perfective and therefore indicates that the process of learning is completed. In the imperfective, ʕ*m* is rather translated as “learning” or “getting to know.”

Ex. 14

<i>m-k</i>	<i>jb</i>	=j	<i>pr.{t}w</i>	<i>m-t3wt</i>	
ATTN-2SG.M	heart	1SG	exit:RES-3SG.M	furtively	
See, my heart went away furtively					
<i>sw</i>	<i>hn.w</i>	< <i>r</i> >	<i>bw</i>	ʕ <i>m</i>	=f
3SG.M	hurry: RES-3SG.M	to	place	know:REL.PFV	3SG.M
					
CLF: VISION/COGNITION					

“He ran away to a place that he knows” (pAnastasi 4, 4, 1 = LEM 39, 9)

Some clues indicate that the etymological relation between ʕ*m* “to swallow” and ʕ*m* “to learn”/“to know” remained transparent in Late Egyptian. Ex. 15 illustrates this transparency through a play on words and classifiers. In this section of a popular tale, a lady swallows a wood chip and becomes pregnant. The classifier of ʕ*m* in the primary sense “to swallow” should be  and/or . However, it is here exceptionally written with the eye  for VISION/COGNITION, which is the usual classifier for ʕ*m* in the derived sense “to learn,” “to know.” This substitution of classifiers reveals a play on words on the two senses of ʕ*m*: the fact that the noble lady swallows (= sense 1) the chip of wood and becomes pregnant is associated to the sense “to know” (= sense 2), but carnally, which mirrors a similar use of the verb *rh* (attested in the same text). The verb ʕ*m* is thus ultimately used as euphemism here, just like it was the case for *rh* in Ex. 11, but without the addition of the classifier  (SEXUAL ACTIVITY) in the present case. Finally, one should note that the Coptic descendant of ʕ*m* primarily means “to know.”⁴

4 <https://coptic-dictionary.org/entry.cgi?tla=C897>.

Ex. 15

<i>jw</i>	=f	<i>hr</i>	<i>ʿq</i>		<i>m</i>	<i>r3</i>	<i>n</i>	<i>t3</i>	<i>šps.t</i>
MCM	3SG.M	on	enter:INF		in	mouth	of	ART:F.SG	noble lady

“It (=the chip of wood) entered into the mouth of the noble lady

<i>wn.jn</i>	=s	<i>hr</i>	<i>ʿm</i>	=f
CJVB:CNSV	3SG.F	on	swallow:INF	3SG.M



CLF: VISION/COGNITION

and she swallowed it” (pOrbiney, 18, 5 = LES 28, 6–7)

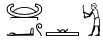
Case 2: *whʿ* (to untie, to release, to explain/understand)

The case of the verb *whʿ* constitutes another very interesting case where the different senses colexified by a single lexeme are explicitly disambiguated by different classifiers. Attested from a very early stage in the language (ca. 2680 BCE), the verb *whʿ* primarily means “to untie” (= sense 1) and is accordingly written with the classifiers or (both for ACTION/ACTION OF STRENGTH) and/or sometimes (ABSTRACT, “default” classifier). Later on (ca. 2125–1770 BCE), the lexeme starts to colexify two new senses: “to release oneself” or “to be released” metaphorically (= sense 2), when applied to abstract entities (e.g., being released from a task or releasing power—not the physical act of releasing someone from bounds, for example) and “to solve,” “to understand,” based on the metaphor of solving a problem like one unties a knot (= sense 3). Both metaphorical senses *whʿ* 2 and *whʿ* 3 are thus conceptualized through the idea of “untying” and actualize the paths MENTAL ACTIVITY IS PHYSICAL ACTIVITY (Vanhove 2008; Lakoff 2014) and THE SOCIAL WORLD IS THE PHYSICAL WORLD.

whʿ thus colexifies three distinct senses, a distinction that becomes gradually reflected on the classifier level as well, in a slower process. Indeed, it first went through a phase of transition, until the end of the so-called 19th dynasty (ca. 1295–1186 BCE), in which for all senses, the same group (ABSTRACT + ACTION) was used (at least in hieratic texts). This group appears to have been the “non-marked,” generic spelling for all senses of *whʿ*. In parallel, specific spellings with distinct classifier groups for each sense emerged and gradually became systematized: (1) the group ([OVER]STEPPING/RUSHING + MOTION) for the sense 2 “to stop, to leave” or also just “release” (an *abstract* entity)—see Ex. 17 vs Ex. 18—and (2) the group (ABSTRACT + COGNITION) or just (COGNITION) for the sense 3 “to solve, to understand”—see Ex. 19 vs Ex. 20. Finally, (3) the verb *whʿ* in its sense 1 “to untie” or “to release” (physically) always kept the group . In Ex. 16 below, *whʿ* is used in its primary sense “to untie.” Accordingly, it is classified with the group (ABSTRACT + ACTION)

Ex. 16

<i>wh^c</i>	<i>ky</i>	<i>jw</i>	<i>gm</i>	<i>=k</i>	<i>sw</i>	<i>snh</i>
untie:IMP	other	PTCL	find:PFV	2SG.M	3SG.M	tie:RES



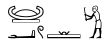
CLF: ABSTRACT + ACTION

“Release anyone that you found tied” (pChester Beatty 4, v° 2, 1) 19th dyn.

In Exs. 17 and 18, *wh^c* bears the sense 2 “to release oneself” (from a task). In Ex. 17, the non-marked group is still used (ca. 1295–1186 BCE), while in Ex. 18, from a later date (ca. 1186–1069 BCE) and thus from a later phase in the evolution of the system, one finds already the classifier group specific to the sense “to stop, to be released.”

Ex. 17

<i>spr</i>	<i>=k</i>	<i>r</i>	<i>wh^c</i>	<i>m</i>	<i>rwh3</i>
reach: IPFV	2SG.M	to	release:INF	in	evening



CLF: ABSTRACT + ACTION

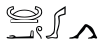
“When you manage to stop (working) in the evening”

<i>jw</i>	<i>h^c</i>	<i>=k</i>	<i>nb</i>	<i>nd</i>	<i>hdhd</i>
PTCL	body	2SG.M	all	crush:RES	break:RES

“It is while your entire body is crushed, broken” (Satirical letter of Hori, pAnastasi 1, 19, 9) 19th dyn.

Ex. 18

<i>wh^c</i>	<i>=f</i>	<i>r</i>	<i>pr</i>	<i>=f</i>	<i>m</i>	<i>rwh3</i>
release: NMLZ~IPFV	3SG.M	to	house	3SG.M	in	evening



CLF: (OVER)STEPPING/RUSHING + MOTION

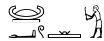
“It is in the evening that he stops (working)” (pLansing, 5, 5) 20th dyn.

The same opposition between non-distinctive vs distinctive classification can be seen in Exs. 19 and 20, in which the verb *wh^c* bears the derived sense 3 of “solving,” “understanding.” In the first one, from an earlier date (ca. 1295–1186 BCE), *wh^c* is still written with the old non-marked classifier group . In the second example, from a later date (1069–945 BCE), the new classifier group, specific to the meaning “solving,” “understanding,” is used.

Ex. 19

<i>rnpj</i>	<i>stn</i>	<i>3bw.t</i>	<i>tw</i>	<i>jm</i>
young man	characterize:PTCP.IPFV	aspect	enjoyable	shape

“A young man, with a good-looking aspect and a slim figure

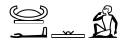
<i>wh^c</i>	<i>jtn.w</i>	<i>gn.wt</i>	<i>mj</i>	<i>jr.t</i>	<i>sn</i>
	difficulty-M.PL	annals-F.PL	like	do-PTCP	3PL

CLF: ABSTRACT + ACTION

the one who solves the difficulties of the Annals, like the one who made them”
(pAnastasi 1, 1, 6–7) 19th dyn.

Ex. 20

<i>jmy</i>	<i>h3ty</i>	<i>=k</i>	<i>r</i>	<i>wh^c</i>	<i>=w</i>
give:IMP	heart	2SG.M	to	understand:INF	3PL



CLF: ABSTRACT + COGNITION

“Apply your heart to understand them (= the teachings)” (Amenemope, pBM 10474, 3, 10)
21st dyn. (later document)

To sum up, the verb *wh^c* colexifies three distinct senses which are made explicit by three different classifier groups. This phenomenon is called *distinctive classification* (author’s concept and terminology).

Scenario 2.2. wh3 (to search, to want, to love): metaphor-induced colexification without classifier variation

The verb *wh3* meant primarily “to go and search” (for something). The verb then evolved into referring to searching as intellectual process (i.e., without the implication of *physical motion*), and from there, into expressing volition “to want.” The senses colexified by *wh3* in Late Egyptian are thus (1) to (go and) search, (2) to search/research (intellectually), and (3) to want. In some contexts, the sense conveyed by *wh3* appears to be very close to the emotional domain by expressing a desire, but always remains characterized by a certain control of the subject on the events (i.e., the subject remains an agent, not an experiencer), which rather indicates that it stays under the VOLITION domain.

It is only in Coptic—the last evolutionary stage of the Egyptian language—in the form of the verb ⲟⲩⲱⲩ (**wōš* – Sahidic dialect, CD 500a–501a), that *wh3* further entered the EMOTION domain and started to lexify the sense “to love” in addition to the formerly attested ones, which remain in use. The evolutionary path of *wh3* can therefore be described as MOTION → VOLITION → EMOTION. The physical motion is used as source domain for mental/emotional motion toward an object or person (“desire,” “wish,” and “love”).

Ex. 21

jw =w (hr) wh3 n =f ʕhʕw q3 zp-sn
 PTCL IMPRS on wish:INF for 3SG.M lifetime high two_times

 CLF: MOTION

“One wishes for him a very long (lit: high) lifetime

jw =f hr tp-t3
 SBRD 3SG.M on top_of_hearth
 while he is on Earth” (Neskhonsu, T. CGC 46891, l. 49)

In pre-Coptic Egyptian, *wh3* retained throughout its history the same classifier , reflecting its sense 1 “to go and search” and, at the same time, the source domain of the metaphor (MOTION). It also remained polysemous: the first sense of *physical search* gradually became recessive, but did survive until demotic.

In the corpus, only two attestations⁵ of *wh3* are written with the classifier  instead of . Both have exactly the same spelling  but, unfortunately, both of them are also too lacunar even to determine whether the meaning of the word in context is “to search” or “to want/wish.”

Scenario 2.3. sh3j (to bring down, to disappoint): metaphor-induced colexification with distinctive classification followed by classifier replacement

The verb *s-h3j*  is the causative form of the verb *h3j* which meant at first “to go down” and then evolved into meaning “to fall” (Wb. 2, 472.3–474.25). The causative form is characterized by the addition of the prefix *s-* to the root. The primary sense of *sh3j* was thus “to cause to go down” or “to cause to fall.” Around 1500 BCE, *sh3j* adopted the metaphorical sense (= sense 2) “to act in a downgrading way,” “to cheat,” “to lie” (Winand 2018: 130, 132). It seems that the causative form with *s-* became then exclusively affected to the derived metaphorical sense. The sense 1 of “making go down” (the actual motion) became then assumed by the so-called *new causative* construction [*rdj* (= do, make) + *h3j*]. The case of *sh3j* clearly illustrates a transfield extension from MOTION to INTERPERSONAL BEHAVIOR. On the classifier level, two changes can be seen: instead of the initial classifier  reflecting the source domain MOTION, most attestations take the classifier . This classifier represents legs walking backwards and stands for the conceptual category NON-STRAIGHTFORWARD MOTION. In addition to this, this classifier can also be used in a meta-semantic function of metaphor marker in some texts with high literary qualities. I argue that the choice of this classifier as metaphor marker is stemming from a transfield extension from non-straightforward motion to non-straightforward expression. It was thus primarily used to mark *sh3j* in the sense “to cheat” as metaphorical use.

⁵ Graffito TT63, l. 3 and P. Harris 500, v° 7, 7 (= LES 6, 14).

The verb *sh3j* underwent a complete semantic change from sense 1 “to cause to go down” to sense 2 “to cheat” and it was reflected on the classifier level: the initial classifier $\wedge$ (MOTION) used for sense 1 was replaced with the classifier $\wedge$ (NON-STRAIGHTFORWARD MOTION), which became the regular classifier for the verb *sh3j* in sense 2. In so doing, it lost its meta-semantic function for this specific verb and became a fossilized orthography. The examples below illustrate this evolution process. One should note that the difference between polysemy and semantic change is often very difficult to establish for ancient Egyptian, due to the absence of speakers and the relative scarcity of data. This is, as said in the introduction, a reason why the term colexification appears as preferable because it is neutral in terms of interpretation. However, the case of *sh3j* is non-ambiguous in this respect since sense 1 was clearly replaced by sense 2 for the lexeme *sh3j* and reaffected to the construction *rdj h3j*.

Ex. 22

hn^c jrj.t n =s sh3.t snf
 and do:INF for =3sg.f CAUS-go_down:PTCP blood
 CLF: MOTION

“And make for her something that makes the blood go down” (pEdwin Smith, 20, 17)

Ex. 23

jr ptr =k ky jw =f (hr) sh3
 PTCL see:SBJV 2SG.M other PTCL 3SG.M on CAUS-go_down:INF

 CLF: REROUTED MOTION/
 METAPHOR MARKER

“If you see another one committing fraud,

j.jr =k sw3 n =f m-w3w
 THMZ 2SG.M pass: INF for 3SG.M away

You should go away from him” (Amenemope, P. BM 10474, 18, 6–7)

CONCLUSIONS

Classifiers offer a unique tool for the understanding of semantic evolution dynamics and several scenarios can be clearly identified. This study focused on metaphor-induced colexification. Two colexification types and four scenarios were highlighted and exemplified:

Colexification type 1: synchronic colexification of sense1 and sense2 only in bridging context (metaphorical use)

- with exceptional distinctive classification
 - *rh* “to know”

Colexification type 2: synchronic colexification of sense 1 and sense 2 outside of bridging context (polysemy and semantic change)

- with distinctive classification
 - *ʕm* “to swallow, to learn, to know”
 - *whʕ* “to untie, to (be) released, to understand”
- without distinctive classification
 - *whʒ* “to search for, to want, to love”
- with distinctive classification followed by classifier replacement
 - *shʒj* “to cause to go down, to cheat”

Classification strategies can (1) help tracking etymologies, when the classifier reflects the source domain; and (2) indicate the directions of transfield mapping process, when (one of) the classifier reflects the target domain.

The present study provides an in-depth insight in the semantic classification of a dead language and its evolution in diachrony, it also shows the steps leading to semantic change: apparition context-bound metaphorical sense and synchronic polysemy. The particularity of Egyptian is that it makes the process visible thanks to its system of graphemic classifiers, which is unique, at least with such level of development. This point directly validates the idea that metaphors do play a role in semantic change, thus providing a concrete illustration of a phenomenon that has been so far primarily a theoretical hypothesis and cannot be proven in many cases because of a lack of historical depth.

Another point indirectly highlighted in this study is that cross-culturally well-attested conceptual metaphors are represented in Ancient Egyptian, both on the linguistic and the visual levels. This observation adds a consequent historical depth to the validation of the conceptual metaphor theory as well as further data exploitable for cross-linguistic comparison. From the data obtained, it appears that, adding to cross-linguistically well-documented examples (Kövecses 2005), the expression of interpersonal behavior (social interaction, personality, emotion) and cognition in Ancient Egyptian is widely based on the MIND AS BODY metaphor (Sweetser 1990; Barsalou 1999; Traugott & Dasher 2001: 95; Casasanto & Gijssels 2015). Under this general path, one can identify a variety of other paths that apply to Egyptian as well: BODY AS A CONTAINER; MENTAL/EMOTIONAL ACTIVITY IS PHYSICAL ACTIVITY (Vanhove 2008) ; EMOTION IS MOTION, MENTAL/EMOTIONAL STATE IS PHYSICAL STATE, EXPERIENCING IS SENSING (Koptjevskaja-Tamm 2015 ; Steinbach-Eicke 2019 ; Vanhove & Hamid 2019 ; Di Biase-Dyson & Chantrain, forthcoming) and THE SOCIAL WORLD IS THE PHYSICAL WORLD (Kövecses 2010: 255; Di Biase-Dyson 2018). These paths were illustrated through examples in the present study.

Table 2.1 Recapitulative table of classifiers appearing in the article and their corresponding conceptual categories.

Classifier	Gardiner code	Referent	Conceptual category
	A2	man bringing his hand to his mouth	INGESTION, SPEECH, EMOTION, COGNITION
	A24	striking man with a stick	ACTION /ACTIVITY
	D6	eye with eyelid	VISION/COGNITION
	D40	arm holding a stick	(VIOLENT/POLEMICAL/STRENGTH) ACTION /ACTIVITY
	D53	ejaculating phallus	PHALLUS AND ITS ACTIONS, MAN, SEX-RELATED
	D54	moving legs	MOTION
	D55	legs moving backwards	BACKWARD/REROUTED MOTION, METAPHORICAL USE
	E6	horse	HORSE
	E6b	Prancing horse with ornament	prancing horse with ornament
	F10	bull head with throat	ACTION OF THE THROAT
	F18	elephant tusk	TEETH AND ITS ACTIONS, LOUD SPEECH, EXTERNALIZATION
	F27	hide and tail	LEGGED TERRESTRIAL ANIMAL
	G37	sparrow	SMALLNESS, NEGATIVITY
	I3	crocodile	CROCODILE, AGGRESSIVENESS
	N5	sun disc	DAYTIME, TIME
	Q7	brazier with flame	FIRE, HEAT
	T30	knife	KNIFE, ACTION OF CUTTING
	Y1	papyrus scroll	ABSTRACT, NON-COUNTABLE
	Z9	crossed sticks	INTERACTION W/OPPOSITION, ALTERATION

ABBREVIATIONS

Glossing:

ADV	adverb(ial)	NMLZ	nominalizer
ANT		PFV	perfective
ART	article	PL	plural
ATTN	attention marker	POSS	possessive
CAUS	causative	PROH	prohibitive
CLF	classifier	PROS	prospective
COMP	complementizer	PTCL	particle
EXLM	exclamative	PTCP	participle
F	feminine	Q	question
GEN	genitive	REL	relative
IMP	imperative	RES	resultative
IMPRS	impersonal	SBJV	subjunctive
INF	infinitive	SBRD	subordinate
IPFV	imperfective	SG	singular
M	masculine	STAT	stative
MCM	main clause marker	THMZ	thematizer.
NEG	negation		

Other:

BA	basic
CD	Crum, W. E. 1939. <i>A Coptic Dictionary</i> . Oxford: Oxford University Press.
KRI	Kitchen, K. A. 1969–1990. <i>Ramesside Inscriptions. Historical and Biographical</i> . 8 Volumes. Oxford: Blackwell.
LEM	Gardiner, A. H. 1937. <i>Late Egyptian Miscellanies</i> . Bibliotheca Aegyptiaca 7. Brussels: Éditions de la Fondation Égyptologique Reine Élisabeth.
LES	Gardiner, A. H. 1932. <i>Late Egyptian Stories</i> . Bibliotheca Aegyptiaca 1. Brussels: Éditions de la Fondation Égyptologique Reine Élisabeth.
MK	Middle Kingdom
NK	New Kingdom
OK	Old Kingdom
Ramsès	Ramses Online. http://ramses.ulg.ac.be/ . Last access Jan 27, 2021.
SB	subordinate
SO	superordinate.
SR	semantic role
TIP	Third Intermediate Period
TLA	Thesaurus Linguae Aegyptiae. http://aaew.bbaw.de . Last access Jan 27, 2021.
Urk. IV	Sethe, K. 1906–1909. <i>Urkunden der 18. Dynastie IV</i> . Band I–IV (Heft 1–16). <i>Urkunden des ägyptischen Altertums IV</i> . Leipzig: Hinrichs; and Helck, W. 1955–1958. <i>Urkunden der 18. Dynastie IV</i> . Heft 17–22. Berlin: Akademie-Verlag.
Wb.	Erman, A. and H. Grapow. 1971 [1926–1931]. <i>Wörterbuch der ägyptischen Sprache</i> I–V. Berlin: Akademie-Verlag.

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3

Foreign or Domestic?

Classifiers, Placenames, and the Categorization of Space in the Hieroglyphic System

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ABSTRACT

The Egyptian hieroglyphic script employed unpronounced signs called classifiers at the termination of words, providing unique insights into how Egyptians ordered their lexicon and world. This classificatory system extended to proper nouns and placenames, communicating basic spatial taxa in which Egyptians placed toponyms. Changing alongside the numerous political, ideological, and orthographic developments throughout the millennia of Egyptian hieroglyphic writing, the manner in which Egyptian scribes classified toponyms tells us a great deal about how they imagined their environment, their world, and associated notions of home, territory, and foreignness. This study assesses the boundaries and changes in the toponymic classifier system, outlining how and why classifiers for the same toponyms could change. Notably, this research demonstrates that the toponymic classifying system was “active,” being subject to interpretation by scribes. An appreciation of the inner workings of this system provides us with a newfound and emic perspective of the ancient Egyptian world.

KEYWORDS: Egyptian hieroglyphics – classifiers – toponyms

In the last few decades, the study of Egyptian classifiers (*determinatives* in the older jargon) has been revitalized. A whole new branch of research in Egyptian philology and linguistics has sought to evaluate how ancient Egyptians ordered their world through the non-phonetic elements of graphic classifiers. Among the lessons and achievements of this new school is identifying the functional nature of Egyptian classifiers and typologically grouping Egyptian classifiers as belonging to a “classifier language,” aligning the Egyptian system with languages which use oral classifiers (usually morphemes). While

this system was not “oral” in Egyptian, many of the patterns and rules that guide the use of oral classifiers seem to also exist in this written classificatory system in the Egyptian script (Goldwasser 2009). Beyond this, there is the notion that classifiers represented an extremely complicated system by which Egyptians ordered and taxonomized their world (Goldwasser 2002). This research further emphasizes that classifiers have different discrete functions when employed in words, such as tautological repeaters, metonyms, categorical “taxograms,” and even metaphors.

One relatively unexplored aspect of this system is the question as to how classifiers functioned when applied to proper nouns. *Prima facie* this system seems rather simple to the student of Egyptian philology. Personal names are often classified with  or , gods with , names of Egyptian towns with , names of dogs with , names of constellations and stars with , and so forth. Royal names were enclosed within a classifier, the famous cartouche , marking the internal name as uniquely belonging to a king. While these simple uses are all truisms, this “system” of proper noun classification is anything but simple when applied to actual texts and corpora over the thousands of years of the Egyptian hieroglyphic system. None of these classifiers are exclusively employed to mark proper nouns and the “proper noun classifiers” could also classify a range of common nouns. As such, these classifiers cannot be cited as “proper noun classifiers” in a typological sense in an identical manner to English capitalization. Furthermore, zero-classification (Goldwasser 1995: 85–86; Cooper 2020: 415) is quite common in proper nouns, meaning that pragmatic context needs to be considered before divining any rules on the use of classifying proper nouns. This work aims to subject the system of “proper noun classifiers” to close scrutiny specifically in the field of toponymy (placenames), underscoring what rules operated in the system of classifying placenames, and what these classifiers tell us about how Egyptians ordered their space and environment. At issue here is whether the classificatory system was quintessentially an orthographic phenomenon and guided by rules of reproduction in scribal practice, or whether the classifier system for placenames spoke to active interpretation of geographic and demographic truths and acted as a truly sensitive taxonomy for ordering space. This short study aims to interrogate some of the basic rules of the earlier toponymic classificatory system before the transformative changes to classifiers in the Ramesside period (Chantrain 2014; Spalinger 2008), with a particular focus on the geographical peripheries of Egypt. The focus on the peripheries of the Egyptian world and what the Egyptian scribal class considered the correct geographic application of these signs to placenames allows us to define exactly which lands and places were accorded to certain categories. Furthermore, the exact notions of the categorical taxa represented in toponymic classifiers are from clear. Was the use of the common toponymic classifiers of  and  a binary consideration of “foreign” and “domestic,” “Nile” and “desert,” or did they convey a host of other ideological and geographic variables haphazardly introduced throughout the course of history?

For Egyptians, and anyone who has visited the Nile Valley, the homeland of this ancient culture strikes one as predisposed to sharp boundaries and obvious geographic categories. There is the Nile River and its floodplain, then there is the desert and the sandy wastes and rocky hills beyond (Diego Espinel 2006; Darnell 2021; Loprieno 2003: 41). One might

almost suppose that the landscape of Egypt deterministically lends itself to rigid geographic classification. The environment of Egypt is not perhaps as messy and diverse an ecology and geography as the homelands of other ancient urban empires (Anatolia, Aksum, China, Mesopotamia, Rome) and it is veritably full of an obvious distinction between fertility and desert. This conception of ancient Egyptian geographic world is often repetitively reduced to a simplistic cliché in which, copying the rhetoric of ancient Egyptian ideological texts, scholars have seen the Egyptian world *in reality* consisting of an ordered, good, urban Nile world on the one hand and a foreign, chaotic, desert world inhabited by no one (or worse, “nomads”) on the other. The red-land (*dšr.t*), the hill-country (*h3s.t*), the land of foreigners (*h3s.ty*) equals bad; the riverine two-banks (*itr.w, idb.wy*), fertile alluvium (*Km.t, t3-mri*), urbane (*niw.ty*), land of the people (*rmt*), equals good. The latter can be ordered into nomes (provinces) with divisions and capitals (Helck 1974), the former is an unorderable mess of deserts and undulating topography. Viewing the world as a set of binaries or dualities is after all one of the easiest ways for our minds to make order from the chaos of reality. Yet this geographical conception is simplistic and one that is partly fictive. As is the case from the perspectives of the indigenes of any land, the landscape is full of subtle complexities and distinctions perceived only by those who are intimate with its geography and those who use the land regularly for subsistence and economic activity.¹ Producing a binary “world ordering” is partly an ideology of reduction, complexity becomes simplicity for the written language.

Such apparent binaries seem to be what is echoed in the classificatory system through which Egyptian scribes ordered space. The preeminent signs  and  are usually considered to designate domestic and foreign space respectively. In this semiotic system, Egyptians scribes were greatly aided by the pictorial and iconic aspect of their hieroglyphic system (Goldwasser 1995), which could visually communicate obvious and common features in their environment and constitute a kind of visual encyclopedia for a scribe. An Egyptian scribe had a large number of hieroglyphs depicting the physical world at their disposal (Houston & Stauder 2020) but ultimately settled on a rather small set of signs (, , , ) when classifying placenames in most historic periods—with  and  being by far the most ubiquitous (Razanajao 2016: 35–38; Cooper 2020: 33–41). This *prima facie* “binary” system, however, on closer scrutiny is anything but sharp and not necessarily everlasting. For both the ancient Egyptians and our scholarly study of their rhetoric, such a system constitutes a “stereotype”—a simplistic vision of a complex system. There were places which were not so easily categorized as  or , and the system was open

¹ Beyond the vast differences in the river’s geography between the landscapes of the Delta, the Fayum lake, and the enclosed canyon of Upper Egypt, one can cite the truly proliferate riverine technical vocabulary listed in the New Kingdom onomastica (Gardiner 1947: I, *6–*9). More generally, one can invoke Edward Sapir’s comments on language and environment (1912: 228): “It is the vocabulary of a language that most clearly reflects the physical and social environment of its speakers. The complete vocabulary of a language may indeed be looked upon as a complex inventory of all the ideas, interests, and occupations that take up the attention of the community... It is not difficult to find examples of languages whose vocabulary thus bears the stamp of the physical environment in which the speakers are placed.”

to misunderstandings and interpretations.² Frontier settlements, unique landscapes, the issue of political alterity (is a place part of the Egyptian world if foreigners lived on the Nile?), mythical placenames, and even etymological “fossil” classifiers all provided cases of confusion and ambiguity to this system. If the reality of the world was more complex than the system, then Egyptian scribes must have actively interpreted and simplified their world to align it to the system. Therein lies the difficulties in any heuristic of classification.

⊗ AND 𐀓 AS LOGOGRAMS AND PROTOTYPES

It has been argued that classifiers had an intimate link to the identical signs that served as logographic lexemes (Goldwasser 2009: 31–32; Lincke & Kammerzell 2012: 68–70); the distinction here is that logograms were read phonetically. For the signs under discussion, the logographic readings of 𐀓 *niw.t* “town, city” and 𐀓 *h3s.t* “hill-country” might serve to provide some categorical basis for the secondary use of these signs as classifiers. If this is the case for the origins of these signs, namely that the logographic lexeme gave birth to the classifier, it seems that after some time the classifiers took on a life of their own and developed their own semantic trajectories. The taxa they represent are not identical to their lexical logographic meanings. A related line of inquiry is to see the link between logographic lexeme and classifier as one of “prototype” (Smoczyński 1999; Goldwasser 2002: 19ff.), where a sign has become an exemplar object for a broader category. If one takes this tact with the 𐀓-sign, then it is plausible that the proximal Nile escarpment was elevated to the superordinate category that designated any landscape and space outside Egypt. This presupposes some mental shift in its iconic reading from an original [NILE-VALLEY ESCARPMENT] to [OUTSIDE NILE-SPACE]. As is the case in the other “prototype” classifiers such as the 𐀓 *3pd* “duck” standing for the superordinate category of [BIRD] (Goldwasser 2002: 19), the relationship was one of familiarity to the Egyptians, with the use of the classifier expanding far beyond the logographic lexical use and a simple iconic meaning of the sign. The sign 𐀓 was the most recognizable and proximal piece of foreign terrain to Egyptians and thus became a stand-in for all foreign landscapes, irrespective of their actual topographic situation (mountainous, flat, coastal, swampy, sandy, etc.).

THE CLASSIFIERS O49 (⊗) + N25 (𐀓)

It is not necessarily obvious what these two signs actually convey in their basic visual form. The sign 𐀓 presents a series of three hills and is used to classify a set of common nouns relating to the desert and hills. In some painted examples there is a small strip of green cultivation at the bottom of the glyph 𐀓 (Gardiner 1957: 488), likely delineating the edge of the cultivation on Nile Valley. The sign therefore is a basic visual representation of the escarpment and rugged desert country next to the Nile Valley, which neatly explains why this sign also classifies landscapes directly on the Nile escarpment like *hr:t-*

² In keeping with system now established in classifier studies (Goldwasser 2002), the suggested meaning of graphic classifiers is encoded within square brackets [].

ntr “necropolis” and *ikw* “quarry.” By extension, the sign as a classifier came to designate anything broadly related to desert landscapes and probably became a somewhat blurred category for anything [OUTSIDE NILE-SPACE]. This meaning is suggested by the use of this classifier for any landscape outside the Nile Valley, no matter its topography or location. For example,  would also be employed for places in the Tigris-Euphrates basin or the Levantine coastal plain, which are hardly topographically undulating or hilly, i.e., *Sngr* (Babylon) or *Rfh* “Rafah” (near Gaza) (Hannig 1997: 1359, 1381). One might consider the hills of this sign , being Egyptian’s most proximal visual cue for something outside the Nile, as standing for a metonym for “the beyond” and anything foreign in the sense of geography. It seems speculative to see in this sign a use that means [FOREIGN] in the sense of political or demographic alterity until later in Egyptian history. If  means “foreign” in this sense, it can only convey this via an extended metonymic use.

While  is more or less easy to visually interpret as depicting a group of hills, the exact visual meaning of the  sign is not so straightforward. Standard lexicons and grammars cite its meaning commonly as [CROSSROADS], thereby designating a city or some part thereof (Gardiner 1957: 498; Hannig 1997: 1072), but there have been some doubts about this reading (Van Lepp 1997; Taterka 2017). Kuhlmann (1991) prefers a more abstract reading of the sign as a symbol of a prehistoric city. The classifier’s use in a number of common nouns such as *dw3.t* “the Netherworld,” *mni.wt* “harbor,” *sp3.t* “nome,” and *grg.t* “settlement, arable land” do not necessarily concord with the idea that the classifier was used specifically for settlements or built agglomerations—likewise, its use in the mythical *Sh.t-i3r.w* “field of reeds” is difficult to accord to this meaning (Taterka 2017: 22). The common element here seems to be a connection to the landscapes and space that contain urban establishments, the floodplain, and the Nile. Conjuring this salient element of Egypt’s geography of the floodplain, Van Lepp (1997) proposes that the sign’s iconic value accords to canal systems, noting the blue colouring of some Old Kingdom painted examples of the sign. If the sign did depict “canals,” it does not overlap with  (N23) or  (N36), both of which seem to accord to a single “canal.” Rather,  seems closer in logic to  (N24) as depicting a plurality of floodplain space.³ Van Lepp’s assessment that the sign depicted canals rather than crossroads, however, has not met with general acceptance (Regulski 2010: 161–163; Lincke 2015, 131 n. 23). As we are so removed from the original creators of the hieroglyphic system, in final analysis it seems difficult to settle on a pervasive iconic definition for this classifier between the “crossroads” or “canal” theories (Razanajao 2016: 36). Meanings according to [FLOODPLAIN-PLACE], [NILE-SPACE], or [URBAN-SPACE] might all approximate its central idea.

The sign  (T14) seems to enter the toponymic classificatory system fairly late and only becomes common in toponyms of the New Kingdom (Spalinger 2008; Lincke 2015; Chantraine 2019: 65), although there are some rare uses in Middle Kingdom placenames (Cooper 2020: 40, 254). Quintessentially, it is first encountered as a classifier for foreign ethnonyms, not toponyms. It is considered by some scholars to have a specific meaning of [NOMAD] (Spalinger 2008: 141) in some sort of contrastive opposition to the situation

3 Gardiner 1957: 488 suggests the lines in N24 designate “runnels” in an agricultural plot.

of urbane 𓂏. This meaning is difficult to universally accept as its primary idea, given that peoples on Egypt's peripheries in riverine Nubia or the Levant can hardly be classed as nomads or possessing a non-urban lifestyle. Its use in toponyms seems to sometimes stand either in place of 𓂏 or can visually join it in the stacked orthography of Late Egyptian (𓂏𓂏). That the sign had some meaning as [FOREIGN] seems also likely in its metatextual use, where it could classify loanwords as "foreign" in select papyri where foreign languages were encoded in the Egyptian hieroglyphic or hieratic script (Allon 2010).

Spalinger (2008) stressed that the two synchronic scripts of hieratic and hieroglyphic exhibited different manifestations of classifiers on toponyms. The "stacking" or "agglutination" of multiple classifiers is observed to be a more common feature in the hieratic script of the New Kingdom (Lincke 2015; Chantraine in press), although "multiple classification" in toponyms is also attested in earlier periods in hieroglyphic writing as will be shown through many examples below. While many of the patterns and developments discussed in this article operate independently of the script employed (hieroglyphic or hieratic), it is certain that script choice could be an influencing factor in choice and reproduction of classifiers. There is also the issue that, in certain periods such as the Old Kingdom, our hieratic documentation is quite small so as to make it difficult to generalize any patterns in classification of toponyms outside the medium of hieroglyphic texts. A further complicating factor is the knowledge of whether a hieroglyphic text was copied from hieratic or an intermediary script called "cursive hieroglyphs," especially relevant in the production of so-called "monumental epigraphy." In many formal documents from temples and tombs, for example, there is every reason to suggest that the chain of copying involved copying from a text that was originally in hieratic.

PROPER NOUNS

There is a basic need here to problematize how a classifier functions when employed in proper nouns. A classifier placed at the end of a word *could* mark the word as a proper noun and thus produce, in the parlance of onomastics, a "unique referent." As stated before, this is not the only role of such signs but it is *one* of their roles. The majority of Egyptian toponyms have a transparent lexical meaning before becoming crystallized as a toponym, a common semantic feature present in the toponymy of many different languages. This usually entailed a process whereby toponyms start their life in spoken language as descriptors or descriptive appellations and are then "semantically bleached" into a proper toponym after extended use in a speech community (van Langendonck 2007: 92). In the Egyptian script, the placing of the toponymic classifier on the end of a word served to show the reader that the word is no longer a common noun but rather a proper noun; for example, the word for "elephant" 𓂏𓂏 𓂏𓂏 [ELEPHANT] becomes the placename 𓂏𓂏 𓂏𓂏𓂏 [ELEPHANT] + [FLOODPLAIN-SPACE] "Elephantine." The classifier here illustrates that the word is no longer a common noun and now has one unique referent. Frequently, the classifier for the toponym's etymon is completely exchanged for a toponymic classifier; for example, 𓂏𓂏 𓂏𓂏 [TREE] "sycamore tree" becomes 𓂏𓂏 𓂏𓂏 [FLOODPLAIN-SPACE] "Sycamore tree(-place)" (Gomaà 1987: 15). It seems likely that one of the discrete roles of

Egyptian classifiers, in addition to being a repeater, a categorial taxogram, a metonym, and a metaphor (Goldwasser 2002), was to serve as a “proper noun marker” or a “placename marker.” If there had only been one “toponymic classifier,” then this would be their sole function, but as there are at least two Egyptian toponymic classifiers, these signs also simultaneously served the role of “taxograms” as well as “proper noun markers.” Cross-linguistically, the addition of the classifier can be considered one strategy among many of marking nouns as proper. There is of course capitalization in modern European scripts. Some languages even contain specific spoken affixes marking a noun as “proper”, such as in Austronesian languages (Blust 2015) and Australian languages like Wangkangurru (Hercus 2009: 280).

Research in proper nouns by linguists and cognitive scientists have shown that all proper nouns belong to a semantic category in the mind of speakers even if that category is not explicit lexically (van Langendonck 2007: 114). In other words, to use a proper noun effectively in speech, the speaker must have some idea as to what “category” it belongs to, such as [PLACE], [GOD], [PERSON], [DOG], [NATION-STATE], or even more select categories like [MOUNTAIN], [HEAD-OF-STATE], [SHIP], and so forth. These “mental” categories can be somewhat common or universal, but there are culturally sensitive specific name classes according to different ethno-linguistic groups. For example, many pastoralist groups across Northeast Africa have a specific set of names that may be bestowed only on their cattle and there thus exists in these cultures a naming category of [CATTLE-NAME] (Kaplan & Smidt 2007: 1127). Egyptians no doubt placed great stock in the category for [ROYAL-NAME] as manifested in the cartouche .⁴ For our research in the Egyptian lexicon, does it hold that  and  present culturally conditioned categories of space according to [NILE] or [OUTSIDE-NILE]? If the answer is affirmative, our glosses and understanding of these categories must appreciate that the name-categories cannot be translated very accurately at all but rather are particularly emic ideas of how an Egyptian scribe would configure their universe from their Nile-centric perspective. Indeed, it must be emphasized that the average Egyptian would have had a rather exceptional worldview considering the overwhelming majority of the population universally shared a homeland on the banks of the same river, a mental common denominator *par excellence*.

Such “mental” categories can be lexically explicit through what linguists and toponymists call the “generic,” a particularly productive feature in toponyms. The generic could be coupled with a pre-existent toponym to designate a specific feature near an established toponym, “Sydney *Harbour*,” or sometimes be a near tautological repeater, “city of Boston,” or merely mark a feature type, “Amazon *Jungle*,” “Mount Everest.” Whether all such generics are part of the formal or canonical name varies widely in different cultural toponymies. Sometimes the generic can be amalgamated with the specific element into one single lexical expression (*lexicalisation*), for example “Newtown” from “New town” (Harvey 2020: 412; Tent & Blair 2021). In Egyptian toponymy, generics are relatively common and include a host of terms in the built and physical landscape such as *h3s.t* “hill-country,” *dw* “moun-

4 The sign was also employed as a classifier for the word *rn* “name”, especially in the phrase *rn wr* “great name” for royal names in the New Kingdom.

tain,” *niw.t* “city,” *dmi* “town,” and *t3* “land,” among others. These generics are not a rule in toponyms but help us in its analysis—the creation of longer multi-lexeme toponymic noun-phrases has a particular bearing on how classifiers were employed by a scribe.

One of the advantages of the Egyptian toponymic classification system is that, as well as constituting a taxonomy, it also provided the functions of a “reading-aid” and word separator (Goldwasser 2009: 36). In classifying placenames, these signs mark a word as a proper noun, setting it apart from general vocabulary. In many texts this might seem unnecessary; pragmatics and context could easily mark out whether the word was to be read as a common noun or a placename. However, in placing these classifiers after placenames, especially in longer narrative texts, it served the dual purpose of marking a noun as proper as well as putting the placename into a basic spatial category. The advantages are obvious for the reader of the text—they can both identify the word as a placename and put the placename somewhere in their mind-map of world geography. This had great utility in different genres of texts. How could a person know when an expedition left Egypt? How was the reader to know the travels of the adventurer Sinuhe? How were they to know the basic landscape of the Netherworld? Even if the readers had no prior knowledge of these places, they could at least insert the placename into a basic spatial framework. The system thus seems somewhat driven by the necessities of the reader. This also explains why certain genres like onomastica (lists) could exhibit zero-classification, when context made it obvious that a word was to be read as a placename. Such is the case in the textual genre of foreign placenames known as the “Topographical Lists,” where many renditions show no or few classifiers (Edel 1976; Wilson 2005).

THEORETICAL APPROACHES TO TOPONYMIC CLASSIFICATION IN EGYPTIAN

Toponymic classifiers have been far from ignored in the scholarship, but for now there is no monograph that treats this subject independently. Perhaps one of the most influential studies are Loprieno’s analyses on classifiers in Egyptian literature (Loprieno 2001; Loprieno 2003), which sought to establish changes in the Egyptian worldview through the correlating changes in the use of classifiers on placenames in Egyptian travel literature. These changes, frequently from  →  or  →  were considered by Loprieno to demonstrate ideological changes in how Egyptians situated themselves in the world, a kind of metric for the Egyptian elite *zeitgeist*. This feature is particularly evident over the lapse of time between the Middle Kingdom and the New Kingdom. The classificatory system had transformed so that all classes of words now commonly held a plurality of classifiers rather than one individual classifier (Chantrain 2014; Junge 2005: 41–42), and in doing so changed the discrete role of classifiers in the system. This “stacking” of classifiers and the influence of the orthographic system on toponymic classification was also stressed by Spalinger (2008). While citing the orthographic tendency of “stacking,” Spalinger also remarks that the -sign became especially prominent, perhaps with a meaning of foreign, unsettled, and nomadic, an umbrella of linked ideas for the urbane Egyptian mind. Spalinger’s study assessed the different classifiers used in placenames on Egypt’s northeastern frontier fortresses of Tjeku and Tjaru, which show great variation

in classifiers diachronically and amongst genre and medium. This geographic focus of the frontier was also taken up by Lincke (2015), who instead emphasized that places on the frontier stood between two prototype worlds of  and , thus allowing scribes to uniquely alternate and combine classifiers in these frontier locations and fortresses, as they were quite literally between both worlds. Some caution should be stated here in all these theories as to whether the changes in placename classifiers of the New Kingdom and the Ramesside period are attributed to changes in orthographic standards (Chantraine 2014) or indeed represent new ways of viewing space (or both).

More general works on Egyptian classifiers can help us in defining somewhat the role of classifiers in these toponyms. According to Goldwasser (2002: 11–18; 2009), classifiers served a few discrete functions such as a tautological repeater of the word in visual form, a metaphor, a metonym, or a taxonomic indicator. It is this last idea of taxonomy that most suits the uses of  and , as they are used to denote different categories of space. Other studies define the function of classifiers according to whether they are classifying the basic lexeme or the discourse specific “real world referent” in a dichotomy called “lexical classification” or “referent classification” (Lincke & Kammerzell 2012: 88–93). Proper nouns having “one unique intended referent” seem to fall into the latter category of “referent classification,” especially if we consider that the lexical meaning of Egyptian proper nouns (especially placenames) are rather transparent and would therefore need to be classified with  or  in order to designate a specific place rather than its etymon. Using the example of “Elephantine” again, without a toponymic classifier it would be possible to confuse the toponym *ḥw*   [FLOODPLAIN-SPACE] for the common noun  *ḥw* [ELEPHANT]. The use of “referent classification” in toponyms is further supported by the fact that the placename can change classifier depending on the discourse and the perspective of the scribe or author. Depending on political perspective and ideology, for example, the placename for the Delta capital of Avaris was written with different classifiers (Berlev & Hodjache 1977: 25–27; Spalinger 2008: 142–143).

One of the chief issues commented on by scholars is the expansion of the toponymic classifier system in the later New Kingdom and Ramesside period from its clear and sharp distinctions implied in  and . This is mirrored generally in the orthographic system of Late Egyptian where classifiers are now often combined into “complexes” (Junge 2005: 41–42). For toponyms, this expansion meant that they were frequently classified with more than one sign and indeed could take on two or three signs in combinations like  or , seeming contradictions to the old dichotomous system. For some, this classification is a breakdown in the hard and clear semantic distinctions of the earlier system, while for others this singles a new complexity that can communicate multifarious categories and that foreign places exhibited “fictive Egyptianization” (Loprieno 2003: 47; Di-Biase Dyson 2013: 338). This new system was not a “breakdown” in the sense of being without rules either. Desert placenames with no population were still precluded from , but  also could now be used for veritably foreign establishments in the Levant and elsewhere.

Some consideration should be given to the “political” membership of the authors of these texts. For Egyptian scribes it made sense to configure the use of classifiers according to their membership (implied or explicit) to Egyptian culture, the perceived Egyptian ethno-

linguistic group, or indeed the Egyptian state. In a number of situations, the hieroglyphic system was used by non-Egyptians to author their own texts, most notably in the use of “Napatan Egyptian,” the formal register of Egyptian language and texts used by the elite of the Kushite empire of Nubia in the Napatan period (ca. 750–250 BCE). Having inherited the hieroglyphic system of the Ramesside period, Napatan authors could now use this “foreign” script to create their own geographic perspectives oriented from their capital in Upper Nubia. Placenames such as the city of “Meroe,” *Brwt* , could now be classified with , a placename which for an Egyptian scribe would have no business belonging to any category but . Likewise, other Kushite cities such as Napata (*Npt*), Doukki Gel (*Pr-nbs*), and Kawa (*Pr-Gm-Itn*) all took  (Peust 1999: 208–228). Taking an identical cue from the Egyptian worldview, the Kushites’ enemies in the foreign lands of *Mdd*  and the *Rhrhs*  likewise were classified with . The system was “relativized” to the differing perspective and ideologies of a non-Egyptian regime but was not altogether sensical. For example, the word for “Egypt” (*Km.t*) still held  despite it being “foreign territory” for the Kushite king Harsiyotef (Peust 1999: 27 l. 64). This might be explained through the prestige of Egyptian culture in the sense of elite emulation and also through the Kushites viewing themselves as the rightful inheritors of Egyptian territory as the chosen people of the god Amun.

CLASSIFIER GENERIC EXCHANGE

One of the proofs that toponymic classifiers could act as “mental” categories and had an inherent link with the logographic lexemes such as *h3s.t* “hill-country” are the examples where a generic word is dropped, provoking a change in classifier in the toponym. These are particularly common in what I call “relative toponyms” in the Eastern Desert, desert tracts which are labeled after their most proximal settlement on the east bank of the Nile (Cooper 2015; Cooper 2020: 421). The examples are not so many but enough to prove that there existed a pattern whereby “hill-country of city X” [NILE SPACE] could change to “city X” [OUTSIDE NILE-SPACE] with the exchange of  to , so  *h3s.t-Gbtw* “Hill-country of Coptos” [NILE-SPACE] became a single lexeme toponym  *Gbtw* “Coptos” [OUTSIDE NILE-SPACE], both referring to the same space. This pattern demonstrates that a single lexeme could refer to the proximal desert environs near the city through a use of  rather than use of a compound generic with *h3s.t* “hill-country.” This would be impossible to recognize in spoken language but was an expedient strategy in written language. This pattern of dropping generics and exchanging classifiers is also attested elsewhere, for example  *Ht.w-Mfk3.t* “Terraces [OUTSIDE NILE-SPACE] of Turquoise [PLURAL]” could be transformed into  *Mfk3.t* “Turquoise” [OUTSIDE NILE-SPACE] (Cooper 2020: 242–243). Mirroring the functional and pragmatic nature of spoken language, generics could also be wholesale dropped from toponyms, explaining for example why the shorthand *Mfk3.t* “Turquoise(-land)” is found only in the idiom of rock inscriptions belonging to miners (Gundacker 2011: 421). This toponymic-classifier pattern suggests scribes needed a way, without using oral speech, to designate the true location of a placename and could change the classifier accordingly. The corollary of this is that

that the authors of these texts were aware of the precise location of a placename. Such writings are therefore discourse specific.

ALTERNATING CLASSIFIERS BEFORE THE NEW KINGDOM

One of the assumptions maintained in works on toponymic classification is that the earlier system is rather “clear and sharp” and maintained distinctions of “foreign” versus “domestic” space (Loprieno 2003: 35–41; Spalinger 2008: 141). In focusing on the frontiers and even placenames within Egypt, it can be shown that Egyptian scribes grappled with the idea of how to classify places that were not obviously and squarely belonging to the category of  or  in the preceding epochs. These instances show us that the classificatory system was always open to interpretation and confusion. Take for instance our favorite example, the placename for Elephantine Island, *3bw*. It would be difficult to argue that this placename was not somehow within the political confines of what we consider “Egypt,” even if the local material culture from the earliest periods demonstrates a strong presence of Nubian cultural groups (the A-Group, Pan-Grave, C-Group) (Raue 2018). Yet even from the Old and Middle Kingdoms (Zibelius 1978: 3–6; Gomaà 1986: 19–25), the toponym (among many variants) alternates between , ,  (O36), or even  and zero. What is happening here? One could accord these orthographies to its status as a walled frontier town or fortress, which no doubt accounts for the use of the uncommon classifier  [WALLED-SETTLEMENT] (Ziermann 1993: 27 n. 90). So in varying examples of writing *3bw*, it may have been that the scribe is specifically attempting to delineate the fortress, urban settlement, or the wider landscape around “Elephantine.”⁵ These would be examples of “referent classification,” where the scribe is aware of the specific denotation of *3bw* in the text and appropriately uses the exact corresponding classifier to show this. One of the unique considerations of Elephantine is that its local geography is the beginning of the cataract zone and a reach of the Nile that is without a large floodplain. The use of  is thus warranted, as the topography of the region is not a standard characterization of the rest of the length of the Nile Valley with its flat alluvium (Fig. 3.1). Roughly the same dynamics are present for the toponym designating the cataracts itself, *Kbh.w*   , which could be classified with either  or  (Zibelius 1978: 240–241; Gomaà 1986: 12–13). It seems that the topography of the First Cataract region provided some categorical ambiguity for scribes who were left with a variety of options between [NILE-SPACE] or [OUTSIDE NILE-SPACE], or indeed “hedged their bets” and used double classification, which after all is a more accurate representation of the geography of this rocky stretch of the river than a single classifier.

5 Seidlmayer (2013: 205–206) cites examples where *3bw* designates either the city, island, or proximal “mainland.” This is a general feature of toponymy cross-culturally, whereby prominent urban toponyms could *pars pro toto* designate larger areas. Sometimes this is encoded in official toponymy, “greater Sydney,” or crystallizes as a historical region *Tunis* → *Tunisia*. In non-proprial Egyptian vocabulary, Chantrain (in press) calls examples of this method of classification “alternative classification,” where a word can regularly be written with different combinations of classifiers, but usually retains one “superordinate” classifier.



Fig. 3.1 The rocky landscape of Aswan, Elephantine, and the Cataract Region, © Julien Cooper.

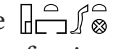
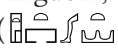
The placename $\text{𓆎} \text{𓆏} \text{𓆑} R3\text{-}3w$ “Tura”, the limestone quarries east of Memphis, provides another example of ambiguous categorization. This toponym could be classified with both classifiers 𓆑 , solely with 𓆏 , or more frequently with 𓆑 (Zibelius 1978: 135; Gauthier 1925–1931: III, 112). Tura is logically classified with 𓆑 just like other elements of the near desert such as cemeteries. But manifestly this quarry is also on the edge of the floodplain, likely also where a number of small settlements existed as indicated by local cemeteries (Jeffreys & Tavares 1994: 145–146). What seems to be evident in both these scenarios for Elephantine and Tura is that some scribes considered these places as being “between” two prototypical categories, just as proposed in Lincke (2015) with respect to Tjaru on the eastern frontier. In the case of Tura it would be impossible, however, to argue that the sign 𓆑 here has any relation to a notion of a “political” alterity, likewise also with respect to Elephantine. These examples rather demonstrate that 𓆑 in these cases was primarily linked to a topographical idea of [OUTSIDE NILE-SPACE].

Another Old Kingdom placename showing both 𓆏 and 𓆑 is the placename $R3\text{-}in.t$ “The opening of the Valley,” usually accorded to the site of Tehna (Zibelius 1978: 136). The writing here (Table 3.1) is probably attributable to a different process which was stimulated by a lexical etymon. The final lexeme for $R3\text{-}in.t$ is the independent word for a desert land-form $in.t$ “valley” $\text{𓆑} \text{𓆒}$, which universally requires the classifier 𓆑 for this common noun referring to a part of the desert landscape. The retaining of 𓆑 in the placename $R3\text{-}in.t$ then is likely an etymological “fossil classifier”—the scribe perhaps should have excised the 𓆑 classifier and simply left 𓆏 to denote the placename for the local settlement. Perhaps due to the fact that the settlement is set within the escarpment or outright confusion, some scribes chose to apply both signs, while in one case the idea of having the sign 𓆏 was eschewed completely.

Table 3.1 The writings of *R3-in.t* after Zibelius (1978: 136).

	[NILE-SPACE]	Urk. I, 24, 13
	[OUTSIDE NILE-SPACE] + [NILE-SPACE]	Urk. I, 24, 16
	[NILE-SPACE] + [OUTSIDE NILE-SPACE]	Urk. I, 26, 4
	[NILE-SPACE]	Urk. I, 27, 14
	[OUTSIDE NILE-SPACE]	Urk. I, 161, 9.

So-called etymon fossils also occur selectively in other compound placenames where the “old” classifier of the common noun etymon was kept. In a placename designating a mining region of the Sinai, *Hrr.t(y)t* , meaning “Flowers-Place,” the classifier for [VEGETATION] is kept along with [OUTSIDE NILE-SPACE] (Cooper 2020: 234–235). A further example is the placename for “Wadi Hammamat,” *R3-hnw* “Vale of the Torrent.” One scribe writes the name of the valley as  with [WATER] and [POOL] classifiers rather than the regularly attested  [OUTSIDE NILE-SPACE] as found in all other examples of this toponym (Couyat & Montet 1912: 126). Whether this was due to some sort of homophonic misunderstandings or an attempt by the scribe in this instance to “reveal” the etymology of the placename as “torrent” is unclear.

A rather informative and exceptional use of toponymic classifiers that demonstrates an idea of political alterity is the changing use of classifiers in the placename  *Hw.t-wʿr.t* “Avaris,” a city in northern Egypt. This was the capital of the Hyksos foreign dynasties and also a major settlement in the periods preceding and following the Hyksos occupations of Lower Egypt in the 14th and 15th Dynasties. The interest here, as is remarked by several scholars (Spalinger 2008: 142; Hodjache & Berlev 1977: 25–27), is that the placename is a witness to changing classifiers even though it is well within the confines of the Delta and the standard perception of a typical “Egyptian” environment. Here, the earlier orthographies of the placename all contain , largely documents of the 14th and 15th Dynasties belonging to the “foreign” Canaanite Hyksos. Theban documents, written by the “indigenous Egyptian” rivals of the Hyksos in Upper Egypt, however, write the same placename with . The writing reverts back to  again after the Egyptian reconquests at the beginning of the New Kingdom, with an honorable exception in the Hatshepsut Speos Artemidos inscription () , which refers to the bygone times of Hyksos domination (Gardiner 1947, 47–48; Spalinger 2008: 142; Allen 2002: 5, pl. 2 l. 37): “when the Asiatics were in the midst of Avaris and the Northland.” This text is a rather spectacular temporally specific “past-tense” use of a toponymic classifier. The scribe was cognizant of the fact that the Hyksos once occupied the “Egyptian” city of Avaris and emended the classifier accordingly to refer to this bygone occupation. The special use of the classifier reinforces the ideological polemic of the text, that Hatshepsut rebuilt the temples which

had fallen into ruin as a result of foreign rule. This alteration of classifiers in this single placename illustrates that the classifier , at least by the Second Intermediate Period, could designate a political alterity rather than or in addition to the idea of topographic alterity. No Egyptian would imagine the Delta as somehow outside any understanding of the geography of “Egypt,” but the Hyksos and their foreign domination had made it “un-Egyptian.” The logical cause of this classifying change may have been that, for the first time in history, Egyptian scribes needed a way of designating places as politically foreign but nevertheless inside the Nile Valley. Foreign domination forced scribes to rethink their categorization systems.

THE OASES

A rather exceptional case study blurring Nile and foreign landscapes is provided by the placenames in and around the oases of the Western Desert, chiefly the depressions of Kharga, Dakhla, Farafra, and Bahariyya. The placename most frequently used for the oases is the word *Wh3.t*   , a word which seems to be able to refer to the totality of the Western Desert oases (Giddy 1987: 37–39), while individual placenames like *Dzdz* “Bahariyya” or *T3-Ihw* “Farafra” could refer to specific oases. In all examples of *Wh3.t* before the New Kingdom the toponym is written with , which seems like the logical classifying strategy from the Egyptian perspective as the placename is well outside the Nile Valley. Yet in one Middle Kingdom text, the Ballas inscription of Mentuhotep II (Fischer 1964: 113–115; Darnell 2008: 93, pl. IX), the placename is written with both classifiers as    , seemingly classifying the oases as belonging to [OUTSIDE NILE-SPACE] and [NILE-SPACE]. The text is very fragmentary, so the entire sense is impossible to discern, but the extant traces narrate a military campaign which resulted in both Wawat (Lower Nubia) and the oases (probably Kharga and Dakhla) as being “annexed” (*sdm*) to Upper Egypt. The rhetoric in this text is overtly political. While Wawat in Lower Nubia only takes , *Wh3.t* “oasis” takes both classifiers . It is difficult to see here why the oasis is allowed this exception and considered as belonging in the category of  [NILE-SPACE], as after all the Nubian Nile is a riverine habitat much like the Egyptian Nile, but the inscription does not afford this classification to Wawat. The explanation for this allowance is likely influenced both by the ideology of the text itself *and* the demographic reality that the oasis possessed an Egyptianized populace since the Old Kingdom. It was accordingly afforded ambiguity as belonging in both spatial categories.

There are other oasis toponyms that provide similar exceptions, namely the smaller settlements in the environs of Dakhla conserved in the Old Kingdom epistolary archives of Balat. In these documents, the two local placenames of  *3ir.t* and  *Mi.tw* (Pantalacci 2013: 286–287) are also given . There seem to be two possible interpretations here that are not necessarily exclusive. One is that the oases are afforded the topographical considerations of being “like the Nile” as a watered artesian basin with urban and agricultural settlements and thus included in the taxonomic space of  periodically. The other interpretation is that local scribes writing from their own perspective of an “oasis world” used this classifier, when perhaps a “Nile-based Egyptian” would have considered such a use as

inappropriate. After the New Kingdom, as with other toponyms in Nubia and the Levant, these Oasis placenames do contain ☉ (Giddy 1987: 140–152). Here, however, the rule is that the oasis lands always had ☉ with 𐀓 or 𐀔, never exclusively ☉.

NUBIA

We have seen that the Aswan frontier presented a unique classifying problem for Egyptian scribes and thus one might expect this ambiguity to continue along the Nubian Nile. In the Old and Middle Kingdoms, no placenames in Nubia certainly contain ☉—this region was considered as being completely within the confines of the 𐀓 spatial category. Even in the Middle Kingdom, where the energetic kings of the terminal 11th and 12th Dynasties established a new administration in Lower Nubia, Egyptian settlements in Lower Nubia remain classified with 𐀓. Thus, the creation of a new colonial settlement or fortress in Nubia did not constitute an allowance for ☉ in the Middle Kingdom. The fortresses of *Bhn* “Buhen,” *Ṭkn* “Mirgissa,” and *Miꜥm* “Aniba” were all written exclusively with 𐀓 or zero-classification (Gardiner 1916). However, Karola Zibelius-Chen (1972: 70), who established the exhaustive catalogue of African and Nubian placenames in Egyptian texts, noticed a new pattern in the New Kingdom:

Im A[lten] R[eich] und M[ittleren] R[eich] sind ausländische afrikanische Toponyme ausschließlich mit 𐀓 determiniert. Im N[eu]en R[eich] kann 𐀓 auch mit ☉ bei einigen Namen (*bhn*, *bk*, *mꜥm*, *npt*) wechseln. Dies sind Namen, von denen bekannt ist, daß sie auch menschliche Siedlungen bezeichneten. Es könnte demnach geschlossen werden, daß Namen mit ☉ Siedlungen, Namen mit 𐀓 Länder und Namen, bei denen beide Determinative alternieren, eine Siedlung und das umliegende Land bedeuten.

In the New Kingdom, these settlements were afforded ☉, but only those larger fortresses and towns in Lower Nubia (Wawat). The example of Buhen is most illustrative. For hundreds of years the settlement had been written consistently with 𐀓, and then suddenly in the early 18th Dynasty around the reigns of Hatshepsut and Thutmose III (ca. 1450 BCE) an enterprising scribe wrote down *Bhn* 𐀓𐀓☉ on a statuette (BM 1022; Smith 1976: 89–90). The use of the throw-stick classifier shows that some consideration was given to the idea that Buhen was not a “standard” Egyptian locality, but not long after another scribe would write a simpler 𐀓☉ in the South Temple at Buhen, a pattern which continues throughout the 18th Dynasty. Was there a tentative transition and a hedging of bets? A similar pattern occurs with *Miꜥm* 𐀓𐀓☉ “Aniba,” where the first example of ☉ is found on an inscription in the Temple of Ellesiya dating to the reign of Thutmose III (Zibelius 1972: 22). This pattern of using ☉ seems confined specifically to Lower Nubia and there is no sign of ☉ in Upper Nubian cities like Napata (*Npt*) until the Napatan Kushites who were writing from a “domestic” Upper Nubian perspective. This means that the presence of ☉ had little to do with the idea of an urban settlement, as cities in Upper Nubia like Kawa and Napata are much larger than those settlements in the relatively infertile and rocky valley of Lower Nubia. As for Zibelius-Chen’s comment that

the use of both classifiers in a single toponym might refer to the surrounding hinterland of the settlement, this seems difficult to test or prove and the answer might instead be found in the inherent ambiguity witnessed in the classification of frontier sites. Neither classifier ⊗ or ⌒ seem to convey any idea of size, they could refer to the names of polities, lands, or small villages.

This shift in classifier use for Lower Nubian placenames comes before the major transformation of the classificatory system in the late New Kingdom and Ramesside period. The change of classifying Nubian fortresses is thus not simply attributable to an orthographic fashion and cannot have anything to do with topography, as nothing had changed in the landscape of the Nubian Nile. Rather, the addition of ⊗ to these settlement names must be ascribed to a genuine change in worldview, likely an administrative-ideological parlance which now considered Nubian settlements as somewhat “Egyptian.” This may have been attributed to broad changes in the Egyptian colonial apparatus, now seeing this land as constituting an inalienable political part of Egypt. Upper Nubia (Kush) and Lower Nubia (Wawat) were after all separate administrative divisions in the New Kingdom colonial empire. Unlike Upper Nubia, which was ruled much more loosely with the help of indigenous elites, Lower Nubia seems to have exhibited the trappings of colonial “direct rule” (Morkot 1991). This precise phase of the New Kingdom where the classifiers change (Hatshepsut–Thutmose III) witnessed the transformation of the fortress communities into “fortified towns,” and also the construction of extensive temple works (Török 2009: 165). Perhaps these local changes stimulated a shift in attitudes and reconfiguration of what proximal Nubia meant in the colonial-imperialist dogma of Egypt’s empire. “Nearer” Nubia could now be “Egyptian,” but further “Nubia” was not yet accorded this orthographic privilege. The change in classifiers for Lower Nubia was also likely coupled with the idea that the Nubian Nile represented, in part, a topographic extension of the Egyptian Nile. This latter observation derives in part because other Egyptian-colonized places in the deserts or the Sinai and the Levant never underwent this equivalent allowance for ⊗ in this period. In other words, it is the combination of political colonialism in a semi-familiar riverine environment that allowed the extension of ⊗ to Egyptian-founded settlements in foreign Nubia. A further pattern here is that many of these texts written with ⊗ originate from the local communities themselves, perhaps arguing for local scribes preferencing Lower Nubia as “domestic” territory. Along with the examples in the “Oasis” and “Avaris,” these patterns suggest that Egyptian scribes possessed not only a notion of an inalienable “Egypt” but also had a mental notion of an “Egyptian empire.” They knew what territory *was* and *was not* part of their empire and were aware of the ambiguities on the edges of empire in geographically and demographically complex borderlands. Analyzed over the course of the millennia, from the Early Dynastic to the New Kingdom, toponymic classifiers show a gradual evolution from designating a topographic alterity $\pm$ [NILE-SPACE] to also being able to communicate a political alterity of “foreign” and “domestic.” These same zones of classificatory ambiguity are also witnesses to cultural entanglement on the archaeological record between Egyptian material and indigenous material cultures (fig. 3.2).

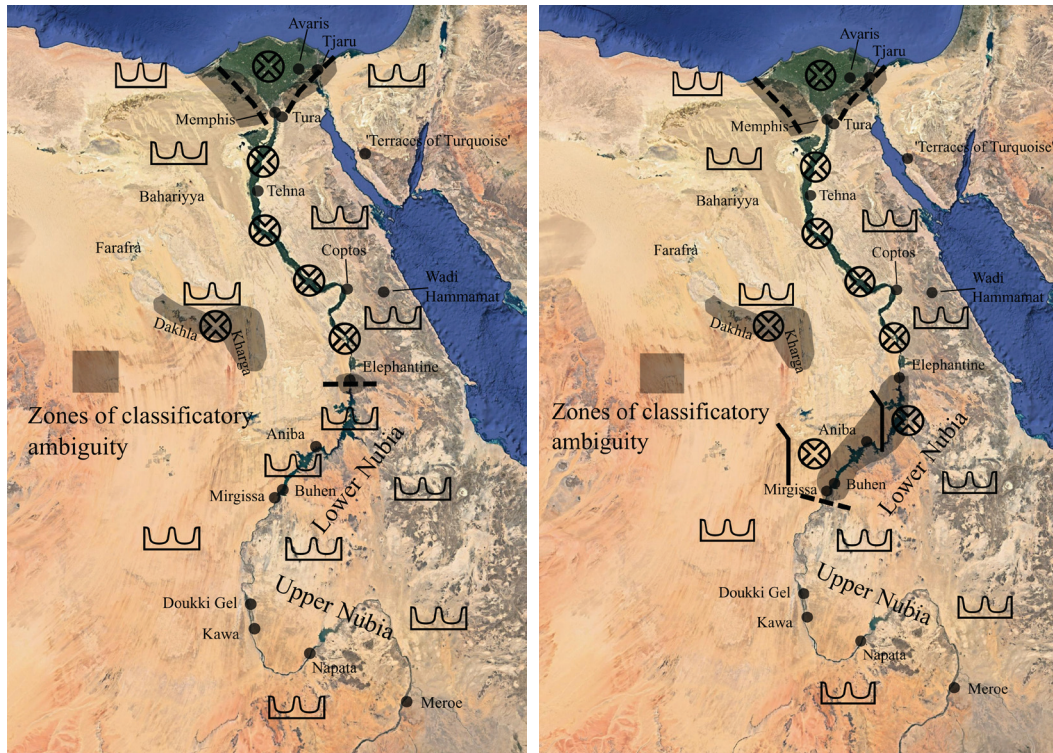


Fig. 3.2 An idealized view of classification strategies before the New Kingdom (left) and in the 18th dynasty of the New Kingdom (right) with marked frontiers and ambiguous zones. Adapted map © Google Earth.

A SET OF CLASSIFYING RULES

Can we establish a set of common rules that guided scribal practice in placing classifiers? There are instances that might obscure our ability to isolate classificatory rules, however. This question is whether the classifier was appended to a toponym according to an active and individual understanding of the placename by the scribe in the discourse of a text (“referent classification”; Lincke and Kammerzell 2012: 91–95) or whether the scribes merely replicated a set of orthographic rules involving “thoughtless” rote copying when applying classifiers. Clearly, both paradigms were at play in different textual genres and documents and across various *Vorlagen*. This observation warns us of attempting to make all our data fit into one or the other of these paradigms. We must allow for the fact that some scribes actively interpreted the classifier, while in other cases scribes merely copied classifiers from memory or other documents. In the first case, we are observing a real glimpse of a scribal worldview, in the second case we are rather seeing a copyist conforming to an older standard and repeating an established worldview. That being said, based on current textual corpora there are some discernible rules discerned from the previous discussion:

RULE 1

Toponyms that were geographically ambiguous between  [NILE-SPACE] and  [OUTSIDE NILE-SPACE] could be classified with either or both signs according to scribal interpretation, with the addition of  in the New Kingdom. This rule also seems to hold for some “mythical placenames” from the Netherworld in the unobservable universe (see below). Another approach to these toponyms is to label them as cases of “alternative classification” (Chantrain, in press), where a word regularly oscillates between classifier combinations. Sometimes there is a discernible and predictable reason for this, such as specifically referring to features in the landscape like fortresses or the hinterland near a settlement, but in many cases there is no obvious reason for classifier choice.

RULE 2

Toponyms frequently exhibit zero-classification where the semantics would be tautological or obvious to the reader. This is especially the case in compound toponyms of the type generic plus specific, where the generic obviously situates the placename in either the Nile Valley or outside the valley. For example, places that take the generic *ḏw* “mountain,” as in *ḏw-ḏšr* “Gebel Ahmar,” frequently have zero-classification () although examples with  (Gauthier 1925–1931: VI, 126; Ayedi 2012: 988) show that this was a scribal choice and idiom. This rule seems to be based on a logic of functionality and expediency as to give the reader no more information than is necessary to place the toponym in a spatial category. It also seems to be a choice of “lexical classification” versus “phrase classification” (cf. Lincke & Kammerzell 2012: 95–98). The assumption might be here that “phrase classification” in toponyms is an Egyptian clue to lexicalisation of a toponym (i.e., “New town” → “Newtown”), while the former shows that a toponym is still transparently understood as its constituent lexemes. This is a dominant pattern rather than a hard rule and does not explain all examples.

RULE 3

“Microtoponyms,” the names of small places (buildings, streets, mines, temples, etc.), are generally excluded from the spatial categories of  and . Such mines, buildings, temples, wells, bodies of water, and so forth almost never hold these classifiers (Cooper 2020: 415). If they did hold these classifiers, it is usually a sign of a toponymic “feature shift” or “locational shift” (Tent & Blair 2021), for example where a temple christens the name of a proximal urban agglomeration. Such a shift can be witnessed in two toponyms designating the city of Memphis: *Mn-nfr*   “Enduring is the Perfection” [PYRAMID] [NILE-SPACE] from the earlier Pyramid name *Mn-nfr-Ppy*   “Enduring is the perfection of Pepi” [PYRAMID] and *Hw.t-k3-Pth*   “The Ka-mansion of Ptah” [NILE-SPACE] from a presumably earlier designation referring solely to the temple estate of Ptah (Gauthier 1925–1931: III, 38–39, IV, 147; Hannig 1997: 1345, 1368; Gomaà 1987: 10). Egyptian scribes required some subjective size of a place for it to be a “true” toponym, if by this we mean a toponym that could contain  or . This seems to be minimally an agglomeration (a village) or larger; the hamlets and fields in papyrus Wilbour (Gardiner 1941), for example, do seem to be classified with . The reason for this pattern is that such “microtoponyms”

also had better suited classifiers that referred to the precise “structure” that constituted the origin of the “microtoponym,” such as $\square$ in the case of temples or mines.

RULE 4

It was possible to use $\otimes$ for places outside Egypt only in the New Kingdom and later. Already there are rare exceptions from the oases or Wadi Natrun since the Old Kingdom. Beginning in the reign of Hatshepsut, $\otimes$ was applied to the Egyptian settlements in New Kingdom Lower Nubia, never extending to Upper Nubia. A rare case of $\begin{smallmatrix} \sqcup \\ \otimes \end{smallmatrix}$ occurs on the Memphis Stele of Amenhotep II with the Syrian placename *N_{gsw}* “Nukhasse” (Urk. IV 1309.3), showing that scribes were experimenting with the geographic extension of this sign. On present records and databases, there seem to be four identifiable steps in the geographic expansion of $\otimes$:

Phase	Use of $\otimes$
1. Early Dynastic to the First Intermediate Period (ca. 3100–2050 BCE)	The Nile Valley, Wadi Natrun, the Fayum, and within the oases, but not the toponym “oasis” (<i>Wh3.t</i>)
2. Middle Kingdom to early New Kingdom (ca. 2050–1450 BCE)	+ <i>Wh3.t</i> “Oasis” (one example)
3. Early New Kingdom to 20th Dynasty (ca. 1450–1190 BCE)	+ Lower Nubian Egyptian settlements
4. 20th Dynasty and later (ca. 1190 BCE >)	+ Any settled place outside Egypt in combination with $\sqcup$ and/or $\}$

PLACENAMES OUTSIDE THIS WORLD

The many iterations of Egyptian geography of the Duat, “the Netherworld,” include numerous placenames that belong to the unobservable world. From the Pyramid Texts to the later cosmographies of the Amduat, the Book of the Day, and the Book of the Caverns, Egyptians produced an exceptionally complex geography of the afterlife. Placenames in the Duat exhibit the same sort of classifying ambiguity that can be observed on Egyptian frontiers—some are written with $\otimes$ and then change to $\sqcup$ or vice-versa, also containing other classifiers belonging to the ideas of sky and water (Thuault 2018; Zago 2018). The mythical placename *Ndi.t* “The falling place (of Osiris)” could be classified with $\otimes$, $\sqcup$, or even the combination $\begin{smallmatrix} \sqcup \\ \text{wavy lines} \end{smallmatrix}$ for [WATER] (Thuault 2018: 9). On the one hand, it would be crass of a modern scholar to conclude that the Egyptians possessed no definite ideas of their netherworldly Duat; clearly, the cosmographies and the depictions of the universe in Royal Tombs and the Book of Two Ways reveal a sophisticated conception of the Netherworld that allowed definite measurements, detailed description of geographies, and illustrations of maps (Quirke 2003; Schneider 2010). Yet on the other hand, it is easy to see how such conceptual geography produces the same kinds of interpretative problems

as frontiers. What places were inside or outside the Nile Valley in the Netherworld? How did an idea of domestic space manifest itself in the Netherworld? If these questions have no certain answers, there is every possibility that authors and theologians struggled with how to place these toponyms in appropriate spatial categories.

AN EVOLVING SYSTEM

One approach to the system is to see how the world ordering changed through different phases of the Egyptian script. We have witnessed how the New Kingdom and the Ramesside Period were already one watershed moment, but surely the system before this is itself the result of different orthographic and ideological changes set in motion since the origins of the Egyptian written script. Did the first scribes consciously develop this system? Judging from Early Dynastic inscriptions, it does not seem that the kind of categorization rules we have outlined for later periods (from the Old to New Kingdoms) existed in an identical pattern that would be common in later Old Kingdom inscriptions. The first possible placenames are not likely on the U-j labels as is commonly supposed (Stauder 2021) but perhaps to be found in rock inscriptions from the Aswan area (Morenz et al. 2020; Darnell et al. 2017). If the readings of these difficult inscriptions are correct, dating to the reigns of Scorpion and Qa'a (Dynasty 0 and 1), both employed earlier versions of the  sign. Elsewhere in these Early Dynastic inscriptions, placenames frequently belonged to the category of zero-classification or often employed purely logographic writings (Morenz 2004: 103–105). For foreign placenames, there was even a different classifier altogether, the sign  (N17/N18), employed on places like *Tḥn.w* “Libya(ns)” or *Šzm.t* (“Eastern Desert?”) (Kahl 2001: 118; Regulski 2010: 148).⁶ This use of  seems to be a very old toponymic classifier but it is retained on rare occasions millennia later.

While the standard uses of the “normal” classifiers of  or  have their origin in the Early Dynastic, the system had variations and idioms that would become less common in later periods. Placenames like *Wnt*  could be enclosed in a crenellated fortress (Kahl 2002–2004: I, 147), similar in principle to the orthographic arrangement of a cartouche, adding a further “category” to our classification system in [FORTRESS] or [WALLED-SETTLEMENT]. The notion of this classifier and category does not seem to map very easily onto the overarching binaries emphasized in the later systems of Nile versus desert or foreign versus domestic, although most uses of this [FORTRESS] classifier likely designate settlements on the Egyptian frontiers. The examples of *Wnt* , *Zrr* , and *Tpʒ*  from the tomb of Kaaper (Fischer 1959: 257, pl. 8) even communicate a double classification with [OUTSIDE NILE-SPACE] and [FORTRESS].⁷ So too there are examples of this sign as a standard postpositional classifier in the placename *ḥḥw 3bw* “Elephantine” (Zibelius 1978: 4). The method of classification using walled enclosures endures throughout Egyptian history into the Old Kingdom and later periods but is certainly

⁶ Gardiner considers these signs a variant of  (N22), which demonstrably depicts sand in some better-illustrated examples, thus perhaps delineating desert tracts (Gardiner 1957: 487–488).

⁷ Some of these toponyms are written in non-crenellated rings, but this does not seem to be diagnostic and is just a graphic variant.

rare and only used with select corpora and placenames (Gundacker 2017: 361–371).⁸ It is most famously employed in the corpus of epigraphic lists of foreign placenames, the so-called Topographical Lists. The evolving use of different classifiers in the Early Dynastic shows that the classificatory system for placenames was a slowly transforming and evolving system and that scribes were periodically experimenting with and discarding taxa to reflect their constantly changing worldview.

The Egyptian system created binaries that suited its riverine–desert dichotomous world. Accordingly, it is useful to consider parallels in other written systems that contain visual toponymic classifiers and how they relate to local geography. In the cuneiform scripts of the Near East, placenames are classified not so much by their spatial location but rather whether the constituent name belonged to something of relative size, a city or a land. In Akkadian cuneiform, the sign  KUR could designate a “land” as a prefixed classifier, while  URU is more properly a “city,” but studies of actual corpora demonstrate that these were used haphazardly and were complicated by the fact that some other “toponymic” classifiers like  KI were written post-positionally. It was perfectly acceptable, for example, to have KUR *aššur* KI, i.e., [LAND] Aššur [PLACE], meaning something like “land of Assur-city” (= Assyria). In a Mesopotamian and Near Eastern world, where there was often a plurality of powers and city-state empires based in centers like Ur, Babylon, Assur, and Nineveh, one can see the advantages of such a system as being able to distinguish cities from polities. A specific notion of “foreign” and “domestic” space is not enshrined in this system.

While the Egyptian classificatory system had some central tenets since the origins of hieroglyphic writing, the system was also in constant flux and evolution, responding to demographic, socio-economic, and political changes. These brief explications on geographic classification and placenames, although not at all fleshed out in enough detail to describe the system comprehensively, support the idea that the classifier system was very much shaped by the specific physical and socio-political environments in which a language group found itself, perhaps also being shaped by prototypical categories of *niw.t* “town, city” and *ḥꜣs.t* “hill-country” present in the Egyptian lexicon. If we accept that these lexemes shaped “spatial classification,” then this observation sounds quite similar to some of the notions of the Sapir-Whorf hypothesis or the theorem of “linguistic relativity,”⁹ that a language somehow influences how speakers think about the world. An Egyptian speaker who perceives the environment through the prism of their language might very well produce different categories and discourses about space than the speakers of other languages.

⁸ It seems unlikely that in every case this sign communicates the specific meaning of [WALLED-SETTLEMENT]. The case of *Ḫsy* “Cyprus” in the Annals of Amenemhat II (Altenmüller 2015: 30; Tf. 10) hardly suits such a meaning when it likely refers to a whole island; so too with many examples given in Gundacker (2017: 361ff), where some of these placenames designate a region (choronym) rather than a specific settlement.

⁹ This topic is much too complex to delineate here, for a contemporary critique of the theorem, see Danesi 2021.

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4

Classifiers as Priming Devices, or “Classifiers Tell Us What We Already Know”

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For J. F. Champollion, the pioneer of classifier studies in Egyptology

ABSTRACT

The article presents the hypothesis that *classifiers* are *priming devices*. They have a prominent *cueing* role in processing script information or spoken utterance by *priming a meaning*. The sophisticated system of graphemic classifiers of the Egyptian hieroglyphic script serves here as a case study.

The first part of the article starts with an introduction to classifiers. It continues with a survey of some recent developments in neurosciences and cognitive linguistics, specifying several models of *lexical access* and information storage in *mental dictionaries*. The second part of the article exhibits the Egyptian graphemic classifier system through the prism of neuroscience and cognitive linguistics theories. The examples of Egyptian words point to clear *interaction* and *reciprocity* between the knowledge organization in the *brain* and the *classifier system of the script*. The Egyptian classifier system seems to be tuned to the brain's activity. What scholars of the history of writing often present as a cumbersome shortcoming of the complex non-alphabetic scripts, is assessed in this article as a *cognitive advantage*.

KEYWORDS: *priming – classifiers – graphemic classifiers – hieroglyphs – categories – mental organization – brain studies*

INTRODUCTION

The impetus for writing this article came from a discussion with Colette Grinevald about (pronounced) classifiers in *Jakaltek Popti'*.¹ She highlighted two relevant facts for my argument in this article:

¹ From here forward, Jakaltek (see Grinevald 2015; 2016 for an excellent introduction). I am grateful to Colette (Craig) Grinevald for this discussion (March 2021) and for her generous sharing of her deep knowledge about classifiers with me over the last two decades. Our early joint classifier

- a. In Jakaltek, classifiers are obligatory for referential nouns. When referring to a pig, one must say [ANIMAL] pig. Eliminating a classifier would be grammatically incorrect. Yet *the addressee would understand the meaning* also by the word alone, that is, *‘pig.’
- b. In Jakaltek and many other classifier languages, “*classifiers tell us, in general, what we already KNOW, e.g., that a pig is an animal*” (Grinevald, personal communication).

If this is true, why are classifier systems so prominent and widespread, appearing in hundreds of languages around the globe (Grinevald 2015; Aikhenvald 2021; Allassionière-Tang et al. 2021)? Why are classifiers borrowed into non-classifier languages? Why do *graphemic classifiers* survive and develop for thousands of years in complex scripts, such as ancient Egyptian, Sumerian and Chinese scripts—ancient and modern?² These questions still are left unanswered.

If we look at the system of *unpronounced graphemic classifiers* in the *ancient Egyptian script*, which is under discussion in this article, Grinevald’s first observation (a.) seems even more relevant. First, the graphemic classifiers in Egyptian are not mandatory and could be eliminated if necessary. So the written signifier representing the lexeme could also lead the reader to the signified *without* a classifier.³ Omissions of classifiers are very common in Egyptian texts. The reasons may be related to materiality (e.g., restricted space), tendencies to iconicity in certain script variations (e.g., hieroglyphs vs. hieratic), interrelation between script and an adjoined image and, in some cases, idiosyncratic choices of the writer (Winand & Stella 2013: 127–128). However, this situation makes it crystal clear that the information included in previous parts of the word is in most cases sufficient to identify the signified safely.

From all the above, we see that the Egyptian *graphemic classifiers*, as much as the *pronounced classifiers* in Jakaltek, in many cases present the reader with *redundant information already known* to him as a native speaker. For example, the Egyptians knew that *r*ˁ

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² Sumerian: Selz, Grinevald & Goldwasser 2017; Selz 2021; Bauer 2017. Chinese: Chen 2016; Handel 2023; Goldwasser & Handel, in press. For the typological similarity between *pronounced classifiers* in classifier languages and *unpronounced classifiers* in sign languages and graphemic classifiers in classifiers *scripts*, see Goldwasser 2022; Grinevald 2015; Goldwasser & Grinevald 2012; Bauer 2017; Bisang 2017.

³ Variations could be found in the same corpus of the same period and in the same script variety. These classifier variations were hardly studied systematically. Conspicuous sites for this phenomenon in Egyptian are the Pyramid Texts, Coffin Texts, Book of the Dead, and so forth. For *iClassifier*, see fig. 4.4 below, and Harel, Goldwasser & Nikolaev 2023, as well as Harel, this volume.

 is a  [GOD] in the Egyptian pantheon.⁴ The often-cited example of the deverbal lexeme *whʿ(w)*     ⁵ ‘fowler’⁶ also offers the Egyptian reader information he already knows, namely, that the prototypical act of fowling is about catching  [BIRD] and  [FISH], it needs  [POWER] and it is done by  [MAN] (see discussion below). Such an amount of extra information goes beyond the built-in redundancy of scripts. Another sort of noun classifier, the *repeater classifier*, is well-documented in spoken classifier systems and in the Egyptian graphemic system (Goldwasser & Grinevald 2012). Examples such as *t̥sm*   ‘dog’ and *miw*    ‘cat’⁷ offer redundant information, as the previous hieroglyphs in both words present complete phonological information necessary for the reading. Moreover, neither lexeme has any strong “competitors”—that is, homographs that may carry a different meaning—for its correct reading. The spelling variation    that indicates the dog belongs to the super-category  [HIDE&TAIL] and so constitutes another unnecessary specification.

This article presents the hypothesis that *classifiers*, in general, are *priming devices*. They have a prominent *cueing* role in processing a script or spoken utterance by *priming a meaning*. I concentrate here on the ancient Egyptian graphemic classifiers of the *script* responsible for much of the “information excess” typical of the ancient Egyptian writing system.⁸ This phenomenon, which scholars of the history of writing often present as a cumbersome shortcoming of the pre-alphabetic ultra-traditional scripts, is assessed in this article as a *cognitive advantage*.

As an interdisciplinary study on classifiers as *priming cues* written by an *Egyptologist*, this article has some limitations. Yet the new approach presented here should prove of enough interest to override this contribution’s shortcomings in the fields of neuroscience, cognitive linguistics and cognitive psychology. Moreover, I hope this article is the harbinger of many other discussions that will distill and refine the hypothesis.

Section 1 briefly introduces classifiers, whether written (unpronounced) or spoken (pronounced). Section 2 continues with a brief discussion and assessment of the traditional explanations for the *emergence* and development of graphemic classifiers in the Egyptian script.

4 From here forward, signs carrying phonological information appear in black typeface and unpronounced classifiers in **amber** typeface. When pictures become members in the script system, they assume equal graphic proportions (calibrated) and as a rule are not connected by touch, movement or mutual recognition (Goldwasser 1995: 24). The size of the fish , duck , cat  and man with the stick  are the same. See the discussions in Goldwasser 2011: 272; Vernus 2015: 146; 2020. The direction of reading is determined by the animated signs that look toward the *beginning* of the text—for example, the word    ‘cat’ is read from *left to right*, and normally the classifier appears at the end.

5 All hieroglyphic examples of words in this article get a linear presentation to make the hieroglyphic script more reader friendly and accessible to those unfamiliar with it.

6 First discussed in Goldwasser 1995: 91. See also Goldwasser & Grinevald 2012: 24, 34–35; Lincke & Kammerzell 2012; Stauder 2020, and Example (4) below.

7 The strong onomatopoeic quality of the phonological signifiers (three first hieroglyphs) of the word *miw* ‘cat’ make the classifier  even more redundant.

8 For an advanced contribution on this topic, see Houston & Stauder 2020.

The next two sections deal with a few qualities of the human mind relevant to our study, as the last fifteen years have witnessed tremendous progress in the neurosciences. Sections 3 and 4 provide an introduction to “reading in the brain” and the representation of categories in the brain. Section 5 offers a concise description of the priming process and concludes with an explanation of the relevance of these theories of the mind to our study of classifiers, explaining how priming may be the secret behind the continuity and “success” of classifiers in Egyptian and other complex scripts. The use of repeaters and phonetic complements as possible priming cues is discussed in section 6, while section 7 deals with the most recent account by David Kemmerer of brain activity and language function; it provides a clue to understanding the widespread phenomenon of *multi-classification* in the Egyptian script. The article ends with conclusions in section 8.

1. A CONCISE INTRODUCTION TO CLASSIFIERS IN *SCRIPT* AND *LANGUAGE*

Classifiers comprise one of the semiotic systems of human language that make up part of the major cognitive process used to *organize* the infinite information facing humans. Classifiers may appear in three media:

- a. PRONOUNCED CLASSIFIERS are known as part of the linguistic systems in languages called *classifier languages* (e.g., Amerindian languages, mainland Southeast Asian, East Asian, Australian languages and more; see Senft 2000; Aikhenvald 2000; Grinevald 2015; Allasonnière-Tang et al. 2021). In these languages, classifiers are PRONOUNCED, and in most cases obligatory (i.e., grammaticalized).⁹
- b. UNPRONOUNCED, GRAPHEMIC CLASSIFIERS (also called “determinatives”) appear in most *complex scripts* (e.g., ancient Egyptian [Champollion 1836; Goldwasser 2002; Goldwasser & Grinevald 2012; Lincke & Kammerzell 2012; Winand & Stella 2013], Chinese—ancient and modern [Handel 2023; Chen 2016; Xu, in press], cuneiform [Selz, Goldwasser & Grinevald 2018; Selz 2021], and Anatolian hieroglyphs [Payne 2017]). Graphemic classifiers are UNPRONOUNCED—they are “*seen not heard*” and may not be obligatory.
- c. CLASSIFIERS IN SIGN LANGUAGES (of different languages) are presented by body signing. These classifiers are also essentially UNPRONOUNCED (Grinevald 2002; Lincke & Kutscher 2012; Brentari 2023).

Example (1) below shows some primary comparative uses of classifiers in *script* and *language*.¹⁰

9 For the origin of the classifier systems in languages, see Craig 1986 and Grinevald 2016; Senft 2000.

10 Examples courtesy of Gebhard Selz, Yanru Xu, and Colette Grinevald.

‘mother[WOMAN]’		classifier 	<i>post</i> position	Script: ancient Egyptian <i>unpronounced</i>
‘[WOMAN]midwife, priestess’		classifier 	<i>front</i> position	Script: Sumerian <i>unpronounced</i>
‘[WOMAN]young sister’		classifier ¹¹ 	<i>front</i> position	Script: ancient Chinese <i>unpronounced</i>
‘[WOMAN] Malin’ (PN)	<i>ix</i> Malin	classifier <i>ix</i>	<i>front</i> position	Spoken language: Jakaltek <i>pronounced</i>

Example (1) shows a comparative use of the classifier [WOMAN] in three *classifier scripts* (unpronounced *graphemic* classifiers)—ancient Egyptian, Sumerian, and ancient Chinese—and one *classifier language* (Jakaltek). The classifier is *pronounced* in the Jakaltek classifier language, yet it carries the same *linguistic function*. Graphemic classifiers may appear in *front* or *post* position but are always *unpronounced*.¹²

1.1. CLASSIFIERS—NO VALUE OF A CONTENT WORD

Classifiers in classifier languages do not have the full value of a *lexical content word* and thus are never included in translations into non-classifier languages, for example, English. See the example below:

Example (2)

Xil *ix* Malin *naj* Pel b’oj *no’* cheh
Saw [WOMAN] Malin [MAN] Pel with [ANIMAL] horse
“Malin saw Pel with the horse” (translation courtesy of Colette Grinevald).

The above sentence is never translated:

* “Saw *woman* Malin *man* Pel with *animal* horse.”

In Jakaltek, when an *unusual referent* appears, such as a *wooden horse*, it is given ‘wood’ in a kind of *compound* construction *after* the word, in *post* position—for example, ‘horse-wood,’ which is clearly not in the position of a classifier.¹³ The same phenomenon could be observed with graphemic classifiers, the classifiers are not translated:

¹¹ Sometimes called “semantic determinative” or “semantic part” in Chinese studies (see Boltz 1996; Handel 2023; Xu, in press).

¹² Compare the situation in Sumerian, where classifiers may appear in *front* and *post* positions and might have originated in a system of pronounced classifiers that existed in the Sumerian language (see Selz, Grinevald & Goldwasser 2018, with a new list of classifiers in Sumerian by Selz).

¹³ For a detailed discussion of this issue, see Craig 1986: 258–262. A similar phenomenon can be observed also in Sumerian (see recently Selz 2021).

Example (3)


hnt *ph.n.f* *W3w3t*
hnt [BOAT] *ph* [MOVEMENT].*n.f* *W3w3t* [FOREIGN/HILL LAND]
 “Sailing  reach(ed)  he¹⁴ Wawat  (toponym).”

Gardiner (1957: 240, 8b) translated example (3) as “Sailing upstream, he reached Wawat.” Egyptologists would *never* translate the above sentence as:

* “Sailing upstream *boat* he reached *movement* Wawat *foreign land*.”

The three hieroglyphs ,  and  that play the functional role of classifiers in example (3) are *absent* from the English translation. A similar linguistic phenomenon can be detected in *spoken* classifiers in classifier languages, as we have seen in the Jakalteke example (2) above. Classifiers are actually “muted” in *translation*. *Pronounced classifiers* have *no representation* in *translations into non-classifier languages* (e.g., Grinevald 2016: 277; in numeral classifiers as well, Bisang and Wu 2017b: 257; Frankowsky et al. 2022: 867). Classifiers are differentiated from parts of compounds (see above, ‘horse-wood’ = wooden horse) by the fact that they lose their value as *lexical content words* in translations (Craig 1986; Goldwasser & Grinevald 2012: 48).

2. ON THE RAISON D’ÊTRE OF THE GRAPHEMIC CLASSIFIERS IN ANCIENT EGYPTIAN AND THE FIRST CLASSIFIERS IN THE SCRIPT

Textbooks on Egyptology state that the *raison d’être* of classifiers (determinatives) in the Egyptian script is the need to distinguish one word from another in *similarly written words*, that is, *disambiguation* of homographs. A second reason occasionally mentioned for the emergence and continuing existence of graphemic classifiers consists in the difficulties created by the Egyptian *scriptio continua*. Thus classifiers are added to mark the ends of words and compounds.¹⁵

¹⁴ Note here the location of the classifier *after the root* before the past marker and the suffix pronoun. In modern semitic root languages written in alphabetic scripts, the space to the next “word” is indicated always *after* the suffix, for example, ‘אכלתי ‘I ate.’ In Egyptian, the classifier has an additional grammatical role of “root marking” (see Goldwasser & Grinevald 2012). For an overview of the root system in ancient Egyptian and Semitic languages, see Oréal & Vanhove in press, and recently Stefanovic and Satzinger 2021.

¹⁵ In compounds, each of the two parts that make the compound could get a classifier in addition to the classifier for the final meaning of the joined parts. See the example and short discussion in Goldwasser 2022: 169–170.

2.1. THE BEGINNING—REFERENCE TRACKING OF PROPER NAMES, DISAMBIGUATION

For *disambiguation*,¹⁶ textbooks usually provide examples of homographs such as *mn*  'be firm' with the  [ABSTRACT] classifier and *mn*   'be ill' with the  [NEGATIVE] classifier (FCD: 106–107). Yet checking the earliest examples of the classifier system during the earliest stages of the script (Dynasties 0–3) brings forward another possible strong catalyst for the emergence of the classifier phenomenon.¹⁷ The early examples of classifier assignment point to an effort of *reference tracking*¹⁸ related to *proper names* and not necessarily to the disambiguation of homographic lexemes. In his seminal book on the script system of Dynasties 0–3, Jochem Kahl writes: “bereits bis zum Ende der 1. Dynastie sind 15 verschiedene generische Determinative nachweisbar; unter Berücksichtigung der Quellenlage...scheint ein Klassifikationssystem der semantischen Felder der sprachlichen Einheiten bereits angelegt zu sein” (Kahl 1994: 111).

In Dynasties 0–3, we find classifiers in many *proper names*—personal names, place names, ship names and more. Proper names and titles make up the lion’s share of texts in this period. In these specific nouns, the final meaning refers to semantic signifieds that may not keep their full value of a content word or carry an additional semantic signified. In the Archaic period, proper names are often made of *compounds* or short *phrases* (e.g., an event called *šmsw hr* ‘the followers of Horus’ or the personal name *di.f n.i* ‘he gave me’¹⁹). The phonological information presented by the hieroglyphic signifiers in these cases offers semantic meanings, which do not include the main property of the signifier—‘name of.’

In such cases, the early Egyptian script tends to add to the missing semantic information presented by the phonetic part an additional *unpronounced* semantic part—an *unpronounced* iconic signifier, for example, [MAN],²⁰ [WOMAN], [DWARF], [DOG], [BOAT], [SETTLEMENT], [CONTAINER], [FRUIT], [BREAD] and so forth (Kahl 1994: 107–111). Today we call the hieroglyphs that are activated in this scriptal function *classifiers* (*determinatives*).

¹⁶ See the recent definition by Daniel Werning: “Generell werden im hieroglyphischen Schriftsystem ja nur die Konsonanten geschrieben. Unterschiedliche Wörter, die zwar unterschiedliche Vokale hatten, aber dieselbe Konsonantenfolge, wurden im hieroglyphischen Schriftsystem konsequenterweise nicht selten gleich geschrieben. Klassifikatoren helfen dem/der Lesenden, die Wörter trotzdem unterscheiden zu können (Disambiguierung)” (after Werning 2018: chap. 8).

¹⁷ The emergence of the classifier system in the Egyptian script deserves an in-depth study that is far beyond the scope of this article.

¹⁸ Compare here Croft 2017 and recently Aikhenvald 2021. For Egyptian, see Lincke & Kammerzell 2012.

¹⁹ Kahl 1994: 421 with note 8 (e.g., the name *di.f n.i*, lit., “Er hat mir gegeben”).

²⁰ This preliminary emergence of classifiers in the realm of personal names is also evident in systems that show a very limited repertoire of classifiers, such as, for example, Linear A and B. When groups of people are being counted, the sign for [MAN] or [WOMAN] is always added (Margalit Finkelberg, personal communication). For the NAHUATL system, see below, note 21.

2.1.1.1. *Personal Names*

In the inscriptions in figure 4.1, the materiality and context of the finds already point to the correct signified (a deceased's *name*). The inscriptions are carved on small tomb stelae. Yet the engravers of some of these stelae chose to add an unpronounced image/hieroglyph ([MAN], [WOMAN], [DWARF], [SOLDIER] or [DOG]) to identify the referent more accurately (Petrie

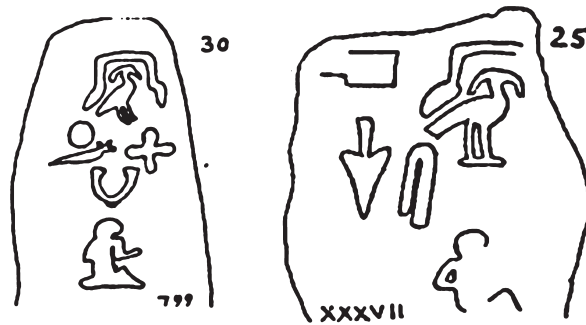


Fig. 4.1 Dynasty 1, titles and proper names, with [man] classifier; after Petrie 1900: pl. XXXII, 30, 25.

1900: pls. XXXI–XXXII). Each of the small stelae above (fig. 4.1) creates a *tri-partite signifier*—the object itself (memorial stela), hieroglyphs that present *pronounced phonological* information (name), and the additional *unpronounced iconic* information offered by the iconic hieroglyph representing the category. The iconic hieroglyph  classifies the referent (the deceased) as [MAN]. The classifier transcends script, opening at least part of the written message for a potentially illiterate or partially literate beholder, who could figure out at least the partial meaning: here rests ‘a man’/‘a woman’ or ‘a dog.’²¹ The  is activated here as a member of the script system and not as an accompanying image. It is calibrated to the same proportion of the other hieroglyphic signs, e.g., bird or snake (see n. 4 above). The seated Egyptian man in this position becomes the “elected image” (signified-elect) that represents the generic concept ‘man’ throughout the history of the Egyptian script (Goldwasser 2009).

2.1.1.2. *Place Names and Vessel Names*

Kahl considers the various [SETTLEMENT] classifiers to comprise one of the earliest categories of generic classifiers, classifying different names of different sorts of walled settlements or building complexes.²² Various archaic classifiers describing temples and settlements (including  O49) follow place and institution names that show similar semiotic patterns found with personal names (Kahl 2007: 651–661).

A few ship names are known with variations of boat logograms or classifiers. Of particular interest is the compound *šmsw hr*  (Kahl 1994: 107 and 665, note 1804). This proper noun is attested from King Den of Dynasty 1 on. The third hieroglyph  in the above

²¹ The NAHUATL system, which has a very limited number and a limited use of graphemic classifiers, presents a solid use of [MAN] [WOMAN] classifiers that emerge, as in Egyptian, in proper names (see Rivera 2021: 30–39 and *passim*). The NAHUATL system also shows distinct cases of *repeater classifiers* (Rivera 2021: 31, fig. 11a).

²² In this period there is no standardization of the hieroglyphic forms, and it is difficult to determine, at this stage of our knowledge, whether the somewhat different forms reflect different architecture or different sign variations (see here, e.g., the discussion in Regulski 2010: 162–163).

example (Dynasty 3) is a *unique classifier* that depicts an extraordinary vessel (T18).²³ The Wörterbuch (Wb IV, 485,5) translates this proper compound as “Frohnde”—an event of biennial sailing through the land by the king and his followers to collect taxes (Regulski 2010: 169). In this example, the classifier  also functions as an ambiguity dispeller to indicate the special *sailing event* and not the officialdom called *šmsw hr* ‘followers of Horus.’ However, in the example above, this proper noun gets an *additional, second classifier* . Two classifiers now classify the compound *šmsw hr*—the unique classifier  and an additional [BOAT]  classifier. The simple boat model  becomes the *generic classifier* for all ships, boats and sailing.²⁴ This semiotic event of double classification and the emergence of the generic [BOAT] classifier was already noticed by Kahl (1994: 112–113). He saw it as one of the first instances of a “systematic classification system” that would flourish later in the Middle Kingdom. By using the second classifier , the Frohnde voyage on the Nile is put into the generic taxonomic category [BOAT]. The [BOAT]  category already includes in the Pyramid Texts other verbs that refer to “movement on water” (Goldwasser 2006: 16–17). However, *šmsw hr* presents another clear case in which the double classification is *unnecessary* for reaching the meaning of the signified, since the first classifier, , is iconically very informative. It shows the vehicle and hints to its specific function by including a phonetic part—the hieroglyph  *šms* in the boat. Indeed, the second, additional classifier  offers the reader what seems to be *purely redundant information*—it tells him what he definitely already knows.

Other early classifiers are different [CONTAINER] classifiers (e.g., classifiers  W2 and  W9) that follow different proper names and designations of different liquids. The containers enhance the correct meaning by reminding the reader of the prototypical container used for the specific drink. Throughout the history of ancient Egypt, we see the script’s sensitivity to the content–container relationship. In hieroglyphic inscriptions, container *forms* are usually prescribed by their *content*.

²³ *Unique classifiers* are known also in classifier languages. On the unique classifier type, which heads a class of *one* item (to be differentiated from the repeater classifier), see Grinevald in Goldwasser & Grinevald 2012: 48. Kahl (1994: 106–107) calls this classifier “spezielles Determinativ.”

²⁴ For this prototype in the hieroglyphic version of Gardiner’s sign list, see Gardiner 1957: 498, P1. The fact that this boat is the prototype of the generic idea of ‘boat, ship’ is evident from the use of this very boat to stand as a logogram for the word *pn^c*  ‘to be upside down’; that is, this prototypical boat represents any “overturned” boat or entity (Gardiner 1957: 498, P2; see also Goldwasser 1995: 95, as classifier also in *p3hd*). However, *pn^c* is very often used metaphorically (e.g., DZA 23.237.950). Already in the Pyramid Texts the agent of the verb *pn^c* (written with the  classifier) may be a snake; that is, the word carries an extended prototypical meaning *unrelated* to boats (pyramid of Unas, PT 226b). Compare HO LXXIX, lines 4 and 9, where the frustrated father laments that the “life-boat” of his son is going nowhere, just sinking. On the active Egyptian conceptual metaphor [LIFE IS A JOURNEY ON THE NILE], see Goldwasser 1995: 97–98 with n, 73; Smoczyński 1999.

2.1.3. *An Early Marking of an Action Category?*

Somewhat unexpectedly, the very early phase of script development (early Dynasty 1) already presents the distinct *verb* classification using the  (D286) [RUNNING] classifier, which is replaced later by the more generic  (D54) [MOVEMENT] classifier. The classifier  would become very prominent throughout the long history of

the Egyptian script.²⁵ The inscription in figure 4.2, written on an expensive stone bowl, was not subjugated to the space limitations of a small item. The verb *phrr*  'run' appears in the phrase "first occasion of the running of the Apis" (lit., "first occasion [that] the Apis runs"; see Goldwasser 2006). In this early example, the classifier  "tells us what we already know," since the verb *phrr* has a full phonetic manifestation without the additional classifier . The walking human legs  would become the generic [MOVEMENT] classifier even when the agent moving was not human.

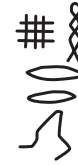


Fig. 4.2 The verb *phrr*, Dynasty 1 (Goldwasser 2006, after Simpson 1957: fig. 2).

2.2. SEGMENTATION

Another often-mentioned reason for the existence of a graphemic classifier is the need to segment the *scriptio continua*.²⁶ From its earliest stages, the Egyptian script shows no effort of segmentation between "words" by spaces or other scriptal means.²⁷ The claim is that classifiers mark the end of a word or compound, thus helping the reader segment the syntax of the vowelless sentence or the paragraph correctly. This claim is undoubtedly valid, yet segmentation is not a given in early scripts. For example, the earliest alphabet of the 2nd millennium BCE is a *purely uniliteral consonantal script* that was well suited to the qualities of Semitic languages and dialects. This early alphabetic script shows no segmentation

²⁵ For the verb *phrr* 'run,' see DZA 23.459.910 and Goldwasser 2006. On verb classification in Egyptian, see Kammerzell 2015. On the difference between verb classification versus verbal classification, see Goldwasser & Grinevald 2012. For the relations between D286 and D54, see Stauder 2018: 375 and Collombert 2022: 138–139, with a beautiful illustration.

²⁶ "Im hieroglyphisch-ägyptischen Schriftsystem werden Wörter und Sätze ohne Leerstellen oder Satzende-Zeichen hintereinander weg geschrieben. Das sich ergebende Problem der *Worttrennung* wird unter anderem dadurch abgemildert, dass Klassifikatoren immer am Wortende stehen. Identifiziert der/die Lesende einen Klassifikator (oder eine Kette von Klassifikatoren), hat er/sie damit gleichzeitig einen Hinweis darauf, dass ein *Wortende* erreicht ist" (see Werning 2018: chap. 8).

²⁷ On the problematics of the notion "word," see Haspelmath 2017. In the Semitic alphabet the word divider or the space comes, as a rule, *after the suffix* of the verb (e.g., the Mesha stela, Naveh 1997: 63, as well as modern Hebrew). In the Egyptian script, in most cases the classifier comes *between the root and the past marker, suffix* or plural strokes, thus *enhancing visually a kind of grammatical segmentation* (see Goldwasser & Grinevald 2012 and example [2] above). Recent studies in cognitive neurology substantiate the fact that morpho-orthographic segmentation must be an automatic, fast-acting morpho-orthographic mechanism that rapidly decomposes morphologically complex letter strings into morphemic units independently from semantics and thus facilitates reading (Beyersmann et al. 2016: 537).

between words or phrases. Instead, segmentation developed gradually, only hundreds of years after the invention of the alphabet.²⁸ However, there is no doubt that when classifiers create segmentation in hieroglyphic inscriptions, they greatly help the reader even though a single classifier (for a word) would do the segmentation job well enough.

2.3. MULTI-CLASSIFICATION: UNNECESSARY CLASSIFIER EXCESS?

In texts from the Archaic period onward,²⁹ classifiers increase in number of occurrences (i.e., they appear in more and more words). The Pyramid Texts already present cases of classifiers that follow “thing nouns,” abstract nouns, verbs, and deverbals,³⁰ but now another clear tendency can be observed: words that were unclassified in the pyramid of Unas are classified in the parallel spells in the later pyramids of Teti and Pepi—for example, *nht*  versus  ‘strong’ (291,d; 301,c), *sdr.f*  versus  ‘he sleeps’ (311,c) and *s3ti*  versus  ‘creeping’ (421a). Simultaneously, *multi-classification* also starts to surface steadily in the pyramid of Teti. For example, *hnnw* in Unas  versus Teti  ‘dispute’ (306c),³² *k3r* in Unas  versus Teti  ‘shrine’ (276b) and *p3n* in Unas  versus Teti  ‘split’ (305a).³³

Multi-classification, often with two or more classifiers for a single lexeme,³⁴ becomes widespread during the Egyptian script’s long lifespan. It shows constant development and growth (Chantraine 2021), becomes a mainstream tendency in the Egyptian script system and is in no way restricted to literary texts or sportive writings.³⁵ It flourishes in hieratic, much less constrained by space and production costs (e.g., Kammerzell 2015).

²⁸ By using spaces, three vertical dots in a row or vertical strokes and later a single dot (see Goldwasser 2016).

²⁹ On double classification in the Archaic period, see the excellent discussion in Kahl 1994: 111–113.

³⁰ In the Middle Kingdom also adverbs, for example ʿ3 ‘there’ (in the New Kingdom *dy* ‘here’), and even demonstratives, such as *n3* ‘that’ (TLA, lemma no. 83340), are given the  [ROAD] classifier.

³¹ The classifier appears here after the root, before the suffix pronoun, marking the *sdm.f* construction. In the case of the next verb, a stative form, the classifier appears after the stative ending (cf. Gardiner 1957: 235).

³² The  [DIVINE] classifier suddenly becomes very prominent in Teti’s texts (e.g., 275f; 276a, c; 294; 295a–d) also in schematic relations. It would become from then on one of the most prominent classifiers in the history of the script (Goldwasser 2002: 113–114; Shalomi-Hen 2006).

³³ The two classifiers of *p3n* ‘split’  [KNIFE] and  [WOOD], stand in schematic relation to the host word. The knife is an integral object (prototypical tool) of the action and has a clear functional role. The [WOOD] classifier is a prototypical patient (Goldwasser 2002: 34–35; see Kammerzell 2015 on semantic relations in verb classification). The [WOOD] classifier may here refer also to a certain part of the knife, probably the handle (FCD: 95).

³⁴ See here Thuault 2020 on the “*dissemblance graphémique*.”

³⁵ Sportive/enigmatic writings in Egyptian show an opposite development. Enigmatic writings toy constantly with the reader’s attention; having no interest in helping the reader reach his goal faster, these writings in fact put innumerable obstacles in his way. For a recent contribution on this challenging topic, see Stauder, forthcoming.

Multi-classification is the foremost example of information “*excess*” in the hieroglyphic script (e.g., example [4] below). Section 7 (below) offers a hypothesis that may solve this semiotic riddle.

2.4. CLASSIFIERS IN EGYPTIAN HIEROGLYPHS—SUMMING UP

If we sum up the short discussion above in section 2, we see that the *emergence* of classifiers in the Archaic period is marked by cases of *reference tracking* in *proper names*. Single rare classifiers already point to future uses, such as  (fig. 4.2). Disambiguation and segmentation are important but probably developed mainly as *secondary effects* accentuated in the subsequent periods. We see evident augmentation in the number of classified lexemes during the Old Kingdom, together with clear tendencies to develop multi-classification for a single host. These tendencies continue forcefully in the Middle and New Kingdoms. Information from brain studies and cognitive linguistics presented in the following sections would hopefully establish the reasons for the “classifier explosion” in the hieroglyphic script.

3. READING IN THE BRAIN—A BRIEF INTRODUCTION

In his compelling book *Reading in the Brain*, Stanislas Dehaene presents several models of *lexical access* that make up part of the reading process. He shows that brain studies have confirmed that the brain stores a few *mental dictionaries*. The mind has a “reference library” that includes a *spelling guide*, a *pronunciation manual* and, finally, *an encyclopedic dictionary* (Dehaene 2009: 41–42). He suggests, for example, that the entry ‘carrot’ includes the semantic features edible vegetable, elongated in shape, orange color, and so on. The number of entries in mental dictionaries must be gigantic. Our lexicons probably contain between 50,000 and 100,000 entries. Yet any reader easily retrieves a single meaning out of at least 50,000 candidate words in the space of a few tenths of a second. He bases his studies on ideas already defined in 1959 by Oliver Selfridge.

Selfridge suggested that our lexicon works like a huge assembly of daemons... . This lively metaphor holds that the mental lexicon can be pictured as an immense semi-circle where tens of thousands of daemons compete with one another. When a letter string appears on the retina, all daemons examine it simultaneously. Those that think that their word is likely to be present yell loudly... . Thus when the word “scream” appears, the daemon in charge begins to shout, but so does his neighbor “cream.” Yet after a short competition, it becomes clear that scream has stronger stimulus support (Dehaene 2009: 42–43).

Dehaene continues to explain how the system of nerves works during reading:

- *— *Massive parallel processing*: All the daemons work simultaneously.
- *— *Simplicity*: Each daemon accomplishes an elementary task by checking to what extent the stimulus matches the target.

- *— *Competition and robustness*: Daemons fight for the right to represent the correct word. If the stimulus is a written word such as ‘lead,’ many daemons will activate (those for ‘bead,’ ‘head,’ ‘read,’ ‘lean,’ ‘leaf’ and so forth) and there will be a fierce argument before the ‘lead’ daemon manages to take over (Dehaene 2009: 43).

Knowledge organization in the brain is relevant to our topic, as it is established that all tasks, including reading, involve bottom-up stimulus-driven as well as top-down task-driven processes. Many experiments on the processing of *nonwords* versus *words* show transparent *superior processing of words over nonwords*. The only explanation is that *words* have a *prior lexical representation in the brain*. Therefore, the superior processing of words over nonwords can be explained in terms of *activation of the lexicon in the brain*, which produces *top-down* feedback from the lexical level to the level of representation (Smith, Meiran & Besner 2000: 206; cf. Dehaene 2014).

4. THE STRUCTURE OF CATEGORIES IN THE BRAIN— A BRIEF OVERVIEW FOR THE PERPLEXED

If the reading process includes *top-down* activations from what Dehaene calls the “reference library,” the next question should be *how* this knowledge is organized in the brain. The question of how word, object, event and action concepts are represented and organized in the brain has shown a fast-growing surge in research in the last two decades (Mahon & Hickok 2016). Since we can answer numerous simple questions very rapidly (e.g., it takes about one second to decide that a sparrow is a bird and that a cat is an animal), it seems that knowledge is *pre-structured* in the mind.³⁶ A few overriding models attempt to illustrate our knowledge structure. Below I present a very short overview emphasizing issues relevant to the Egyptian script system analysis.³⁷

4.1. THE NETWORK MODEL

Collins and Quillian (1969) developed the classical version of this theory, which is essentially still accepted today. The key assumption of this model is that semantic memory is organized into hierarchical networks (fig. 4.3). Major concepts (e.g., ‘animal,’ ‘bird,’ ‘canary’) are represented as nodes, and properties or features (e.g., ‘has wings,’ ‘is yellow’) are associated with each concept.

One may wonder why the property ‘can fly’ is stored with the [BIRD] concept rather than with the ‘canary’ concept. As nearly all birds possess those properties (e.g., ‘can fly,’ ‘has wings’), they are stored at the [BIRD] node or concept. The underlying principle is

³⁶ For a discussion of conceptual knowledge organized in the brain according to domain-specific constraints, see Mahon & Caramazza 2011; Kemmerer 2019 (discussed below).

³⁷ This overview follows mainly Eysenck & Keane 2010.

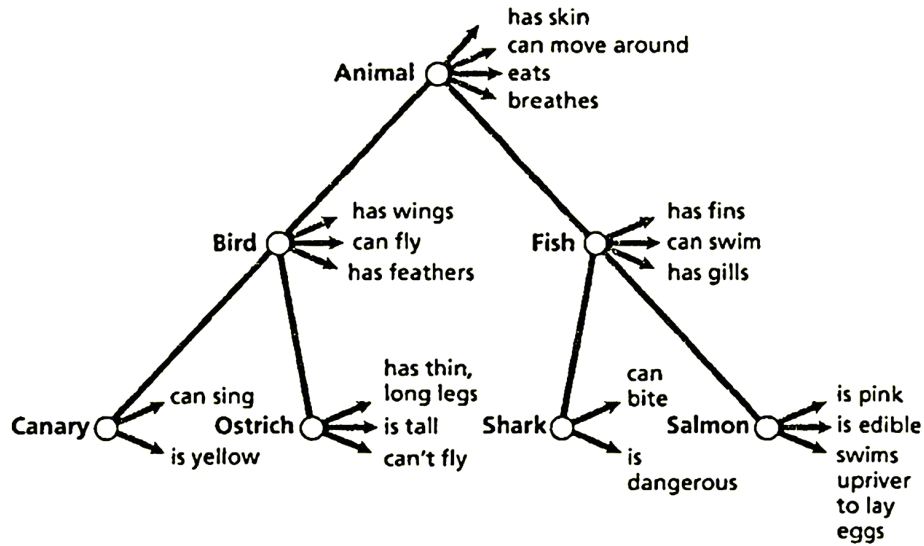


Fig. 4.3 Sample of a mental map (after Eysenck & Keane 2010: 264).

cognitive economy: property information is stored as high up the hierarchy as possible to minimize the amount of information stored.

Adjoined to the *network model* is the *prototype theory* (Rosch 1978). Networks of knowledge organization show clear typicality effects. More typical members of a category are those that possess more of the characteristics associated with the major concept. Experiments have shown that objects are identified faster as members of a category when they are typical or representative members of the category in question. Prototype theory is vital in studying graphemic classifiers in the hieroglyphic script (Goldwasser 2002); it also implies that categories have no clear-cut borders but, instead, fuzzy edges. For example, on the fuzzy edges of our category [BIRD] sits the penguin; in Egyptian, the *py* 'flea' is a fringe member of the category  [BIRD] (Müller 2002: 44*).

4.2. SPREADING ACTIVATION THEORY

Less than a decade after the *network model* appeared, Collins and Loftus (1975) presented the *spreading activation theory*. They pointed out that network theory may be too rigid. As we shall see, this claim would lead the research in the field in the following decades up to today. Using sophisticated experiments, scholars try to define the complexity of knowledge organization better by using the advanced experimental methods provided by the neurosciences. In the key condition, a given word (e.g., 'butter') was immediately preceded by a semantically related word (e.g., 'bread') or by an unrelated word (e.g., 'nurse'). Indeed, 'butter' was identified faster as a word when preceded by 'bread' than by 'nurse' (Eysenck & Keane 2010: 267). This result has important implications for our discussion of the graphemic classifier of the Egyptian script system.

4.3. THE PERCEPTUAL/FUNCTIONAL THEORIES

An influential *feature-based* approach was put forward by Warrington and Shallice (1984) and Farah and McClelland (1991). According to this approach, there is an essential distinction between visual or perceptual features (e.g., what the object looks like) and functional features (e.g., what the object is used for). Different areas of the brain are activated when the perceptual features of an object are processed compared with those used for its functional features.

4.4. THE MULTI-PROPERTY APPROACH

The theory of Buxbaum and Saffran (2002) underscores the complexity of knowledge organization. Other adherents of this approach suggest that findings from brain imaging show that different *object properties* are stored in *different parts* of the brain (e.g., Martin & Chao 2001). It seems that much of our knowledge of objects and abstract concepts is widely distributed in the brain. Such knowledge is modality-specific (e.g., visual or auditory) and relates to perception, language and action. This knowledge is probably stored in regions of the brain overlapping those involved in perceiving, using language and acting (Barsalou and Wiemer-Hastings 2005).

4.5. THE DISTRIBUTED-PLUS-HUB THEORY

According to the distributed-plus-hub theory (Patterson et al. 2007), there is a *hub* for each concept or object in addition to distributed modality-specific information. However, the evidence from brain-damaged patients with category-specific deficits indicates that different object properties are stored in different areas of the brain (Eysneck & Keane 2010: 272).

4.6. CONCEPTUAL SCAFFOLDING IN THE MIND—DAVID KEMMERER

The simultaneous multi-activity of the brain while identifying linguistic signs is discussed in great detail in a recent, seminal book titled *Concepts in the Brain: The View From Cross-linguistic Diversity* (2019), by neuroscientist David Kemmerer. He discusses the meeting grounds of typological linguistics, cognitive linguistics and the neurosciences as they emerge from studies and experiments that have taken place mainly over the last fifteen years.

As suggested above, his presentation also asserts that words (or concepts) do not dwell in a single hub. Even “object nouns” (‘entities in the world’) such as animals or tools may orchestrate an activation in different areas of the brain. It seems that word-and-concept³⁸ recognition operates a complicated, interlacing network in the brain that was studied

³⁸ The semantic borders between a “word” and a “concept” are difficult to define. Is ‘cat’ a concept or a word? The word ‘cat’ is a signifier for all kinds of cats and many other knowledge components, such as meowing, purring, fur and so forth—that is, it is an “object *concept*.”

only partially. The better metaphor to describe the activity of the mind would perhaps be *conceptual scaffolding*. I address this terminology below (section 4.7).

4.7. CLASSIFIERS AND THE BRAIN

In 2016 Kemmerer discussed in an influential article the possible areas in the brain that could be affected and activated by *pronounced classifiers* of *classifier languages*. He suggested that people who use languages with pronounced nominal classification systems must coordinate two explicitly coded levels of object categorization that differ in granularity—for example, the basic-level ‘horse’ and the superordinate ‘animal’ (see above **no** ‘cheh [ANIMAL]horse, example [2] in Jakaltek, and cf. here in Egyptian   = *ssmt*  [HIDE&TAIL] = ‘horse,’³⁹ actually written ‘horse[HIDE&TAIL]’). They must do so accurately and habitually in a very brief span of time. Kemmerer develops this issue further by suggesting:

We have seen that almost all of the key semantic parameters that enter into *nominal classification systems can be aligned with previously documented functional-anatomical dimensions of the ventral stream of object processing*. It is therefore reasonable to suppose that this cortical infrastructure underlies the *conceptual scaffolding* that, as just mentioned, serves as the *universal foundation for assembling nominal classification systems...*. This raises the question of how, for a given semantic parameter, *these two levels of representation* are related to each other across the expanse of ventral temporal cortex. One possibility...is that the different levels may be organized as spatially superimposed hierarchies, *such that the kind of high-level information encoded by a classifier (e.g., animate) may be represented within a particular cortical territory at the relatively coarse scale of centimeters, and the kind of lower-level information encoded by an adjacent noun (e.g., dog) may be represented within that same territory at a finer scale of millimeters...*. This approach is not without merit, but there is also evidence that while posterior regions of the ventral temporal cortex contribute to all levels of object categorization, increasingly anterior regions are recruited for increasingly specific levels (Kemmerer 2019: 111–112 [*italics and underlining mine*]; see above at 4.6).

In a quick reaction to Kemmerer 2016, Barsalou (2017: 6), who also discusses the effect of classifier use on the mind, puts forward the suggestion that “when the classifier is heard [or read O.G.], it activates these word forms (or a subset), which contribute to the classifier’s meaning. *Because one of these word forms is likely to be the noun currently classified, the*

³⁹ DZA 28.722.060, hieratic. For the entrance of the horse into the Egyptian lexicon and classifier system, see Goldwasser 2017. The Egyptian language does not have a word for ‘animal.’ However, the *script* shows rather early that a similar covert category, [HIDE & TAIL]—‘having hide and tail’—existed in the Egyptian mind. Most animals take the *unpronounced classifier*  [HIDE&TAIL] as the loanword *ssmt* ‘horse’ mentioned above (see Goldwasser 2012: 57–89). See also the ‘dog’ example in the Introduction above. For animals in the Egyptian classifier system and lexicon, see Goldwasser 2023.

classifier primes it, speeding up linguistic processing” (italics mine).⁴⁰ Barsalou’s contribution is crucial, as he stresses the possible *priming effect* that classifiers may create in the brain. If we go back to the sort of “race” suggested above by Dehaene, we could imagine that in a competition between ‘scream’ and ‘cream,’ adding a classifier—for example, [EDIBLE]—would shorten the competition and speed the processing.

5. ON PRIMING

In his book *Semantic Priming*, McNamara (2005: 3–4) defines priming as an improvement in performance in a perceptual or cognitive task, relative to an appropriate baseline, produced by context or prior experience. *Semantic priming refers to the improvement in speed or accuracy to respond to a stimulus, such as a word or a picture*, when it is preceded by a *semantically related* stimulus (e.g., *cat-dog*) relative to when it is preceded by a semantically unrelated stimulus (e.g., *table-dog*). The stimulus to which responses are made (e.g., *dog*) is the *target*, and the preceding stimulus (e.g., *cat* or *table*) is the *prime*. Eysenck and Keane (2010: 637) define priming even more flexibly, that is, as “influencing the processing of (and response to) a target by presenting a stimulus *related* to it in some way beforehand” (italics mine).

Priming occurs at many levels of the perceptual hierarchy, reflecting activity modulations ranging from lower to higher levels, depending on the stimulus, task and context. Priming appears in different modalities, such as verbal and visual ones. Experiments have shown again and again that “repeated presentation of an object’s *features* or *location* in visual search tasks facilitates subsequent detection or identification of that item, a phenomenon known as *priming*” (Kristjánsson & Campana 2010: 5). Priming is today a vast and complex research field, with a few sub-fields, that has developed during the last two decades and naturally cannot be adequately presented here (see, e.g., Kiefer & Martens 2010). Priming theory is constantly extended to new disciplines, such as neuromarketing (Cohn & Maréchal 2016; Zurawicki 2010). Scholars are still debating the neurophysiological and neuropsychological processes involved in priming processes, the exact nature of priming and, mainly, which areas in the brain are involved in those processes.

Priming has already been mentioned in our discussion in section 4.2 above as suggesting faster access to the *network* or *hub* in the brain when a semantically related word is seen/read before the target word (prime = ‘bread,’ target = ‘butter’). In addition, Barsalou (2017) clearly refers to the *priming function* of *classifiers* in classifier languages (see section 4.6 above).

⁴⁰ Barsalou specifically discusses the *more abstract meaning* that a lexeme acquires when playing the classifier function in the linguistic system: “a classifier could be associated with all (or many of) the word forms for the nouns it classifies, such that these word forms represent the classifier’s meaning in a distributed manner” (Barsalou 2017: 6). The hieroglyph ☉ when activated as classifier collects into a unified category lexemes relating to [SUN] and [TIME]. The hieroglyph 🐸 loses its iconic reference Horus/‘King’ (Shalomi-Hen 2006) and becomes already in the Pyramid Texts the classifier [GOD/DIVINE] notwithstanding the god’s form or gender (see Goldwasser 2002: 113–114 and *passim*).

6. PRIMING IN THE EGYPTIAN SCRIPT—GRAPHEMIC CLASSIFIERS AS PRIMING DEVICES

In light of the above description of the categories in the brain and of priming effects on mental dictionaries, I suggest that the success of the classifier system in the Egyptian script and other *complex scripts* and *classifier languages* is related to the *priming effects of the classifiers*. Most classifiers stand in clear, motivated relationships to their hosts. We can observe superordinate classifiers for basic-level lexemes in taxonomic relations (‘horse,’ an example of [HIDE&TAIL] = ‘*example of*’ relations) or in diverse schematic relations, mainly of ‘made of’ relations (‘bed,’ made of [WOOD]). Almost all classifier categories in the Egyptian script are mixed and include members that stand in taxonomic and schematic relationship with the same classifier, clearly reminiscent of the mental organization of categories described in section 4 above. For example, the classifier category  includes all boats and ships (taxonomic relationship) but also (in schematic relationship) many travel verbs, such as  ‘travel downstream’ (Goldwasser 2002: 29–95; 2006). Preliminary results from recent research conducted by the *iClassifier* (© Goldwasser/Harel/Nikolaev) digital tool clearly show knowledge organization into a *network* of classifier categories connected in complex, interrelated nodes of classifiers and words.⁴¹ For example, the computer-produced drawing in figure 4.4 shows a tentative classifier map by a *community detection algorithm* based on ongoing research conducted by Tanja Pommerening and Svenja Stern using the *iClassifier*. Stern annotated the classifier system in the medical papyrus Eber.⁴² The computer-generated image below clearly shows a few classifiers that are robust “mega-nodes” (on which see below, section 8).

The “mega-nodes” in figure 4.4 present a knowledge organization map that reflects the central categories involved in this classification of words in this long medical papyrus. The capital letters with numbers refer to the hieroglyph number in Gardiner 1957: 442–458. When classifiers are connected, they may appear together in the same word, for example,  (Aa2) (cf. Pommerening 2017: 176) and  (G37), that is,  [ILLNESS] and  [NEGATIVE] in pink and light brown.

A most prominent classifier in the medical papyrus is  (N33), referring to powder-like *ingredients* and *medications* very often mentioned in the papyrus (cf. Pommerening 2017: 172, 175). Another major category is  (Aa2) [GLAND/ILLNESS], prototypical marker of illness in Egyptian culture. A closely connected category is the  (G37) [NEGATIVE] category, which highlights the [NEGATIVE] state and effects of illness. The  (W24) [POT] represents the *common container* for medications, and  (M2) [PLANT] shows the strong presence of

⁴¹ <https://archaeomind.huji.ac.il/>. *iClassifier* creates network knowledge organization maps according to classifiers for ancient Egyptian, Sumerian, and ancient Chinese scripts. For Egyptian, see Harel, Goldwasser & Nikolaev 2023; Goldwasser & Soler, in press; Harel 2023. For Sumerian, see Selz 2021; Selz and Zhang in press; for ancient Chinese, see Xu in press.

⁴² The application of the community detection algorithm to the Egyptian script system in *iClassifier* is by Dmitry Nikolaev. The papyrus dates to the beginning of the 18th Dynasty, circa 1550 BCE. On classifiers in medical formulae in Egyptian, see Pommerening 2017.

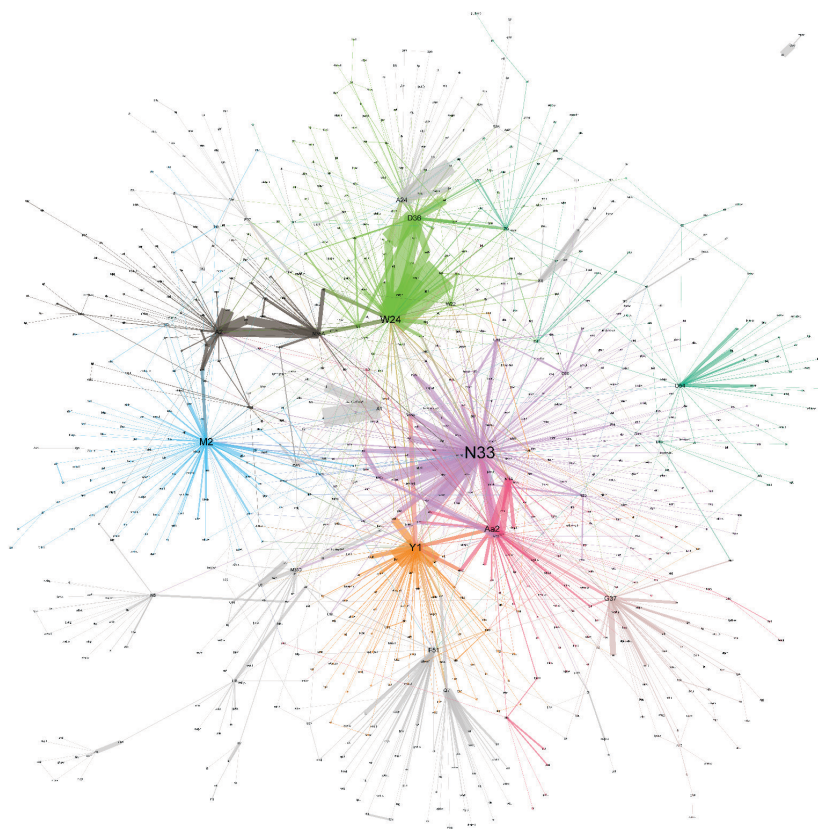


Fig. 4.4 The Medical papyrus Ebers by community detection algorithm. Produced by *iClassifier*, in the ArchaeoMindLab, the Hebrew University, Jerusalem (ISF grants 735/1 and 1704/22). The papyrus Ebers project: *Conceptualization*, Tanja Pommerening; *Data annotation* in *iClassifier*, Svenja Stern; *Financing*: Tanja Pommerening. The tokenized text was provided by <https://thesaurus-linguae-aegyptiae.de/object/FA5AXVOIIREOBJT2MOXMQRQQPA>, in: *Thesaurus Linguae Aegyptiae* (accessed: 10/28/2023), courtesy of Daniel Werning and Lutz Popko. (*iClassifier* digital platform: *Conceptualization*, Orly Goldwasser; *Computational realization*; Haleli Harel; *Programming*, Dmitry Nikolaev; *Financing*, Orly Goldwasser.)

plants in many medical recipes (Pommerening 2017). The  (D36) and  (A24) represent the [FORCE/ACTIVITY] involved in combating illness and healing.⁴³

6.1. PHONOLOGICAL PRIMING⁴⁴—PHONETIC COMPLEMENTS (INTERPRETANTS) AS PHONOLOGICAL FACILITATORS

The nature of phonological priming, its exact function and its effectiveness in speech and/or writing are still heavily debated. However, research conducted by Jescheniak and

⁴³ The analysis of the community detection map is by Orly Goldwasser.

⁴⁴ Compare here the term *phono-repeater* in Werning 2018: §13. For phonological facilitation, see Lee & Thompson 2015.

Schriefers (2001) has pointed to the high probability that picture naming is facilitated by phonological distractors.

It seems that the common phenomenon in the Egyptian script, the phonetic complement (or interpretant),⁴⁵ may be explained now in the framework of priming effects. For example, the written lexeme *pr(i)*   ⁴⁶ ‘go out’ is made of three hieroglyphs, of which two have additional cueing functions. The first hieroglyph, , is an icon that, when used in the function of *logogram*, stands for the word *pr* ‘house.’ As a logogram, its iconic and phonetic reading coincide. The same icon  could function as a *phonogram*. In such cases, the homograph stands as a signifier for other lexemes built of the same consonantal root, *pr*, but carrying different meanings. In   , the  is a *phonogram*. The *cue* to its movement to the *phonological track*, leaving the meaning ‘house’ behind, is given with the presentation of an additional hieroglyph, *r* , a uniliteral sign which carries *phonological* information that *unnecessarily repeats* some of the consonants of the logogram. The *r*  repeats the second consonant of the biconsonantal *pr*  and *should not be read*. The  is “seen but not heard.” To read here    **prr* is a mistake. The third hieroglyph is the semantic classifier  [MOVEMENT] discussed above.

When presented with the written word   , the reader identifies the redundant phonological information *r*  as such; it *cues* him to neglect the semantic signifier/signified of  ‘house,’ thus pushing him to the *phonological track*.⁴⁷ Once on the phonological track, an additional hieroglyph  in the semantic classifier function cues the reader to the correct category [MOVEMENT]. The combination of the two *unpronounced* cues—the phonological one and the semantic one—leads the reader comfortably to the meaning ‘go out’ for the combination   .

6.2. REPEATERS AS PICTORIAL PRIMING DEVICES

The *repeater classifiers* are hieroglyphs that function as semantic classifiers, repeating in the pictorial the semantic information already provided phonologically by the other hieroglyphs of the same word. The repeater classifier is a well-attested phenomenon in classifier languages and complex writing systems (Goldwasser & Grinevald 2012; Aikhenvald 2021; and Introduction above). Hieroglyphs functioning in this way are especially common in the hieroglyphic script but appear inexplicable to modern scholars born into alphabetic script systems. To a reader who uses alphabetic writing, repeating the dog image  as a classifier in    *tsm*, or the cat picture  in the onomatopoeic word    *miw*, when the previous signs already provide all the necessary phonological information seems utterly devoid of purpose.

The repeater classifiers in classifier *languages* are the most extreme examples of the observation noted in the subtitle of this article: “classifiers tell us what we already know.”

⁴⁵ For a recent discussion and presentation of this semiotic role in the script system, see Polis & Rosmorduc 2015; Polis 2018.

⁴⁶ From now on phonological facilitators, i.e., hieroglyphs that function as interpretants, are colored in blue.

⁴⁷ This idea was first suggested by Kaplony 1966; see also Goldwasser 1995: chap. 2.

We find them in Jakaltek and many other classifier languages. In Jakaltek, ‘*ix ix*’ [WOM-AN]woman and ‘*naj winaj*’ [MAN]man are representative examples of repeater classifiers (Goldwasser & Grinevald 2012: 48).⁴⁸ The reason for their existence and persistence in all spoken and written systems should be sought in the field of *repetition priming*.

Henik and Carr (2002: 578-579) define *repetition priming* as:

“The change in responding to a word or an object as a result of a previous encounter with that same item, either in the same task or in a different task. Responding to words or objects is typically improved due to this previous experience. . . . For example, if a word appears for a second time in a task that requires reading the target aloud (naming task) or deciding whether the target is a word or a nonword (lexical decision task), responding is faster and more accurate than for words appearing for the first time at the same level of overall practice in the task.”

Moreover, experiments in *pictorial priming* show that when the *prime* is a *picture* it is *stronger* than a priming *word* (Smith, Meiran & Besner 2000).

The analysis of hieroglyphic repeaters (and unique) classifiers as *pictorial priming devices* would explain their strong persistence and “success” in the Egyptian script system, for they minimize the cognitive effort of the reader.⁴⁹ In this way, priming theory neatly explains the persistent, enduring presence of repeater classifiers in classifier languages and classifier scripts.

7. MULTI-CLASSIFICATION AND NEURAL SCIENCE— CUEING A FEW AREAS IN THE BRAIN SIMULTANEOUSLY

How would brain theory and priming theory contribute to explaining the widespread multi-classification phenomenon (more than one classifier for a single word) in the Egyptian script system? On the other hand, how does the multi-classification phenomenon contribute to the endorsement of experimental results in the neurosciences?

As we have seen above, brain studies in the last two decades, and especially the recent contribution by Kemmerer (2019), have illuminated the fact that reading activity ignites not one hub but *a few areas in the brain at once*. Kemmerer argues further, “We have seen that almost all of the key semantic parameters that enter into nominal classification systems can be aligned with previously documented functional-anatomical dimensions of the ventral stream of object processing. It is therefore reasonable to suppose that this cortical infrastructure underlies the *conceptual scaffolding* that, as just mentioned, serves as the universal foundation for assembling nominal classification systems)” (Kemmerer 2019:

⁴⁸ Grinevald writes: “The repeater in its function as classifier usually shows signs of grammaticalization, such as the loss of stress, semantics, or the shortening of form”; the ‘*naj winaj*’ is a shortened form. Repeaters were discussed already in Allan 1977 and in a detailed discussions in Senft 2000.

⁴⁹ Even when reading hieratic, the reader probably translates the cursive signs to their hieroglyphic meanings. No research was conducted on the differences between reading processes in hieratic (where many signs lose their iconicity) and those in reading hieroglyphs.

111 [underlining mine]]. If classifiers indeed participate in *priming activity*, many more neural systems are likely to be involved in implementing them than those representing *object* features alone. Systems that represent goals, actions, mental states and outcomes may all enter the distributed neural networks associated with classifiers and their host words and will undoubtedly give neuroscientists even more to do toward understanding how classifiers operate in the cognitive system (cf. Barsalou 2017: 11).

Due to limitations of space, I have only touched briefly on a selection of neural systems discussed in Kemmerer (2019) that are relevant for exploring and explaining multi-classification in the Egyptian script. Kemmerer presents results from hundreds of brain studies, and even though he stresses that there is still much to be done, some general patterns have already emerged.

The road to analyzing graphemic multi-classification as a *multi-priming* cueing system is not long. Considering the brain's complex "conceptual scaffolding," the multi-classification cases could be seen as *orchestrated cueing efforts signaling to different areas in the brain*, probably speeding up the reading process.⁵⁰ Following Kemmerer, I enumerate below some of the prominent topics that are activated in different areas of the brain and are relevant to my discussion.

7.1. OBJECT CONCEPTS

Based on broad linguistic data and many experiments in the neurosciences, Kemmerer suggests that one of the main mental organization parameters in the brain is that of *animate* versus *unanimate* (Kemmerer 2019: 83). This distinction is found in the Egyptian classifier system where the  [HUMAN-MALE] classifier is very prominent—for example,  *wt* 'embalmer' ^[GLAND]_[MAN]. The tendency of the brain to mark animacy may have contributed to the continuing development of the  [HIDE&TAIL] classifier (somewhat parallel to the [ANIMAL] category; see Goldwasser 2002). We could say very cautiously that object concepts in Egyptian do not tend, under usual circumstances, to receive multiple semantic classifiers. The general tendency is the alternating or exchanging a repeater classifier with superordinate (generic) classifiers. The examples mentioned above,  *tsm* 'dog' ^[DOG] and  *ssmt* 'horse' ^[HORSE] may take, instead of the repeater classifiers— and —the superordinate  [HIDE&TAIL] classifier.⁵¹ In the cases of  *tsm*

⁵⁰ The position of the classifier (front-position or post-position) is not crucial in reading tasks, as words are read, according to recent research in *saccades*. An article about this issue in the Egyptian writing system is in preparation by Goldwasser and Brice. I am grateful to Dr. Henry Brice for this information. Neurological research on Chinese "radicals" and their role in reading processes has carefully suggested that they may play a priming role in certain cases (see Ding, Peng & Taft 2004). However, "radicals" should be carefully distinguished from classifiers in the Chinese writing system. A "radical" may have different functions in the script—e.g., logogram or classifier; see Handel & Goldwasser, in press.

⁵¹ See Müller 2002: 26*. The general diachronic tendency is from repeater to more general classification (see Chantraine 2014; Kammerzell 2015). Hieratic texts show a clear preference for superordinate classification, probably catalyzed by considerations of writing speed. In most cases the superordinate classifiers are simpler in form. These issues cannot be discussed here.

‘dog^[HIDE&TAIL]’ and  *ssmt* ‘horse^[HIDE&TAIL]’, the reader is now offered a *multi-dimensional information structure*, that is, in  the *phonetic part* presents the basic-level information *ssmt* ‘horse,’ and the unpronounced graphemic classifier is a *superordinate addition*  [HIDE&TAIL], as with the cases in classifier languages—for example, [ANIMAL] horse, also discussed by Kemmerer (see above section 4.7).

The  [HUMAN+MALE] (*animated/human*) classifier tends to appear as the final cue in deverbals that are used as nouns—for example,  *wršy* ‘watchman^{[SUN][MAN]}’.⁵² In this example the  [SUN-TIME] classifier is carried on by the root *wrš* but is nevertheless a most relevant semantic cue to the meaning of the deverbal. So here, two categories in the brain are cued simultaneously— [SUN-TIME] and  [HUMAN+MALE]. A rare example is the passive participle  *msddt* ‘she who is hated’ (Gardiner 1957: 275, note 27).⁵³ Here one finds two classifiers, the  [NEGATIVE] classifier followed by the animated  [HUMAN+FEMALE] as the female agent-undergoer (Kammerzell 2015). Indeed, from the Middle Kingdom onward, the classifier  refers regularly also to social judgments of negativity—for example,  *hnš* ‘stink^{[FISH][NEGATIVE]}’.⁵⁴ This word shows two classifiers,  [FISH] (a prototype of bad smell) and  [NEGATIVE]. Thus the script system shows through the classifier system that hatred and stink are both judged as [NEGATIVE] characteristics within the Egyptian culture. One wonders whether neuroscience will one day identify a [NEGATIVE] hub in the brain.

7.2. ACTION CONCEPTS

Kemmerer also specifies areas in the brain for the processing of events, that is, action concepts. He specifies *motion events*, *object directed/arm events* and *interaction/function events*. Action concepts are very important in the case of Egyptian, as it seems that most of the examples for multi-classification are to be found in verbs and deverbals, which are concept entities based on actions. Occasionally, classifiers of a multi-classified host are carried over by the verbal root into a deverbal (cf. here Lincke & Kammerzell 2012). The Egyptian script shows a few classifiers that refer mainly to action concepts. The most prominent ones that embrace very large categories with many members are , , , and .⁵⁵

⁵² In these cases, the classifier is marked in *iClassifier* not only as a taxonomic classifier but also as a grammatical classifier, marking the nominalization of the verb (cf. Kammerzell & Lincke 2012).

⁵³ Compare TLA, lemma-no. 76240; DZA 24.403.370; FCD: 118.

⁵⁴ FCD: 193; see also *hnš sw r swḥwt rmw*, ‘He stinks more than fish eggs’ (DZA 27.882.330; 27.882.370). For the definition of the  classifier category in the Middle Kingdom, see Goldwasser 1995: 87–88. The social-judgment lexeme *bin* ‘evil’ is a central member in the category  (see spellings in DZA 22.827.250; 22.827.260). It has been a “mega-category” since the Middle Kingdom. On the  [NEGATIVE] classifier in the New Kingdom, see Kammerzell 2015. The [FISH] classifier in *hnš* plays as an additional priming cue in the above sentence for the *swḥwt rmw*—fish eggs.

⁵⁵ The classifier  (man with hand touching the mouth) represents the conceptual metaphor [THE BODY IS A CONTAINER] (eat, talk, think, feel). It cannot be discussed here for lack of space; see Goldwasser 2005: 99, 111; Goldwasser & Soler, in press.

7.2.1. Motion Events

Kemmerer presents *motion events* as they were analyzed by Leonard Talmy:

...a *motion event* has four fundamental conceptual components: (1) the *figure*, which is the entity that moves, such as a person, animal, or inanimate object; (2) the *path*, which is where the figure moves relative to its external frame of reference, such as into, onto, or over something; (3) the *manner*, which is how the figure moves relative to its internal frame of reference, such as climbing, crawling, or hopping; and (4) the *ground*, which is an entity that serves as a landmark for determining the path, such as the source or goal of motion (Kemmerer 2019: 115ff.).⁵⁶

Of all the action concepts, *motion events* offer a rich conceptual arena relatively well studied in linguistics and the neurosciences. As we have seen in figure 4.2 above, the first prominent action classifier to emerge in the earliest phase of the script is  in the verb *phrr*. The ‘running legs’ classifier in this early example vividly shows the movement while indicating the “forward” path. The fact that the *forward* direction was included in the signified of this classifier may be concluded from the fact that, later, another classifier appears: , specifying movement in the opposite direction (recently Chantrain 2021). The hieroglyph  has limited use as a logogram and phonogram and is usually activated as a classifier. The  [MOVEMENT] suggests a *forward* motion event on a *path*. The *figure* is also hinted at by the *human* legs.

In the verb *snb*    ‘overleap^{[WALL][MOVEMENT]}’, the first classifier  [WALL] shows, as suggested by Talmy (2) above, “where the figure moves relative to its external frame of reference, such as into, onto, or over something”; it also immediately suggests the *manner* and the *ground*. The second classifier, , reflects the direction (forward) of a human *figure* on a *forward path*.

7.2.2. Object-directed Arm Events and Interaction/Function Events

Another semantic parameter mentioned by Kemmerer (2019: 152) to be discussed in relation to the multi-classification issue consists in the *interaction/function* events and *object-directed arm events*. Findings from various experiments present a plausible neurobiological foundation for the meanings of classifiers (in classifier languages) that specify interaction/function-based categories of objects, such as cutting, breaking and opening. Let us now look again at one of our above-mentioned hieroglyphic examples in the light of Kemmerer’s discussion:

⁵⁶ Verb classification in the Egyptian script as a representation of semantic relations of the verb (valance) was presented in a groundbreaking article by Kammerzell (2015). In the *iClassifier* research platform, we follow his analysis (<https://archaeomind.huji.ac.il/>).

makes part of the phonetic information *wh*ˢ—the action happens while sailing on a boat. To sum up, the classifiers *cue* for a single word two *object-directed arm events* (catching birds and catching fish), an *interaction/function event* ‘acting powerfully,’ while the final classifier is a solid *animated/human* cue and a generic nominalizer.⁵⁹

An interesting comparison is the rare, multi-classified word *mḥw* ^[BOAT] ^[FISH] ^[HUMAN+MALE], translated as “hunter” (FCD: 114). In this case, the generic boat (not the fishing boat) does not make up part of the phonological information, and it appears as the first classifier, playing the role of a cue marking the vehicle that defines the *path* ‘on water.’ The second classifier cues the *object* at which the action is directed, and finally, the third classifier offers the *animated/human* cue for the *figure*.

8. CONCLUSIONS

The aim of this article is twofold. The first consists in implementing the most recent developments in the neurosciences and cognitive linguistics to understand better the reasons behind the *systematicity* of graphemic classifiers in the ancient Egyptian script, their *raison d’être* and their successful *longue durée*. The second aim is to present the Egyptian classifier system to non-Egyptologists through the prism of neuroscience in the hope of attracting the interest of scholars in other fields to a mine of information on cognitive processes hidden in the Egyptian hieroglyphic writing system. The few examples of Egyptian words presented in this article already point to clear *interaction* and *reciprocity* between the *brain* and the *classifier system of the script*. The Egyptian script seems to be tuned to the brain’s activity as it is described in recent brain studies.

The Egyptian system is the most extensive classifier system ever practiced in language or script. It was always lively, motivated and open to change. Its high iconicity makes very transparent the categories to which the words are assigned. This system survived for more than 3,000 years, and it shows many variations resulting from diachrony, script variations (cursive vs. non-cursive script), genre differences, spelling traditions and sometimes personal idiosyncrasies. These variations present numerous possible classifications, *yet they all adhere to the same basic rules of motivation, classifier order and classifier repertoire*. When the Egyptian language was finally transcribed into Coptic, an *alphabetic* writing system (ca. 100 CE), the classifiers disappeared as though they were mere *fata morgana*, since they were always “seen but not heard.”

The Egyptian system is a “big-data” corpus. It presents *millions* of occurrences of classifiers.⁶⁰ When registered systematically and analyzed digitally, it provides us with detailed

⁵⁹ The phonetic part includes one phonetic classifier (interpretant)—the uniliteral ˢ. The hieroglyph describes not the generic boat but a fisherman’s boat with net (Gardiner 1957: 449, P4).

⁶⁰ The repertoire of classifiers in the Egyptian script during the Middle Kingdom (ca. 2000–1650 BCE) comprises around 100 classifiers; see Gardiner 1957: 31–33; Goldwasser and Grinevald 2012; Selz, Grinevald & Goldwasser 2017; Goldwasser & Soler, in press). Categories vary by the number of members—some categories embrace many members (e.g., or), and some a few members only, e.g., .) The classifiers appear with diverse host lemmas. Lemmas may present multiclassification, or alternating classification.

data that are more nuanced and particularized than the data provided by any other writing system. Its analysis by the *iClassifier* digital tool creates *network maps* that provide a defined set of nodes—classifiers or words—connected by *edges* (interconnections). It identifies *neighbors* (nodes that share an edge) or mega-nodes (classifiers) with many neighbors. The mega-classifiers are contrasted with numerous nodes (classifiers) with a limited number of neighbors (*low-degree nodes*). Another important revelation is the *intolerance* of some nodes to others, that is, incompatible classifiers and categories—they never appear with the same host. On the other hand, we can identify *communities* (clusters), that is, tight groups of interconnected nodes separated from other groups (see the example above, fig. 4.4).

We cannot measure activation areas in the brains of mummies. This predicament is a shortcoming for modern experimental disciplines such as neuroscience. However, the repetitive minute details that surface in the Egyptian classifier system, unknown in any other system, may open new insights into the landscape of the mind. The multi-classification phenomenon presents a systematic set of orchestrated strategies for reducing competition by simultaneously cueing the correct signified in different areas of the brain. Via the network mind maps of *iClassifier*, we may observe today the subtle network organization of knowledge within the conceptual scaffolding of the mind of ancient Egyptians.

When discussing the information from *classifier languages*, Kemmerer states that “this information is clearly quite relevant to cognitive neuroscience because it can be construed as a rich set of behavioral findings that must be accommodated by current theories about the organization and representation of concepts in the brain” (Kemmerer 2016: 17–18). He insists that knowledge organization in the mind is based on *universal* and *culture-specific* information. The ancient Egyptian data forcefully reiterate his position.⁶¹

Born to solve problems of reference tracking and graphemic ambiguity created by a complex writing system, Egyptian classifiers became active *priming tools* that *converse with the brain*. As a result, they help the reader walk faster on the road of reading the complex script by reducing competition, speeding up the process, and facilitating the correct accomplishment of the reading task.

⁶¹ For culture-specific classification in the Egyptian script, see Goldwasser 2002; 2010; and Allon 2007. On the interlacing culture-specific and universal information in pronounced classifiers in classifier languages, see, recently reiterated by Senft 2000, Grinevald 2016, Bisang 2017, and Seifart 2018 in a range of different languages.

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5

Comparing Networks of Semantic Categories Digitizing Graphemic Classifiers in Ancient Complex Scripts Using the *iClassifier* Research Platform

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ABSTRACT

We regularly access the lexicons of ancient languages through lemma lists and dictionaries. This study suggests a method exposing a macro-outlook of the lexicon. By digitizing the linguistic phenomenon of nominal classification, the lexicon is portrayed as a network, where lexical items are arranged around innate semantic categories. This research path reveals a landscape of inner hierarchies in ancient lexicons. This article presents a method to gather corpus-based data about graphemic classifiers and visualize classifier systems as complex and dynamic networks linked to context and metadata. The term classifier is put forward as a comparative concept, allowing us to compare systems of nominal categorization. The study suggests that classifier systems can be viewed not in a list, as they were traditionally presented in grammars, but as corpus-based, dynamic, and complex interconnected networks. Preliminary results of the method as applied to ancient Egyptian, Sumerian, and ancient Chinese are presented. Furthermore, three comparison parameters are suggested: the semantic range, the functional range, and the productiveness of each linguistic categorization system.

KEYWORDS: ancient scripts – classifier studies – digital humanities – network analysis

INTRODUCTION

While one cannot perform experiments recording the brain activity of speakers of ancient languages, we can document a specific overt feature exposing semantic categorization and, based on it, model networks arranged around semantic categories. Ancient complex

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writing systems contain a unique feature, graphemic classifiers. By collecting classifiers and marking them in texts, one can expose a macro image of the intrinsic categories arranging a lexicon (or, more precisely, of those parts that occur with classifiers). This paper presents a method to gather corpus-based data about graphemic classifiers and visualize classifier systems as complex and dynamic networks encoded with context and metadata. For this purpose, the *iClassifier* research platform (©Goldwasser/Harel/Nikolaev) was created at the ArchaeoMind Lab at the Hebrew University, Jerusalem. The platform aims to create an accurate, descriptive record of the various classifiers in each writing system, record their semantic scope, and compare the commonalities and divergence between scripts and cultures. At the same time, the presented method contributes to each respective discipline (Egyptology, Assyriology, Sinology). Each classifier system is documented by marking classifiers, conducting classifier analysis, and applying Network Analysis (NA) methods.

Moreover, it is published as an accessible digital tool, allowing browsing the repertoire of classifier categories, querying the classifier network of a particular text or lect, and tracking the diachronic changes undergone by signs in the role of a classifier. First, I will make a case for the term classifier as a comparative, typological concept. Next, I put forward the hypothesis that classifiers head semantic categories and suggest applying a network approach to access the inner structure of semantic categories. I will then discuss the documentation protocol by the *iClassifier* platform and present preliminary results displaying how network analysis methods expose the structures and hierarchies of overt linguistic categorization systems.

1. CLASSIFIER AS A COMPARATIVE CONCEPT

In the last two decades, several researchers established that graphemic classification in writing systems shares similarities to the phenomenon of pronounced classifiers morphemes (Goldwasser & Grinevald 2012; Lincke & Kammerzell 2012; Grinevald 2015; Kemmerer 2019; Kilarski & Allasonnière-Tang 2021; Goldwasser 2022) and signed classifiers in sign languages (Lincke & Kutscher 2012). Thus, we see a similar phenomenon of morphemes or graphemes categorizing a host into a category in different media. Nonetheless, their morphosyntactic position varies. They can occur in post-position, pre-position, and various loci in the sentence (in a numeral construction; possessive construction; added to a demonstrative, noun, or verb, etc.) Grinevald (2015: 817) explains the use of ‘classifier’ as a comparative concept:

“The term classifier cannot be taken either as applying to a specific linguistic category, since there is so much variation ... so that no two systems are indeed the same. The appropriate way to use the term is therefore as a cover term, maybe best written in caps as some type of grammatical gloss, as CLASSIFIER, to signify its status of abstract comparative concept to permit a typological approach through the great language specific diversity of such phenomena locally described in family specific terms.”

Using a comparative, typological concept such as ‘classifier,’ allows one to compare instances of overt categorization in various scripts and languages. The term ‘comparative concept’ is used in linguistic typology to bridge various disciplines and terminologies (Haspelmath 2010; Croft 2016). I use the comparative notion of “classifier construction” (Croft 1994, 2017) and map the semantic and grammatical features of such constructions. Thus, a ‘classifier’ is part of a construction denoting semantic information that can be pronounced or un-pronounced (or signed in sign languages). In ancient scripts, classifiers are silent graphemes; in modern languages, they are pronounced morphemes. Moreso, as Croft (1994) suggested various types of classifier constructions have differing functions. Noun classifiers are part of reference marking and tracking, and numeral classifiers require the individuation and identification of units (Croft 2017, 426). In the 1986 volume “Noun Classes and Categorization,” a phenomenon existing in complex ancient scripts was first considered comparable to semantic classifiers in modern languages (Rude 1986; and a survey of the use of this term since in Kilarski 2013). By comparing morphemes that add a semantic category to a host, we can gather descriptive data of ancient scripts and measure their similarity to the state-of-the-art documentation of classifiers as pronounced morphemes in a wide range of modern languages (Seifart 2010; Allasonnière-Tang et al. 2021). Just as classifier systems in modern languages differ in their syntactic and semantic properties, ancient writing systems also reveal identifiable variances.² In comparing classifiers in scripts and languages, we aim to describe the shared and unique knowledge organization schemes of the various classifier systems. By listing the *classifier repertoire* of each system, we can document the scopes and types of semantic properties (such as genus, shape, size, material, and animacy) constituting each system. We can approach which categories are shared across various systems and which are exclusive to a language or even to a specific language variant.

Considering questions raised commonly in classifier studies, I suggest comparing classifier categories by several distinctive measures, the *semantic range*, the *functional range*, and the *productiveness* of a linguistic categorization system:

A. THE SEMANTIC RANGE – The classifier repertoire of a system or sub-system

To compare datasets, typological semantic terms are used (see below §3.1). Each classifier is tagged with an interpretive meaning label in English, e.g., the label [WOOD] is assigned in Egyptian to the classifier  (M3) or [TREE] to  (M1). In some cases, a classifier is tagged with more than one meaning label. E.g., the Sumerian cuneogram  (ġiš-/ġeš-) or the Chinese character 木 (mù) are tagged as [WOOD] and as [TREE] to cover the semantic

² In classifier studies, the scope of semantic “coverage” of classifier systems has been tagged under general semantic parameters such as “shape,” “physical properties,” “animacy,” “functional properties” and “social status” among other terms, see Croft 1994; Aikhenvald 2006; 2019: 15. Aikhenvald suggests also that various types of categorization devices commonly represent specific semantic parameters, e.g., that noun classifiers commonly cover the parameters “social status,” “functional properties,” “nature.” Additional systematic descriptive work is needed to form generalizations on the semantic range of each graphemic classifier system.

range, which in both script systems includes items made of [WOOD] and types of trees. One should consider that these English meanings are not exact definitions but merely a tool used to gloss the semantic properties of a category (Lincke & Kammerzell 2012: 67–72; Selz, Grinevald & Goldwasser 2018: 289; Chen 2016; cf. Klinkenberg & Polis 2018: 77).

Similarly, classifiers in classifier languages can be tagged, e.g., [WOOD] for Kilivila (Austronesian) –ke– (“wooden things” in Senft 1990: 150). Such labels for semantic categories assist in identifying similar semantic domains and have to be considered an etic conceptualization of each original category. At the same time, to track and map the semantic space of each classifier, all of the *hosts* occurring with a certain classifier are matched with English meanings as well, allowing us to compare to which classifier categories a meaning is distributed across datasets.

As English meanings do not always cover the semantic nuances or range in the language of origin, a specific classifier or host lemma can be matched with more than one meaning or label. By measuring the semantic similarity and divergence of classifier categories across languages, one can better assess if various systems of graphemic classifiers in scripts share semantic properties and if they resemble the semantic scope of classifiers as pronounced morphemes in classifier languages.

B. THE FUNCTIONAL RANGE – how a classifier system operates

The functional, morphosyntactic patterns of each system can be tracked by:

- *Describing the loci of the classifiers.* In each *synchronic* system, one can track the syntactic relations in which classifiers occur and map the morphology of types of hosts occurring with classifiers, considering which elements are classified and which are not. E.g., in Japanese, classifier morphemes occur adjunct to a numeral, classifying quantified nouns; in ancient Egyptian, classifiers added to nouns, verbs, deverbals, and in some cases to prepositions and adverbs, or broadly have been suggested to be associated with roots (Grinevald 2015: 811–816; cf. Aikhenvald 2019).
- Describing how the system encodes *reference management and tracking* (Croft 2017). By that, we can learn which information is provided by categorization and describe, with quantitative tools, “what classifiers are good for.” By documenting how the system operates and what elements are classified, we can look for common functional features of classifier systems (Grinevald 2015: 811–16; Corbett & Fedden 2016: 496–97; Aikhenvald 2019: 21–23) and better theorize its role in language production and interpretation. Little research has been devoted to the cognitive benefits of classifier systems (Goldwasser, this volume).
- This syntagmatic reading of classification patterns can also be applied to *phonetic classification*, a phenomenon occurring both in classifier scripts and languages, where a classifier morpheme signifies phonological information instead of semantic information (Goldwasser & Grinevald 2012: 30) or to

the so-called *grammatical classification* of the gender or number of a host in complex scripts.

C. THE PRODUCTIVE RANGE – how categories are created, how semantic structure develops over time, and how grammaticalized is a nominal categorization system

Studies have placed classifier systems on the grammatical scale of systems of nominal categorization and suggested that the stage of each classifier system can be seen on a continuum of grammaticalization (Grinevald 2015; Corbett & Fedden 2016; Aikhenvald 2019). When documenting concrete examples of a classifier system, one can bring this aspect into discussion and inquire about the diachronic routes in which classifier categories develop with quantitative and comparative tools. E.g., regarding complex scripts, we can expose the classification rate per corpus and track how categories develop or when new classifiers are introduced (Grinevald 2015: 816; e.g., for Egyptian, discussion on chaining in Lincke and Kammerzell 2012; and systematic look on diachronic changes of classifiers in Chantraine 2014; 2021). This research tracks highlights looking into diachronic data and modeling the network's dynamic of change over time, asking how the semantic range of a classifier changed over time, and did a sign first emerged as a classifier or was a lexical item that was "elected" as a prototype or used as a repeater. Not only dating can be exploited for this research track but also genre or geographical variation, showing where a certain pattern was "successful" and how it was distributed.

2. APPLYING A NETWORK APPROACH TO CATEGORIZATION BY CLASSIFIERS

2.1 CATEGORIES, CLASSIFIERS, AND THE LEXICON

The linguist Otto Jespersen wrote, "Man is a classifying animal." (1922: 388).³ Later, as the scientific investigation of language as a cognitive phenomenon developed, George Lakoff suggested, "We understand the world not only in terms of individual things but also in terms of categories of things" (Lakoff 1987: 9).

Before ancient scribes wrote grammar books, they sorted vocabulary into categories by creating lists (Cancik-Kirschbaum & Kahl 2018: 283–297; Selz 2011). In recent decades, studies in cognitive linguistics and cognitive sciences have put categorization in human thought to the test. Researchers study today empirically, by experimental methods, the existence of higher-level categories and the hierarchy or common structures of language processing, e.g., the relations between categorization and naming tasks.⁴ Such experiments exposed evidence for representational similarity spaces in the brain (see examples for

³ He continues: "in one sense it may be said that the whole process of speaking is nothing but distributing phenomena of which no two are alike in every respect, into different classes on the strength of perceived similarities and dissimilarities."

⁴ Literature about the cognitive effects of classifiers are listed in Seifart 2010: §3.4, more recently Kemmerer (2016) published an article on the relevance of nominal classification to cognitive neuroscience that stirred a lively discussion in numerous review articles.

representational similarity analysis [RSA] in Kemmerer 2019: §2), e.g., by visualizing the topography of *actions* and *objects* arranged in semantic spaces in brain mapping (Huth et al. 2012; 2016). In ancient scripts, a record of ‘categories of things,’ mostly covert in most languages, is overt and even represented by a pictorial prototype, classifying lexical items into a graphemic classifier category. Goldwasser (2002: 7–38) presented a theoretical framework for a scientific description of the Egyptian classifier system based on cognitive linguistics (following the theories of Rosch 1978 and Lakoff 1987) and theories of ethnobiological categorization (e.g., Berlin 1992). Applying this framework to case studies of specific classifiers, she established how classifier categories are arranged around a prototype at the center of a “conceptual category.” Pioneering works recently published investigate the semantic properties of other graphemic classifier systems in Sumerian (Selz, Grinevald & Goldwasser 2018; Selz 2021) and ancient Chinese scripts (Handel 2023), following the description of the Egyptian classifier system, studied over the last two decades (Goldwasser 1999; 2002; Goldwasser & Grinevald 2012).

Cuneiform, Egyptian, and Chinese writing systems all have uniquely long scribal traditions spanning thousands of years. This suggests that their knowledge organization based on classifiers may comprise inherited and contemporary categorizations (terms suggested for the Chinese classifier system by Handel 2023: §8). Thus, a systematic, diachronic description of classifiers as conceptual categories will reveal how such systems developed and changed in their respective written corpora. A curious point to be noted is that in some cases, classifiers reflect knowledge structures that are not represented on a superordinate level in the lexicon itself, e.g., the lack of a superordinate term ‘animal’ in the Egyptian lexicon coincides with the existence of a superordinate classifier category [ANIMAL] in the script (Goldwasser 2002; 2023; Chantrain 2021: 51–52). Thus, classifiers portray an added semantic and categorical layer arranging vocabulary (Harel 2023).

2.2 A NETWORK APPROACH

A *network approach* is a new approach added to the theoretic arsenal of semantic categorization. Today, as I will demonstrate below, we apply network analysis methods to visualize and analyze classifiers as heading semantic categories. I will review some theoretical guidelines of the network approach and illustrate how it can be applied in describing the classifier systems of ancient scripts or modern languages. Network Analysis (NA) was applied in Egyptology and Assyriology previously in applications of Social Network Analysis (SNA) in studies devoted to modeling social organization.

In recent years, pioneering work has been done in projects providing NA visualizations and analysis methods, such as by the metadata database Trismegistos,⁵ and by scholars studying social organization, e.g., Martinet’s (2020) study of Egyptian individuals and institutional networks of the late Old Kingdom. Primarily, network analysis methods have been used to expose links between entities and visualize the quantitative distri-

5 For the current version of the Trismegistos network visualization tools, visit <https://www.trismegistos.org/network/>.

butional patterns of a dataset. In the lexicography of ancient languages, some research has been devoted to defining guidelines for creating semantic maps (Grossman & Polis 2012; Georgakopoulos & Polis 2018; 2021). Models of semantic maps have been applied to visualizing specific meanings or knowledge domains (e.g., Werning 2014, discussing “semantic space”; Georgakopoulos & Polis 2018; 2021; Winand 2019). For example, colexification semantic maps are visualized as weighted networks exposing how many languages have a shared association, a polysemy, signified by a particular lexical item. This allows cross-linguistic tracking patterns of co-expression of a certain meaning, e.g., in studying polysemy and colexification (François 2008; List et al. 2018). NA tools have been applied to studying semantic networks in several case studies in Egyptology. For example, a study of the community structure around several ancient Egyptian lexical items measured their co-occurrence rank with other lexical items (Elwert and Gerhards 2017; Elwert 2021).

Various statistical models were developed in general linguistics to quantify and analyze semantic networks (Steyvers and Tenenbaum 2005). NA methods have been utilized for representing various types of linguistic data; e.g., to visualize communities in the lexicon (Kovács et al. 2021). A review of recent research relating to the application of network theory in cognitive sciences has shown how network science has been utilized to represent human cognition and model structural properties and processes, especially in semantic memory and language processing fields (Siew et al. 2019). The cognitive aspects of language procession and production activity are studied with NA tools (Solé et al. 2010; Castro & Siew 2020), suggesting statistical universals in the networks of languages (Solé et al. 2010). In many scientific fields, NA methods offer a new way to present and analyze a dataset. It enables data-driven research, structuring inner, intrinsic hierarchies in a dataset that can be scrutinized and theorized (Iñiguez, Battiston & Karsai 2020).

An innovative paper by Gunter Senft (1991) discussed which type of network can represent a classifier system. Senft suggested that a classifier system can be presented as a linear list, a one-dimensional yet hierarchical network, and lastly, a multi-dimensional network. Years later, most presentations of classifier systems are still list-based, where categories are recorded and not linked to actual language data, such as frequency and context, to reflect semantic scope, function, or their centrality in the system. The presented method takes the first steps in modeling the complexity of a nominal categorization system.

Classifier-based networks differ from other semantic networks. The information on which they arrange semantic spaces is based on something other than English translations or modern grammatical analysis. A *classifier-based network* portrays the structure, interrelations, and dynamics of change of classifier categories as assigned to lexical items in origin. A *classifier-based network* can be visualized by two types of relations, classifier–host and classifier–classifier (co-occurrence). Some key concepts necessary for reading network maps in the discussion below are:⁶

NODES *classifier-based networks* include two types of data points, visualized as nodes—*classifier* and *lemma*.

⁶ An informative general introduction to the terminology of network science is available in the online publication of Barabási’s monograph: <http://networksciencebook.com/>.

EDGES Edges link between classifiers and their host lemmas and between classifiers that co-occur in a particular token (=example) of a lemma. In the network images below (figs. 5.2–5.3), a different color represents each type of connection.

EDGE WIDTH The width of an edge represents the number of concrete examples of a certain lemma with a particular classifier category.

CENTRALITY MEASURES The centrality of nodes in a network is investigated using several independent measures to quantify and describe the network's structure (Barabási 2016):

Degree centrality is how many connections (=edges) a node has. In *classifier-based networks*, how many lemmas or how many concrete examples occur with a specific classifier?

Betweenness centrality is how many other nodes a node is linked to. In *classifier-based networks*, this can represent how many combinations a classifier has with other classifiers. This is relevant only to classifier systems that contain multiple classifications.

Closeness centrality is a calculation of the path length from a node to other nodes (=how many steps it takes to reach it from any place in the network). A classifier node with semantic association to many other categories will have a higher closeness centrality rank.

3. HOW TO CREATE A CLASSIFIER-BASED NETWORK

I will now present the technical protocol carried out for marking classifiers in various corpora using the *iClassifier* platform (©Goldwasser/Harel/Nikolaev). The platform enables data-driven research and exposes the repertoire of classifier categories in a given corpus or corpora, their members, and semantic structures built around a semantic range. To facilitate the research projects carried out in *iClassifier*, we established the ArchaeoMind lab at the Hebrew University of Jerusalem, led by PI Prof. Orly Goldwasser. The platform enables data collection in various scripts. Using the *iClassifier* platform, we aim to create corpus-based, annotated classifier lists and work towards digitizing the classifiers with context and in complete corpora in each field. In this discussion, I present preliminary results from three pilot studies. First, lexical borrowings in Egyptian New Kingdom texts (after Harel 2022; 2023); second, data from the ePSD2 Sumerian dictionary digitized into *iClassifier* by Gebhard Selz and Bo Zhang (after Selz, 2021); and third, ancient Chinese, collected by Yanru Xu (Xu, in press), in collaboration with The Intelligent Retrieval Network Database of Chinese Characters, East China Normal University, Shanghai.

3.1 *iCLASSIFIER*, INPUT SYSTEM

The input system of *iClassifier* is primarily identical for each script currently analyzed with the tool: e.g., Egyptian, cuneiform, and Chinese. The data structure was created to fit

Fig. 5.1 Tagging classifiers in examples (=tokens). Left, a token of the lemma *mw.t* ‘mother’ in Egyptian. On the right, a token of the lemma *gadištum* ‘priestess, midwife’ in Sumerian. In both, the classifier is marked by adding a tilde sign (~) before and after the classifier.

Classifiers are similarly annotated for each script, e.g., Egyptian and Sumerian, as marked by a red square in figure 5.1. The transcription of the example is enriched with a classifier marking, using the tilde (~) sign, before and after each classifier, e.g., in Sumerian ~𒂗~𒈾𒀭𒊩𒌆𒍪𒋷𒍪𒅗𒄣𒁺𒃶, or Egyptian 𓏲𓐠𓏳𓏴𓏵𓏶𓏷𓏸𓏹𓏺𓏻𓏼𓏽𓏾𓏿𓐀𓐁𓐂𓐃𓐄𓐅𓐆𓐇𓐈𓐉𓐊𓐋𓐌𓐍𓐎𓐏𓐐𓐑𓐒𓐓𓐔𓐕𓐖𓐗𓐘𓐙𓐚𓐛𓐜𓐝𓐞𓐟𓐠𓐡𓐢𓐣𓐤𓐥𓐦𓐧𓐨𓐩𓐪𓐫𓐬𓐭𓐮𓐯𓐰𓐱𓐲𓐳𓐴𓐵𓐶𓐷𓐸𓐹𓐺𓐻𓐼𓐽𓐾𓐿𓑀𓑁𓑂𓑃𓑄𓑅𓑆𓑇𓑈𓑉𓑊𓑋𓑌𓑍𓑎𓑏𓑐𓑑𓑒𓑓𓑔𓑕𓑖𓑗𓑘𓑙𓑚𓑛𓑜𓑝𓑞𓑟𓑠𓑡𓑢𓑣𓑤𓑥𓑦𓑧𓑨𓑩𓑪𓑫𓑬𓑭𓑮𓑯𓑰𓑱𓑲𓑳𓑴𓑵𓑶𓑷𓑸𓑹𓑺𓑻𓑼𓑽𓑾𓑿𓒀𓒁𓒂𓒃𓒄𓒅𓒆𓒇𓒈𓒉𓒊𓒋𓒌𓒍𓒎𓒏𓒐𓒑𓒒𓒓𓒔𓒕𓒖𓒗𓒘𓒙𓒚𓒛𓒜𓒝𓒞𓒟𓒠𓒡𓒢𓒣𓒤𓒥𓒦𓒧𓒨𓒩𓒪𓒫𓒬𓒭𓒮𓒯𓒰𓒱𓒲𓒳𓒴𓒵𓒶𓒷𓒸𓒹𓒺𓒻𓒼𓒽𓒾𓒿𓓀𓓁𓓂𓓃𓓄𓓅𓓆𓓇𓓈𓓉𓓊𓓋𓓌𓓍𓓎𓓏𓓐𓓑𓓒𓓓𓓔𓓕𓓖𓓗𓓘𓓙𓓚𓓛𓓜𓓝𓓞𓓟𓓠𓓡𓓢𓓣𓓤𓓥𓓦𓓧𓓨𓓩𓓪𓓫𓓬𓓭𓓮𓓯𓓰𓓱𓓲𓓳𓓴𓓵𓓶𓓷𓓸𓓹𓓺𓓻𓓼𓓽𓓾𓓿𓔀𓔁𓔂𓔃𓔄𓔅𓔆𓔇𓔈𓔉𓔊𓔋𓔌𓔍𓔎𓔏𓔐𓔑𓔒𓔓𓔔𓔕𓔖𓔗𓔘𓔙𓔚𓔛𓔜𓔝𓔞𓔟𓔠𓔡𓔢𓔣𓔤𓔥𓔦𓔧𓔨𓔩𓔪𓔫𓔬𓔭𓔮𓔯𓔰𓔱𓔲𓔳𓔴𓔵𓔶𓔷𓔸𓔹𓔺𓔻𓔼𓔽𓔾𓔿𓕀𓕁𓕂𓕃𓕄𓕅𓕆𓕇𓕈𓕉𓕊𓕋𓕌𓕍𓕎𓕏𓕐𓕑𓕒𓕓𓕔𓕕𓕖𓕗𓕘𓕙𓕚𓕛𓕜𓕝𓕞𓕟𓕠𓕡𓕢𓕣𓕤𓕥𓕦𓕧𓕨𓕩𓕪𓕫𓕬𓕭𓕮𓕯𓕰𓕱𓕲𓕳𓕴𓕵𓕶𓕷𓕸𓕹𓕺𓕻𓕼𓕽𓕾𓕿𓖀𓖁𓖂𓖃𓖄𓖅𓖆𓖇𓖈𓖉𓖊𓖋𓖌𓖍𓖎𓖏𓖐𓖑𓖒𓖓𓖔𓖕𓖖𓖗𓖘𓖙𓖚𓖛𓖜𓖝𓖞𓖟𓖠𓖡𓖢𓖣𓖤𓖥𓖦𓖧𓖨𓖩𓖪𓖫𓖬𓖭𓖮𓖯𓖰𓖱𓖲𓖳𓖴𓖵𓖶𓖷𓖸𓖹𓖺𓖻𓖼𓖽𓖾𓖿𓗀𓗁𓗂𓗃𓗄𓗅𓗆𓗇𓗈𓗉𓗊𓗋𓗌𓗍𓗎𓗏𓗐𓗑𓗒𓗓𓗔𓗕𓗖𓗗𓗘𓗙𓗚𓗛𓗜𓗝𓗞𓗟𓗠𓗡𓗢𓗣𓗤𓗥𓗦𓗧𓗨𓗩𓗪𓗫𓗬𓗭𓗮𓗯𓗰𓗱𓗲𓗳𓗴𓗵𓗶𓗷𓗸𓗹𓗺𓗻𓗼𓗽𓗾𓗿𓘀𓘁𓘂𓘃𓘄𓘅𓘆𓘇𓘈𓘉𓘊𓘋𓘌𓘍𓘎𓘏𓘐𓘑𓘒𓘓𓘔𓘕𓘖𓘗𓘘𓘙𓘚𓘛𓘜𓘝𓘞𓘟𓘠𓘡𓘢𓘣𓘤𓘥𓘦𓘧𓘨𓘩𓘪𓘫𓘬𓘭𓘮𓘯𓘰𓘱𓘲𓘳𓘴𓘵𓘶𓘷𓘸𓘹𓘺𓘻𓘼𓘽𓘾𓘿𓙀𓙁𓙂𓙃𓙄𓙅𓙆𓙇𓙈𓙉𓙊𓙋𓙌𓙍𓙎𓙏𓙐𓙑𓙒𓙓𓙔𓙕𓙖𓙗𓙘𓙙𓙚𓙛𓙜𓙝𓙞𓙟𓙠𓙡𓙢𓙣𓙤𓙥𓙦𓙧𓙨𓙩𓙪𓙫𓙬𓙭𓙮𓙯𓙰𓙱𓙲𓙳𓙴𓙵𓙶𓙷𓙸𓙹𓙺𓙻𓙼𓙽𓙾𓙿𓚀𓚁𓚂𓚃𓚄𓚅𓚆𓚇𓚈𓚉𓚊𓚋𓚌𓚍𓚎𓚏𓚐𓚑𓚒𓚓𓚔𓚕𓚖𓚗𓚘𓚙𓚚𓚛𓚜𓚝𓚞𓚟𓚠𓚡𓚢𓚣𓚤𓚥𓚦𓚧𓚨𓚩𓚪𓚫𓚬𓚭𓚮𓚯𓚰𓚱𓚲𓚳𓚴𓚵𓚶𓚷𓚸𓚹𓚺𓚻𓚼𓚽𓚾𓚿𓛀𓛁𓛂𓛃𓛄𓛅𓛆𓛇𓛈𓛉𓛊𓛋𓛌𓛍𓛎𓛏𓛐𓛑𓛒𓛓𓛔𓛕𓛖𓛗𓛘𓛙𓛚𓛛𓛜𓛝𓛞𓛟𓛠𓛡𓛢𓛣𓛤𓛥𓛦𓛧𓛨𓛩𓛪𓛫𓛬𓛭𓛮𓛯𓛰𓛱𓛲𓛳𓛴𓛵𓛶𓛷𓛸𓛹𓛺𓛻𓛼𓛽𓛾𓛿𓜀𓜁𓜂𓜃𓜄𓜅𓜆𓜇𓜈𓜉𓜊𓜋𓜌𓜍𓜎𓜏𓜐𓜑𓜒𓜓𓜔𓜕𓜖𓜗𓜘𓜙𓜚𓜛𓜜𓜝𓜞𓜟𓜠𓜡𓜢𓜣𓜤𓜥𓜦𓜧𓜨𓜩𓜪𓜫𓜬𓜭𓜮𓜯𓜰𓜱𓜲𓜳𓜴𓜵𓜶𓜷𓜸𓜹𓜺𓜻𓜼𓜽𓜾𓜿𓝀𓝁𓝂𓝃𓝄𓝅𓝆𓝇𓝈𓝉𓝊𓝋𓝌𓝍𓝎𓝏𓝐𓝑𓝒𓝓𓝔𓝕𓝖𓝗𓝘𓝙𓝚𓝛𓝜𓝝𓝞𓝟𓝠𓝡𓝢𓝣𓝤𓝥𓝦𓝧𓝨𓝩𓝪𓝫𓝬𓝭𓝮𓝯𓝰𓝱𓝲𓝳𓝴𓝵𓝶𓝷𓝸𓝹𓝺𓝻𓝼𓝽𓝾𓝿𓞀𓞁𓞂𓞃𓞄𓞅𓞆𓞇𓞈𓞉𓞊𓞋𓞌𓞍𓞎𓞏𓞐𓞑𓞒𓞓𓞔𓞕𓞖𓞗𓞘𓞙𓞚𓞛𓞜𓞝𓞞𓞟𓞠𓞡𓞢𓞣𓞤𓞥𓞦𓞧𓞨𓞩𓞪𓞫𓞬𓞭𓞮𓞯𓞰𓞱𓞲𓞳𓞴𓞵𓞶𓞷𓞸𓞹𓞺𓞻𓞼𓞽𓞾𓞿𓟀𓟁𓟂𓟃𓟄𓟅𓟆𓟇𓟈𓟉𓟊𓟋𓟌𓟍𓟎𓟏𓟐𓟑𓟒

Users in *iClassifier* mainly annotate three forms. Adding first a *token* (= example) (fig. 5.1). Then, linking the token to a certain *text* metadata form and possibly adding source

⁸ While reduced from the networks in this paper, phonetic determinatives/classifiers are attested also in classifier languages, and we aim to collect and mark them in our corpora as well. Phonetic classifiers appear to have an apparent cognitive value in pointing the reader to a correct pronunciation for a specific sequence of signs.

Fig. 5.2 Classifier analysis. A “classifier/s” window is generated for the analysis of each sign in the role of classifier, allowing to determine the type of *classifier–host relations* and the *information type* represented by the classifier: encyclopedic/semantic, pragmatic/referential, grammatical, metatextual, or phonetic (Harel, Goldwasser & Nikolaev 2023; in press).

images, if relevant.⁹ Finally, linking the token to a certain *lemma* (= word) based on a lemma list imported into the *iClassifier* lemma form or by referring to a published dictionary. For example, above the token forms of the ancient Egyptian and Sumerian portals, with the word ‘*mw.t*’ ‘mother’ in ancient Egyptian and *gadištum* ‘priestess, midwife’ in Sumerian. Each language studied, featuring graphemic classifier (not pronounced) or pronounced classifier morphemes, is annotated similarly and linked to comparative, typological meanings in English. Lemma entries (fig. 5.2, top right, in yellow) are further annotated with a comparative meaning of “concept” and “semantic field” based on a pre-made list of concepts published online by Concepticon’s project (List et al. 2021). For example, the meaning “mother” is matched in the lemma card with the semantic concept “MOTHER” (no. 1216) and the semantic field “Kinship,” based on the Concepticon list of meanings in the world languages.¹⁰ While this article discusses how to compare the semantic range of classifier systems, the documentation in the *iClassifier* platform aims to track variables that will also assist in comparing the functional (tracking syntactic placement of classifier)

⁹ For Egyptian, the *iClassifier* metadata format consists of a “Text” and “Object” hierarchy, following the TLA metadata structure (<https://thesaurus-linguae-aegyptiae.de/>) and the THOT metadata thesauri (<https://thot.philo.ulg.ac.be/>), re-used in the *iClassifier* input form.

¹⁰ For a detailed protocol of tagging lemmas with typological concepts, see Harel, Goldwasser and Nikolaev 2023. When a meaning is not part of the Concepticon list, it is added to a designated list, and only a semantic field is chosen. For the difference in how semantic fields and classifier categories arrange the vocabulary, see Harel 2023: §4.1.7.

and the diachronic productiveness range of classifier systems by matching each example with detailed metadata annotations.

Currently, we are building the corpus *bottom-up* in Egyptian and ancient Chinese by creating various pilot studies. The Sumerian network is a top-down network depicting the general image of the vocabulary and its classification. The current Sumerian dataset is based on the normalized transcription of ePSD2. A description of the project was recently published by Selz (2021), analyzing the network according to the first 1200 lemmas digitized into *iClassifier*. In Sumerian, classifiers were marked in all dictionary entries with a semantic or phonetic classifier (determinative), as transcribed in uppercase by the ePSD2 (Selz 2021). This dataset could later be enriched with corpora to represent the size and distribution of classifier categories across time and place.

3.2 CREATING NETWORKS

The macro networks in figures 5.3–5.4 exemplify how a classifier system can be represented as a network. The two corpora presented by these networks should be carefully differentiated. In fig. 5.3, the Egyptian corpus is based on general lexicon items that likely have a foreign origin and occur in New Kingdom Egyptian texts. Proper names, personal names, divine names, and toponyms were not included in this corpus (Harel 2023). In fig. 5.4, entries of the Sumerian dictionary that are written with classifiers were listed following the ePSD2, including proper names (Selz 2021).

3.2.1 Ancient Egyptian

The classifier-based network presented in fig. 5.3 depicts the classifier system of a particular timeframe, the Egyptian New Kingdom (~ 1550–1070 BCE), and a certain type of lemmas—lexical borrowings. It consists of 1800 examples written in Egyptian texts (Harel 2023: §4.1), arranged around a hundred classifier categories. In the network visualization, the width of the blue edges represents the number of attestations of a certain lemma with a classifier.

3.2.2 Sumerian

The network of classifiers in Sumerian is based on a lemma list that includes general lexicon items as well as proper names, divine and place names. The network is thus an image of the analysis of ~75% of the Sumerian vocabulary, according to the readings provided in the ePSD2 data, with reduced phonetic indicators.

The Sumerian *iClassifier* project is led in collaboration with Prof. Gebhard Selz and Bo Zhang. The project is built on collecting all spellings in the ePSD2 that include semantic determinatives (=semantic classifiers), traditionally transcribed in uppercase letters, e.g., ^{ges} for the sign 𒄣. A critical reading of the elements transcribed in superscript in the lemma list by Gebhard Selz (Selz 2021) suggests guidelines for identifying classifiers vs. attributive appositions in superscript that, in some cases, should be regarded as pronounced nominal attributes (e.g., Selz 2021: 161).

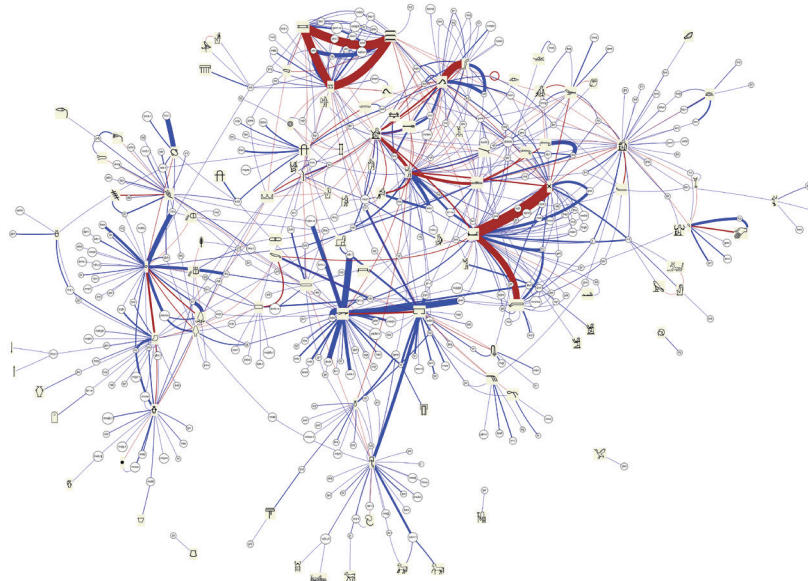


Fig. 5.3 A network of the classifier categories of lexical borrowings in New Kingdom texts.¹¹ Blue edges are links between classifiers and their host words; red edges are links between classifiers that co-occur with a particular lemma.

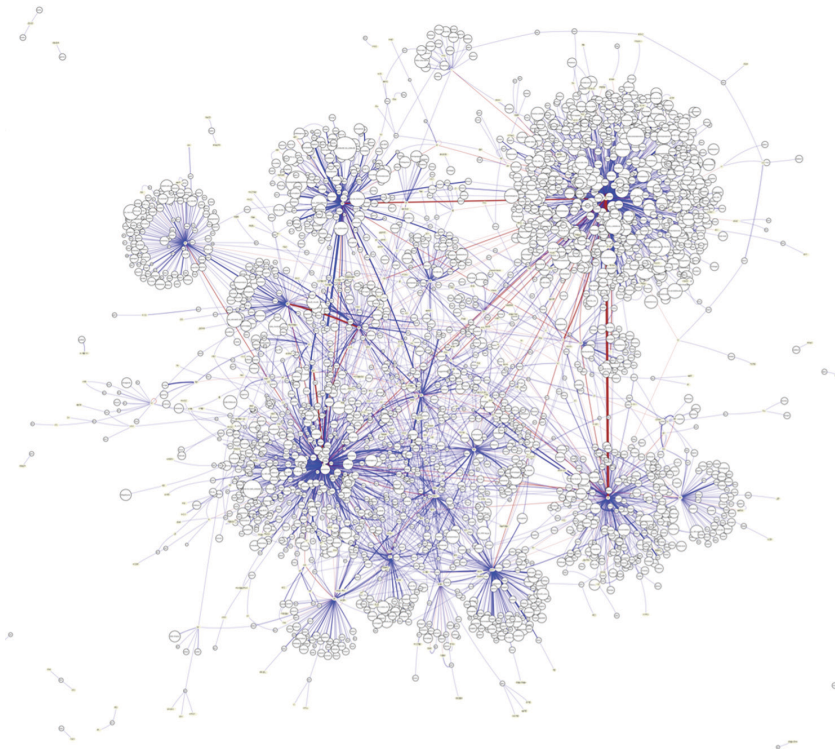


Fig. 5.4 A classifier-based network of Sumerian, according to the ePSD2 lemma list, after Selz (2021), updated to include 2696 lemmas and 8963 written forms, digitized by Bo Zhang in *iClassifier* (©Goldwasser/Harel/Nikolaev) in collaboration with Prof. Gebhard Selz.¹²

Figure 5.4 illustrates the macro network of all categories and all host lemmas in the current dataset. Using the *iClassifier* web reports, one can look into each classifier category in detail.¹³

3.3 DISCUSSION: THE LANDSCAPE OF CATEGORIES ACCORDING TO CLASSIFIER SYSTEMS

When exploring the *distribution* of lexical items into categories, some similar characteristics emerge across different networks of classifier categories. One should consider that this experimental comparison is concurrent with compiling a corpus of examples in each project independently. Thus, this discussion aims to raise novel questions and share working notes. In figs. 5.3–5.4, red edges reflect the high *connectivity* between categories. In both networks, we see the co-occurrence of lemmas with multiple categories and variations in categorization. The results teach us that semantic knowledge is not arranged in separate “piles” or domains but that categories interact and intersect (Harel 2023: §4.1).

Wide red edges indicate common combinations that form conceptual clusters, such as the water classifiers in Egyptian, a cluster linking the signs  (N35A),  (N23), and  (N36). The width of the red edges represents that these three signs frequently co-occur in categorizing [WATERWAYS] with items such as *y-m* ‘sea,’ *b-r-k-t* ‘pool,’ or *h-p* ‘shore,’ in the upper part of fig. 5.3. Using a network method, we measure not only the contents of the categories but also the complex interrelations between categories. These interrelations represent how semantic space is structured in each investigated classifier system. For example, compare it with the semantic scope of the Chinese classifier 水, which can be tagged with the interpretive labels [WATER], [WATERBODIES], or [LIQUID] (Xu, in press).

3.3.1 Long-Tailed Distributions

The Network visualization of a classifier system reveals at first glance not only which categories exist, yet also which are most connected and have robust edges (fig. 5.3). As I will suggest below, preliminary results demonstrate that various classifier networks depict a long-tailed distribution of categories. Figure 5.5 lists the repertoire of categories evident in the network. A few large categories head the graph and classify a high percentage of the lemma list. Thematically with the network’s “power” law, the classifier attested with most lemmas in fig. 5.5 is the “power” category:  (D40) [HAND&STICK], its variation  (A24) [MAN+HAND&STICK]. These two categories can be labeled as [HUMAN-FORCE], or

¹¹ The *iClassifier* network maps are drawn using the JavaScript library Vis.js and Gephi.

¹² A digital version of the network is accessible at <https://www.iclassifier.pw/reports/#!gebhardselz/classifiers/%F0%92%8B%A2>. In this link, the  [LEATHER] category is presented, when pressing on the top of the page “subset by type” and choosing “lexical,” all phonetic classifiers, or elements, are excluded.

¹³ The figure is reproduced with the current version of the map (2696 lemmas, 8963 tokens). © *iClassifier*, data digitized by Bo Zhang, in collaboration with Prof. Gebhard Selz, updated to Feb 4th, 2023.

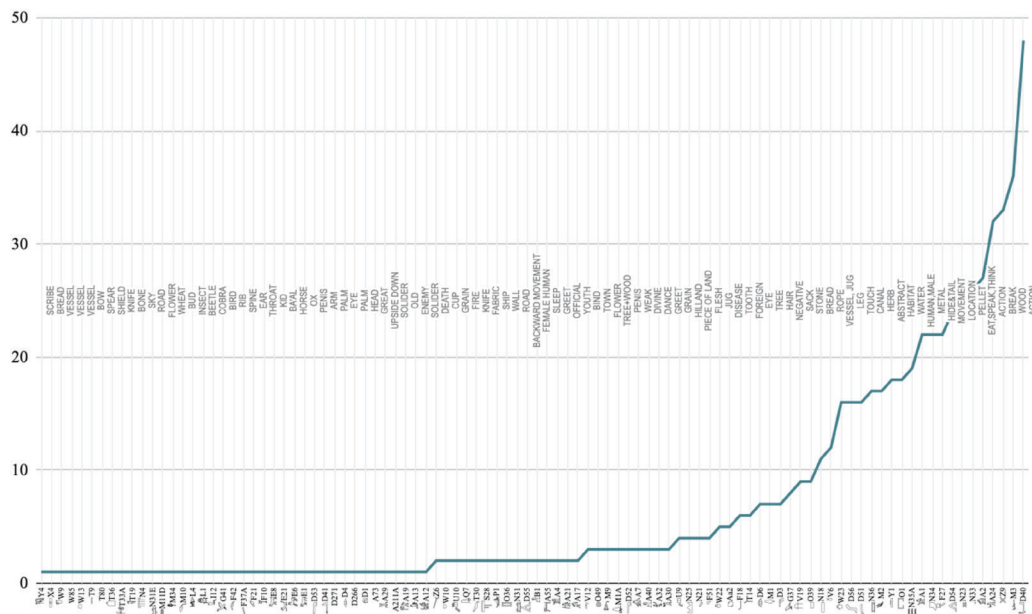


Fig. 5.5 A long-tailed classifier distribution: The number of lemmas per each classifier category, lexical borrowings in New Kingdom Egyptian texts (after Harel 2023: §4.1). Classifiers are listed by their MdC; Unicode glyphs added where supported.

broadly as [ACTION], represented by a hand holding a stick. It appears with words related to administration, verbs denoting aggressive or violent actions, and social terms relating to military and trade. In the network of lexical borrowings in New Kingdom texts, it includes words such as *j-t-r* ‘captive,’ social terms such as *b-r-t* ‘agreement,’ occurring both with  (D40) [HAND&STICK] or its variation  (A24) [MAN+HAND&STICK] and army-related terms such as an hapax instance of lexical borrowing, *r-k-s* ‘equipment,’ or formations of loaned verbal lexemes such as *ʕ-š-k* ‘to extort.’¹⁴ The second most attested classifier to appear with lexical borrowings in fig. 5.3 is the  (M3) [WOOD] category.¹⁵ This information is also presented in fig. 5.5, listing the classifiers by their number of host lemmas.

The long-tailed distribution of categories in Egyptian in fig. 5.5 shows a transparent Pareto or so-called “power law” degree distribution, where many nodes represent a “long tail,” occurring with only a few connections. Such distribution has been demonstrated to appear in various contexts and scales in the field of Network Analysis, e.g., regarding human dynamics, be it the websites where internet traffic goes or the percentage of scholars with the most citations (Barabási 2005; 2016; Vázquez et al. 2006)¹⁶ Specifically for lin-

¹⁴ For a full report, visit <https://www.iclassifier.pw/reports/#!/classifyingtheother/classifiers/A24> and <https://www.iclassifier.pw/reports/#!/classifyingtheother/classifiers/D40>.

¹⁵ See discussion on the different classifier paradigms of these two categories in Harel 2023: §4.1.5.a.

¹⁶ The topic of “scale-free” networks and “power-law” dynamics received much criticism and debate, arguing that not all cases presented as such and pure “power-laws” are rare, see Stumpf & Porter 2012, or Broido & Clauset 2019. For this reason I suggest that the distribution should be carefully identified based on the examination of a larger sample.

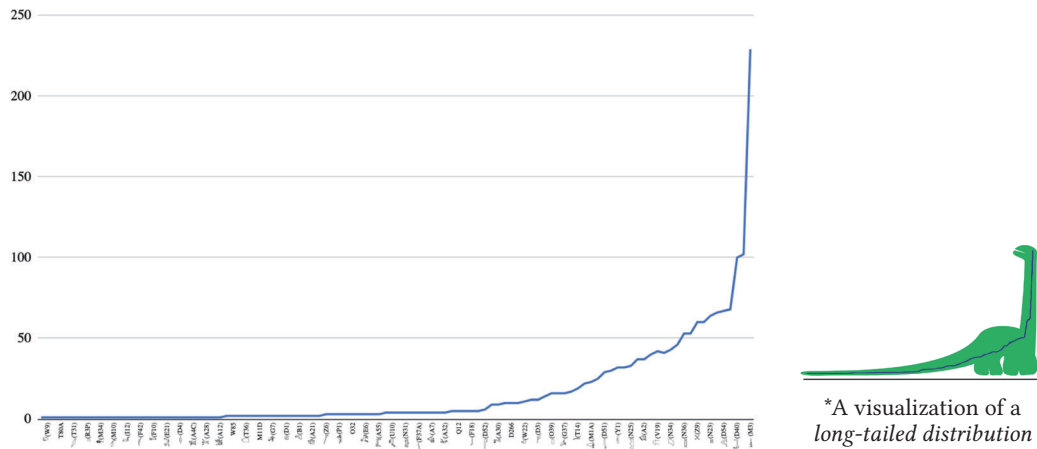


Fig. 5.6 Distribution of lexical borrowings, no. of tokens (=examples) per classifier.

guistic data, a law commonly known as Zipf’s law, coined in the 1930s, suggests that the frequency of lexical items in languages has a similar distribution. In recent years, various complexity measures applied to language networks have shown similar characteristics, such as a “power-law” distribution (Solé et al. 2016: 3). More data should be collected to determine a statistically accurate distribution of classifier networks. Still, preliminary results of corpora in Egyptian, the lemma list in Sumerian, and preliminary results in Chinese resemble such a distribution (Harel, Goldwasser & Nikolaev, in press.)

A steeper distribution emerges in how concrete examples distribute according to classifier categories, as apparent in figure 5.6.

Looking into which domain has the most concrete attestations points us to the [wood] category, heading fig. 5.6. Figure 5.7 lists the hosts occurring with this classifier, including weaponry, tools, furniture, and wood types.

The results direct us to look not only into the semantic scope of the category but also to consider classifier combinations and the “classifier paradigms” of a host lemma, hence, with which other categories a category interchanges (inverse correlation). Despite the very different corpora in Sumerian and Egyptian, we see a similar distribution of categories in the Sumerian classifier repertoire (fig. 5.8). Though the amount of classifiers is smaller than in the Egyptian corpus, it exposes a distribution of classifier categories arranging the vocabulary items that occur with semantic classifiers, typical of a network “Pareto” distribution, where 80% of the examples occur with the top 20% classifiers. It has several central categories, arranging the domains of geography, divinities, animate subjects, and materials or object types occurring frequently. Still, this graph is not based on complete corpora, and some tagged classifiers are debated (Selz 2021; Selz and Zhang, in press).

Figure 5.8 depicts a preliminary distribution of the 46 semantic categories by the number of dictionary entries occurring with each classifier (Selz & Zhang, in press). The current results show that the most prominent categories, occurring with the largest number of distinct lemmas, are ✱ *diġir (AN)– [DIVINITY], 𒌷 ġiš–/ġeš– [WOOD], 𒂍 –ki [PLACE]

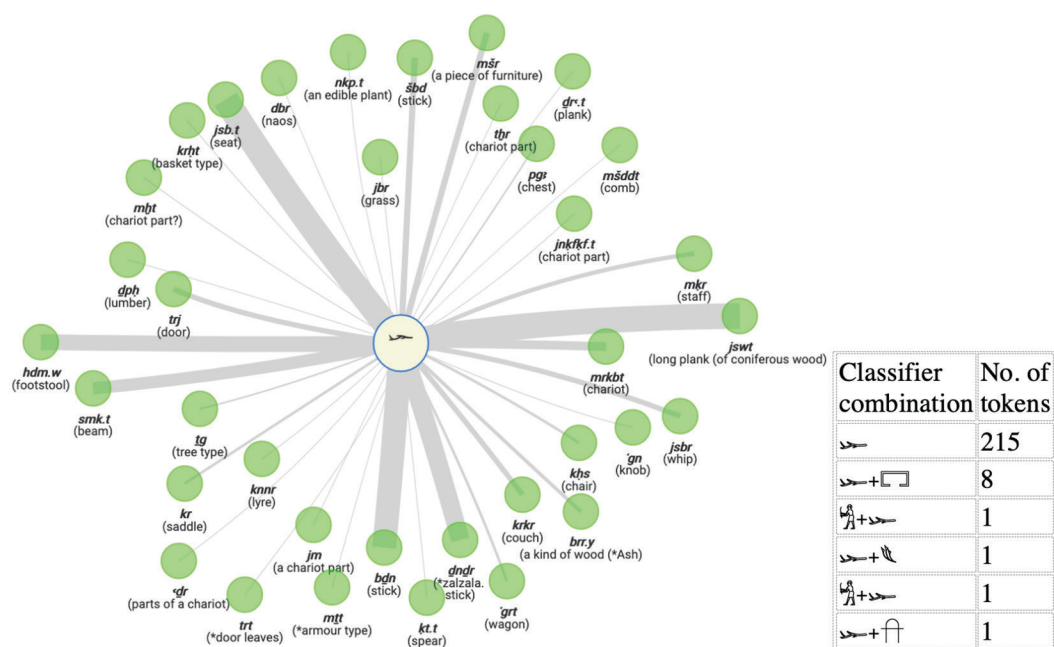


Fig. 5.7 The wood category, mostly classifying vocabulary items made of [wood], is the most attested category with lexical borrowings in a corpus of New Kingdom texts.¹⁷

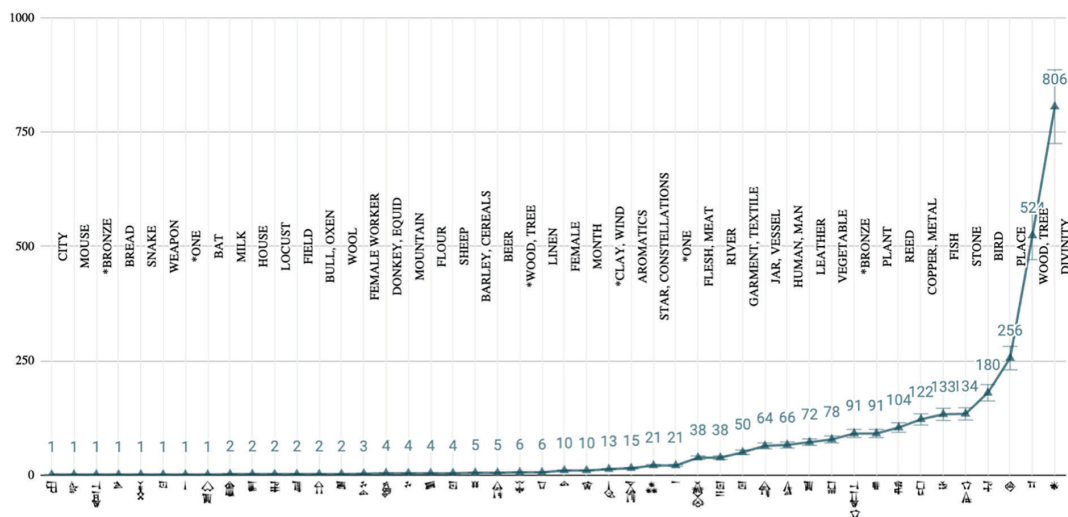


Fig. 5.8 Classifier categories in Sumerian, a long-tailed graph produced in *iClassifier* (see Selz and Zhang, in press, fig. 1 for additional commentary).

¹⁷ For a full report, visit <https://www.iclassifier.pw/reports/#!/classifyingtheother/classifiers/M3>. See discussion regarding the [wood] category in the corpus of lexical borrowings in New Kingdom texts in Harel 2022: 65–57.

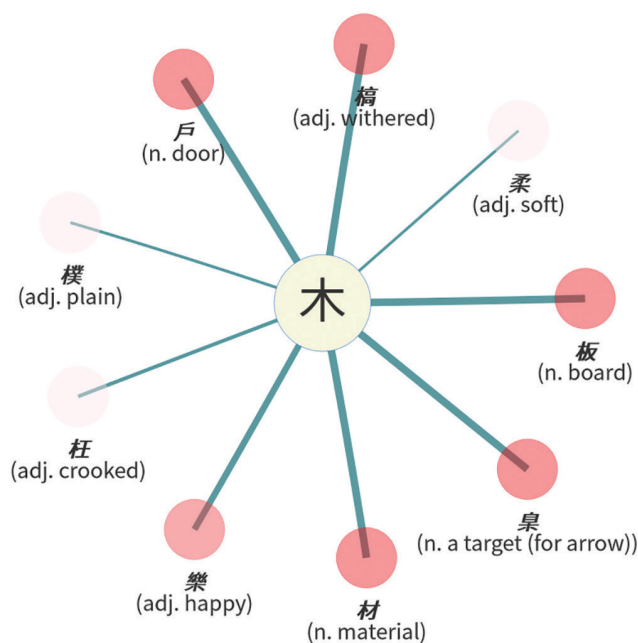


Fig. 5.9 The category 木 [wood] in ancient Chinese, in a corpus of inscriptions subscribed to Laozi (Goudian).¹⁸ Produced by Yanru Xu in ©iClassifier.

and 𠂇 –*mušen [BIRD] (see commentary in Selz 2021: 164).¹⁹ The distribution of categories will change as the Sumerian transcriptions will be enriched with statistical information based on corpora. One has to consider that this list includes proper names, including divine names, regularly written with a classifier, and these can be excluded from the network using *iClassifier*. With *iClassifier*, one can compare how many categories there are in each dataset, what their semantic scopes are, and where they occur and where not. Each corpus yields a different semantic range and different types of hosts or syntax of the classifier (e.g., pre- or post-position). In fig. 5.9, we see the scope of 木 [wood], in an ancient Chinese corpus of philosophical texts. Nodes with a darker hue stand for a high co-occurrence rate with this lemma, while nodes with a light pink hue represent that the lemma has additional patterns with other classifiers or zero classification. As in Egyptian, it includes many terms that are made of [WOOD]. It also represents qualities of wood (e.g., ‘crooked’). The most attested lemma is 樂, meaning ‘music’ or ‘happy.’ It occurs with the meaning ‘music’ with [WOOD] and [STRING] classifier referring to a musical instrument made of wood and string. It represents another meaning of this character, ‘happy.’ The same character covers both meanings in this corpus, e.g., 樂備〔〕惠〔德〕者之所樂也. ‘Music is something in which those complete in virtue find happiness.’²⁰ In fig. 5.7, in an Egyptian

¹⁸ Fig. 5.9 is accredited to Yanru Xu, co-ordinator of the Chinese *iClassifier* portal. The figure was produced in *iClassifier* ©Goldwasser/Harel/Nikolaev, supported by the CSC scholarship, China, and the ISF grant 1704/22. For a corpus-based pilot of philosophical texts written on bamboo slips from the Guodian and Shanghai collections of the writings of Laozi, see Xu, in press.

¹⁹ The hyphens before or after each classifier indicate if it is commonly occurring in preposition or postposition to its host.

²⁰ Translation after Cook 2012: 19, data of 《郭店楚墓竹簡》《語叢三》, 54.17 accredited to The Intelligent Retrieval Network Database of Chinese Characters, East China Normal University,

corpus of lexical borrowings, we see a different semantic range for [wood], including many household and warfare items. Our next step will be to compare the semantic range within comparable corpora and see to what degree the innate semantic range of a category overlaps across different classifier systems.

Going back to the Sumerian network, following the divine category, occurring with a long list of names of deities, and heading fig. 5.8, comes the [wood] classifier, a category found in Sumerian, Ancient Egyptian, and Ancient Chinese classification systems.²¹ Though the semantic and functional range of each system differs, one can track common categories across various systems (see preliminary list in Selz, Grinevald & Goldwasser 2017: 308). We now construct such a comparative list of semantic ranges based on the methodology presented in this article.

This discussion introduced an input method and report system visualizing classifier systems as networks. Next, we work towards documenting the semantic repertoire of various systems dynamically, comparing between single texts or between large-scale corpora. Today, classification and categorization tasks are at the core of technological innovation as neural networks are trained to classify objects and concepts. Kemmerer (2019: 258) recently discussed how semantic typology could contribute to cognitive neuroscience and highlighted that

“the roughly 6,500 languages around the globe do have many lexical-semantic and grammatical-semantic similarities that are far from trivial. But they also vary greatly in several important ways, such as how they partition particular conceptual domains, how they map those domains onto syntactic categories, which distinctions they require speakers to habitually attend to, and how deeply they weave certain notions into the very fabric of their grammar.”

Ancient scripts hold evidence of how humans performed systematic categorization tasks. I have shown how classifier systems can be viewed, not in a list, as they were traditionally presented in grammars, but as corpus-based, dynamic, and complex interconnected networks. Future implementation of this approach will result in an accurate description of the various categorization systems, documenting the semantic domains and changes that a certain lexicon undergoes. Based on this documentation, possibly universals of categorization systems could be suggested, as well as a record of categories in ancient minds.

4. CONCLUSIONS

This article proposes a new method to study knowledge organization using network analysis methods, suggesting that classifiers can be recorded and analyzed as a dynamic, interconnected network of semantic categories and host concepts. The current discussion aimed at setting theoretical prerequisites for comparative, data-driven research of classifier systems in ancient complex scripts. Accordingly, it is merely the first step, suggesting a

Shanghai, classifier marking Yanru Xu, see Xu, in press, and a digital report in <https://www.iclassifier.pw/reports/#!/guodianimported/classifiers/%E6%9C%A8>.

²¹ For a full report, visit <https://www.iclassifier.pw/reports/#!/gebhardselz/classifiers/%F0%92%84%91>.

means and a framework to examine ancient minds with a contemporary toolset. As we advance, the proposed research method will allow us to construct a new image of the categories, their members, and their interrelations, available for us to dissect, analyze, and theorize. Three aspects of comparison were highlighted, the *semantic* range, *functional* range, and the *productiveness* of each classifier system. It was demonstrated how networks arranged around intrinsic semantic categories could be scrutinized using advanced NA methods to paint a new macro landscape of semantic topographies. The potential of identifying thought patterns embedded in graphemic classification is multifold. The classifier nodes in such networks can be analyzed as #hashtags, perhaps providing an intrinsic topic modeling of a given text, as well as showcasing categorization and knowledge organization in a comparative cross-linguistic perspective and resulting in exposing if there exist innate or learned cross-linguistic patterns in linguistic categorization. By gathering this data, we can reveal how higher-level overt categories are similar to other types of networks, reveal tendencies in the distribution of categories, and learn how they evolve and change over time.

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6

On Hearing and Listening in the *Pyramid Texts* Linguistic Worldview as a Tool to Reconstruct the Ancient Egyptian Conceptualization of the World

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ABSTRACT

This article aims at presenting the first part of the author's studies on the conceptualization of senses in the world's oldest religious texts, namely, the *Pyramid Texts*. It also intends to demonstrate how, in practice, theoretical frameworks established by Polish linguists in the field of linguistic worldview research can be adapted to the study of ancient Egyptian. Linguistic worldview is a language-entrenched interpretation of the reality of a studied community, interwoven with its culture, *videlicet*, it is culture embedded in language. To formulate an open definition of an exemplary studied concept, dictionary entries, grammar, texts and corpora are analyzed. The article scrutinizes the concept of *the sense of hearing (and listening)* within the *Pyramid Texts*.

KEYWORDS: *Pyramid Texts – sense of hearing – linguistic worldview – performative utterance*

INTRODUCTION. METHODOLOGICAL FRAMEWORK—SOME WORDS ON THE LINGUISTIC WORLDVIEW AND LINGUISTIC STUDIES ON SENSES

This article is one of my series of publications using the *linguistic worldview* methodology adapted for the studies of ancient Egyptian religious texts (see, e.g., Popielska-Grzybowska 2020, *passim* and 15–18, 213–235 in particular, and further bibliography therein).

Linguistic worldview is an interpretation of the reality common within a certain ethnic group, preserved in language—in grammatical terms, in lexis and phraseology, in well-established judgments expressing common notions, as well as in beliefs, myths and rituals.

This leads to reconstructing identity/ies (=worldview/worldviews) based on linguistic and co-linguistic/ad-linguistic data.¹

The theoretical foundations of a new approach to studies of the linguistic worldview were delineated by Nikita Tolstoy. He designated a narrower understanding of ethnolinguistic studies as a branch of linguistics, and a broader one as a branch of cultural studies (Tolstoy 1990: 238–253; 1995; 1997). This change in research was inevitable, as purely linguistic analysis of the lexis of spiritual spheres of life and their language is not really possible (Tolstaya 1992: 10–25). The inquiry, in order to be thorough, should include an interpretation of beliefs, mythology, customs, habits and laws, and rules of everyday life.

The methodology developed within Egyptological studies that I am acquainted with is enriched, above all, by the methods elaborated and deployed by Polish ethnolinguists from the Maria Curie-Skłodowska University in Lublin, namely, Jerzy Bartmiński, Stanisława Niebrzegowska-Bartmińska, Ryszard Tokarski, Anna Pajdzińska, and many others who collaborated within the project called EUROJOS.²

A study conducted with the use of this method allows the formulation of an open cognitive definition. Therefore, the reasoning presented here is subjected to the research within three criteria of dictionary entries, grammar analyses necessary to translate the excerpts, and contextualized minute studies of the corpora of texts.

The starting-point is to choose a concept, namely, the mental notion in the way it was pictured in the language being studied. The concept shall be analyzed within a matrix of lexical-semantic links, taking into consideration connections both on the paradigmatic and syntagmatic axes. Paradigmatic may include hypernyms, hyponyms, opposita, synonyms, as well as formative and semantic derivatives, that is, figurative use—if discernible in the context. While syntagmatic may refer to complexes and collections preserved in language and collocations, being recurrent connections amalgamated in the language as regular phraseological expressions or contrarily momentous ones, where predicate argument schemata may be used.

First and foremost, linguistic worldview analyses are based on the lexis: “Vocabulary is a very sensitive index of the culture of a people” (Sapir 1957: 36)³ as to some extent E. Sapir

¹ For terminological discussion see Bartmiński 2012: 6–37; Bartmiński 2017b: 14; Popielska-Grzybowska 2020: 15–22, 231–238; as well as Humboldt 1999 [1836]; Whorf 1956; Sapir 1957: 1–44; Muszyński 1988: 129–153; Bock 1992: 248–249; Curtius 1993; Korzyk 1999: 9–32.

² All these assumptions were specified by M. Abramowicz, J. Bartmiński, W. Chlebda and I. Bielińska-Gardziel, Methodological Instruction: EUROJOS, and analyzed, elaborated, defined, and re-defined by a working team participating in the EUROJOS project in the years 2012–2015 within the international linguistic project financed by the Polish Ministry of Science and Higher Education NPRH nr 0132/NPRH2/H12/81/2012 of which the present author was a part. Bartmiński 2017b: 9–31; Głaz 2008: 231–257; Grzegorzczkowska 1990: 41–49; Pajdzińska 1999: 83–101; Pajdzińska & Tokarski 1996: 143–158; Tokarski, 1999: 9–23; 2014; Wierzbicka 1978: 5–31; 1983: 125–137; 1985; 1988; 1991; 1992; 1994: 133–196; 1996; 1997; for comparison see also works of Apresyan, Ivanov, Toporov, Lotman, Tolstoy, Tolstaya, Arutyunova, and others.

³ Note in Bartmiński 2012: 26, emphasis put on lexis as a “living, dynamic and continually enriched with new items, a kind of seismograph registering changes in the society, civilization and culture.”

emphasized, differentiated from grammar (Sapir 1957: 1–44), and after all, both are strictly interrelated. What is particularly crucial in studies of the linguistic worldview is the fact that this conception has a firmly and thoroughly semantic character (Bartmiński 2012).

Linguistic worldview is an interpretation of the world, not a reflection upon it. “It unites people in a given social environment, creates a community of thoughts, feelings and values” (Bartmiński 2003; 2006; 2012: 23; Bartmiński & Mazurkiewicz-Brzozowska 1993). This definition needs counterchecking, for when ancient and religious texts are considered—as is the case here—the dynamic and open nature of the view is not relevant, as it was also certainly not an average speaker or user of a given/studied language who wrote the *Pyramid Texts*. Furthermore, and most pivotal, is the fact that the studied texts present neither colloquial variants nor style, but a highly specific religious style (Makuchowska 1995: 449–473; Popielska-Grzybowska 2020: 20–22, 235–238, 281–283). There have been attempts to reconstruct a religious worldview, but they have been rather intermittent. The linguistic worldview, however, attests not only to a community identity in general but also to its religious identity.

In this respect—taking every available source into consideration and adapting the rules to the study of ancient and religious written sources—this analysis takes into account:

- the meaning/s of the scrutinized notions, namely the meanings included in dictionaries and/or derived from context/s (“life context” or *Sitz im Leben*);
- the nomination and onomasiological data if discernible based on etymological and/or structural examination and reasoning;
- word-formational derivatives, if discernible;
- figurative extensions (though with great caution);
- phraseological units, collocations, when possible;
- texts (in our case the most cardinal array of data)—contextualised information on the concept, actions, and environment of acting, if applicable.

Regarding general linguistic studies on senses, crucial are works by Åke Viberg (Viberg 1984) who carried out first in-depth research on perception verbs using a sample of 53 languages from 14 different language stocks. His study demonstrated the primacy of vision on other sensory modalities, however, this was verified and challenged by Nicholas Evans and David Wilkins based on Australian languages (Evans & Wilkins 1998; 2000) and by Martine Vanhove on 25 languages belonging to eight phyla (Vanhove 2008). Moreover, even though Eve Sweetser—as Viberg (1984: 136, 147)—referred to the preponderance of vision (Sweetser 1990: 35–36), which mirrors intrafield associations,⁴ I will argue here that the predominance of a sense depends on context and type of record in particular.

The view being reconstructed here is habitual—at least to a high degree—within the sphere of the religion of the ancient Egyptians. If it is a single congruent worldview or some interrelated worldviews, then that is another question. Frequently, variations between worldviews within one language turn out to be more meaningful than between languages (Chlebda 2005: 414; 2013: 25–37; Bartmiński 2012: 26). For this juncture, the *Pyramid Texts*,

4 For intra- and transfield associations differentiation see Matisoff 1978: 176.

their every single pyramid-divergent version notwithstanding, might turn out to be a/the reflection of a single coherent worldview.

Religious language is one of the most stable and slowly modifying modes of language, and often is not modified at all in terms of form or style. The expressions solidified in the language typical of religious narration in any culture notwithstanding, the language of the *Pyramid Texts* is self-specific, namely, divergent from any other texts, even from the same historical period (Strudwick 2005).

The elements of the worldview reconstructed here are the elements of a religious worldview presenting a religious *point of view*, namely, the religious sphere, thought, and axioms as entrenched in the language of the texts which have come to be known as the *Pyramid Texts*.

I concentrate here on the scrutiny of the language, its grammar, and the means of expression, to wit, the form of words, phrases, and the forms of utterances, saying the text out loud as a religious means to create a desirable reality through language. Consequently, my analysis is devoted to aspects of a religious creation of reality and thus the religious style of ancient Egyptian texts (Makuchowska 1995: 449–473; Popielska-Grzybowska 2020: 20–22, 235–238, 281–283).

To face the difficulties created by the specificity of analyzed written sources—ancient and religious—the study must be limited to some facets relevant to both ancient and religious contextualization. This is of non-negligible importance for the present study (Popielska-Grzybowska 2020: 18–20).

CULTURAL CONTEXT—A SKETCH OF THE BACKGROUND INFORMATION ON SENSES IN AFRICAN CULTURES (*SITZ IM LEBEN*)

Broad cultural “life context” affords us a better understanding of the role and importance of sensory perception of the world, but not only that. What is also equally crucial is how a community re-acquires itself through the usage of its senses. Because preliterate or marginally literate cultures obviously could neither communicate nor transmit their knowledge and heritage through the written word, they thus employed all other media to do so. At least since the 1990s the phenomenon of “performance” has been the focus of anthropological and cultural studies, legal and communication studies included (Hibbitts 1992: 873–960). In reference to our analysis it is pivotal that in most traditional communities different messages were conveyed orally and also in gesture, touch, scent, and flavor.

Furthermore, and even much more naturally, this pertains to religion and religious practices. Although non-written media seem to us to have less effect (and even importance), tend to be treated as less powerful, less dispositive, and less durable, in reality, this is not always so evident. It is well-known how permanent and stable re-told stories and religious practices are. As has already been mentioned, religious style is one of the least amenable to change. Studying traditional African cultures shows them to be either concentrated on sound effects even in the face of death and funeral ceremonies—or *particularly* in these circumstances.

Moreover, crucial is that in many languages (including modern ones) “I hear” or “I see” is equivalent to “I understand.” For instance, the Greek word *ksuniemi* means to “know by hearing,” and Plato wrote that those who know a lot have heard a lot. Contrarily, in some Australian aboriginal languages “deaf” is equated with “stupid” (Devereux 1991: 43–44). The sound is regarded as possessing the power to create and/or to destroy. Conversely, members of African tribes—and not only they—avoid using certain words in certain environments so as not to harm anybody. Performative aurality has always been a prevailing practice in traditional societies (Stanford 1981: 127). Therefore, African Limba people judge others in accordance with their capacity to speak well (Finnegan 1968: 61–77). These all influence the aesthetic aspects of language. They encourage people to formulate thoughts in such a way that they are pleasing to the ear. Likewise, this urged people to use aural or phonetic devices such as alliteration, echolalia, euphony, glossolalia, instrumentation, and many other onomatopoeic effects. Moreover, in the African Yehweh cult in the beginning there was the sound *hu*, called *hu-dze-ngo*, while in Tibetan philosophy “religion is sound” (Baumann 1997: 3). Pivotal is that these stylistic modifications make sense when the utterance is read out loud, and this is equally true regarding ancient Egypt. The effect and impact of the phenomena enumerated above is lost in writing them down and left for silent reading. Last but not least, one should consider the presence of music sung or played as an accompaniment to the ritual and/or performance. An interesting and relevant reference here is the Hindu expression *nada brahma*, which means “everything is sound,” and also worth mentioning is the fact that Israel used to be named, metaphorically, “The Ear of the World” (Baumann 1997: 5).⁵ Furthermore, it should be mentioned that sounds, and music in particular, are believed to have healing powers. In many cultures sounds, music, and especially the art of listening have cosmological and thus religious value and bring the attentive and gifted listener close to the Word of God/the gods. One should not forget that hearing can provide unity with the invisible—divine and inaccessible to the eyes, as a god frequently is hidden. Even the very first exhalation of the creator Atum that provided visible consequences and ramifications in the forms of Shu and Tefnut may have been audible (Popielska-Grzybowska 2020: 57–70, 169).

Communicating through actions inextricably linked to our sensory perception of the world is intrinsic to human beings. Perception is a process by which an individual selects, evaluates, and organizes stimuli from the outside world. It is an internal process that transforms the physical energies of our environment into a meaningful experience. And the senses play a crucial role in this process. Certainly, perception does not depend solely on sensory stimuli but also on practice and habits, as well as perceptiveness and intelligence. We act by introducing our experience into emotional and linguistic contexts (Pawlik 2020: 87). Therefore, the linguistic worldview method is so efficient in demonstrating both, namely, culture in language. People in Africa, South America, and Southern Europe who perform their identity in everyday life and in ceremonies tend to do so in a well-audible

5 For more examples of different cultural contexts, but parallel conceptualization, see, e.g., Reis 1991.

way. Therefore, bearing in mind the fact that language is first and foremost a system of sounds,⁶ this article—the first of my studies on senses—is devoted to the sense of hearing.

Most African languages are tonal and use many ideophones as well as sounds that express the speaker's and listener's emotional commitment. The sensual dramatization of funeral speeches evokes the sensual-emotional involvement of the gathered group (Niedźwiedź 2015: 249–254). Presumably, the same or similar could be written about ancient Egyptian funerals and that this made the ceremonies better and firstly audible and then visible. African cultures appear to treat aural capacities as more crucial, even today. On the one hand, death is associated with silence (cf. the ancient Egyptian word *jgrt* 'necropolis', e.g., Faulkner 1988: 32). Relatives and all present must keep silent or speak in a low voice. On the other hand, however, the funeral ceremony in Africa was and still is sonic. Furthermore, death either disturbs the order of the world or, conversely, is linked to rebirth (Niedźwiedź 2015: 54; Thomas 1980b: 58–61). The language used to speak to the dead must be under control and strictly defined (Thomas 1980a: 408–413). Moreover, the deceased must be informed that he/she is dead, by what is whispered in his/her ear (personal communication with a respondent from the Republic of the Congo). This is similar to the *Bado* practices of the Tibetans. The Congolese dead should be asked questions to confirm whether they are truly dead, if they had to die exactly that day, and if they were killed or died a natural death (Thomas 1982: 164–166; Pawlik 2003: 157–172).

It must be underlined that the performance is personal. This might have been very significant and important for the ancient Egyptians, for the Egyptian ritual was undoubtedly concentrated on the individual, namely, the king, and/or a group of individuals. Consequently, the following statement of B.J. Hibbitts appears to be very relevant: "Intellectually, performance cultures revolve around 'becomings' rather than 'beings,' what happens as opposed to what is" (Hibbitts 1992, based on Havelock 1963: 182 and Ong 1967; Ong 1982). And what mirrors ancient Egyptian culture as well. Therefore, following the designation of B.J. Hibbitts (Hibbitts 1992), I choose to name oral and marginally literate cultures "performance cultures."

RELIGIOUS REALITY CREATION AND SENSES—CASE STUDY —HEARING AND LISTENING IN THE *PYRAMID TEXTS*

Aural forms of communication and expression according to linguistic analyses seem to be less prevalent than visual ones (Viberg 1984: 136, 147; Sweetser 1990: 35–36; Vanhove 2008 and in this volume), but their significance in the ritual and religion in general, may have been more relevant than the latter.

As has been shown above, religious texts frequently put the aural in the prime position. It has even been considered that the semantic extension of "to hear" is "to believe" (Karpf 2011). Therefore, I aim at analyzing and verifying—applying linguistic worldview methodology—the role of the sense of hearing in the *Pyramid Texts*.

⁶ It is estimated that known languages have 25 to 50 phonemes but none of them uses all of them; see Rakowska-Jaillard 1989: 94.

Analysis of religious texts allows observation of how ancient Egyptians reacquired their culture with the sound of the human voice. Due to the strict space limitations of this publication, only the main assumptions can be presented here. The lexeme *sdm* is translated both as “to hear” and “to listen.” However, “to listen” is attested mainly in an imperative form (cf., e.g., Allen 2005: 89). There is, however, another verb with the meaning “to hear,” namely, *smt* (for details, see below point 2).

DICTIONARY ENTRIES AND OTHER LISTINGS OF VERBS

1. *sdm*

Wb IV: 384–390: “hören,” “hörend sein,” “etw. anhören,” “auf jmd. hören,” “gehörchen,” “achtsam anhören” (main meanings relevant to the texts studied here).

Faulkner 1988: 259: “hear” (voice), “hear of sth,” “listen” (+*n* to someone), “obey” (with *n*), “understand,” “judge,” “satisfy conditions (math.).”

Hannig 2003: 1275–1276: “hören,” “anhören,” “hinhören,” “gehörchen” (*n* jmd), “gehorsam sein,” “(ver)hören (vor Gericht); *sdm mdw*: “Verhör abhalten,” “verhören *n* jmd,” “erfahren,” “hören von,” “kennenlernen”; *sdmt*: “das Gehörte”; *sdm sdmt w*: “der hört, was nur einer hören darf”; *sdmw*: “der Hörende,” “der Zuhörer,” “der geduldig Zuhörende.”

Allen 2000: 468: “hear”; *sdm n* “listen to.”

Allen 2017: 267: “hear, listen” (verb 3-lit.).

SAMPLE DERIVATIVES

sdmj

Faulkner 1988: 229: “judge (n.).”

sdmt

Wb IV: 388: “das Gehörte (in Verbindung *sdm sdmt*; in den richterlicher Titeln).”

The dictionary entries include the above-mentioned *sdmj* to mean “judge (noun)” (Faulkner 1988: 259), and *sdm-š* as “servant” (*Wb* IV: 390; Faulkner 1988: 259). However, none of them appears in the *Pyramid Texts*. All dictionaries provide as the first translation “to hear,” and the primary meaning is “to listen”; the semantic extensions (“transfield associations”) are “to understand,” “to judge.” Furthermore, in Egyptian it is very important to indicate the perfective verb form.

2. *smt*

Wb IV: 144: “Verb des Hörens,” “etw. hören,” “etw. erlauschen,” “auskundschaften,” “auch neben *sdm* gebraucht.”

Faulkner 1988: 229: “hear.”

Hannig 2003: 1145: “hören,” “erlauschen,” “auskundschaften,” “verhören.”

Allen 2000: not listed.

Allen 2017: not listed.

SAMPLE DERIVATIVE

smtj

Wb IV: 144: “als Götterbezeichnung” (belegt Pyr.).

CONTEXTS (*SITZ IM LEBEN*)—TEXT ANALYSES

While referring to religious reality, the people living on the Nile appear to have believed in the performative use of words (see Popielska-Grzybowska 2020: 20–21, 265–266, 277, 281, 288–289 and below). Therefore, what was written was designed to “enchant reality,” leading to the creation of religious reality (Popielska-Grzybowska 2011: 680–693). To accomplish the task, varying grammatical constructions were employed: the imperative and/or the *ius-sivus* mood (expressing commands or injunctions) as well as *diaphora*—multiple repetitions, e.g., Live! Live! O king live!⁷ or *m* of predication to express ablative constructions used to demonstrate the identity of somebody/something with somebody/something, especially to perform a certain task (see, e.g., Popielska-Grzybowska 2011: 688; 2020: 265–283).

Interestingly, while invoking life, the use of the imperative mood turns out to be most frequent:

- §259a NN *pj* NN *m3* NN *pj* NN *ptr*
- §259b NN *pj* *sdm* NN *pj* NN *wn jm*
- §260a NN *pj* NN *tz tw hr gs.k jr wd*
- §260b *msdd kdd sb3gjj h jm ndjt*
- §260c *jr t.k nfr m p szp shm.k m jwnw*
- §261a *hrw pw wd n.f jrt n jt.f(...)*

O king, o king, see! O king, o king, look!

O king hear! O king, o king exist!

O king, o king raise yourself from your side!

Do my command, you who hate sleep but were made limp.

Stand up, you in Nedit.

Your good bread has been made in Pe—receive your control of Iunu.

It is Horus having been commanded to act for his father.

/PT 247 (W 158)/

Moreover, the above juxtaposition of hearing and *being* (existence) can be corroborated by another example, in which He-who-is (see also Allen 2005: 89) is named, but only in one of Teti’s versions of the spell. However, in Unis’s version the word “ruler,” namely of Unis himself, was used:

⁷ On their role in language, cf. Bartmiński 1980: 194–204.

- §511a [wnjs pw n^cw k3] j.šsm ^cm sfht.f j^crwt
 §511b hpr.n sfht.f nhbwt
 §511c [w^d mdw] n sfht.f psdwt sdmt mdw jtjw
 §512a j.n wnjs j.^cm.f^cntjw
 §512b šzp wnjs ^cntjw ^cnjj.f m ^cntjw ^cnt wnjs m ^cntjw
 §512c nhm.n wnjs wsrt.tn ntrw
 §512d pšr n wnjs nhbt.f k3w.tn

[Unis is a serpent, the leading bull], who swallowed his seven uraei and his seven neckbones came into being, [who governs] his seven Enneads and hears the word of the ruler.

Unis will receive myrrh and become pleased with myrrh, the fingernail of Unis is full of myrrh.

Unis will remove your strength, gods. Attend Unis, who will assign your kas.
 /PT spell 318 (W 223)/

Furthermore, a thought-provoking remark should be made concerning the above-mentioned juxtaposition. This may indicate one more semantic extension of *sdm*—quite a unique one, namely, “to live.” To corroborate this extension, a reference from one of *Wörterbuch*’s entries concerning *nh.wj* with the meaning “die Ohren” (*Wb* I, 204: 18–205: 4) can be invoked.

Consequently, the pharaoh listening gains control of not only his fate but also his life in the Beyond where he might have close contact with the abyss and nothingness from before the creation—the characteristics of Nu, from where life comes. Thus, the king achieves his goals even without hearing the voice (implicitly: of the gods) and assists the sun Ra in his constantly recurrent, everyday journey:

- §499b nj šp wnjs d.k sw m kkw
 §499c nj jd.f tm.f sdm hrw.k
 §500a jt.k n.k wnjs hn^c.k hn^c/k
 §500b nj^c n.k š3pt hsr n.k jgp j.sd n.k šnjt

Unis will not become blind if you place him in darkness, he will not become deaf if he does not hear your voice.

You should take Unis along with you, he who will blow out the overflowing for you, dispel the clouds for you, and disperse the hail for you.

/PT spell 311 (W 216)/

Thus, one may conclude that the uttering of the words—the voice itself—had the power to create. Therefore, it was enough to speak out loud to make something happen, to prevent the inevitable and to eliminate death, for instance:

- §722a jf n NN pn
 §722b m hw3 m jmk.(k) m dw st.k

O body of the king, do not decay, do not rot, do not smell unpleasant

/PT spell 412 (T 228, P 60, M 24, N 33, Nt 43)/

If something was said to become and exist, it—in line with the beliefs of ancient Egyptians—did come into being and truly existed. Moreover, it was the voice—the pronounced words—that made the things come into being. Many traditional societies have attributed creative and/or magical properties to the voice and spoken words and that was true in ancient Egypt as well. Some of the best examples of magical use of language are the so-called “serpent spells,” constructed in such a way as to obtain onomatopoeic effects and perhaps also by the use of a foreign language and glossolalia (Popielska-Grzybowska 2019–2020: 285–296; 2020: 18, 126, 296; 2021: 93, 187–188).

Of great importance may also be the *art of hearing and listening*, and it may be denoted in the oldest religious texts as well. The perceivable forms of oral communication are meaningful and transparent enough to be understood also in our culture. Hence, the deceased is commanded to listen and hear the voice of the gods, which may be a semantic extension transmitting the meaning ‘to obey.’ However, concurrently, it can be an incentive to listen to the beauty of the gods’ voice—the voice that has the power to make things come into existence:

- §795a *t3 sdm nn dd.n ntrw*
 §795b *dd.(n) r^c s3hw.f ppj pn*
 §795c *šzp.(n).f3hj.f m hnt ntrw hrw js z3 wsjr*
 §795d *d.f n.f3hj.f jm wršw pw*
 §795e *s^ch.f sw m ntr jm wršw nhnw*

(Earth), hear this which the gods have said! Ra says he will akhify this Pepi so that he might receive his akh-form at the head of the gods like Horus, the son of Osiris, giving him his akh-form which is one of the Watchers of Pe, and dignifying him as a god, one of the Watchers of Nekhen.

/PT spell 437 (P 31)/

Or in other words:

- §1443a *j^c hr pt b3k pdt*
 §1443b *ms ntr jn pt hr ^cwj šw hn^c tfnt hr ^cwj.j*
 §1444a *wbn wr*
 §1444b *sdm sw mdw pn j.ddw n.k ppj*
 §1444c *wd3 n.fjb.k jr ppj swt wr z3 wr*
 §1444d *jw ppj pn hn^c.k šd ppj pn hn^c.k*

*The face of the sky has been washed, the arc of the sky has become shining.
 The god has been given birth by the sky on the arms of Shu and Tefnut, on the arms of him who rises and is great.*

You of whom the gods speak, hear it, this word said to you! Become acquainted with it about Pepi: Pepi is a great one, the son of the Great One. Pepi is now with you: take this Pepi with you.

/PT spell 570A (P 509)/

More examples could be quoted, for this is a prevalent concept in the religious texts studied here.

Enthrallingly, also the deeds, physical actions, must be heard concurrently with seeing them. One may assume that both hearing and seeing mirror the semantic extension of perception to other semantic fields, namely, cognition:⁸

§979a *z33 sw ḥw.n sw m33t.f sḏmt.f*
 §979b *pr.t.f jr pt ḥr m3kt ntr*
 §979c *ḥt (ppj nfr k3 r^c) m j^crt jmt wpt stš*
 §980a *3ḥj nb ntr nb wnt.f^c.f n ppj nfr k3 r^c ḥr m3kt ntr*
 §980b *dmd ksw ppj nfr k3 r^c n.f s3k.n.f^cwt.f*
 §980c *stp.(n) r.f ppj nfr k3 r^c jr pt jr db^cwj ntr nb m3kt*

He who will see or hear his ascending to the sky on the ladder of the god—every akh and every god who will be (there), his arm for Pepi Neferkara on the ladder of the god—will secure him, having promulgated him, for he has appeared as the uraeus on the brow of Seth. The bones of Pepi Neferkara have been united for him, and his limbs have been collected for him. Therefore, Pepi Neferkara will vault to the sky nearby the god who has the ladder.

/PT spell 478 (N 428)/

That which is heard, seen and brought to the pharaoh pleases him and gives him complacency:

§34c *ḥtpt jnt n.k ḥtpt m33t.k ḥtpt sḏmt.k*
 §34d *ḥtpt m b3ḥ.k ḥtpt m ḥt.k ḥtpt ḥrt.k*

*Serenity be what is brought for you,
 serenity be what you see, serenity be what you hear,
 serenity be before you, serenity be behind you,
 serenity be your lot.*

/PT spell 44 (W 32, T 37, P 84, M 79, N 136, Nt 71)/

Likewise:

§1775a *pt m ḥtpwt t3 m 3wt jb*
 §1775b *sḏm.n.sn dd ppj nfr k3 r^c m3^ct m *
 §1776a *nd\\\\\\\\\\\\ ppj nfr k3 r^c m d3d3t.f*
 §1776b *ḥr tz m3^c pr m r.f*
 §1776c *dbḥ.n ppj nfr k3 r^c s3.f m ḥk3 (...)*

*The sky is in satisfaction and the earth is in joy,
 for they have heard that Pepi Neferkara will establish Maat [... and they will] hail the [entrance] of Pepi Neferkara's in his court
 because of the true phrase that comes from his mouth.*

⁸ On verbs of cognition, see Winand 2015: 109–139; 2021; and in this volume.

Pepi Neferkara has demanded his condition as ruler (...).
 /PT spell 627A (N 31)/

It is attested that in religious messages in Africa the aural is prior to the visual (cf. Karpf 2011). This may be difficult to accept contextualized in ancient Egyptian religion and taking into consideration the linguistic findings referred to above (Viberg 1984: 136, 147; Sweetser 1990: 35–36; Vanhove 2008 and in this volume). Especially so, given that ancient Egypt seems to have been overwhelmed with visual forms of gods and writing in visual form itself, namely, hieroglyphs (cf., e.g., Goldwasser 1995). Nonetheless, it is certainly noticeable how significant and vivid “a whole array of mnemonic—rhythm, repetition, antithesis, alliteration and assonance, epigrams” was in the religions of African people (Karpf 2011: chap. 13). Moreover, to corroborate the above assumption, for instance, the African Basotho tribe (or Sotho speakers) and—surprisingly!—today’s New Yorkers use “I hear (you)” as meaning “I understand”—another semantic extension among perception verbs (San Roque et al. 2018: 371–406). The examples can of course be multiplied. However, pivotal for this study is that this was also true in ancient Egypt. At first, as mentioned above, it appears that in ancient Egyptian culture sight and visual aspects were much more important. Yet, when the religious texts and their contexts are scrutinized, this ceases to be so apparent. Concurrently, it turns out that they were inextricably linked to hearing. Admittedly, referring to the most common and obvious association, the verb *m33* “to see,” “to look on,” and *ptr* “to see,” “to behold” appear in the *Pyramid Texts* many times more than *sdm* and *smt* “to hear,” “to listen” (over ca. 1000 to ca. 40, all forms included). Consequently and indubitably, sight must have played an important role in religious practice. One may be sure that this was the case, for it was crucial in the process of presenting the religious axioms to the people—the subjects of the pharaoh. However, when it came to the deceased pharaoh himself and his family, it turns out that the situation diverges. First and foremost, the king had his texts pronounced out loud at the funeral. Secondly, he could read them out loud himself when need be and while on his way to the Beyond, hence they were assisting him on his way, and through their performative power he proceeded on that way.

Recapitulating, it can be written that the aural references expressed by the lexeme *sdm* appear in the *Pyramid Texts* in the following contexts:

- hearing some information shall bring fulfilment and complacency: *PT* 44 (W 32),
- hearing used as juxtaposed with existing (thus “to hear” with semantic extension “to live”; *Wb* I: 204–205), while seeing with looking: *PT* 247 (W 158);
- the king will not become deaf (*jd*) without hearing the voice (most probably Ra’s voice is referred to here): *PT* 311 (W 216);
- hearing cases in the legal, judicial sense: the Double Maat heard the case: *PT* 260 (W 170), *PT* 264 (T 187), *PT* 318 (W 223, T 257), *PT* 523 (P 471, M 350); his case has been heard by the Ennead and it resulted in depriving him of everything: *PT* 534 (P 483); hearing cases like Horus of the Akhet: *PT* 556 (P 529); day of hearing the case between Horus and Seth: *PT* 485 (P 337)—most probably with the semantic extension “to judge”;

- the male snake is ordered to listen to him/the Earth/Geb: *PT* 385 (T 260) with semantic extension “to obey”;
- command to hear this what the gods say: *PT* 437 (P 31), Geb has said about akh-ifying Osiris as the god: *PT* 483 (P 334); hear that which Geb has said: *PT* 483 (P 334); the earth is urged to hear what the gods have said and the deceased may emerge at the voice of the invocation: *PT* 610 (M 375); hear this which Horus said to his father Osiris about taking his predestined place in the Beyond: *PT* – (N 510)—the semantic extension “to obey,” but probably “to get to know” as well;
- command to be silent and hear the words of the deceased: *PT* 460 (P 297); different gods are urged to hear the words said to them: *PT* 570A (P 509); the gods will hear his words: *PT* – (P 432); Geb and Thoth are urged to hear: *PT* 570B (P 510); hear what they say to the deceased: *PT* 613 (P 551)—one may expect the same semantic extension as above but this can also express the necessity of listening to the words of the pharaoh due to their importance and/or beauty (see the reference to *PT* spell 570A (P 509) below);
- the gods should hear the king’s *bas* and his invocation in the mouth of the Double Ennead giving the information that his mother speaks of his beauty: *PT* 570A (P 509);
- command to hear this which the deceased’s son has done for him—repaying what bad was done to him, such as hitting the one who hit him: *PT* 482 (P 333), wake up and hear what Horus has done for you: *PT* 670 (N 348)—most probably with the semantic extension “to perceive,” “to understand”;
- warning that anyone who hears about those who may be dangerous for the king traveling in the places of Anubis will not live: *PT* 542 (P 489)—most probably with the semantic extension “to let live/exist,” “to understand”;
- the deceased should hear with his/her ears: *PT* – (P 268) with the semantic extension “to live”;
- gods/akhs/all the people should hear his (the deceased’s) name: *PT* 77 (W 51, P 366), *PT* 468 (P 319a) with the semantic extension “to recognize,” “to acknowledge”;
- command to hear the pharaoh’s going up to the sky on the ladder of the gods: *PT* 478 (N 428)—perhaps as a counterpart and/or synonym of “to see”;⁹
- the bull of the Double Ennead will hear and open up a way: *PT* 710C (P 353), *PT* – (N 469) —probably the semantic extension “to obey”;
- Ra is urged to pay attention to the words and the bull of the Ennead as well; other senses are also explicitly mentioned in this context: *PT* 524 (P 472); Ra is urged to hear the words said to him and concerning his self as the pharaoh: *PT* 570B (P 510)—perhaps the semantic extension “to obey”;
- an invocation to urge listeners to hear the words of Ra as a god: *PT* 659 (N 357)—perhaps the semantic extension “to obey”;

9 On “to hear” meaning “to see,” cf. Maslova 2004: 300–312.

- information about giving orders that are heard in the houses and overheard (see below) in the footpaths (an invocation to the sky): *PT* 517 (P 465)—perhaps the semantic extension “to obey”;
- Osiris is urged to raise himself because Seth has raised himself, having heard the curse of the gods, who spoke on behalf of the father of the god: *PT* 477 (P 327);
- hearing the words of the sun people of Iunu (*hnmmt*): *PT* 513 (P 453).

To delineate the entire context of the references to the sense of hearing in the *Pyramid Texts*, also relevant are mentions of an ear and ears:

- baboon with red ear: *PT* 549 (P 496);
- the king’s ears are those of the twins of Atum: *PT* 215 (W 148); the king’s ears are those of Watery One and Nu: *PT* 539 (P 486)—a reference to the primordial existence and life;
- the deceased’s ears have been open up/unplugged to let him live and/or continue to live in the Beyond: *PT* 407 (T 284), *PT* 436 (P 30), *PT* – (P 553), *PT* 602 (M 227), *PT* 611 (P 554), *PT* 688 (N 522), *PT* – (N 604).

It is riveting that also the deeds and actions must be heard, to wit, one may presume they must be understood (another semantic extension especially valid in a religious context). Consequently, that which was done had to be not only seen but also heard, namely, perceptible and understood in someone’s self:

§1007a [ḥ^c m3.k nn ḥ^c] s_{dm}.k nn
 §1007b jr:n n.k z3.k jr:n n.k hrw
 §1007c j.h.f/h.n.f ḥ tw k3s.f/k3s.n.f n.k k3s tw
 §1008a d.f sw hr z3t.f/k wrt jmt k_{dm}
 §1008b snt.k wrt s3kt jf.k k_{fn}t drwt.k
 §1008c zhnt tw gmt tw hr gs.k hr wdb ndjt
 §1009a j.tm j3kb hr jtrtj
 §1009b ntrw mdw hft.f jn n.tn [sw]

[Stand up and see this, stand up] and hear this, which your son has done for you, which Horus has done for you, hitting for you the one who hit you, binding for you the one who bound you, and putting him under your greatest daughter in Qedem—your greatest sister, who pulled together your flesh and folded your hands, who searched you and found you on your side on the shore of Nedit—so that mourning over the Double Shrines might cease.

Gods, the one who speaks against him—fetch [him] to you.
 /*PT* spell 482 (P 333, M 270, N 417)/

Very similar but referring to waking up:

§1976a *ḥꜥ mꜣ.k jrt.n n.k zꜣ.k*

§1976b *j.rs sdm.k [jrt.n n].k ḥrw*

Stand up and see what your son has done for you.

Wake up and hear [what] Horus [has done for] you.

/PT spell 670 (P 53, M 53, N 348)/

The second verb analyzed here is *smt* “to hear” (see above point 2. and Wb IV: 144; Faulkner 1988: 229; Hannig 2003: 1145). J.P. Allen translated it as “to interrogate” (spell) and “to overhear,” for instance in spell 517 (P 465, M 357, N 545) (Allen 2005: 159), or “the one who listens” in spell 556 (P 529, N 574) (Allen 2005: 188). Therefore, one should note the semantic extensions, for instance “to interrogate” in spells 678 (N 418) and PT 691F (*2136) (N 531) (Allen: 2005: 278, 296).

In spell 517 the lexeme *smt* is used together with *sdm*, most probably to differentiate or simply avoid repeating the same verb, or to evoke different “ways of hearing/listening.”

§1189a *ppj pw dꜣng jbꜣw ntr*

§1189b *šḥmḥ jb n ntr m bꜣḥ ꜥwj st.f wrt*

§1189c *jw nw sdm.n.k m prw*

§1189d *smt.n.k m šmmwt*

§1189e *hrw pw n njs.k*

§1189f *jr sdm wdt mdw*

§1190a *m-k ḥrwjj st ntr ꜥꜣ*

§1190b *njs.sn jr ppj*

§1190c *wꜣꜣ pw ḥnꜥ snb*

§1191a *dꜣjj ppj jr šht st nfrt nt ntr ꜥꜣ*

§1191b *jrrt.f jr w jm.s m jmꜣḥww*

§1191c *wꜣ.f sn n kꜣw sjp.f sn n ḥꜣbw*

Pepi is a dwarf of the dances of the god, a performer near his [great] abode. This is what you have heard in the houses and listened to/overheard(?) in the pathways on the day of summoning you to hear the giving of the orders: “Look, the two on the abode/throne of the great god—they are Soundness together with Health—are summoning this Pepi that this Pepi might be ferried to the field of the beautiful abode of [the great god], in which [he] does what is done with the honoured ones, commending them to kas and appointing them to the catch of fowl.”

/PT spell 517 (P 465, M 357, N 545)/

Other example of use of the verb *smt* is the following:

§1382a *wꜣꜣ nmꜥt n jt wsjr ppj jꜣḥ mr-n-ḥꜣj*

§*1382b *njs r.f jt wsjr ppj jr ḥm jr smt*

§*1382c *dꜣ.snj jt jr gs pfjꜣbj n pt*

Meyer-Dietrich presented a thought-provoking study on sonic acting in the pyramid of queen Neith (Meyer-Dietrich 2016: 271–291). She presumes that 151 statements on sonic acting may be found on the walls of the burial chamber and the corridor of the queen's tomb. The author uses her own term “sonic acting” to identify such *acts* as talking, laughing, shouting, and rejoicing, but also witnessing, awakening, warnings, and defaming (Meyer-Dietrich 2016: 274–275). These are actions demanded of the queen and also performed by her. Meyer-Dietrich's definition is treated very broadly. This may provoke doubts if all of the acts enumerated must have had sonic value. For instance, witnessing or the message of Ra, or “Neith joins bodily performance rhythm” (Meyer-Dietrich 2016: 274) and others may raise doubt. The question is how far we can go in assigning sounds to actions, and how certain we may be that they were present and have not been imposed due to our own experience. However, there is a high probability that such “sonic acting” did have a place, especially since the deceased pharaoh was urged to move, run, and act vividly. Meyer-Dietrich assumes that in the *Pyramid Texts* of Neith it was rather Seth than Atum or Horus who provided “the essentials for a *sonic acting living body*—rhythmic movement, a warm mouth and an effective voice” (Meyer-Dietrich 2016: 291).

Concluding, it should be written that many kinds of voices, noises, and sounds are evoked in the *Pyramid Texts*, only to adduce that 40 times “voice” *hrw* is mentioned (*Wb* III: 324–325 [“Stimme,” also: “Geräusch,” “Lärm”]; Faulkner 1988: 196; Hannig 2003: 967). Interestingly, J.P. Allen (2005: 84, 86, 130, 249, 267, 277, 373) translates the lexeme *rwj* usually interpreted as “to dance” (e.g., Faulkner 1988: 147), as “drum,” “drumming,” meaning “drum your legs/feet,” for instance in P 275, P 448, N 70 (*PT* 458), N 510, Nt 250 (*PT* 665A) in the pyramids of Pepi I, Pepi II Neferirkara and Neith.

CONCLUSIONS—PERFORMATIVITY OF THE LANGUAGE OF RELIGION OF THE ANCIENT EGYPTIANS AND THE SENSE OF HEARING

Performativity and performative/performance culture can be understood in at least a few ways. First of all, and the most prevalent today, is defining it in line with the conception of performance in its meaning of a show, spectacle, and ceremony. In this respect, it is indubitably present in preliterate and marginally literate societies,¹⁰ even in the legislative spheres (Hibbitts 1992). And this was the approach used by H.M. Hays (2012) in his studies on the interpretation of the *Pyramid Texts*. Correspondingly, though with more attention to the language itself, Nils Billing reconstructed the “performative structure” of the *Pyramid Texts* of Pepi I used to demonstrate the ritual performed in the tomb (Billing 2013).

There is, however, another meaning and interpretation involving the theory of performative utterance, hence, the performative powers of language (Baldick 2015), as introduced by John Langshaw Austin in his book *How to Do Things with Words*. He understood performative utterance as an utterance through which some further action is performed (Austin 1962). The last appears to be most relevant as far as the ancient Egyptian religious texts are concerned. This phenomenon may also be designated as “a performative verb”

¹⁰ On estimated literacy in ancient Egypt, see Wentz 1990.

and is defined as follows: “A term used in philosophy and linguistics for a type of verb (apologise, forbid, inform, promise, request, thank) that can explicitly convey the kind of speech act being performed. In saying I apologise for my behaviour, someone is making an apology, which could also be done in part at least without such a verb: My behaviour was utterly deplorable” (McArthur, McArthur-Lam, Fontaine 2018).

It is ubiquitous that people communicate through sounds, through audible phenomena, like music, dance, and songs but also words spoken out loud in a very diversified manner. Hearing and listening was significant and crucial in all the so-called traditional cultures, and ancient Egypt was no exception. Although, as is often emphasized, the significance and sense of sonic systems are not universal (cf., e.g., Baumann 1997: 3–8), the meanings of “hearing” and “to hear,” scrutinized above, seem to be a rather all-pervasive principle. However, further thorough analysis of the language, derivatives, collocations, connotations, plays on words, and categorization through language should display the cultural differences. This is especially so in the comparative study of all senses’ conceptualization in an ongoing study.

Nonetheless, the *Pyramid Texts* do not correspond to the idea of a prevalent motif of sound accompanying the creation of the world. The only such reference is to the scream by Isis giving birth to the king (*PT* 669; *P* 431, *N* 347), which may have some creation connotations (Popielska-Grzybowska 2020: 177–178), but this is not explicit. All in all, in ancient Egyptian tradition the primacy of the spoken word and thus the primacy of the sense of hearing over the sense of sight is undermined by the presence of hieroglyphs and the codification of the words in writing. The spatial dimension is dominant in the case of visual signs, and the time dimension in the auditory signs (Jakobson 1989: 79). However, this statement, well-grounded in linguistic studies, may be less applicable to religious writings. This needs further far-reaching and meticulous analyses concerned with corroborating recent results of research on perception and the brain/mind within neurolinguistics with an ancient Egyptian linguo-cultural context.¹¹ Of significant value are contributions by Karenleigh Overmann.¹²

Notwithstanding all the impediments enumerated above, the incontrovertible importance of the art of hearing in ancient Egyptian religion cannot be denied and is well attested—perversely by means of written sources. This is confirmed by numerous injunctions to listen and hear which are testified in the *Pyramid Texts*. Moreover, the concepts of “to hear” and “to listen” connote, as noted above, most frequently obedience and life but also understanding. This links the verb *sdm* with both sensory and ethical meanings.¹³

And to hear what is crucial, silence is needed:

§868c *j.gr m sdm.tn sw mdw pn j.ddw mrj rꜥ p*

§869a *3h.f hntj 3hjwt shm.f hntj ꜥnhw*

§869b *hms.f r sm3 hnt jmntjw*

¹¹ This study has been carried out by the present author in collaboration with Jadwiga Iwaszczuk and Krzysztof Radtke; for more general cultural analysis, see Kordys 1991.

¹² See, for instance, Overmann 2019: 153–168; 2021a: 55–72; 2021b: 93–116 and bibliographies therein.

¹³ For similar connotations in other languages, see Bartmiński 2017a: 171–179 and bibliography therein.

Be silent! Hear them, these words that this Merira says, so that he becomes akh at the head of the akhs, have power at the head of the living, and sit at the side of the Foremost of Westerners.

/PT spell 460 (P 297)/

Recapitulating, it must be underlined that a comprehensive “open definition” can be formulated after studying the conceptualization of all the senses in the *Pyramid Texts*. Due to the strict space limitations of this chapter, it may only have an introductory character. Comparative analysis will bring the most comprehensive results, and thus valuable interpretations in the synaesthesia of the human senses may be obtained. In many cultures seeing was indispensable for confirmation of what was heard. The apparent advantage of sight over hearing is the effect of a long process of civilizational change. It is said that what is seen is much more objective, while what is heard is a kind of *soul* of things, and consequently is more subjective (Florensky 1990: 37–38). And the latter is much more relevant to religion and religious experience. The ancient Egyptians were aware of the necessity of listening to the invisible and “gaining insight and enlightenment with closed eyes” (later taken over and adopted in the Greek mysteries). Hearing allows inner perception and understanding, and thus brings us closer to a true meaning of the *elements* of the universe and the universe itself. Speaking and listening are dynamic and create a stronger bond between the speaker and the listener, while the written word may exist even without the recipient. The pharaoh in the *Pyramid Texts* seems to want and require everlasting contact with the ones who listen to him and to whom he should listen. Listening and hearing is a source of knowledge of inward reality, while sight provides knowledge on the outside world (Bernárdez 2013: 415–441; Bartmiński 2017a: 171–179)—and the ancient Egyptians exploited this distinction in their religion deftly and ingeniously.

Nonetheless, it must be stressed clearly that obviously the sensory impressions of sight and hearing, particularly in traditional cultures, were corroborated and endorsed by the senses of smell, taste, and touch, creating a “complete” experience, leading to a certain, well-defined cosmovision—the ancient Egyptian worldview (*Weltanschauung*).

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7

From Hieroglyphs to Cognition and Back Again (with a few Detours and Dead Ends...)

Claus Jurman

*Can't you see
In my handwriting
The curve of my 'g',
The longing?*

PJ Harvey, The Letter

ABSTRACT

This contribution is concerned with the intersection of writing, reading and cognition in the context of social practice as it is deducible from the ancient Egyptian source material. While Egyptological (grapho)linguistics tend to focus on the abstract functioning of the representation of language in a given graphemic system, the question of how a concrete specimen of text is created and produces meaning in the mind of the writer(s) as well as the reader(s) is often relegated to the fringe. By drawing on examples and case studies from epigraphic material of the Third Intermediate Period, this study aims to highlight the social and contextual embeddedness of writing and reading practices, whose cognitive underpinnings are still poorly understood.

KEYWORDS: writing – reading – hieroglyphs – cursive script – iconicity – cognition – semiotics – allography – Third Intermediate Period – Serapeum

INTRODUCTION

While the last two decades have seen a substantial increase in Egyptological studies applying frameworks of theoretical and cognitive linguistics as well as general semiotics (cf., e.g., Goldwasser 2002; Loprieno 2011; Grossman et al. 2012; Angenot 2015; Nyord 2015; Meeks 2015; Köhler 2016; Chantrain & Winand 2018; Haring 2018; Werning 2020; Thuault 2020),

* I would like to thank Stéphane Polis for providing most valuable comments on an earlier draft of this contribution, through which he saved me from a number of mistakes and imprecisions.

the focus of research is predominantly placed on the functioning of the Egyptian language on an abstract level, which is almost exclusively deduced from its manifestation in the system of written language. In a sense, spoken language is observed through the lens of the associated writing system in its different applications rather than analyzed concurrently with it as two interrelated but basically autonomous representations of language.¹ The implicit consensus seems to be that the “glass of the lens” may be slightly blurred (thus the grammatical opacity of many spelling variants of verbal forms, cf., e.g., Schenkel 2009), but *faute de mieux* and despite its imperfections is still capable of offering a relatively neutral, non-tinted view of the object of enquiry. Occasionally, voiced skepticism (Loprieno 1995: 61–62) regarding the possibility to fully reconcile the reconstructed morphophonological structure of “pre-Coptic” with the reality of hieroglyphic spellings found in the epigraphic evidence do not seem to have had a strong impact on general Egyptological attitudes.² Even studies on the graphemics of hieroglyphs, classifier functions, or general visual semiotics using the writing/marking system itself as their point of departure (Goldwasser 1995; 2002; Loprieno 2011; Lincke & Kammerzell 2012; Polis 2018) pay significantly more attention to the texts as primary sources waiting to be mined than to the material and social contexts which have shaped their creation, namely, the concrete acts of writing. There is thus a certain tendency to privilege the study of the *énoncé* over that of the *énonciation* with all its irreducible subjectivity, if one wanted to apply Benveniste’s famous distinction here (Benveniste 1970: 13; cf. Kim 1997). To be fair, constructing abstract models from the “noisy” data sets provides the Archimedic point from which historical linguistics operates, and it would not make sense to simply reverse priorities. Furthermore, there certainly exists a tradition within Egyptological epigraphy that is interested in the interplay between the shape and arrangement of hieroglyphic signs, and the material, social, as well as chronological contexts of their use. This approach—probably best represented by the research of Henry George Fischer (1973; 1976: 55–58, 101–114; 1977; 1996: 177–236)—has provided many insightful analyses of concrete graphetic phenomena (see also more recently Russo 2010), but it is nevertheless to be regretted that it has not led to an attempt at integrating the evidence into a more general semiotic or grapho-linguistic model.

A different strand of research having become popular in recent years places the materiality of preserved texts and the social embeddedness of textual production at the very center of the theoretical framework (Hilgert 2016; Hoogendijk & Gompel 2018; cf. also Malafouris 2013: 72–73; Petrovic et al. 2018). But efforts to situate the linguistic analyses in the wider cultural and social landscape often stop at the level of *con-text*, i.e., the production and reception of *text(s)* rather than *writing*. In contrast to some recent contributions

¹ As pointed out by Kammerzell and Lincke, the meanings of uttered speech and its written counterpart never fully overlap, especially in the case of ancient Egyptian. Kammerzell 1993; Kammerzell 2009: 294–295; Kammerzell & Lincke 2012: 63–66; cf. also Harris 1995: 95–101.

² Quite symptomatically, even studies explicitly dedicated to the question of how theoretical assumptions on morphology and the reality of the epigraphic evidence can be aligned do not reproduce a single hieroglyphic spelling and completely disregard the grapholinguistic context of individual sources; cf. Schenkel 2005; 2008.

on the materiality of writing (Ragazzoli 2013; 2017; Haring 2018; Backes 2020: 584–601)³, the majority of such studies do not normally engage with the preconditions and processes that determine the visual and structural characteristics of a concrete instance of writing. These factors encompass of course the actual phrasing of the textual content (the common “target” of cognitive linguistics), but include also a great number of concomitant choices regarding the use of material and script, layout, spelling, as well as the shapes and arrangement of the individual signs. The cognitive processes involved in generating such acts of writing are interrelated with acts of speech, but not fully congruent with them, which makes it so difficult to apply methods from the cognitive sciences to the study of ancient writing practices.

Compared with hieratic and demotic manuscripts, hieroglyphic inscriptions appear to be even more opaque in respect to the cognitive processes involved in their creation. Generating text via the non-alphabetical, semi-linear (in the sense of “obeying not solely linear principles of arrangement”), and semantically overdetermined (see section 1.3 below) Egyptian hieroglyphic writing system is by any standard a time-consuming multi-agent process involving both subconscious and conscious decisions. Therefore, any attempt at exploring the *grammaire de la forme* of inscriptions needs to be based on the scrupulous examination of a homogenous corpus of comprehensively contextualized sources. Once assembled and processed, such a corpus could help to develop a suitable theoretical framework and methodology for the application of cognitive grapholinguistics in relation to an ancient script and may facilitate new insights of a more general scope.

My thoughts on Egyptian writing and cognition are influenced by my previous research on elite display in Memphis during the Third Intermediate Period, around 1070–750 BCE (Jurman 2020), at a time when administrative systems and scribal culture(s) were undergoing significant transformations concomitant with the appearance of new social and ethnic realities (Jurman 2015; Jansen-Winkeln 2017). The epigraphic examination revealed many interesting graphemic and graphetic (for the terminology, see below) peculiarities, some of which may be related to the interplay between different script/scribal traditions and varying degrees of scribal expertise. In that respect, one needs to be reminded that within a timespan of little more than 300 years, five more or less distinct script traditions (hieroglyphs, cursive hieroglyphs, hieratic with the subtypes *Buchschrift* and *Geschäftsschrift*, abnormal/cursive hieratic and early demotic) and at least three different language stages (Middle Egyptian/Égyptien de tradition, Late Egyptian, Early Demotic, not to mention any potential Libyan languages omitted from the scribal repertoire) were used partly side by side (Graefe 2015; Verhoeven 2015b: 33–48; Vittmann 2015: 383–388; Lippert 2016; Lieven & Lippert 2016: 262–264, 275–276; Abd-Ellatif & Eissa 2020; Archidona Ramírez 2021). While the number of sources allowing to trace the formation and evolution of both abnormal hieratic and early demotic is rather limited (cf. recently Vittmann 2020: 317, 331–332), we possess a relatively large corpus of contemporaneous hieroglyphic and (lapidary) hieratic inscriptions. It is quite possible that some of their variability and peculiarities in terms of

3 Cf. also several papers in Quirke et al. in preparation, as well as Boyes et al. 2021, and particularly Overmann 2021 for non-Egyptological perspectives.

graphemic and graphetic properties (as compared with the late New Kingdom) reflects the synchronous processing of different scripts and/or language stages by scribes and craftsmen. For this reason, the early first millennium BCE seems particularly well-suited to investigate how various degrees of knowledge of different scripts could have been acquired, implemented, and transmitted, and to what degree intentional or unintentional interferences between different systems/modes of writing occurred (for the Roman period, see now Love 2021). The following chapter will outline some of the challenges and opportunities of such an approach illustrated by a number of case studies of (primarily hieroglyphic) epigraphic material from the Memphite region dating from the 10th–8th centuries BCE. Rather than providing a comprehensive analysis of the material, however, it is my aim to sketch its potential for more thorough investigations relating to the topics of the present proceedings. In a rather associative fashion I will also raise more general open questions and possible avenues of further research on writing and cognition in ancient Egypt and beyond.

A NOTE ON TERMINOLOGY AND THE LIMITS OF DIFFERENTIATION

Even though some of my points may be relevant to the signification of writing in general, my focus shall nevertheless lie on those levels of signification that do not serve to represent natural language, which are thus *not* graphemic. As others have pointed out before (Kohrt 1985: 423–424; Meletis 2020: 19–30, 61–76), differentiating between the levels of signification of writing is not always a straightforward enterprise. Perspectives differ on how many levels one should consider in the first place, and on how they are to be defined and labeled (cf. Meletis 2021: 137–139). There is at least a consensus among grapholinguists to make a basic distinction between the “glossic,” i.e., language-related, level of signification (e.g., phoneme–grapheme correspondences)—usually referred to as *graphemic* or *graphematic*—and all the other meanings tied to writing’s perceptual impact and materiality—often subsumed under the *graphetic* dimension. In addition to this conventional distinction, Klinkenberg & Polis (2018: 63–64, 87–93) have recently introduced the concept of *scriptemes* within the framework of a semiotic macro-theory of the phenomenon of writing. In their understanding, *scriptemic* levels of signification relate to indexical function(s) created through the very act of using writing in a social context (e.g., a person’s signature as an index of formal authorization). In this respect, it is the use of writing itself which creates meaning within a given formal and social context, not the content on the language plane or the choice of script.⁴ Between these two poles of signification lies the sphere more intricately connected with the form of the visual stimulus, the domain usually associated with *graphetics*. Klinkenberg & Polis (2018: 62–64) opt for the term *grammemic*⁵ to refer to all those functions pertaining to the socially conditioned system-internal norms and conventions of writing (incorporating symbolic, iconic, and indicial values). While one needs to be aware that the terms *graphetic* and *grammemic*

4 In studies on socio-(grapho)-linguistics, scriptemic phenomena are sometimes considered within the scope of graphetics; see, e.g., Spitzmüller 2013.

5 For a completely different use of this term not at all related to grapholinguistics, see Pike 1957.

are not fully congruous (Klinkenberg & Polis 2018: 81, n. 65), they share a focus on the formal and material characteristics of the visual stimuli as well as the functions and values associated with them. For the purpose of this contribution I will adopt the more common term *graphetic* and treat it as a quasi-synonym of *grammemic*.

As important as the terminological differentiation of semiotic levels may be for structural analysis, it should not distract from the fact that signification is always an integrated and contextual phenomenon. No text can signify on the graphemic level only, and all levels of signification have indexical functions of social relevance that may or may not be intentional, may or may not align with the plane of the textual content. To offer a cheesy yet effective example: Penning a love letter instead of calling someone up on the phone (scriptemic level), writing it by adopting a calligraphically pleasing handwriting, using choice ink on choice paper (graphetic level), and employing time-honored spellings—for example, the pre-1990 French or pre-1996 German orthography—(graphemic level), may all serve one single purpose—to communicate appreciation.

1. OF HIEROGLYPHS AND ZOMBIES – THEORETICAL CONCEPTS AT THE ABSTRACT AND AT THE CONCRETE LEVEL

1.1 THE RESEARCH QUESTIONS

When browsing through books on ancient Egyptian grammar or on the structure and functioning of the Egyptian writing system one realizes that the basic relation between the factors governing the creation of hieroglyphic texts, and the linguistic rules and norms abstracted therefrom is rarely made the subject of explicit discussion.⁶ Such issues may be brought to the fore with later stages of the written language, when archaizing “hypercorrections” abounding in higher registers warrant caution against certain generalizations (see Der Manuelian 1994: 67, §4; 72, §11; 103–104; Jansen-Winkeln 1996: 1–2, §1; 57–58, §92). For earlier periods, however, reference books give the impression that our primary source material was by and large produced by well-educated and competent language and script users.⁷ That this was not always the case is borne out by the epigraphic evidence and uncontested among specialists, but the repercussions of working with what I would

⁶ Among textbooks on ancient Egyptian grammar, one of the few explicit comments that dwell on the difficulties of differentiating between “error” and “exception” is Allen 2014: 439–440; cf. also Loprieno 1995: 61–62, already cited above.

⁷ In a typical example, the implicit norms and rules of language use are related to a “competent speaker” (Junge 2005: 21) without commenting on the fact that our attempt at explicitly identifying those norms and rules stands or falls with the competence and intentions of our ancient scribal “informants.” For example, it requires a lot of careful and circumspect consideration to treat the question whether the form  *whmmy.t*, “repetition,” attested only once in *Khakheperreseneb* (tBM EA 5645, rt. 2), is a scribal error, an ungrammatical but intentional poetic hyperbole playing on the semantic significance of reduplication, or a rarely used type of deverbal noun completely acceptable to ancient Egyptian ears (and eyes) at the time of writing. See Stauder 2013: 133–134; 2014: 50 (I owe these references to Gerald Moers).

call “epistemologically inhomogeneous” data⁸ are seldom reflected at the level of general semiotic analysis. While trying to play the devil’s advocate, I certainly do not want to insinuate that this is an either-or question (in the sense of taking every preserved written utterance at face value vs. surrendering to insurmountable aporia), rather one of as-well-as. Even a sceptic will find it hard to deny that the majority of carefully laid out and executed hieroglyphic texts is likely to reflect high levels of grapho-linguistic expertise and skill on the part of their creators.⁹ Yet, those skills may not always map onto our expectations of consistency and intelligibility (see also the remarks of Widmaier 2013: 537–538). That it is always the concrete *parole* which gives access to and embodies the abstract *langue* is of course not peculiar to Egyptology. It constitutes in fact a sore point of historical linguistics more generally since at least the time of de Saussure (not always considered a problem at all; cf. the different contributions to Beedham 1999). However, the issue becomes more acute in Egyptology because our still very limited understanding of ancient Egyptian culture and language(s) favors the amalgamation of source categories and levels of analysis that would otherwise be differentiated more carefully. With very few exceptions, the concrete, materially preserved instances of ancient writing are our only gateway to accessing the ancient language and cultural phenomena based on or mediated through language. The sheer banality of this insight in my opinion often plays a role in obscuring the meta-questions directed at the sources during research. This in turn often increases the risk of the chosen approach becoming prone to methodological incongruity. What exactly do we want to know from studying the material? *How the ancient Egyptian language (or a given chrono-/sociolect) works in principle (> langue)? How the Egyptian writing system functions at a structural level? How these abstracted structures manifest themselves and are adapted in concrete instances of writing (substitute for parole)? How the ancient Egyptian mind (respectively, that of a subgroup or an individual) works in general?* While these categories of questions are naturally interrelated and difficult to disentangle, each set requires specific methodological sensibilities and tailored toolkits (and entails its particular aporias). This is far from saying that the methodologies hitherto employed have been largely deficient or inadequate or that the researchers did not know what they were doing. But as I will try to show in the following sections, more attention to what happens at the microlevel

⁸ In the sense that the data is not simply inhomogeneous in terms of its physical attributes (e.g., papyrus vs. lapidary inscription) and the characteristics of the respective contexts of use (e.g., private letter vs. funerary liturgy) but also in relation to the epistemological value for the targeted question (e.g., reliability and representativeness of a particular register or sociolect etc.). The fact that in regards to an ancient language and script culture, whose written output has been incompletely preserved, the latter factor is far more difficult to assess than the former ones increases potential opacity and the risk of operating with an unacknowledged black box when drawing conclusions. Similar epistemological problems arise at the other end of the spectrum when analyzing big data; cf. Desai et al. 2022: 13–15.

⁹ There exists also the opposite tendency in philology to regard instances of text that do not conform to one’s preconceived understanding of what constitutes *proper* Egyptian grammar and “orthography” as necessarily faulty, e.g., the use of the “narrative infinitive” in narrative discourse; cf. Feder 2004.

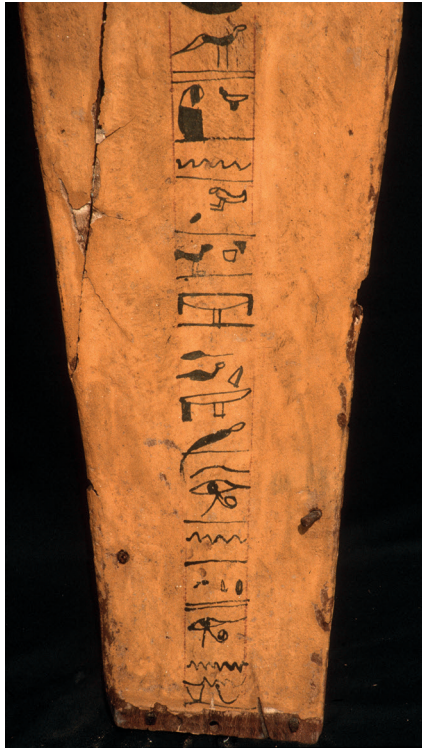


Fig. 7.1 Coffin no. 54 + 64 from the tomb of Iurudef with “pseudo-hieroglyphic” inscription (courtesy of the Egypt Exploration Society).

of writing and reading when looking at the macro-level, and vice versa, could lead to interesting new avenues of research.

1.2 WHAT ARE “ZOMBIE” HIEROGLYPHS AND HOW CAN THEY BE CONCEPTUALIZED IN SCRIPTUROLOGICAL TERMS?

In 1985, the Anglo-Dutch Expedition at Saqqara near Memphis discovered in the tomb of a New Kingdom official named Iurudef a cache of about 70 secondary burials mostly dating from the end of the New Kingdom and the early Third Intermediate Period (Aston, Raven & Taylor 1991). Among the grave goods were a number of wooden coffins of modest quality, some of which had hieroglyphic inscriptions painted onto their lids and cases as could be expected from such an ensemble. However, it soon became clear to the excavators that what appeared at first to be proper hieroglyphic inscriptions such as the ubiquitous offering formulae was merely a hotchpotch of hieroglyphic or hieroglyphically looking graphic elements that provided no decipherable text but amounted to graphemic gibberish (fig. 7.1). This now quite well-known group of inscriptions (cf., e.g., Lieven

2009: 104 w. n. 14; Fitzenreiter 2015: 195–197) provides attestations of what are commonly referred to in Egyptology as “pseudo hieroglyphs.” Far from being an isolated phenomenon, pseudo hieroglyphs are well attested in later pharaonic history (roughly speaking, the first millennium BCE and the first three centuries CE)¹⁰ and occur quite frequently as a substitute for proper hieroglyphic texts and phrases on particular non-monumental object groups of religious/votive character such as Horus stelae (Sternberg-El Hotabi 1999: 189–190; Lieven 2009) or scarab amulets (Keel 1995: 176; Ben-Tor 2009). In many (but not all) such instances the employment of graphemically non-sensical text can be attributed to mass production, a relatively modest socio-economic status of the producers and their clientele, as well as a general lack of their respective scribal competence. Quite often such instances of writing are characterized as being “without meaning” or “senseless,” and this is certainly largely true as far as the relation between the graphemes and the phonemic referents is concerned. It is also out of the question that the craftsmen responsible for creating these inscriptions lacked a proper understanding of the sign repertoire and graphemic rules of

¹⁰ For an interesting case of even later pseudo hieroglyphs scratched on a Theban pottery sherd of the 6th–7th centuries CE, see Górecki & Kopp 2013.

the hieroglyphic writing system then in use. But we cannot know whether they would have been able to give an account of the approximative language-related content of their work. Even if these texts are deficient concerning their relation to spoken language, they certainly fulfill other important characteristics and functions of writing which transcend the principles of grapheme-phoneme mapping. While losing the surrogational quality and link to language in the narrow sense, these “zombie” hieroglyphs highlight other dimensions of the significance of writing, for example its intrinsic auto-referentiality and its situatedness in a social and material context, which involves both producers and recipients. In that respect they relate to the indexicality of writing as a semantically complex social practice. Discussing similar instances of pseudo script, Kammerzell rightly points out that “a mere sequence of *indexical signs*” may “transport nothing but the message that the producer makes use of ‘writing’” (Kammerzell 2009: 299, original emphasis). In the case of the coffin inscriptions from Saqqara, their original context of use (i.e., funerary item bearing decoration of religious significance) certainly provides a more specific frame of reference. For people familiar with Egyptian funerary culture, the inscriptions’ indexicality will not only have pointed to the use of script as such but likewise (and more importantly) to the ritual power and efficacy of hieroglyphic writing in general. However, it is anybody’s guess whether this dimension was lost upon those who could read hieroglyphs and were able to expose the lack of graphemic sense. While the painter of coffin no. 54+62 may easily have asserted: “Of course that’s an offering formula! What else should it be?,” an educated member of the clergy could have replied: “Not even a single readable divine name! That’s completely ineffective and even sacrilegious!” From an elite perspective, the use of pseudo writing may have meant a disregard for the religious decorum prevalent in elite culture and betrayed the social stratum associated with the Saqqara coffins as pathetic would-be script users. Both parties would probably have agreed, however, that the scribblings are at least an index of the use of writing as such. This basic level of signification could be labeled in analogy to Malinowski’s (1923: 315) and Jakobson’s (1960: 355) coining of the term “phatic” as “graptic use of writing” (after anc. Greek γραπτός, “written down, painted, inscribed”). In that sense, writing would communicate in complex but not completely fixed ways solely at a meta-linguistic level.¹¹ While it is not my intention to establish yet another (grapho-)linguistic term derived from the PIE root *gerbh-, the expressions “phatic use” and “graptic use” simply serve to draw attention to the fact that a given visual stimulus (a perceptible instance of writing) is not tied to a single signifying plane (see Klinkenberg & Polis 2018: 61–63 and below), not even necessarily to a single meaning at any of the signifying planes. This is especially true for a culture where the skills of active (“scribes”) and passive (audience) literacy, and the skills required to produce/execute visual stimuli (e.g., draftsmen, craftsmen etc.) need not be fully congruent (see section 2.1). Even in contemporary communication contexts, the shape of a visual stimulus is not enough to determine its identification and meaning. As figure 7.2 demonstrates, it requires technical expertise as well as contextual information to conclude that figs. 7.2a and 7.2b, while possessing an

¹¹ In Kammerzell’s classification of non-textual marking systems, the latter use would most likely be subsumed under the heading “secondary functions of systems of graphic information processing;” Kammerzell 2009: 301–302.

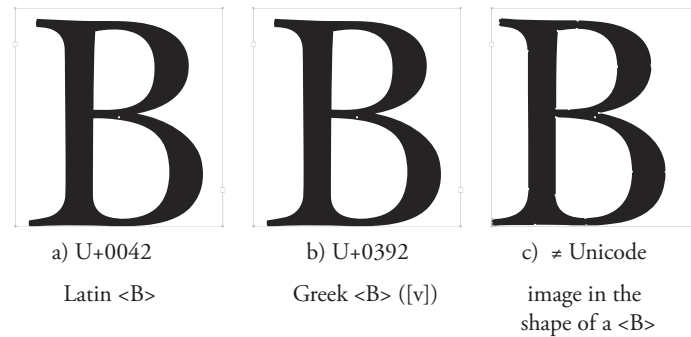


Fig. 7.2 The encoding ambiguity of three figures in the shape of the letter .

identical shape, are not part of the same writing system and—the way they are encoded in Unicode¹²—will not be handled in the same way by electronic data processing. The graphic element of fig. 7.2c on the other hand does not even represent the glyph of an electronically encoded writing system, although it can be interpreted as such by onlookers, who might identify it as a token of either fig. 7.2a or 7.2b depending on their respective background information and expectations (priming).¹³ This intrinsic ambiguity of encoding even when dealing with a known notation (Harris 1995: 64–68, 102–105)¹⁴ is where the term “zombie” in its epistemological dimension (Kirk 2019) comes into play. Zombie writing could be defined as a manifestation of a “system of graphic information processing” (Kammerzell 2009: 279–280) that resembles writing in many or most respects and appears in similar

¹² For an insightful discussion on the grapholinguistic dimensions of glyphs and characters encoded in Unicode, see Haralambous & Dürst 2019.

¹³ While the example of letter shapes isolated from context may seem rather arbitrary and far-fetched, one can indeed identify historical instances where incomplete understanding of encoding principles by certain producers/users of musical notation (in accordance with Harris 2000: 201, I consider western musical notation a non-glottographic writing system) led to a significant change in the whole system. A case in point is the development of musical notation in German speaking countries from the 15th century CE onwards. Through a misinterpretation of notational conventions or a conscious decision to accept a typographic compromise when typesetting musical manuscripts (or a combination of both), the *b quadratum* or *b durum* symbol b traditionally indicating the note b natural (as opposed to the *b rotundum/molle* symbol b for b flat) was replaced by the similar looking (in the typefaces of the time, that is) letter <h>, while derivatives of the decontextualized *b quadratum* were kept as the accidental signs $\sharp$ and $\natural$. As a consequence, the notation of natural notes in the German speaking region and some countries of Northern and Eastern Europe until this very day contains a disruption of the conventional alphabetic order ranging from A to G through the illogical insertion of the letter H between A and C. The matter has still not been thoroughly researched from a grapholinguistic perspective, but see Dahlhaus 1955; Apel 1969: 5.

¹⁴ As Harris (1995: 68) remarks, “different activities of interpretation may confer different significations on the same set of marks.” Another illustrative example of this is offered by the system of vehicle registration plates in modern Greece. The three letters representing the prefecture in which the car was registered are composed of the Greek alphabet and work as abbreviations of the prefecture’s name. However, the sign repertoire has been intentionally restricted to those letters that have an identically shaped counterpart in the Latin alphabet (probably for reasons of international recognizability). Thus, e.g., AH for ΞΑΝΘΗ (Xanthi).

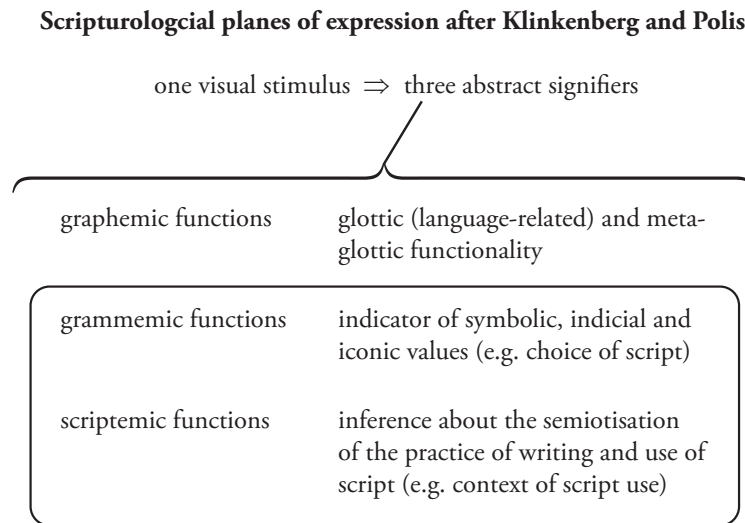


Fig. 7.3 Scheme based on the model in Klinkenberg & Polis 2018. The components encircled pertain to the levels of expression present in “zombie” hieroglyphs.

environments, but does not encode linguistic information in the narrow sense. The latter fact, however, may not be transparent to all potential recipients (for problems with the common concept of literacy see also Pinarello 2015: 118–121). For a modern Egyptological audience, the case of the coffin inscriptions from the cache of Iurudef is quite clear. But as has already been pointed out above, the issue gains complexity when considering that the ancient contexts in which the conception, the execution, and the reception of writing happened, were engaged in acts of diverging *semioseis* (in plain words, attributed more or less divergent meanings to the visual stimuli).

This brings me to the already mentioned structural model of the phenomenon of writing in all its aspects, which was introduced by Klinkenberg and Polis in 2018 under the heading “scripturology.” As I have tried to visualize in figure 7.3, one of their primary tenets is that the visual stimulus representing writing relates to three distinct signifiers, in their turn associated with three different content planes (the graphemic, grammemic=graphetic, and scriptemic functions of writing; Klinkenberg & Polis 2018: 61–64). The model stresses the semiotic multi-dimensionality of writing and the polyfunctionality of its individual signifiers on multiple levels, but at the same time the authors point out that only where all three levels of signification are present one can rightfully speak of a “writing system” (Klinkenberg & Polis 2018: 67). In the case of the “zombie” hieroglyphs from the cache at Saqqara, the graphemic signification seems to have been eliminated, while the graphetic and especially the scriptemic plane of expression are hardly compromised. These latter two do not suffice to turn the inscriptions into representations of a “writing system,” but it is obvious that these inscriptions derive a significant part of their intended meaning from mimicking the hieroglyphic writing system. If a mother’s shushing sounds when lulling a baby to sleep is not language in the narrow sense but definitely an act of speech

(Jakobson 1960: 355; Ameka & Wilkins 2006), then the “zombie” hieroglyphs of the cache of Iurudef, while not conforming to a writing system, attest acts of writing. This is not to say, however, that such acts of writing are as transparent as conventional uses of writing systems. Rather, their decoding tends to be highly sensitive to social context and is prone to diverging interpretations by different social agents.

1.3 FUNCTIONS OF SIGN USAGE, FUZZY BOUNDARIES, AND THE UNITS OF ANALYSIS

Despite the semiotic “wealth” of the Egyptian writing system and its different scripts,¹⁵ only the plane of graphemic functions—including, but not restricted to the incomplete mapping of sequences of phonemes to sequences of graphemes—is usually accorded a deeper semiotic analysis in Egyptological scholarship. In recent decades, a number of seminal studies on this plane of functionality of the hieroglyphic script have appeared (to cite just a few: Goldwasser 1995; Loprieno 2003; Lincke & Kammerzell 2012; Polis & Rosmorduc 2015; Polis 2018). Drawing on general semiotics as well as on cognitive linguistics, these studies aim at elucidating the structural mechanics of the writing system and the demarcation of sign functions (or, more precisely, the functions of specific usages of tokens of given signs). One of the most recent models of hieroglyphic sign functionality, originally published by Polis and Rosmorduc in 2015, places special emphasis on the fuzziness of boundaries between the different functional categories. While the model as such, like the majority of semiotic approaches to ancient Egyptian scribal culture, is aimed at the *langue*, to use a Saussurian term, the *parole* (that is, of written language!) is represented by a number of case studies to probe the model’s applicability in concrete textual environments. A similar approach can already be found in Orly Goldwasser’s classic 1995 analysis of the semiotics of hieroglyphic writing, which focuses on the functionality of classifiers (see also Goldwasser 2002; 2009). As the numerous examples make abundantly clear, semiosis¹⁶ in the hieroglyphic writing system tends to be quite complex already at the level of individual lexemes. The complexity is at least in part connected with the system’s intrinsic and ineluctable iconicity or figurativeness, although opinions differ as to the impact of this feature on the actual process of semiosis (see, e.g., Assmann 2002: 35–36; Loprieno 2003; Vernus 2019: 102–103). As a matter of fact—despite all the recent theoretical advances in understanding the semiotic principles of hieroglyphic writing—we are still in the dark about whether our models, however their details might differ from one another, bear any resemblance to actual cognitive processes taking place while writing or reading hieroglyphic texts. When even in relatively transparent alphabetical writing systems experienced readers process lexical units at sub-word and word-level simultaneously (Dehaene 2009: 42–47), the potential interferences between graphemic conventions, phonemic encoding, and the presentation of semantic information transcending spoken language multiply for hieroglyphic writing. As Nathalie Beaux (2009: 249) has pointedly remarked, each and

¹⁵ On the distinction between writing system and script, see Bunčić 2016: 20–21.

¹⁶ Here understood as the triadic relations within the sign structure in the Peircean tradition as well as the actual, agentive process of attributing meaning to that sign, whether by its producer or by its reader.

every token of a hieroglyphic sign is imbued with “un réservoir sémantique inhérent à sa qualité d’image, réservoir auquel le scribe est toujours libre d’accéder” (in a similar vein, Loprieno 2003: 246; Polis 2018: 302). Even beyond the conventionalized graphemic functionalities inherent in the writing system, hieroglyphic signs are never visually *innocent*, because they always have the potential of becoming semantically overdetermined, to use a Freudian and Lacanian term. That these additional levels of meaning peculiar to written language were always deployed in a controlled and conscious fashion should not be taken for granted and remains an issue to be assessed for every individual case (see section 3.3).

Iconicity as a graphemic category is of course far from being a straightforward concept (cf. esp. Stetter 2011: 52–65; Mersmann 2015: 98–132; Klinkenberg & Polis 2018: 80–81; Stauder 2018: 368–372; Vernus 2019), as it relates to those very characteristics that establish a similarity relationship (the *Bildhaftigkeit* of the linguistic sign) between signifier and not just one (e.g., a real-world object) but several different levels of signifieds (cf. also Marazzi 2016: 128–129, who conceptualizes scriptural signification in terms of layers). Iconic relationships can be form/shape-related or structural/diagrammatic (Stauder 2018), they can refer to the extra-linguistic world (exophoric), or to the language system and/or the writing system itself (endophoric) (Meletis 2020: 236–243; a differing approach in Klinkenberg & Polis 2018: 62). Even in a highly “iconic” writing system the visual similarity between signifier and signified remains a relative (Stauder 2018: 370; Vernus 2019: 111–113), scalar concept, and is not necessarily tied to the graphemic plane of writing alone.¹⁷ In the conventional written discourse of modern western culture, the effects of the simultaneous processing of different planes of script activation are not easy to replicate, and one has to resort to non-standard examples to illustrate the point. Figure 7.4a shows an example of political activism in the form of a flyer design which adduces a semantically rich visual stimulus to attract attention and at the same time to convey a message not encoded in the corresponding spoken realization. Analyzed in graphemic terms, one could describe the corporate logo as a logogram, which is provided with superfluous phonographic interpretants in conventional alphabetic script. While unnecessary for phonemic notation, these interpretants “sabotage” the logographic force of the icon by dissecting from the phonemic continuum the sequence /hell/ and showcasing its outrightly negative meaning in the English language. The semantic enrichment does not stop there, as the company’s logo and name have yet another signified, the sea shell as an object of the natural habitat. This fact is relentlessly exploited by the activists and contrasted with the company’s well-known track record of damaging the Earth’s biosphere. Figure 7.4b, the company’s (indirect) response to such graphemic activism, even adds a metalevel of signification through precisely referencing the critical image-text creations of which fig. 7.4a is a prime example. The results are multilayered units of signification, whose different levels cannot be easily dissected or disentangled from each

¹⁷ One could go as far as to state that the swear word *Fuck* in this particular font and word shape (known from anti-capitalist T-shirt activism from the 1990s and 2000s) bears an iconic relation on the graphetic plane to the corporate icon *Ford*, its referent on a meta-linguistic level. Likewise, iconicity can be autoreferential as in the case of the word T-shirt, in which the ⟨T⟩ can be conceptualized at the same time as a phonogram, an autoreferential pictogram, and a logo-/morphogram, as in Chinese T恤衫, *tīxùshān*, lit. “T-shirt shirt.”



Fig. 7.4 a. Flyer announcing a protest against Royal Dutch Shell in Berlin, May 19 2020 (<https://rad-spannerei.de/2020/05/18/welcome-to-shell/> (accessed 18 November 2021); b. Advertising campaign, Royal Dutch Shell, September 2017. (https://www.adsoftheworld.com/media/print/shell_from_hell_to_shell_5_o (accessed 18 November 2021).

other. One could of course object to the use of such an ideologically highly charged textual artefact, which is quite far removed from the conventional mode of writing in modern alphabetical cultures. But it nevertheless points to the potential complexity of processing textual creations with a high level of iconicity. It also demonstrates quite effectively the interplay of phonemic and semantic levels of signification, and the associative cognitive networks triggered alongside, which are connected to different forms of semantic priming (thus its political readability; for such priming effects, see McNamara 2005).

Semiosis on one plane, e.g., the graphemic one, cannot be completely isolated from the other planes, nor can it be dissociated from the material, social, cultural and functional contexts in which the production and reception of writing take place. Connotations at the purely visual level and practices at the graphetic plane, which are usually not accounted for in classical semiotic models of the hieroglyphic writing system, can have significant effects on the graphemic plane, the usual unit of analysis. A good example is the establishment of the hieroglyph H8 (𓂏) as a conventional logogram for *z3* “son” (normally written with G39 𓂏), a process likely involving “conceptual transcription” from hieratic to hieroglyphic writing (hieratic shortcut for G39 developing an iconic resemblance to H8) as well as iconic re-analysis helped by the (conscious?) application of several semantic relation principles such as metonymy, synecdoche, and metaphor (Sethe 1911; Gardiner 1957: 474, H8; Allen 2002: 200, G39* and 201, H8; Baines 2012: 58). In this sense, even the most abstract account of graphemic rules and conventions is necessarily tied to writing’s other levels of signification. While this observation is nothing new, its implications are only gradually receiving heightened attention in scholarship. A number of recent studies on media-related issues, scribal practices, and the materiality of texts (Dorn 2015; Ragazzoli 2017; Cromwell & Grossman 2018) have gone some way towards what Richard Parkinson (2009: 90) has called the “stratigraphy of writing.”

It is perhaps no coincidence that most of these studies focus on cursive scripts and papyrus documents, where there is a clearer link between writer, writing, and writ than in hieroglyphic material.

2. QUESTIONS OF WRITING AND READING OR WHOSE COGNITION?

2.1 INTRODUCING THE LEVEL OF AGENCY

Compared with hieratic or other cursive Egyptian scripts, hieroglyphic texts are usually quite opaque regarding the levels of agency involved in producing them. With no strict rules of orthography, the hieroglyphic encoding and inscribing of a given fixed sequence of words is far from a straightforward task. It requires a large number of decisions which complement or sometimes even transcend the conventional syntax (for the latter, see Polis 2018) of the writing system.¹⁸ The encoding (*Verschriftung*) may or may not happen at the same time as the actual creation of the visual stimulus and may or may not involve the same person or group of people (for the potential impact of transpositions from one script to another, see section 3.2). Levels of active and passive literacy may vary significantly across the spectrum of protagonists. This perspective is obviously not revolutionary, and it may appear even rather trivial. But it is perhaps not so trivial if we consider that hieroglyphic inscriptions in Earlier Egyptian and *Égyptien de tradition* provide to a significant degree the means by which we try to get access to phenomena situated at the level of *langue*. Could it be that a high percentage of our sources for key stages of the Egyptian language were executed by people who had only a rudimentary knowledge of the underlying writing system? If we view semiosis as a twofold, socially mediated process, in which both the producer(s) and the reader(s)/recipient(s) play an important part, then it takes place within a nexus of distributed agency, where material, cultural, and social factors intersect. This is relevant for hieroglyphic texts as much as for the different forms of cursive scripts, but since the number of people involved in the conception and production of writing within the sphere of the so-called monumental discourse is usually higher, the potential of interferences between different agents and/or media is greater there. Whether one adopts any of the diverse models of agency used in archaeology (Jurman 2020: 1214–1217, with references to older literature) or feels more inclined towards certain aspects of the Actor–network theory (Hofmann et al. 2016) or Material Engagement theory (Malafouris 2013) is of minor concern in this regard. What I hold to be more important is to engage at all with general concerns of socio-grapho-linguistic pragmatics and the questions thereby raised (cf. the similar aim expressed in Houston 2012: xvi). From the overarching question “Why does the given text look like it does?” spawns a number of follow-up questions such as:

¹⁸ As in the case of the funerary stela of Iku, Louvre E 26904, where the name of Iku’s mother precedes the filiation formula *msj.n* owing to constraints of space or a mistake on behalf of the carver; cf. Ziegler 1990: 204–206.

- Who was responsible for its original *Verschriftung* and/or *Verschriftlichung*?
- Who was responsible for its structural features at the graphemic level?
- Who was responsible for its material execution and other aspects of the visual stimulus?
- Which linguistically or graphemically salient features can be attributed to which (class of) agent(s)?
- Which of the decisions were taken consciously, which were not?
- What can individual idiosyncrasies (or “mistakes”) tell us about cognitive processes more generally?

It goes without saying that in most cases it will be nearly impossible to arrive at an uncontestable answer for any of those questions. However, in asking them, one becomes acutely aware of the wide range of possibilities, which, in turn, may help to hone our methodological toolkit for further targeted investigations. The unanswerability of the questions also highlights how inadequate our understanding of the social practices of writing and reading in ancient Egypt still is and how little we know about the ways the different Egyptian scripts were learned, written, and read from a synchronic perspective as opposed to our abstract semiotic models.¹⁹

2.2 INTRODUCING A NEUROSCIENTIFIC PERSPECTIVE

With the advance of modern cognitive sciences and neuroscience, our understanding of the neurobiological foundations and the cognitive mechanisms which enable us to write and to read has increased considerably.²⁰ As a consequence, the models developed in linguistics and semiotics are no longer the only route of access to one of the most complex phenomena of human culture. This should not lead one to argue for epistemological superiority of the natural sciences or to pit one methodological approach against the other, but it is out of the question that contemporary insights into the functioning of the human central nervous system are of relevance for understanding “ancient” brains as well. It would be preposterous to try as an outsider to present an extensive review of recent neuroscientific literature on the subject (for further discussions, see Goldwasser, this volume). Suffice it to say that research has demonstrated the existence of a specific brain region that becomes specialized in grapholinguistic pattern recognition and decoding when individuals acquire literacy. Studies have further shown that the cognitive representation of lexical units is polymodal, i.e., relating to semantic, phonetic, visual, and motoric representations simultaneously. Experimental studies in perceptual psychology (primarily eye movement studies; cf. Zang et al. 2011) further strengthen the hypothesis that both sequential grapheme/phoneme decoding and image recognition of whole words/lexical units play a role in

¹⁹ For recent discussions on scribal agency and education, see Pinarello 2015: 121–125; Allon & Navratilova 2017: 110–119; Ragazzoli 2019: 339–354; Jurjens 2021a.

²⁰ For a convenient summary of the findings, see Torrance et al. 2007; Dehaene 2009; 2014; Glass 2016: 195–200.

the reading process, with different ratios of activation depending on the writing system, the degree of reading expertise, and the level of difficulty (Dehaene 2009; Dehaene 2014; cf. also Mersmann: 117–132; the correct understanding of the underlying processes is still debated). These insights are to a significant degree owed to the establishment of neuro-imaging techniques, which provide neuroscientists and experimental psychologists with the opportunity to observe how the human brain processes language and writing in real time. However, this does not mean that the findings based on neuroscientific methods can easily be applied to ancient societies and non-western languages. As has been pointed out repeatedly in critical scholarship, the overwhelming majority of behavioral and neuroscientific experiments are based on study groups consisting primarily or even exclusively of (W)EIR(D)²¹ participants speaking a LOL²² language and are thus prone to several biases (Henrich et al. 2010; Dahl 2015). In addition, in recent years even the meaningfulness of the results of fMRI (functional magnetic resonance imaging) scans has come under scrutiny, as issues about small sample sizes, unsatisfactory reproducibility, and flaws in the statistical analyses as well as the software design were raised.²³ Even beyond these technical qualifications, it remains an open question whether the cognitive models developed for the reading process of modern alphabetic scripts are also applicable to any of the ancient Egyptian scripts. With their significant differences in relative iconicity, one cannot rule out the possibility that hieroglyphs, hieratic, and demotic were each processed slightly differently, despite the fact that the scripts share one underlying writing system and that hieroglyphic writing and hieratic are transmutable—at least in theory.²⁴ In recent years, a number of studies, including fMRI studies, have suggested that there are small but noticeable differences in the processing of written text between western readers socialized in an alphabetic environment and people educated in the Chinese morphosyllabic writing system (Wu et al. 2012; Tsang & Chen 2012; Cao & Perfetti 2016; and particularly Pae 2020). It would be interesting to probe whether similar tendencies emerge for ancient Egyptian scripts (see section 4).

2.3 LOOKING FOR CLUES

As studies on writing and reading in modern societies demonstrate, cases where things go wrong (e.g., due to learning disorders) or which show strong idiosyncrasies are potentially more revealing in regard to underlying cognitive processes than standard procedures (Dehaene 2009: 28; 53–64). It comes as no surprise that also the ancient Egyptian epigraphic record offers ample evidence of uncontested mistakes that were occasionally corrected still by contemporaries (Bareš 2009; Mathieu 1996; Alvarez 2016; Morales 2016:

²¹ Acronym standing for the attributes “Western, Educated, Industrialized, Rich, and Democratic.” In many studies involving speakers of Chinese, the attributes “W” and “D” are not applicable.

²² Acronym standing for the attributes “Literate, Official, and with Lots of users.”

²³ In addition, a software bug renders fMRI studies prior to 2015 practically useless; cf. Mueller et al. 2017; Elliott et al. 2020.

²⁴ For important considerations concerning the diverging orthographic conventions of different scripts in Roman Egypt, see Love 2021: 144–175.

76-77; Jurman 2020: 1205; for corrections in cursive script, see recently Winand 2020: 21-31; Motte & Sojic 2020: 71-75; Verhoeven 2020; Jurjens 2021b). Thus, it should be highly rewarding to systematically collect and analyze the manifestations of such phenomena under the scope of cognitive sciences and grapholinguistics, and not just from a philological perspective (for the latter, see, e.g., Zeidler 1999: 17-26). Of course, it is unlikely that such an endeavor will lead to a data basis as robust as is common for modern languages and writing systems. The point would rather be to look more systematically for clues and thereby use the sources available to us to their full potential.

3. THE *DIRTY* DETAILS OF THE EPIGRAPHIC EVIDENCE

While the previous paragraphs were devoted to a number of theoretical considerations regarding grapholinguistics in Egyptology, the remainder of this article shall focus on the actual epigraphic evidence and the challenges its interpretation poses. As already mentioned in the introduction, my examples and case studies derive from the corpus of Memphite elite inscriptions of the early first millennium BCE.

3.1 SIGN VARIABILITY AND UNCONVENTIONAL ALLOGRAPHS WITHIN THE CORPUS

It is well known that in the absence of rigid orthographic rules and “font” specifications, hieroglyphic inscriptions often show a remarkable variability at the level of word spelling and sign shapes. Such variation among the tokens of a specific word or grapheme can be observed within a reference group of more or less contemporaneous monuments (i.e., a corpus) or within a production unit (i.e., a single monument or one of its epigraphic components). As recently discussed by Thuault (2020), graphemic variation and disambiguation may not only be a manifestation of the aesthetic principle of *variatio delectat*, but can also occur systematically in order to serve a variety of system-internal purposes. Love (2021: 132-147), on the other hand, draws attention to the fact that the applied level of orthographic depth (ranging from shallow/transparent to deep/opaque) plays an important role across many dimensions of the use of scripts, including readability and acquiring of literacy. In this respect, hieroglyphic inscriptions of the early first millennium BCE can be considered a particularly fruitful subject of investigation (Jansen-Winkeln 1996: 11-31; Wüthrich, in preparation). Despite the fact that many graphemic phenomena appearing during that period foreshadow characteristics commonly attributed to the writing system of the Late or Ptolemaic Period (e.g., the increasing conventionalization of so-called “late” or “cryptographic” spellings), they tend to be sidelined in discussions on grapholinguistics and epigraphy. This is perhaps due to the fact that a comprehensive list of noteworthy graphemic phenomena (not all to be subsumed under the heading “sportive writings”) has yet to be compiled and analyzed. In the present context, I shall confine myself to pointing to a small number of representative examples. The first one, which is also discussed in greater detail by Wüthrich (forthcoming), regards the use of the hieroglyph S56  as elementary grapheme for the phoneme /k/ (with S57 , S57A  and  figuring as allographs in a number of relatively early attestations). An inscription on the small statuette Cairo TR 10-5-30-2 (very

likely of mid-late 22nd Dynasty date originating from the Memphite region; see Jurman 2020: 869–876) offers a representative example in the form of  for *mnw=k*, “your monument.” As an alternative of/substitute for monoconsonantal ⟨basket⟩ V31 , S56/7 seems to function predominantly—at least as far as the Third Intermediate Period is concerned—as representation of the second person singular suffix pronoun, especially (but not exclusively) in those cases where for spatial reasons a small grapheme would be desirable (cf. Wüthrich, in preparation; Jansen-Winkel 1996: 132, §216, 2; Perdu 1985: 92; 101, l. 6; 108, l. 13). However, other contexts such as  for the first person singular absolute pronoun *jnk* attest a wider application (e.g., Berlin ÄM 31230: Jurman 2020: 670–671, Tk. e; Cairo CG 647: Clère 1995: 154, fig. 55, A, 2–4; cf. also Jansen-Winkel 1996: 139, §227). This distributional pattern could suggest that at some point  was considered an optional positional variant similar to the post-Old Kingdom opposition between ⟨folded piece of cloth⟩ S29  and ⟨door bolt⟩ O34 . The distribution between  and  as suffix pronouns remains highly uneven, however, with a token ratio (based on Jansen-Winkel’s Theban corpus) of 26.4:1. While the details remain yet to be investigated, it is nevertheless noteworthy that prior to the Ptolemaic Period there seems to be a particular association between S56/7 and pronominal forms, so that  assumes an almost “logographic” or “morphographic” function in respect to the suffix pronoun at least from the time of Sheshonq B/I (late 21st Dynasty) onwards (Wüthrich, in preparation; cf. Blackman 1941: 86, pl. X; Yoyotte 2012: 136, n. 3). Given the ubiquity of *=k* in many different inscriptional contexts and the advantage of having two graphemes of different shape to represent an elementary morpheme, the innovation might have been readily adopted by many scribal schools across Egypt, even if it should have originated in the idiosyncratic practice of a single scribe or draftsman. Whereas the apparent arbitrariness speaks in favor of conscious decisions (cf. occasional  for *=f* in the same corpus; Jansen-Winkel 1996: 132, §216, 3), the precise origins and agent(s) of this development remain obscure. We can state with certainty only that the idea of employing  as monoconsonantal phonogram ⟨*k*⟩ must have occurred well before the Third Intermediate Period, since the sign is already attested in that function within a “cryptographic” composition of the late 18th Dynasty (Drioton 1933: 5, no. 50; Roberson 2020: 157). Because the principle of derivation is not transparent to us any more, speculations about why the sign was chosen in the first place are hardly productive. It has been suggested (Drioton 1933: 39, no. 34; Roberson 2020: 157) that the motivation for the “enigmatic” use (Werning 2020: 198) was connected with the lexemes , “material for vessel” (*Wb* V, 93, 10 = Cairo CG 1385), , “property of the Eye of Horus” (*Wb* V, 101, 10 = PT 689) and , “foreign toponym” (*Wb* V, 101, 11 = autobiography of Weni, Cairo CG 1435, 16). However, these three purported attestations of the grapheme S56 show in fact spellings with F9, thus  (personal observation; see already Borchardt 1937: 46),  (Sethe 1910: 508, 2078a), and  (personal observation; see already Sethe 1933: 101, 15), respectively, and cannot therefore serve to clarify the question. It appears likely that the value /*k*/ was derived from an extension of the previously very limited sign function (Principle #3a of Werning 2020: 203). Indeed, S56/57A is attested as a classifier in  *fn.t*, “headscarf” or similar, from the Old Kingdom onwards (e.g., PT 582, Sethe 1910: 1566b), but thus far no hints at a similar term containing /*k*/ have surfaced.

My second example for graphemic innovation I shall only briefly touch upon. It represents probably the most deliberately chosen spelling discussed in this paper and provides a stark contrast to some of the graphetic phenomena presented further below. On the aforementioned statuette Cairo TR 10-5-30-2 one also finds the remarkable rendering of the word *k3.t*, “work,” as  instead of the conventional  and variants (Jurman 2020: 871–872, Tk. p). This “enigmatic” spelling is well-known from Ptolemaic temple inscriptions (see *Wb* V, 98; Kurth 2007: 298, no. 10; 300, n. 41), but has to the best of my knowledge not been reported from pre-Saite times (Yoyotte 2005: 436). It is highly unlikely that the operation of metonymic association (Werning 2020: 232, Principle #21; Vernus 2019: 102) between the concept of “work” and the observable behavior of a particular species of insects was first undertaken at the occasion of inscribing the small and poorly executed dedication of a Libyan period “controller of Memphis” (*rwḏw ʕ3 n Mn-nfr*). The cognitive task of coining the value *k3.t* for L2 has probably to be located among learnt circles (of earlier periods?²⁵) that were not directly responsible for creating the preserved visual stimuli (cf. section 2.1).

Significantly more complex is the case of a peculiar sign often used to denote the genitival converter *n* on monuments from the same corpus. While the standard phonographic representation of /n/ is the <ripple of water> N35  (and its allographs), the alternative phonogram Red Crown S3  is usually employed where horizontal space is scarce (analogous to  and ). On the monuments from the Memphite corpus, however,  is quite frequently replaced with variants of the palm rib M4  or tokens reminiscent thereof (in several different configurations which may or may not represent the same grapheme: , , ) in proximity of mentions of the god Ptah (Jurman 2020: 1202 w. n. 5331). While the structural similarities between the shape of  and that of  cannot be denied, the original motivation and particular semantics of the substitution remain once more elusive. One may speculate whether the composite hieroglyph M7  (= <mp> + <p>) could have played any role in the process, since it combines an even closer similarity to  with an association with the monoconsonantal grapheme , which is conventionally used to represent the first consonant of *Pth*, the god Ptah. However, I cannot think of any attestations of M7 denoting a preposition preceding *Pth*. Since the association between  and Ptah on Memphite monuments goes back at least to the New Kingdom, any potential ad-hoc creation during that time must have undergone a subsequent process of conventionalization and semantic enrichment. In the case of , the important question relating to cognitive grapholinguistics is whether the addition to the sign repertoire was a conscious decision or was triggered by an unconscious misprocessing of an already existing visual stimulus or its cognitive representation (see section 3.3). An important issue influencing our understanding of the text production for the “monumental discourse” is the hotly debated question of the existence and nature of potential *Vorlagen*, drafts or pattern books (cf. several contributions in Verhoeven 2015a; Díaz-Iglesias Llanos 2018). If the script used for a draft or an archival master copy differed from the target script, then at some point a process of graphic

²⁵ One should note that already the *Teaching of Kheti* (7,3), whose preserved manuscripts date from the 18th Dynasty onwards, features a simile involving the bee and her proverbial work/product (i.e., honey): *mj bj.t wnm(.t) k3.t=s* (according to the Ramesside oDeM 1497 and 1514), “like the bee which is eating its work;” see Jäger 2004: 71; XXXI.

transposition must have taken place, necessitating a separate set of graphemically and graphetically relevant decisions. In the context of highly competent language and script users, the reciprocal transmutability of hieroglyphic, cursive hieroglyphic, and hieratic scripts should be ensured, given that we are dealing with a continuum of scripts that are part of an overarching common writing system. In reality, however, transpositions from one medium to another often resulted in idiosyncrasies or mistakes.

3.2 NOT ALL SIGNS ARE CREATED EQUAL – STRUCTURAL ALLOGRAPHS AND INTRUSIVE “WORTBILD SPELLINGS” WITHIN A SINGLE MONUMENT

Positional allographs are a common feature of many writing systems (cf. upper case and lower case letters in continuous English text or positional variants for most letters of the Arabic alphabet) and are also widespread in ancient Egyptian cursive scripts (especially within ligatures), but are uncommon in hieroglyphic inscriptions. There, differences in execution of individual graphemes attributable to different hands certainly occur, but these variations do not normally have salience on the graphemic plane. In exceptional cases, however, we can observe a phenomenon that could be called “structural allographs.” By that term I understand variants of a grapheme whose (deliberate or unconscious) selection is sensitive to grammatical or lexical function and the graphemic environment. Three further examples from the Memphite corpus may serve to illustrate this sort of allographic disambiguation within a single monument.

The first example comes from the votive stela Cleveland Museum of Art 1914.669 (Jurman 2020: 498–522, D-060, pls. 38–39; 114–115) dating to the early 22nd Dynasty (ca. 920 BCE) (fig. 7.5). The female officiant depicted in the left half of the lowermost register is characterized by the accompanying caption as $\dot{\text{š}}\text{m}^{\text{c}}\text{y.t n p}^{\text{3}}\text{grg}^{\text{2}} \text{w}^{\text{c}}\text{b n} [\text{Pt}]\text{h}^{\text{3}} \text{nš}(\text{.t}) (\dots)$, “songstress of the pure foundation of [Pt]ah, the hairdresser (...)” Within the contiguous columns 2 and 3 of this title sequence, the monoconsonantal phonogram <ripple of water> N35 , usually denoting the phoneme /n/, is represented five times in three different functional contexts. The first three tokens form the conventional composite-grapheme N35A , which can serve as a logogram for *mw* “(body of) water” or as a classifier for words related to water/liquids. In the present case it is used as a classifier (fig. 7.5) of the adjective *w^cb*, “pure.” Its graphic components thus retain a distinct iconic relationship with the original signified (> water as a means to achieve purity). The notation of the following genitival converter *n* is situated solely at the phonemic level and therefore abstract. Interestingly, the scribe or carver responsible for the actual shape of the individual hieroglyphs chose to denote the genitival *n* with a simplified and not uncommon allograph of the wavy line, a straight horizontal line —. It is difficult to ascertain whether this was done as a conscious attempt at disambiguation in order to increase the visual salience of the lexeme border, or because — was considered a conventional “logogram” of the genitival converter, which had somehow become dissociated from other uses of the elementary grapheme N35. Since there is no consistent allographic representation of genitival *n* on the stela and since the non-autonomous phonogram <*n*> at the start of column 3 is again represented in its traditional form with five ripples, the former explanation seems to be more convincing.

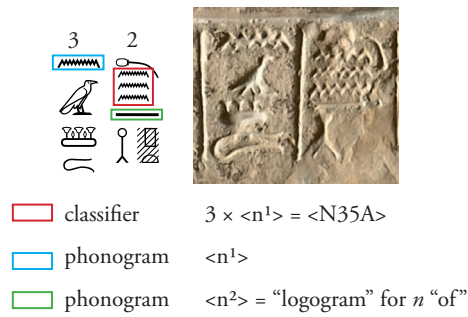


Fig. 7.5 Detail of inscription on stela Cleveland 1914.669 (photographic detail courtesy of Cleveland Museum of Art).

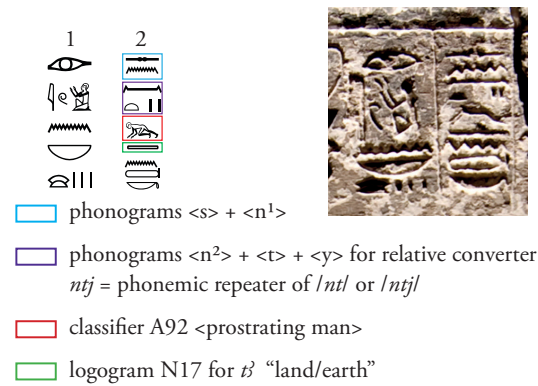


Fig. 7.6 Detail of inscription on lintel Cairo JE 45569 (photographic detail by author, courtesy of Egyptian Museum, Cairo).

The second example is taken from an inscription on the lintel Cairo JE 45569 of the late 21st Dynasty (ca. 980 BCE; Jurman 2020: 311–318, D-037, pls. 33b, 89b). Here the salient feature is the spelling of the compound *sn-t³*, “to prostrate oneself” (lit.: kissing the earth) (fig. 7.6), which by the time has probably already become univerbated as the three-consonantal lexeme *snt* (*Wb* IV, 154). It seems that in the middle of the column we are dealing with the graphemic representation of the relative converter *ntj*, which *qua* possessing a conventionalized *Wortbild* or schematogram (Schenkel 1971: 91; Junge 2005: 39) could also be viewed as a composite “logogram.” In this case it serves as a phonemic repeater for the phonemes /n/ and /t/ (and possibly a short semi-vowel) apparently inserted into the traditional rendering of *sn-t³* (analogous to the common “intrusive” words in Late Egyptian orthographic practice). With the univerbation of *snt* in mind, however, one could interpret the spelling also as an updated rendering of the word’s phonemic substance (using monoconsonantal graphemes only) combined with a highly iconic composite classifier  (cf. Naville 1892: pl. XV, 7 for a pictorial representation) created ad hoc to incorporate the logogram — *t³*, “earth,” of the traditional spellings. Whatever the correct interpretation in the present case, it is most interesting to note the differences in the representation of the grapheme <n>. This allographic disambiguation again runs counter to our intuition, given that there is normally only one type of water in the graphemic repertoire. It could point to a cognitive shift in the processing of graphemic units when drafting or executing hieroglyphic inscriptions. As the role of *Wortbild* spellings established and memorized within a cursive script setting increased (cf. the later phenomenon of demotic “historical groups”; Quack 2014: 214–215; Love 2021: 149–160), the invariability of individual graphemes across different toposyntactical (Polis 2018) and lexical contexts appears to have been weakened. While one should be cautious with generalizations based on limited data, there is reason to believe that in the course of the early first millennium BCE the ability or willingness to correctly re-analyze conventionalized schematograms of cursive scripts saw a marked decline in certain scribal milieus.

My final example, taken from stela Louvre IM 3008 (probably of late 22nd Dynasty date; fig. 7.7), provides even more intricate cases of sign variability. The monument belongs to

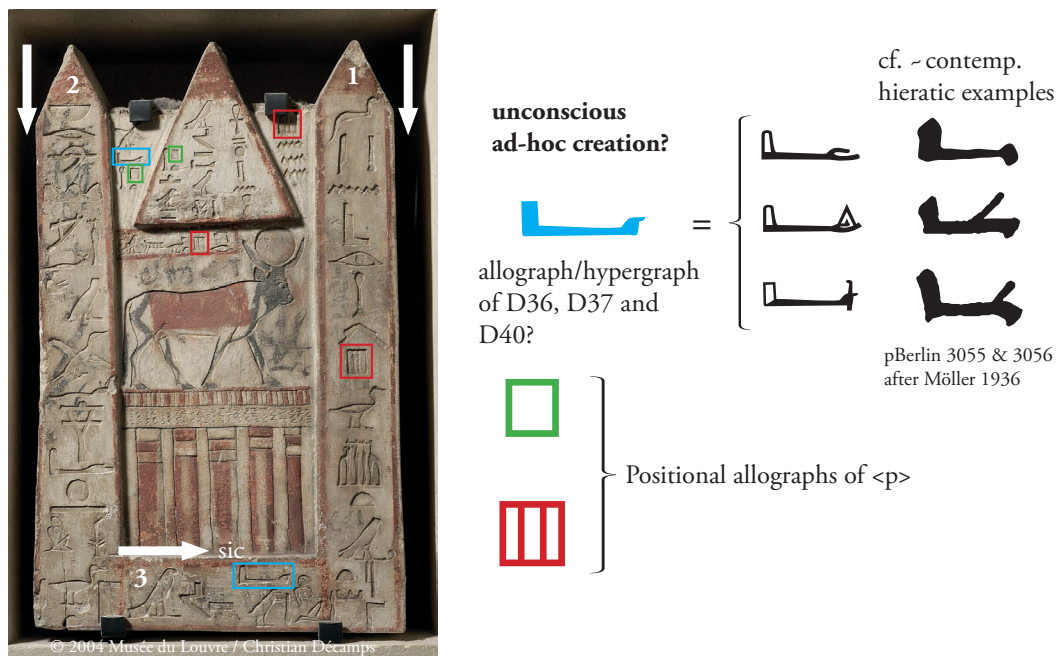


Fig. 7.7 Allographs on the Serapeum stela Louvre IM 3008 (photo credit: © 2004 Musée du Louvre / Christian Décamps; <https://collections.louvre.fr/en/ark:/53355/cl010020332>).

a relatively homogeneous corpus of votive stelae from the Serapeum catacombs of the necropolis of Saqqara, which were dedicated by officials and personnel connected to the burial rites of the sacred Apis bull over a period of several hundred years (Malinine et al. 1968; Jurman 2020: 907–978). Most of the stelae bear more or less carefully executed religious imagery and simple carved or painted inscriptions, the majority of which are executed in hieroglyphic script, although interspersed with a high degree of cursive features, whose specifics would clearly merit closer examination. Most of the stelae bear additional secondary inscriptions, or rather *dipinti*, of names of devotees, which are executed in a script that sometimes appears to be halfway between hieratic and early demotic. In addition, there are a few stelae inscribed solely in lapidary hieratic. On IM 3008, one can observe further instances of seemingly unmotivated hieroglyphic allographs as well as a lack of graphemic disambiguation between *arm* hieroglyphs that are traditionally carefully differentiated (perhaps a feature reintroduced from cursive script forms; cf. fig. 7.7, right). The odd spacing and grapho-syntactic mess of the inscription begs the question of whether the executor of the carvings was actually aware of the sense of the texts.

While we can only speculate about the contemporaneous cognitive processing of such spellings and the factors governing the decoding of iconic relations, it could well be that such phenomena were significantly affected by a potentially preceding stage of transliterating cursive master copies into hieroglyphs. Should this be the case, then the metaphorical “cracks” at the interface of different scripts would enable us to catch a rare glimpse at instances of ancient “graphocentric” cognition at work (not necessarily representative of more advanced script users). In this respect the corpus of Serapeum stelae, which strad-

dles exactly the transitional period between hieratic and early demotic in the north of Egypt, represents a source whose potential has not yet been fully exploited. The fact that some of those stelae show an almost continuous spectrum of script styles (for comparable tendencies in an earlier period, see Popko 2016) with an apparently well-judged application of iconicity for prominence marking (the Serapeum stela Cairo JE 21830 is a case in point; Perdu 2018: 243, fig. 1) demonstrates the complexity of the issue. It relates directly to questions of education (to what degree was the theoretical transmutability of cursive scripts and hieroglyphs cognitively maintained during later periods of pharaonic history?), the cognitive mechanisms of writing and reading non-alphabetic scripts (sequential decoding vs. whole-word recognition etc.; see section 2.2 above), as well as the concrete decision-making processes determining the superficial and structural characteristics of the visual stimulus.

3.3 THE IMPLICATIONS OF DUAL-PROCESSING THEORY FOR EGYPTOLOGICAL GRAPHOLINGUISTICS

The complex interplay between different decision-making processes has come to be associated in psychology and the cognitive sciences with dual-processing theories, particularly the Dual System Theory and its well-known proponents Jonathan Evans (2008; 2017), Amos Tversky, and the Nobel laureate Daniel Kahneman (2011). Dual System Theory encompasses a rather wide range of theories (Neys 2017) circling around the basic tenet that human judgement and decision-making are primarily structured on the one hand by a quick unconscious system, which is very efficient at repetitive tasks but particularly prone to fallibility, and on the other hand by a much slower but more reliable system used for conscious decisions informed by rational deliberations. While there is no unified approach to studying the interaction of these two hypothetical cognitive systems in contexts of sophisticated cultural production, issues of dual processing theories have been targeted in a number of recent fruitful studies in several humanities disciplines such as historical musicology (Bangert et al. 2014; Fabian 2016). Viewed from an oblique angle, one could conceive of writing and reading in ancient Egypt as acts of “performance”²⁶ fully determined neither by the “score” (e.g., a master copy or a virtual template) nor by embodied knowledge but potentially impacting through non-reflected practice on norms and conventions. In this respect, it would for example be worthwhile to investigate more systematically the different levels of relative iconicity observable in the graphemic repertoire of hieratic and early demotic from both a synchronic and a diachronic perspective. Grapheme frequency certainly plays a major role in the “drive to abstraction,” but there may be other, still unknown factors at work.

²⁶ Even more so as loud reading was most likely the rule rather than the exception during the pharaonic period.

4. FINAL REMARKS

Thanks to the increasing availability of online research infrastructure such as *Ramses Online*, the *Thot Sign List*, the *Altägyptische Kursivschriften* project, *The Demotic Palaeography Database Project*, the *iClassifier* project with its subprojects (see Goldwasser, this volume), or the new integrative research project on Deir el-Medina, *Crossing Boundaries*, the ground has already been prepared for meaningful inter- and transdisciplinary approaches to writing and cognition in ancient Egypt. It goes without saying that the toolkits available to empirical anthropologists, experimental psychologists, and neuroscientists are usually not applicable to societies of the past. But I am convinced that any attempt at describing ancient cognitive mechanisms would profit considerably if we could feed in more information on how ancient Egyptian scripts and language are processed in modern brains by the closest we can get to second language expert users—Egyptologists.

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8

The Innovations of the Verbal System in the Reign of Akhenaten (1352–1336 BC)

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ABSTRACT

This study aims to examine the innovations of the ancient Egyptian language in the reign of Akhenaten, focusing on an analysis of the verbal system including the sequential constructions—the *irr.f sdm/ir.f sdm* and *mtw.f sdm*. These grammatical innovations contributed to the development of the analytic (or periphrastic) system, dominant in Late Egyptian, and they also characterize the transitional stage from Middle (or Classical) Egyptian to Late Egyptian. Moreover, this chapter examines whether the linguistic innovations are only attested at Amarna or spread to any other city outside Amarna during this period. The study also explores if these innovations occurred as a result of the existence of a dominant local dialect in Akhenaten's new city.

KEYWORDS: ancient Egyptian language – philology – syntax – dialect – vernacular language – Amarna

INTRODUCTION

Different attestations of features typical of the TE (Transitional Egyptian) and LE (Late Egyptian) verbal system appear during the reign of Akhenaten and continue in the following periods. These innovations gave new vitality into the language and introduced a new set of syntactical forms. New forms likely derived from the vernacular language, such as the negative preterite *bw sdm.f* form,¹ can be seen in LE literary texts. Moreover, the non-literary texts, which are likely closer to the spoken language, attest constructions like the *bwpy.f sdm*, which appears to be the predecessor of Demotic and Coptic. The language

¹ The positive Literary Late Egyptian (LLE) forms Perfect *sdm.f*, Circumstantial Perfect *sdm.n.f*, and Aorist *sw sdm.f* were attested during the reign of Akhenaten, but I do not present them here. They will be dealt with in detail in a forthcoming article.

of the literary texts is divided into three categories (Groll 1975/6: 237–246; Goldwasser 1992: 449–450; Mathieu 1996a: 189–190; Pierre & Laisney 2017: 320–324):

1. Pure Middle Egyptian forms (PME), which are known as Traditional Egyptian (TdE) (Vernus 2016: 1–14; Engsheden 2016: 1–6);
2. Literary Late Egyptian forms (LLE);
3. Non-literary forms of Late Egyptian (NLLE).

This research focuses on the Transitional Egyptian (TE) verbal forms and the Late Egyptian (LE) verbal constructions, with the goal of exploring whether they were inherited or innovated by the king and his scribes.² I define as “inherited” those forms and constructions that are attested in Classical Egyptian (CE) or in TE before the reign of Akhenaten. By contrast, I define as “innovative” those forms and constructions that are attested for the first time during the reign of Akhenaten or which take a distinctive new shape during his reign.³ To clarify this last point, an example: the constructions *hn^c ntf sdm* and *mtw.f sdm* are obviously directly related, as the first is the ancestor of the latter. However, *hn^c ntf sdm* is attested in this shape before the reign of Akhenaten and can be found also during his reign, while the shape *mtw.f sdm* is attested for the first time only during his reign. Therefore, even though from a diachronic perspective they are related, I define the *hn^c ntf sdm* as “inherited” and the *mtw.f sdm* as “innovative.”

The forms and constructions discussed in this paper are the following: the *hn^c ntf sdm*, *bw sdm.f*, *bn sdm.f*, *bw rh.f*, *k3 sdm.f*, prothetic (*r*, *i*), *bw p3y.f sdm*, *bw sdm.n.f*, and *bw sdm.f* forms (TE), and *tw.i hr sdm*, *irr.f sdm*, *m-ir sdm.f*, *mtw.f sdm*, *bwpwy.f sdm*, *i.ir.f tm sdm*, and *bn-iry sdm.f* constructions (LE). For the sake of clarity, I will provide an example for each form and construction discussed.

In the following pages, I will discuss the verbal forms (§1), distinguishing inherited forms (§1.1), and innovative forms (§1.2); then I will present the verbal constructions (§2), starting from the inherited ones, i.e., those attested already before the reign of Akhenaten (§2.1), before moving to the innovative ones, i.e., those attested for the first time during his reign (§2.2). Finally, I will analyze the presented corpus and examples, following this with a discussion.

1. THE TRANSITIONAL EGYPTIAN VERBAL FORMS

Transitional Egyptian (TE) is a phase between Classical Egyptian (CE)⁴ and Late Egyptian (LE), which was not attested before CE (Frandsen 1974: §16.4 [2a], 25; Greig 1990: 72; Černý & Groll 1993: §22; Junge 2005: 139; Neveu 2015: §20, 80) or TdE (Vernus 2016: 8), addressing the syntactic system including verb, subject, and object (Loprieno 1995: 4, 9,

² This chapter aims to present a summary for my MA thesis, which was defended successfully in June 2020: Shehada 2020a, “Innovations in the Language of the Amarna Period: An Analytical Study of the Verbal System.” Unpublished MA thesis, Helwan University, Cairo.

³ I.e., it also includes the changes of the shape of the forms and constructions.

⁴ The term refers to Old and Middle Egyptian.

91; Jenni 2010: 145; Allen 2015: 141–184). The term LE is used by modern Egyptologists to describe a type of language used in the literary and non-literary texts attested in the New Kingdom (Goldwasser 1992: 448). One of its main characteristics is a widespread use of periphrastic/analytic constructions consisting of subject, verb in infinitive, and object⁵ (Loprieno 1995: 91; Jenni 2010: 145; Allen 2015: 141). TE shares innovative forms with LE, such as the negative particle *bw*, but it also has forms inherited from CE, such as the *sdm.f* form (Edgerton 1931: 34, §20; El-Hamrawi 2006: 82). This mix of innovative and inherited forms can be found especially in the texts of the reign of Akhenaten, which seems to have been a crucial period for the emergence of TE.

1.1 INHERITED VERBAL FORMS ATTESTED IN THE REIGN OF AKHENATEN

1.1.1. The Conjunctive Construction *hn^c ntf sdm*

ATTESTATIONS

Before Akhenaten's reign: 1. pBM 10102 (Glanville 1928: pl. XXXV, [rt.13–14]); 2. pBerlin 10463 (Caminos 1963: pl. VIa [rt.3–4, vs.1]); 3. Bowl Moscow 3917b (Gardiner & Sethe 1928: 27, pl. IX); 4. pAmherst 9 (Gardiner 1932: 78 [L.4, 5] 2, x+5; 79. [L.1] 2, x+16; 81. [L.1] 14,y). *During Akhenaten's reign:* 5. oAmarna Cairo 35/214 (Pendlebury 1951: pl. LXXXIV [3]) = Silverman 1991: 313 [3]; 6. *ibid.* (Pendlebury 1951: pl. LXXXIV [6] = Silverman 1991: 313 [6]).

The development of this construction can be followed from CE to Coptic: *hn^c sdm ntf* → *hn^c ntf sdm* → *mtw.f sdm* → **ⲧⲁⲥⲱⲧⲙ** or **ⲛⲧⲉⲓⲕⲱⲧⲙⲉ** or **ⲛⲁⲕⲱⲧⲙ**^{S.F.A2} or **ⲁⲕⲱⲧⲙ**^A (Černy 1949: 25; Kröber 1970: §34.2, §34.33; Frandsen 1974: §64; Winand 1992: §731; Loprieno 1995: 95–96; Egberts 2005: 16; Junge 2005: §2.3.3, 103–104; Neveu 2015: §25.3).

The *hn^c ntf sdm* construction was rarely used in TE during the 18th Dynasty until the 19th Dynasty⁶ (Gardiner 1928: 86; Kröber 1970: §34.2; Junge 2005: §2.3.3, 103–104; Neveu 2015: §25.3; Hammam 2018: 163–164). More specifically, this construction is attested 8 times from 4 texts before the reign of Akhenaten⁷ (attestations 1, 2, 3, 4) and only 3 times in 2 texts of the Amarna Period (attestations 5, 6).

Ex.1.1.1: oAmarna Cairo 35/214⁸ (attestation 5):



ih wnw.k p3 wd3 hn^c ntk rdit hrr 7

“Then, you will open the storehouse and give 7 bundles.”

⁵ S (subject), V (verb), O (object).

⁶ Winand (1992: §725) supposed that this form was in use from the reign of Seti I to Ramses II.

⁷ Kröber (1970: §34.32.11) mentioned an additional 6 examples in pCairo 58053 (rt.7), pCairo 58054 (rt.6–7, vs.2–3) and pCairo 58055 (rt.5). Nevertheless, they are attested after the reign of Akhenaten during Seti I's reign, KRI. I, 322 (L. 10), 323 (L. 7–8, 15), 324 (L. 1, 16).

⁸ An ostrakon from Amarna now at the Cairo Egyptian Museum.

The construction *hn^c ntf sdm⁹* follows and semantically agrees with the imperative (Černý 1949: 29). As it appears, it can be used in direct speech. During Akhenaten's reign, it is attested only in one text, namely, oAmarna 35/214.

1.1.2. The Negative Preterite¹⁰ Form *bw sdm.f*

ATTESTATIONS

Before Akhenaten's reign: 7. pBM.10107 (Glanville 1928: pBM.10107, pl. XXXV (rt.7)).

During Akhenaten's reign: 8. Stela K (Davies 1908: pl. XXIX [5] = Sandman 1938: 109, K5 [L.11, 13] = Urk. IV: 1970, K26 [L.4] = Murnane 1993: 22 [K5]); 9. *ibid.* (Davies 1908: pl. XXIX [L. 5, 6] = Sandman 1938: 109, K5 [L. 11, 13] = Urk. IV: 1970, K26 [L. 4], K27 [L. 5] = Murnane 1993: 22 [K5, 6]); 10. Tutu Tomb (Davies 1908a: pl. XV [L. 9, 10], XVII [L. 1], XIX [L. 6] = Sandman 1938: 76 [L. 18], 77 [L. 1–2, 3:5], 78 [L. 13:15], 83 [L. 14–15] = Urk. IV: 2008 [L. 11–12], 2017 [L. 5]); 11. *ibid.* (Davies 1908a: pl. XVII [L.6] = Sandman 1938: 80 [L.2] = Urk. IV: 2010 [L.20]).

This form developed from the *n sdm.f* form (Satzinger 1976: 188; Winand 1992: §381, 238; Mathieu 1996a: 198; Junge 2005: 153–154; Schenkel 2012: 233; El-Hamrawi 2006: 85; Neveu 2015: §15.1.2.3).

The *bw sdm.f* form belongs to LLE (Groll 1975/6: 243). It is also the source of LE *bwp-wy.f sdm* (Groll 1976: 243; Mathieu 1996a: 198), which appears at the end of 19th Dynasty (Loprieno 1995: 93) and can be found especially in non-literary text in the 20th Dynasty (El-Hamrawi 2007: 52). The negative preterite form occurs only once during the pre-Amarna Period, in the reign of Hatshepsut (attestation 7). By contrast, it is attested 15 times in 4 texts from the Amarna Period (attestations 8–11).

Ex.1.1.2: The Boundary Stela K (attestation 8):



didī m ib.k r st nbt mrr.f bw wts.f r nsw nb // rn wnt ḥm.k

“Give to your heart every place he loves. He did not raise up the name of any (other) king [// except] for your Majesty.”

⁹ The *hn^c ntk sdm* construction attested in all the instances appeared before and during the reign of Akhenaten with the 2nd person singular *ntk*. In post-Amarna, it occurred with the 2nd person plural *tn* instead of *ntk* in pCairo 58053, (vs.1); Kröber 1970: §34.32.11, ex.7; Černý 1949: 28.

¹⁰ The affirmative *sdm.f* and negative *bw sdm.f* forms express the past tense. Scholars have used several terms to describe that form: Preterite (Hintze 1950: 60; Wentz 1969: 1; Junge 2005: 152; El-Hamrawi 2006: 85; 2007: 45), Perfect (Satzinger 1976: 120, 127), and Perfect Active (Groll 1969: 185; Černý & Groll 1993: §14.1, 209; Neveu 2015: §15.1, 51). The present author prefers to use the Preterite term.

¹¹ Sandman offered to read the lacuna as  *nb wpw-ḥr*; see Sandman 1938: 109, note a-b.

This instance involves an active transitive verb in an Initial Main Clause (IMC) (attestations 9, 10). In other instances it is attested with intransitive verbs (attestation 11). It is worth mentioning that this form was used only in IMCs (Černý & Groll 1993: §14.1, 209).

1.1.3. The Negative Prospective Form *bn sdm.f*

ATTESTATIONS

Before Akhenaten's reign: 12. Thutmosis III Stela (Kröber 1970: §23.42, ex.1) 13. Amenhotep II Letter (Urk. IV: 650 (L. 3), 1344 (L. 8, 14).

During Akhenaten's reign: 14. Stelae B, N, S (Davies 1908: pl. XXVI [S24] = Murnane 1993: 96 [B16, 18–19, N22–23, S24]); 15. Stelae A, B, J, S, U (Davies 1908: pl. XXVI [S13] = Murnane 1993: 90 [A7–8, B7, J6, S13, U11–12]); 16. Meryra Tomb (Davies 1908: pl. XXXV [5–7] = Sandman 1938: 5 [L. 10]); 17. Stelae X, K (Davies 1908: pl. XXX [K33–34] = Sandman 1938: 117, K34 [L. 9, 11] = Urk. IV: 1977, K54–55 [L. 9–12]) = Murnane 1993: 28 [X27], 29 [K33–34]).

This form developed out of the *nn sdm.f* form (Gardiner 1957: §104; Gilula 1970: 211; Frandsen 1974: §13.2, §16.4 (2), 25; Winand 1992: §341; Mathieu 1996a: 198; Kruchten 1999: 4).

The negative prospective is attested for the first time in the reign of Thutmose III, in what is usually classified as Early-Late Egyptian (*Frühneuägyptisch* in German)¹². In total, this form is attested 3 times in 2 texts before the reign of Akhenaten¹³ (attestations 12–13) and 28 times in 4 texts from the Amarna Period (attestations 14–17).

Ex.1.1.3: The Boundary Stelae B, N, S (attestation 14):



*bn ft*¹⁴.*tw.f*¹⁵ *bn i'cy.tw.f* *bn krp*¹⁶.*tw.f* *m i'cw.f* *m kd*¹⁷ *bn iryw hihi(.tw).f*

“It shall not be obliterated. It shall not be washed out. It shall not be erased. It shall not be coated with gypsum. It shall not be missed.”

This instance is attested in an IMC with future/optative meaning (attestations 15–16). The negative independent prospective *bn sdm.f* is used here with *.tw* (attestations 15, 17) and

¹² Junge (2005: 17) mentioned the *Frühneuägyptisch* term as “The earliest recorded use of the colloquial form was considered to surface in texts otherwise written in Classical Egyptian.”

¹³ Kröber suggested it appears four times before the reign of Akhenaten. However, the pCairo 58054 is attested in Seti I's reign, published in KRI. I: 323 (L. 4–5).

¹⁴ This word is attested in the Amarna Period, Coptic **ϣⲱⲧⲉ**: *Wb.* I: 580.14. It means “obliterate,” which in Arabic is “fatata” (turn the thing small).

¹⁵ *tw.f* refers to stela; Murnane 1993: 95.

¹⁶ This word appeared in the Amarna Period in this form, Coptic **ϣⲱⲣⲉ**, **ϣⲱⲣⲓ**: *Wb.* V: 135.6. It means “erase,” which in Arabic is “kharab” (destroy).

¹⁷ This word occurred in the Amarna Period, the LE with this form and written in syllabic writing (i.e., one of the LE characteristics). *Wb.* V: 82.7.

it is thus semantically passive (Winand 1992: §490, §526; Reintges 1997: §7.4.1, 387; Junge 2005: 138).

1.1.4. The Negative Aorist Form *bw rh.f*

ATTESTATIONS

Before Akhenaten's reign: 18. Private Stelae (Clère 1956: 29 = Erman 1995: §767, 389 = Ilin-Tomich 2018: 138); 19. Cairo CG 20540, Louvre C 58, Ny Carlsberg ÆIN 964, pReisner I B 3, C 82, P 3, and Turin Cat. 1629 (Ranke 1935: 94 [9] = Ilin-Tomich 2018: 138, 146–147); 20. Avignon A 31, Cairo CG 20255, and Petrie 1888, Nr. 269 (Ranke 1935: 94 [10] = Ilin-Tomich 2018: 138, 146–147).

During Akhenaten's reign: 21. Stelae K, X, M (Sandman 1938: 111, K9 [L. 7] = Murnane 1993: 23, K9, X12, M11); 22. Stelae K, X (Murnane 1993: 21 [K2, X4]); 23. Tutu Tomb (Davies 1908a: pl. XVII [4] = Sandman 1938: 79 [L. 2–3]); 24. pMond¹⁸ II (Sandman 1938: 312 [L. 18] = Peet 1930: pl. XXVII [2, 18]).

The negative aorist form is attested from CE to Coptic, and developed as follows: *n rh.f* (*n rh.n.f*) → *bw rh.f* → *bw-ir rh.f* → **ⲙⲉⲱⲁⲕ** (Spiegelberg 1925: §477, 215–216; Gardiner 1935: pl. 19, Verso 4 [4–5]; Satzinger 1976: 188; Winand 1992: §384, §385, 240; Neveu 2015: 68; Osman 2015: 140).

More specifically, to my knowledge there are roughly 20 attestations in the personal names before the reign of Akhenaten (attestations 18–20). It is attested 4 times in the Amarna texts.

Ex.1.1.4: The Boundary Stelae K, X, M (attestation 21):



p3-ḳd sw ds.f m ʿwy.f bw rh sw ḥmw

“(As for) the one who created himself with his two hands, the craftsman does not know him.”

In this instance, the form is used in a IMC with apposition of the object. This form is in all the instances from the Amarna Period that are attested in IMC with adverbial complements (attestations 22–24).

1.1.5. Relative Form with Prothetic *r*.

The prothetic *r* appears for the first time during the reign of Hatshepsut (attestation 25) and continued in the reign of Akenaten. It was used in the Relative form in the Amarna texts (Kröber 1970: 175–6; Černý & Groll 1993: §10.5, 162; Quack 1994: 39–40; Kruchten 1999: 3; Neveu 2015: §21.1, §27.1.1, §28.1, §37.1). The prothetic *r* is written as **Ⲡ** (Kröber 1970: 177;

¹⁸ pMond I and pMond II are two letters that were written in Akhetaten/Amarna and sent to persons resident in Thebes.

Korostovtsev 1973: 272; Frandsen 1974: §86.2; Černý & Groll 1993: §10.5, 162; Erman 1995: §10, §255, §303; Cassonnet 2000: §11.1.2, 137; Neveu 2015: §27.1.1, §28.1, §37.1). Alternatively, the same verbal prefix takes the form of a prothetic *i*, spelled as ,  (Korostovtsev 1973: 272; Quack 1994: 39; Erman 1995: §10, §255, §303; Neveu 2015: §21.1) or even as , and  (Kröber 1970: 177).

ATTESTATIONS

Before Akhenaten's reign: 25. pBM 10102 (Glanville 1928: pl. XXXI-V [rt.6–7]).

During Akhenaten's reign: 26. Tutu Tomb (Davies 1908a: pl. XVIII [2] = Sandman 1938: 79 [L.12]); 27. *ibid.* (Davies 1908a: pls. XVIII [1–2], XXV [2, L. 18–19] = Sandman 1938: 312 [L. 9–22]); 28. *ibid.* (Davies 1908a: pl. XV [1–2] = Sandman 1938: 75 [L. 8–10]).

This form develops as follows: *sḏm.n.f* → *r.sḏm.f* / *i.sḏm.f* → *i.ir.f sḏm* (Spiegelberg 1925: §549; Kruchten 1999: 2).

This form is attested 5 times in one text from the Amarna Period with the prothetic prefix.

Ex.1.1.5. The tomb of Tutu (attestation 26):



ḥsw m ḥḏ nbw r.dd.f¹⁹ r ḥy.tw ḥr rmn (.f)

“Great of praise by silver and gold, which he gives more than one can carry on (his) shoulder.”

This instance proves that the antecedent and the subject are not the same, since the subject and object are grammatically distinct, even though semantically they are the same. Thus, this agrees with the idea that the subject of the relative form must be different from the antecedent regardless to the gender and the number (Winand 1992: 605; Neveu 2015: §28.2). There are 4 other examples of this form from one text dating to the Amarna period (attestations 27–28). The *r.sḏm.f* form is attested only in the tomb of Tutu.

1.2 THE INNOVATIVE VERBAL FORMS IN THE REIGN OF AKHENATEN

This section focuses on the forms that occur in their LE spelling for the first time during the reign of Akhenaten.

1.2.1. The Future Form *k3 sḏm.f*

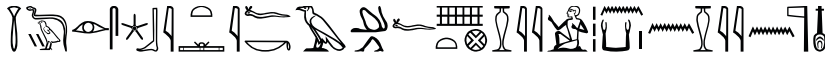
ATTESTATION

29. Aḥ Tomb (Davies 1908a: pl. XXXIII = Sandman 1938: 100 [L. 14–15]); 30. *ibid.* (Davies 1908a: pl. XXXII = Sandman 1938: 99 [L. 2–3]).

¹⁹ Comes with *i.di.f* to give relative perfective; Cassonnet 2000: 141.

This form developed as follows: in CE as *s_{dm}.k3 .f*, then in TE and LE as *k3.f s_{dm}.f k3 s_{dm}.f* (Depuydt 1989: 18; El-Aguizy 1997: 157). It is attested 3 times in one text from the tomb of Aÿ.

Ex.1.2.1: The Tomb of Aÿ (attestation 29):



w3d.wy ir sb3yt.f k3 ph.f sp3t hsyw n k3 n hsy n nfr ntr

“How glorious is he, who acts upon his teachings. So that he may attain the region of the doves for the Ka of the favorite ones of the good god.”

The form is used here in indirect speech, but elsewhere it is also attested in direct speech (attestation 30). It expresses consecutive events that follow each other after a long span of time, and never in the near future. The *k3 s_{dm}.f* refers to the events that will take place in the future depending on an implied condition (Depuydt 1989: 19).

1.2.2. Prothetic *i*.

The prothetic *i* is one of the distinctive features of LE. It was used in four forms: Relative forms, Emphatic forms, Participles, and Imperatives (Kröber 1970: 175–176; Černý & Groll 1993: §10.5, 162; Quack 1994: 39–40; Kruchten 1999: 3; Neveu 2015: §21.1, §27.1.1, §28.1, §37.1). Three of these forms are attested with a prothetic *i* for the first time in the Amarna texts and also the Emphatic Form with prothetic *r*.

1.2.2.1. The Emphatic Form with Prothetic *r*:

ATTESTATION

31. Tutu Tomb (Davies 1908a: pl. XX [1–2] = Sandman 1938: 80 [L.16–17]).

This form is attested from CE to Coptic and developed as follows: *s_{dm}.f* → *r.s_{dm}.f/ i.s_{dm}.f* → *i.ir.f s_{dm}* → **ἱῖῖῖῖῖῖ** (Wente 1969: 3). The Emphatic form with prothetic *r* prefix occurs once in the Amarna texts.

Ex.1.2.2.1: The Tomb of Tutu (attestation 31):



r. ir(.i) sw n.k n mry.k r.dd ntk p3y.i s_{dm}w-š ʿ3 nty hr s_{dm} t3y (.i) sb3yt

“It is for the love of you that I am doing this for you, because you are my great servant who listens to my teaching.”

This instance comes in IMC, which agrees with the suggestions of Černý & Groll (1993: §26.1.1).

1.2.2.2. The Relative Form with Prothetic *i*.

ATTESTATION

32. pMond I (Peet 1930: pl. XXV [2, L.18–19] = Silverman 1991: 311 [L.18–9]); 33. pMond II (Peet 1930: pls. XXVIII [9], XXIX [19–22] = Sandman 1938: 312 [L. 9, 19–22]); 34. oAmarna 36/119 (Pendlebury 1933: pl. LVII [6]; Silverman 1991: 313 [6]).

This form is attested 6 times in 3 texts from the Amarna Period with the prothetic *i*. prefix.

Ex.2.2.2.2 The pMond I (attestation 32):



b3k n 'It n i.wh3.f mtw.k in tw.f mtw.k dit h3.f

“The servant of Aten, whom he sought, and you shall bring him and you shall allow him to come.”

The Amarna texts show 3 examples where the antecedent and the subject differ (attestation 33). Moreover, the relative form is attested twice without antecedent (attestation 34). The relative *i.sd m.f* is found in papyri and in oAmarna 36/119.

1.2.2.3. The Emphatic Form with Prothetic *i*.

ATTESTATION

35. Stelae K, X (Murnane 1993: 23 [K10–11, X13]).

The Emphatic form with prothetic *i*. prefix occurs once in the Amarna texts.

Ex.1.2.2.3: The Boundary Stelae K, X (attestation 35):



n3y.f stwt 'nw(t) mrw(t) i.di.f st hr.i m 'nh w3s r nh3 dt

“(As for) his beautiful and lovely rays, it is on me that he has spread it, to live and rule forever and ever.”

This instance comes in an IMC.

1.2.2.4. The Imperative Form with Prothetic *i*.

ATTESTATION

36. pMond I (Peet 1930: 86, pl. XXIII [13] = Silverman 1991: 311 [L.13]); 37. pMond II (Peet 1930: pl. XXVIII [10] = Silverman 1991: 312 [L.10]).

This form is attested from CE to Coptic, and developed as follows: *n sdm.n.f* → *bw sdm.f* → *bw-ir.f sdm* → **𓂏𓂏𓂏𓂏𓂏** (Gunn 1924: 110; Edgerton 1931: 34, §20; Gilula 1970: 206–207; Frandsen 1974: §21.1, 31; Piccione 1980: 111; Kruchten 1986: 64; Winand 1992: §378–379, 236; Loprieno 1995: 92, 222; Mathieu 1996a: 198; El-Hamrawi 2006: 90; Ockinga 2012: §42, 84[b], 85; Junge 2005: 100; Neveu 2015: §17.1, 70; Brose 2019: 57). This form is common in school texts (Neveu 2015: §17) and is attested 3 times in 2 texts from the Amarna Period.

Ex.1.2.5: The tomb of Maÿ (attestation 43):



bw in.tw r-^c.s iw p3 Itn hr wbn im.s mh.f sy m stwt.f

“One cannot reach her end, while the Aten rises in it and fills it with his rays.”

Strictly speaking, this example is grammatically active, with *.tw* as subject and *r-^c.s* as object (Winand 1992: §488, §524). However, this is the well-known periphrastic passive/impersonal pattern, and it can thus be translated as “One cannot reach her end” or even “Her end cannot be reached.” This form is used here in an IMC with the transitive verb *in*, followed by a circumstantial 1st present construction. This form is also attested with the intransitive verb *iy* (attestation 44).

2. THE LATE EGYPTIAN VERBAL CONSTRUCTIONS

In LE, the periphrastic system was more dominant. Most of the constructions consist of a conjugated form of the auxiliary verb *ir* followed by the main verb in the infinitive. In most cases the LE word order consists of auxiliary verb *ir* + SVO (Subject, Verb infinitive, Object) (Loprieno 1995: 91; Jenni 2010: 145; Allen 2015: 141).

2.1 THE INHERITED VERBAL CONSTRUCTIONS IN THE REIGN OF AKHENATEN

2.1.1. The 1st Present *tw.i hr sdm*

ATTESTATIONS

Before Akhenaten's reign: 45. Carnarvon tablet 1 (Gardiner 1916: 107; Kröber 1970: §32.13.1, exs.2–3); 46. pKahun, XV. 1 (Griffith 1898: pl. 30 [L. 39]); 47. Senemiaoh Stela (Urk. IV: 1509 [L. 5, 10]); 48. Waseram Stela (Urk. IV: 649 [L.7, 14–15]); 49. Thutmose III Stela (Urk. IV: 1231 [L. 18–19]); 50. Stela Cairo JE 49566 (Klotz 2010: pl. XX [11] = Mathieu 2021: 391–395); 51. Carnarvon tablet 1 (Gardiner 1916: [L. 3, 7]); 52. pChassinat I (Posener 1957: x+3 [L. x.5]); 53. oBM 5633 (Černý & Gardiner 1957: pl. XXXVI, 2 [L. 10]); 54. Kenamun Tomb (Davies 1930: pl. 42 [right up]); 55. Kamose Stela (Habachi 1972: pl. VI [1, 4–5]); 56. Stela BM EA 1645 (Vernus 1996: 831 [L.3] = Cahail 2019: 20); 57. Papyrus 7 Karnak

²⁴ The scribe wrote the word *wbn* with a different form in this sentence: **𓂏𓂏𓂏** instead of **𓂏𓂏𓂏**. This way of writing was normal in private texts in the Amarna texts; cf. Sandman 1938: 33 (L. 14).

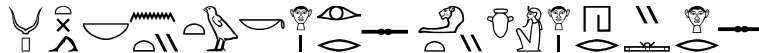
(Urk. IV: 181 [L. 2]); 58. Carnarvon tablet 1 (Gardiner 1916: [L. 5, 7]); 59. pKahun (Gardiner 1906: 30 [L. 25–26]); 60. pBerlin 10463 (Camino 1963: pl. VIa [vs. 2]); 61. pBM.10103 (Glanville 1928: pl. XXXV [rt.4]); 62. pLouvre 3230 (Peet 1926: pl. XVII [6]).

During Akhenaten's reign: 63. Tutu Tomb (Davies 1908a: pl. XIX [2] = Sandman 1938: 80 [L. 17–18]); 64. pMond II (Peet 1930: pl. XXIX [2] = Silverman 1991: 312 [2]); 65. Aÿ Tomb (Davies 1908a: pl. XXVII = Sandman 1938, 93 [L.16]); 66. pMond I (Peet 1930: pl. XXIII [7] = Silverman 1991: 311 [L. 7]).

The development of this form is as follows: *tw.i hr sdm* → *tw.i sdm* → **𓂏𓂛𓂏𓂛** (Erman 1995: §209–213; Loprieno 1995: 174; Junge 2005: 111).

This construction occurs for the first time in the middle of 13th Dynasty, in the tomb of Seneb-Kay at South Abydos (Cahail 2019: 15–34). It is known also from the reign of Kamose (attestation 45). There are 26 attestations²⁵ in 14 texts of this construction before the reign of Akhenaten and 8 in 4 texts from the Amarna Period.

Ex.2.1.1: The Inscription from the Tomb of Tutu (attestation 63):



wpt nb nty tw.k hr ir s h3ty.i hry hr.s

“Every mission, which you have done, my heart is pleased with it.”

This instance is attested in a relative clause introduced by the relative particle *nty*. It also appears with *r-nty* (attestation 64). In this case the predicate of the 1st Present is the adverbial predicate *hr* + infinitive. However, this construction also can occur with the preposition *m* (attestation 65) and with the old perfective (attestation 66).

2.1.2. The Emphatic *irr:f sdm*²⁶ Construction

ATTESTATIONS

Before Akhenaten's reign: 67. pSinuhe (MES, 12 [L. 6] B19); 68. Thutmose III Stela (Urk. IV: 605 [L. 16–17]).

During Akhenaten's reign: 69. Stelae N, S, U (Davies 1908: pl. XXV [U13] = Sandman 1938: 127 [S15–16, U13] = Murnane 1993: 91 [N13–U13]); 70. pMond II (Peet 1930: pl. XXIX [2, L. 23] = Silverman 1991: 312 [L. 23]).

This form is considered as tenseless (Behnk 1930: §56; Kruchten 1999: 26). It is an emphatic form. This construction is attested twice before the reign of Akhenaten (attestations 66–67) and 9 times in 2 texts from the Amarna Period.

²⁵ Kröber mentions 25 times before Amarna, but there are three uncertain examples; Kröber 1970: §32.13.1–2, exs. 9, 13, 20.

²⁶ For more information, see Korostovtsev 1973: §215; Blumsohn 1995: 294–299; Junge 2005: 66.

Ex.2.1.2: The Boundary Stelae N, S, U (attestation 69):



irr.i ḥꜥ r r-ḥꜥ.f ḥꜥ pꜣ dw wbnw n 3ḥt-Itn

“It is at its limit that I stop, on the eastern mountain of Akhetaten.

The example consists of an emphatic IMC with transitive verb. The form can be translated here as a present. The form also can be used in contexts referring to the past (attestation 70).

The *irr:f sdm* is an emphatic (Behnk 1930: §56, C-3; Kruchten 1999: 26), imperfective (Korostovtsev 1973: §215; Ritter 1995: 57; Kruchten 1999: 26–29; Junge 2005: 66), and tenseless (Depuydt 1993: 211; Gilula 1970: 207). Korostovtsev (1973: §215), Allen (1984: §704, 493–494; 2015: §17.3), Schenkel (2012: 24), and Werning (2008: 287–289) mention the *ir:f sdm* construction as tenseless (i.e., which could be past, present, or future tense), but it always refers to perfective (Ritter 1995: 58). Sometimes it appears with the auxiliary verb *ir* or *iry* (Behnk 1930: §57-b) and always in IMC position (Ritter 1995: 57–58). The *ir:f sdm* is considered as non-emphatic in complete action (Allen 1984: §704, 493; Ritter 1995: 57; Allen 2015: §17.3). Greig (1990: 5–6) says, “The perfective aspect did not just denote the completion of an action or state but rather referred to the beginning, middle and end as a single whole.”

The verb can be transitive or intransitive (Allen 1984: §704, 493–494), and the adverbial adjunct is stressed (Kruchten 1999: 26; Allen 1984: §704, 493). Kruchten (1999: 26) supposed that *irr:f sdm* and *ir:f sdm* are the same construction. The only difference is that sometimes scribes wrote it with the phonetic complement of the auxiliary verb as *irr* while in others they saved the space by omitting one *r*, thus spelling it as *ir*. However, the difference between *irr:f sdm* and *iry:f sdm* is that the verb *iry* is used with four or more radical consonant and compound verbs or those of foreign origin (Gardiner 1930: 220; Blumsohn 1995: 294–299; 2008: 87 الشحات).

2.1.3. The Negative Imperative *m-ir sdm.f*

ATTESTATIONS

Before Akhenaten’s reign: 71. Amenhotep II Letter (Urk. IV: 1344 [L. 19]); 72. Tomb from time of Thutmose IV (Urk. IV: 1626 [L. 19]).

During Akhenaten’s reign: 73. Aḳ Tomb (Davies 1908a: pl. XXX = Sandman 1938: 97 [L. 6]); 74. Stelae A, B, N, S, U, X (Davies 1908, pl. XXV [U13–14], XXVI [S17] = Sandman 1938: 127–128 [S15–17, U13–14] = Murnane 1993, 32 [X46], 91 [N13–U13], 92 [A11–B10–N14–S17–U14]); 75. pMond II (Peet 1930: pl. XXVIII [9, 16, 18], XXIX [22], 93 = Silverman 1991: 312 [L. 9, 16, 18, 22]).

This construction is attested only twice before the reign of Akhenaten²⁷ (attestations 71-2) and 6 times in 3 texts from the Amarna Period.

Ex.2.1.3: The Tomb of Aÿ (attestation 73):



m-ir wdf rk iw.i r šm r in.w (n) pzy(.i) hry

“Do not delay, for I must go and bring them (to my) superior” (Murnane 1995: 116).

This construction is used here in an IMC, but it appears in the NIMC (attestation 74) in other examples.

2.2 THE INNOVATIVE VERBAL CONSTRUCTIONS IN THE REIGN OF AKHENATEN

2.2.1. The Conjunctive *mtw.f sdm*

ATTESTATIONS

76. oAmarna Otago 33/132 (Pendlebury 1951: pl. LXXXIV [1] = Silverman, 1938: 313 [1]); 77. Stelae K, X (Davies 1908: pl. XXIX (K12–13), pl. XXXII (X15–16) = Sandman 1938: 112, K12–13 [L. 15], 113 [1, 3, 5] = Urk. IV: 1972, K33–34 [L. 17–20], 1973 [L. 1–3] = Murnane 1993: 24 [K12–13, X15–16]); 78. pMond I (Peet 1930: pl. XXIII [13] = Silverman 1991: 311 [L. 13]); 79. *ibid.* (Peet 1930: pl. XXV [2, L. 18–19] = Silverman 1991: 311 [L. 18–19]); 80. pMond II (Peet 1930: pl. XXIX [2, L. 20–21] = Silverman 1991: 312 [20–21]).

This construction is attested from CE to Coptic, and develops as follows: *hn^c sdm ntf* → *hn^c ntf sdm* → *mtw.f sdm* → **ТАСΩΤΗ** or **НТЕΩСΩΤΗБ** or **НҚСΩΤΗ**^{S,F,A2} or **ҚСΩΤΗ**^A (Černý 1949: 25; Kröber 1970: §34.2, §34.33; Frandsen 1974: §64; Winand 1992: §731; Loprieno 1995: 95–96; Egberts 2005: 16; Junge 2005: §2.3.3, 103–104; Neveu 2015: §25.3; Hammam 2018: 163–164). This construction appears 14 times in 4 texts from the Amarna Period.

Ex.2.2.1: The oAmarna Otago 33/132²⁹ (attestation 76):



ih di.k dbn 10 n Pyzy mtw.k dit 50

“Then, you will give 10 deben to Piay, and you will give 50 [...].”

²⁷ Kröber gave 6 more examples; two of them belong to the tomb of Paheri. However, pl. V does not have *m-ir sdm* construction and pl. XI does not exist at all. The other 4 examples (pCairo 58053 [rt.6–7, 8] and pCairo 58054 [rt.8, vs.4], KRI. I, 322 [L. 9–10, 11], 323 [L. 9], 324 [L. 2]) date to the reign of Seti I.

²⁸ *rk* is enclitic particle: Gardiner 1957: §450.4.

²⁹ Now at New Zealand, Otago University Museum with register number 33/132.

In this case, the *mtw.fdit* is used in coordination with the main clause (Mattha 1945: 54–55; Shehada 2020b: 2721–2734). It can also follow the negative prospective (attestation 77), the imperative (attestation 78; Callender 1973: 71; Frandsen 1974: §83; Borghouts 1979: 20; Egberts 2005: 17; Junge 2005: §5.4.3 [1], 232), the relative clause (attestation 79; Gardiner 1928: 91; Mattha 1945: 47), and the 3rd future (attestation 80; Neveu 2015: 78).

2.2.2. The Negative Preterite *bwpwy.fsdm*

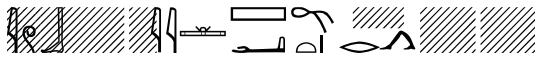
ATTESTATIONS

81. pMond II (Peet 1930: pl. XXVII [8] = Silverman 1991: 312 [8]).

The underlying construction is attested from CE to Coptic and develops as follows: *n p3.fsdm* → *bw p3y.fsdm* → *bwpwy.fsdm* → **ⲛⲡⲉⲩⲱⲧⲙ** (Behnk 1930: §89, 61; Crum 1939: 178a; Bakir 1970: 121; Kröber 1970: 63; Frandsen 1974: §7; Černý 1976: 86.7; Erman 1995: §776–777; Loprieno 1995: 93; Kruchten 1999: 31–32; Junge 2005: 155; El-Hamrawi 2006: 86; 2007: 52; Neveu 2015: §15.1.2).

The *bwpwy.fsdm* form belongs to NLE (Groll 1975/6: 243). There are two reconstructed attestations of this construction in the Amarna texts.

Ex.2.2.2: The pMond II (attestation 81):



iw b[wpw]y šꜥt spr/////.

“No letter had arrived” (Peet 1930: 95).

In this instance, the *bwpwy.fsdm* form is used with a transitive verb in IMC. The instances of negative preterite *bwpwy.fsdm* construction are attested in the Amarna texts, based on the construction of the lacuna by Peet (1930: 95) and Silverman (1991: 305). The researcher suggests that this construction is one of the Amarna innovations.

2.2.3. The Negative Emphatic *i.ir:tm sdm*

ATTESTATIONS

82. pMond II (Peet 1930: pl. XXIX [26] = Silverman 1991: 312 [L. 26]).

The subject in this construction is negated by *tm*, and the predicate or the adverbial adjunct by *bn* or *bn...iwn3* (Groll 1970: 142; Frandsen 1974: §91; Černý & Groll 1993: §27; Cassonnet 2000: §10.1.5–6, §10.2.1.2; Junge 2005: 130). Cassonnet (2000: §10.1.6, 116) thinks that this construction was used for the first time in the 19th Dynasty, but in fact it seems to be attested once in the Amarna texts.

Ex.2.2.3: The pMond II (attestation 82):



ky-dd n Wr i.iry.i tm h3b n ////

“Another saying to Wer: ‘Is to //// that I will not send’.”

This is the only instance of the *i.iry.i tm sdm* in the Amarna texts (Kruchten 1999: 27)³⁰. It is attested in an IMC referring to the future. The corresponding affirmative construction is not attested in the Amarna texts.

2.2.4. The Negative *bn-iryw sdm.f*

ATTESTATIONS

83. Stelae A, B, f, N, S, U (Davies 1908: pl. XXV (U22), pl. XXVI (S24); Murnane 1993: 96 (A18, B18–19–16, Fx.10–x.11, N22–23, S24, U22).

This periphrastic construction is used with verbs with four or more radical consonants, with reduplicated verbs, or with verbs of foreign origin (Gardiner 1930: 220; Blumsohn 1995: 294–299; 2008: 87 الشحات). This construction occurs once in the Amarna texts.

Ex.2.2.4: The Boundary Stelae A, B, f, N, S, U (attestation 83):



bn ftt.tw.f³¹ bn i'f.tw.f bn krp.tw.f bn i'f.tw.f m kd bn-iryw hihi(.tw)³².f

“It shall not be obliterated. It shall not be washed out. It shall not be erased. It shall not be coated with gypsum. It shall not be missed” (cf. Davis 1971: 73).

This instance occurs in an IMC in what seems a passive clause (Behnk 1930: §57-b; Allen 1984: §704, 494).

3. DISCUSSION

3.1 SPECIFIC USE IN ONE TENSE BY DIFFERENT FORMS/CONSTRUCTIONS

The Amarna verbal system represents a partial overlapping of different forms in the language of this period (figs. 8.1–8.3). The charts show the difference between the use of the Negative Aorist *bw rh.f*, *bw sdm.n.f*, and *bw sdm.f* forms (fig. 8.1), the Negative Preterite *bw sdm.f*, *bw p3y.f sdm* forms, and *bwpwy.f sdm* construction (fig. 8.2), and the Conjunctive *hn' ntf sdm* and *mtw.f sdm* constructions (fig. 8.3). The uses of the forms *bw rh.f*, *bw sdm.n.f*,

³⁰ Cassonnet (2000: §10.1.5, 115) suggested that the form without prothetic *i*.

³¹ *tw.f* refers to the stele; Murnane 1993: 95.

³² With a passive verb, it comes to mean “miss;” *Wb*. III: 151, aIII.

and *bw sdm.f* are characterized by both common elements and distinctive features. In particular, all these forms can be used in present tense of non-emphatic position in the private tombs. The *bw rh.f* and *bw sdm.n.f* forms appear in royal and papyrus texts, in emphatic IMC. The *bw rh.f* and *bw sdm.f* forms appear in NIMC. The *bw sdm.f* and *bw sdm.n.f* forms, innovated by the Amarna Period, both appear in transitive and intransitive verbs. Finally, the *bw rh.f* form inherited from CE and continued in Amarna texts appears in adjective and transitive verbs. The *bw sdm.f* form is the only one to be used in the passive. The *bw sdm.n.f* form is used in the active, and it appears in future tense in motions and perception verbs.

The uses of the forms *bw sdm.f*, *bw p3y.f sdm*, and the *bw pwy.f sdm* construction are also characterized by both common elements and distinctive features. In particular, all these forms and constructions can be used with active transitive verbs. The *bw sdm.f* and *bw p3y.f sdm* forms appear in Royal texts, in NIMC. The *bw sdm.f* form and the *bw pwy.f sdm* construction appear in IMC. The *bw pwy.f sdm* construction and the *bw p3y.f sdm*

form are innovations of the Amarna Period. Finally, the *bw sdm.f* form is the only one attested in Pre-Amarna text and used with intransitive verbs in literary texts of the private tombs. The *bw pwy.f sdm* construction is the only one used in non-literary texts on papyrus and ostraca. The *bw p3y.f sdm* form is the only one restricted to the Amarna texts.

The *hn^c ntf sdm* construction follows the imperative in Pre-Amarna texts. The *mtw.f sdm* construction is used in the Amarna royal texts and follows the future tense. Moreover, *hn^c ntf sdm* and *mtw.f sdm* occur in non-literary texts. They can both appear in direct speech and in NIMC.

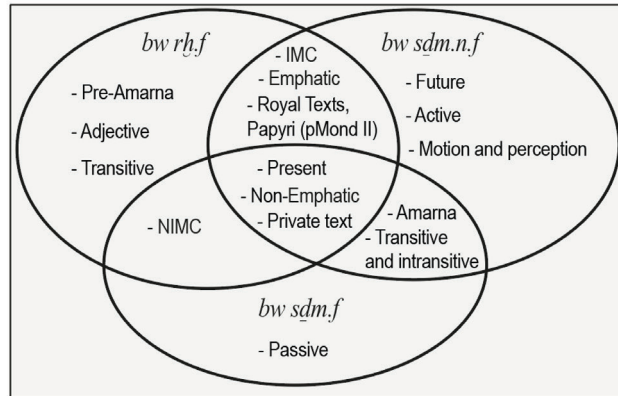


Fig. 8.1 The Negative Aorist *bw rh.f*, *bw sdm.n.f*, and *bw sdm.f* forms.

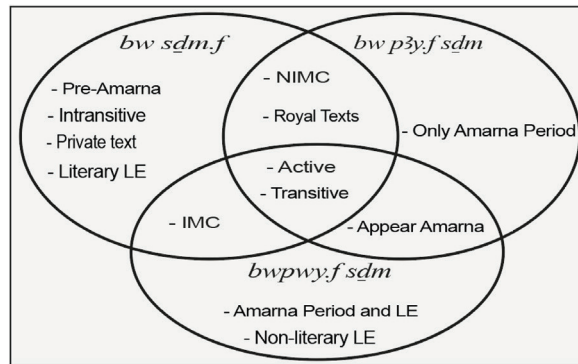


Fig. 8.2 The Negative Preterite *bw sdm.f* and *bw p3y.f sdm* forms, and the *bw pwy.f sdm* construction.

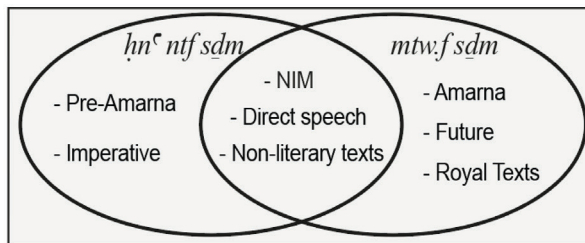


Fig. 8.3 The Conjunctive *hn^c ntf sdm* and *mtw.f sdm* constructions.

3.2 PALAEOGRAPHY

Selected aspects of the palaeography of the forms just described in their TE and LE are discussed in the following paragraphs.

The particle *bw* (see §1.1.2) in the negative preterite *bw sdm.f* is written as  in all instances of hieroglyphic literary texts of the reign of Akhenaten, while in the hieratic non-literary texts dating to the Amarna and the pre-Amarna period it is written as  (attestation 7).

The negative aorist form *bw rh.f* (see §1.1.4) appeared firstly in the 12th Dynasty³³. The particle *b(w)* was used in 20 personal names³⁴ attested in a private stela and an accounting papyrus (attestation 18), where it is written only with the consonant  *b*, e.g., masculine  *b(w) rh.f* (attestation 19) and feminine  *b(w) rh.s* (attestation 20). In the Amarna hieroglyphic literary texts, the particle *bw* is written as , while in the hieratic non-literary texts it is written as . It thus appears that the bird sign *w*  was absent in the *bw* of the personal names in the MK. This way of writing *b(w)* became later the particle *bw* (Davis 1973, 187). Moreover, Davis (1973, 188-9) mention that: <the *b*-forms were generally confined to non-standard dialects of the Old and Middle Egyptian...official recognition of the *bw* negative dialect came under Akhenaten>. The personal names with *bw rh.s/.t* are recorded from Thebes, Dra Abu el-Naga, Naga ed-Der, Abydos, Elephantine and Aswan. This piece of evidence could lead to this possibility that this feature was properly common only in Upper and Middle Egypt (Ilin-Tomich 2018, 138, 146).

The 1st present *tw.i hr sdm* construction (see §2.1.1) is attested 9 times in pre-Amarna times with a 3rd sg. m. pronominal subject, spelled *sw*  (attestations 46-50), 4 times with the 3rd sg. m. pronoun *sw*, spelled  (attestations 51-53), 6 times with the 3rd sg. indefinite pronoun *tw*, always spelled  (attestations 54-56), only once with the 3rd sg. f. pronoun *sy*, spelled  (attestation 57), 5 times with the 3rd sg. indefinite pronoun *tw*, spelled  (attestations 58-61), and once with the 3rd sg. f. pronoun *st*, spelled  (attestation 62). By contract, during the reign of Akhenaten the construction *tw.i hr sdm* appears only with the 3rd sg. indefinite pronoun *tw*. This pronoun is attested 3 times in the hieroglyphic literary texts, where it is spelled as , and 5 times in hieratic non-literary texts, where it is spelled as .

The analysis of writing *w* in the verbal forms and constructions in pre-Amarna and in the reign of Akhenaten shows that, as expected, the *w* is written with  in hieroglyphic texts, and with  in hieratic texts to simplify it (cf. Ali 2020, 573).

33 Ilin-Tomich (2018: 138) said „dass die Personennamen mit dem Negationswort *bw* in der 13. Dynastie in Theben belegt sind, während sich keine vergleichbaren Belege aus dem gesamten Mittleren Reich mit dem memphitisch-fayumischen Raum verbinden lassen. Davor, d.h. während der Ersten Zwischenzeit und der 11. Dynastie, lässt sich das Negationswort *bw* allerdings nördlich von Theben nachweisen, und zwar in Naga ed-Der, Achmim und Assiut.“

34 https://pnm.uni-mainz.de/names?name=bw+rx&translation=&match=inexact&match-region=attested&place=&match-date=strictly&period=&gender=any&ranke=&tla=&pnmid=&form_type=&sem_type (accessed 09/04/2022)

The *irr:f sdm* construction appears before the reign of Akhenaten with the auxiliary verb spelled as *ir*  and *iry*   (attestations 67–68). During the reign of Akhenaten it is attested 7 times spelled as *irr*  and twice as *ir*  (see §2.1.2).

The negative imperative *m-ir sdm* construction is attested in the pre-Amarna period and in the reign of Akhenaten. It occurs twice in literary texts, where it is spelled once as  (attestations 71, 73) and once as  (attestation 72). It is then attested 5 times in non-literary texts from the Amarna period (papyri), where it is spelled as   (attestation 75). The *m* of the *m-ir* form was thus spelled as  in hieratic and as  in hieroglyphic texts, both before and during the reign of Akhenaten.

3.3. TEXTUAL DISTRIBUTION

The attestations dating to the reign of Akhenaten discussed here derive from six different types of sources, namely: I. Royal inscriptions such as Boundary Stelae K, X, M, F, J, A, B, N, Q, U, and S; II. Private texts inscribed in elite tombs (Meryra, Pentu, Rames, Aÿ, Maÿ, and Tutu); III. Miscellaneous texts on an Ushabti (Py); and Non-literary texts on: IV. Papyri (pMond I & II); V. Ostraca (Nos. 1, 2, 3, 4 and 138); and VI. Dockets (No.14).

The royal texts take the lion's share of the corpus, as they count for 40 attestations in the Amarna texts. The private texts come second with 39 attestations. The papyri follow with 29 attestations, while there are 8 attestations from ostraca. Miscellaneous and dockets are represented by 2 attestations each. The distribution of the forms among these types of sources deserves attention, as it may provide precious clues about the question at the core of this paper—where were these verbal system innovations introduced and why?

In the corpus analyzed here, there are 55 instances (46%) of inherited forms attested in TE (fig. 8.4). They are distributed as follows: royal texts: 25 attestations; private texts: 24 attestations; miscellaneous: 2 attestations; on a papyrus: 1 attestation; on ostraca: 3 attestations. No attestation is recorded from dockets.

In the corpus analyzed here, there are 24 instances (20%) of the innovative forms attested in TE (fig. 8.5). They are distributed as follows: royal texts: 3 attestations; private texts: 10 attestations; on papyrus: 7 attestations; on ostraca: 2 attestations; on dockets: 2 attestations. No attestation is recorded from miscellaneous.

In the corpus analyzed here, there are 23 instances (19%) of the inherited constructions attested in LE (fig. 8.6). They are distributed as follows: royal texts: 7 attestations; private texts: 6 attestations; on papyrus: 9 attestations; on ostraca: 1 attestation. No attestation is recorded from miscellaneous and dockets.

In the corpus analyzed here, there are 18 instances (15%) of the innovative construction attestations in the LE (fig. 8.7). They are distributed as follows: royal texts: 4 attestations; on papyrus: 12 attestations; on ostraca: 2 attestations. No attestation is recorded from private texts, miscellaneous and dockets.

Generally, 120 attestations (66%) were used in the reign of Akhenaten and 61 (34%) pre-Amarna. The inherited forms and constructions (figs. 8.4, 8.6) that were used pre-Amarna and in the reign of Akhenaten indicate that 80 attestations (57%) occurred in the reign of Akhenaten and 61 attestations (43%) were represented pre-Amarna.

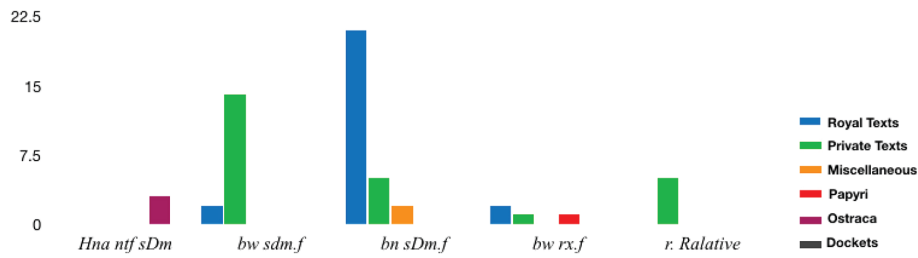


Fig. 8.4 Inherited forms attested in TE.

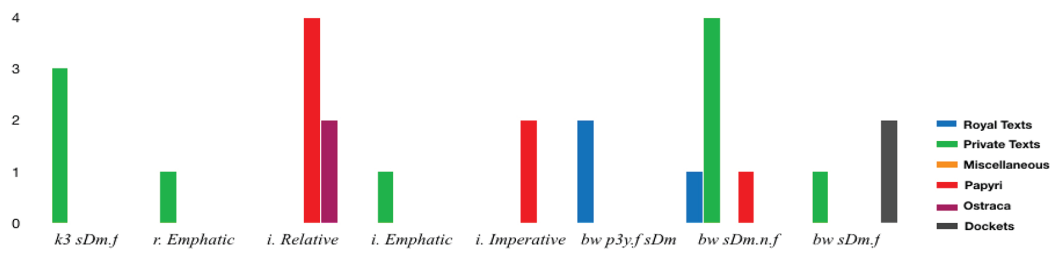


Fig. 8.5 Innovative forms attested in TE.

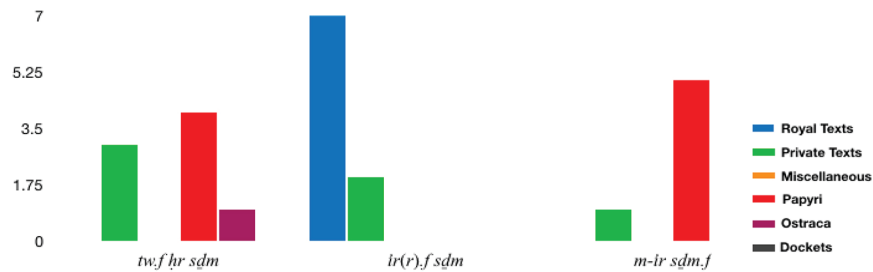


Fig. 8.6 Inherited constructions attested in LE.

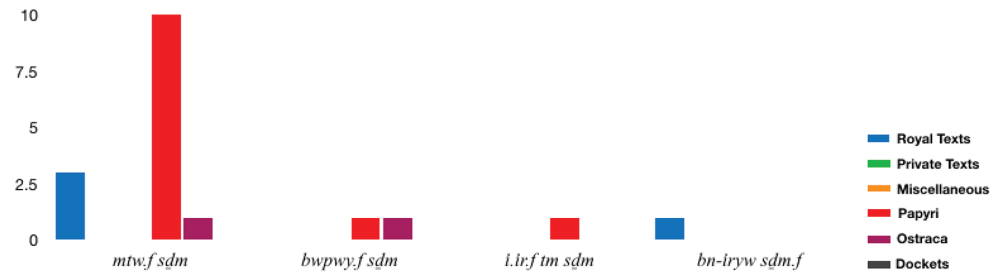


Fig. 8.7 Innovative constructions attested in LE.

These data show that 66% of the innovations are attested in the literary texts, while the non-literary texts yield only 34% of the attestations. This distribution shows a strong correlation between these innovations and both royal texts and texts in elite tombs (Arp-Neumann, 2020: 6). This strongly suggests that these innovations stemmed from the milieu of the royal court (Goldwasser 1991: 129–142; 1999: 311–328; Hammam 2018: 147–200) and perhaps from the king himself or from his very close circle, which manifested itself in the direct speech of the king (Jansen-Winkeln 2011: 168; Kupreyev 2014: 227; Cahail 2019: 30).

It is generally agreed that the innovations attested in early New Kingdom and the Amarna Period texts and LE as a whole somehow reflect a more colloquial language, or at least an influence or interference from a more colloquial language (Goldwasser 1991: 129–141; 1999: 311ff; Kilani 2017: 188). In fact, references to a colloquial or “low-class” speech can be found already in early texts. For instance, (I) the stela of the nomarch Paheri in his tomb at el-Kab, which dates to the middle of the 18th Dynasty (Naville, 1894: 1: pl.9 [L.34]; Urk IV: 120.3; Mathieu 2021: 10) states, *ib.i dr mi-ty... n dd.i mdt nt ḥ3w mr* = “My heart was likewise... I do not speak the speech of lower-class” (for the translation of *ḥ3w mr*, see *Wb.* II: 98.6; Faulkner 2017: 200); (II) The stela of the royal scribe Senemiaoh from his tomb (TT127) at Sheikh Abd el-Qurna (Urk IV: 508.7; Mathieu 2021: 10), which dates to the reign of Hatshepsut, says, *ir.n.i mnht... n sdm.i n iwti kd.sn n dd.i mdt n ḥ3w mr* = “I did act to be effective... I did not listen to him who had no constant character, I did not speak the speech of the lower-class.” Moreover, the title *gm mdt nt ḥ* = “finder (of) the speech of the palace” (Lange & Schäfer 1908: 152 [L.7]; Mathieu 2021: 10), attested on the stela of the vizier Montuhotep (Cairo Museum CG 20539), which is dated to the reign of Senwosret I, suggests that there was a colloquial language already at that time.

The question of the presence of possible dialects and other geographically specific variants in such colloquial language, however, is far less studied (see Sethe 1925: 290ff; Edgerton 1951: 9–12; Jansen-Winkeln 1995: 92–112; Reiche 1998: 37; Goldwasser 1991: 129–141; 1999: 311ff; Baines 1998: 307; Junge 2005: 21; Nagai 2006: 224; Polis & Winand 2010: 5; Winand 2016: 229–269; Kilani 2017: 204; Cahail 2019: 27:32; Allen 2020: 49).

3.4. DID THE AMARNA LANGUAGE INNOVATIONS SPREAD OUTSIDE TELL EL-AMARNA IN THE AMARNA PERIOD?

The material presented here can be very relevant for this discussion. In particular, while everyone generally agrees that these features are the result of interference from a more colloquial language, there has been little or not research on the nature of such common language. More precisely, were these features common in a colloquial language everywhere in Egypt, or are they bound to specific contexts or geographical locations?

In particular, it is worth investigating whether the verbal system and its innovations are attested only at the capital city of Akhetaten or whether they also were present in other regions, such as Saqqara or Thebes. To this aim, it is worth investigating the inscriptions dating to the Amarna period/the reign of Akhenaten but originating outside the capital.

The royal chancellor of King Akhenaten, Meryneith/ Meryra,³⁵ had a tomb at Saqqara that lacks the innovations of Amarna, while his tomb (N.5) at Amarna, dated to the 9th or 10th year of Akhenaten's reign (Davies 1903: 42–43), included many innovations. Moreover, Meryneith's tomb at Saqqara shows several variants in the writing of his name and some additional titles. His tomb decoration reflects the development of his career and presents stylistic phases in the decoration. He even changed his name from Meryra to Meryneith. These changes reflect the ideological development of the Amarna Period and its immediate aftermath (Raven & Walsem 2014: 30, 39–40). The following three phases can be recognized.

Phase I (reign of Akhenaten, between years 5 and 8) with reliefs and inscriptions found in the central chapel and the western portico. The reliefs of this phase show scenes close to the tomb of Huy at Amarna. Other scenes correspond with the “offering table funerary rites icons” of the New Kingdom Theban tombs (Raven & Walsem 2014: 47, 178–179).

Phase II (between year 9 of Akhenaten and years 1–2 of Tutankhamun) represents the Amarna-style reliefs. These are in the southwest and northwest chapels and in the vestibule of the tomb and in the inscriptions of the double statue. The inscriptions of this phase contain an offering formula for Aten. The decoration program of Phase II represents a balance between the traditional funerary traditions and the iconographical renewal of Atenism (Raven & Walsem 2014: 48, 180–181).

Phase III (reign of Tutankhamun, starting from year 2) corresponds to the decorations and inscriptions found on the north and south walls of the courtyard, on the walls of the eastern chapels. The scenes belong a tradition seen in contemporary Theban tombs at the reign of Tutankhamun (Raven & Walsem 2014: 49, 181).

This could prove that Meryneith/ Meryra worked on his tomb at Saqqara until the year 9 of the reign of Akhenaten when he moved to Amarna and began to work on his tomb there. Later, after Akhenaten's death, he returned to Saqqara and resumed working on his tomb there in year 1–2 of Tutankhamun reign (Raven & Walsem 2014: 48).

A fragment of a stela (TNM: B19b) was found in the north cemetery of Saqqara of Teti pyramid and is dated to the reign of Akhenaten (Ockinga & Binder 2013: 502–16). It did not contain the verbal system innovations of the reign of Akhenaten. Furthermore, from the site of el-Minya, the visitor's hieratic graffiti of the scribe Ramose at Dayr Abu Hinnis³⁶ (Willems 2009: 225, figs. 1–2), which is dated to the reign of Akhenaten, shows no Amarna innovations.

³⁵ A high official, who lived through the reigns of Akhenaten and his successor Tutankhamun. Furthermore, the name Meryneith was taken after the end of the Amarna period. For more information, see Raven & Walsem 2014: 7ff; Hoffmeier 2015: 176; Paqua 2015: 44–45; Ghaly & Ibrahim 2017: 154ff.

³⁶ It is one of the Amarna quarries, discovered in 2003 during a survey expedition already carried out between Dayr al-Barsha and Dayr Abu Hinnis; Willems 2009: 222–226.

The Talatat³⁷ blocks from Karnak do not show the innovations of the reign of Akhenaten (Chappaz 1985: 81–119; Andreu 1987: 1–20; Kramer 2009: 5–20). The tomb of Parennefer, called also Wenennefer³⁸ at Thebes also did not have these grammatical innovations. The hieratic graffiti found on the 9th pylon at Karnak, which dates to the beginning of the reign of Akhenaten, does not contain any innovations of the reign of Akhenaten (Lopez 1985: 245–270). An interesting case is provided by the hieratic graffiti found in the tomb of Paury, wab-priest in front of Amun, Overseer of peasants of Amun, at Sheikh Abd el-Qurna (TT139), published by Gardiner (1928a: 10–11) and Ragazzoli (2017: 357ff). This graffiti is dated to the 3rd year of Akhenaten's successor, Queen-Pharaoh Merytaton (Gardiner 1928a: 10–11, pl. V; Ragazzoli 2017: 365ff, fig.8) and contains the forms *bw sdm*³⁹ and *bw sdm*. The latter is considered an Amarna innovation.⁴⁰

This is not all. In fact, the most surprising thing is that some monuments at Amarna itself did not contain any of the innovations in the verbal system. Outside of the 18 private tombs of the north and south cemetery that include inscriptions, only 5 tombs attest such innovations. These are: Meryra (N.5), Tutu (N.8), Rames (N.11), Maÿ (N.14), and Aÿ (N.25). Thirteen tombs do not contain any of the innovations. These are: Panehesy (N.1), Huya (N.2), Meryra II (N.3), Ahmes (N.4), Pentu (N.6), Parennefer (N.7), Mahu (N.9), Apy (N.10), Neferkheperuhersekheper (N.13), Suti (N.15), Sutaui (N.19), Any (N.23), and Paatenemheb (N.24). This raises another crucial question: why did some tomb inscriptions contain grammatical innovations, while others at the same site and city did not include any?

Based on the aforementioned attestations, it would appear that the innovations of the reign of Akhenaten verbal system were restricted to Akhetaten itself. This may indeed point to a local dialect.

4. CONCLUSION

To conclude, this study shows that some texts attested in Akhetaten present a series of innovations that are also characteristic of Late Egyptian. The language of the reign of Akhenaten and its innovations did not happen suddenly or unexpectedly—some forms were already attested in pre-Amarna, in the New Kingdom, or even before the New Kingdom (see, e.g., §1.1 and 2.1). In particular, the forms *hn^c ntfsdm*, *bw sdm.f*, *bn sdm.f*, *bw rh.f*, prothetic (*r*), *tw.i hr sdm*, *irr.f sdm*, and *m-ir sdm.f* are attested already before the Amarna Period (and count for

³⁷ *Talatat* is the Arabic term used by Egyptologists to describe the blocks emerging from a technique of cutting stones, adopted in the reign of Akhenaten in order to speed up the execution of his building projects. For more information, see Mahran 2009: 107–113. The hieroglyphic word for *Talatat* is *dbt m inr*, which literally means “box of stone,” Lopez 1985: 258.

³⁸ A high priest who was contemporaneous to Akhenaten, Tutankhamun and Horemheb; Ghaly & Ibrahim 2017: 150ff; Ghaly 2017: 23–32.

³⁹ This form is rare and usually appears with a small number of verbs, of which *wnm* and *hpr* are not part. Moreover, this form did not occur in the Amarna texts; Neveu 2015: 74, §18.2.

⁴⁰ The date of this graffiti is controversial: Allen 1988: 117ff; Gabolde 1998: 153–166, 183–185; Allen 2010: 27–41; Hoffmeier & Van Dijk 2010: 201; Gabolde 2015: 60–64; Ragazzoli 2017: 365–369. Paqua, in her unpublished Master's thesis, dates it to post-Amarna and suggests that Ankhkheperure Neferneferutaten is identified as Nefertiti; Paqua 2015: 17.

66% of the attestations considered for this study), while the forms *k3 sdm.f*, prothetic (*i.*), *bw p3y.f sdm*, *bw sdm.n.f*, *bw sdm.f mtw.f sdm*, *bwpwy.f sdm*, *i.ir.f tm sdm*, and *bn-iry sdm.f* are attested for the first time during the reign of Akhenaten (and count for 34% of the attestations).

This research tackled the palaeographic TE and LE verbal forms and constructions that are attested in the Amarna texts or pre-Amarna. It presented almost no differences, except the way of writing some signs, which could be for the sake of simplification.

The comparison between the inscriptions from the reign of Akhenaten originating from Amarna and those from outside of the capital city also revealed an intriguing pattern. Clearly, these linguistic innovations were limited to Amarna and were not common outside the capital in other regions like Memphis or Thebes. In addition, they seem to be concentrated in royal texts or in texts from the upper elite, while they are scantily attested, or completely absent, from other texts outside the royal court and its narrow circles. Hence, these innovations in the reign of Akhenaten indeed stemmed from Akhetaten and specifically from the royal court, which presented in the direct speech of the king.

In this respect, the case of the two tombs of Meryneith/ Meryra is intriguing. His tomb at Saqqara lacks innovations, while his tomb at Amarna includes many innovations. The difference does not reflect Meryra's way of speaking. Rather, it probably reflects two distinct traditions among the artisans/scribes that planned and inscribed the two tombs. Indeed, it could be two dialects, one at Saqqara and the other at Amarna, or perhaps Amarna was a more innovative workshop that included more spoken elements, while the tomb of Saqqara was more traditional.

At the same time, it is significant that some elite tombs at Amarna itself did not contain any of the innovations in the verbal system. This raises another crucial question: why did some tomb inscriptions contain grammatical innovations, while others at the same site and city did not? I will focus on this issue in a further study. Regardless, this study discussed only the innovations in the verbal system at Amarna, but it is likely that other morphological and orthographic innovations were part of the same phenomenon. Moreover, it would be interesting in the future to contextualize these linguistic developments into a wider socio-historical perspective, as the innovations of the reign of Akhenaten were obviously not restricted to the language, but involved many changes in other domains (such as religion, art, and literature) that had a significant effect on Egyptian culture, economy, and on the upper strata of Egyptian society (Malek 1999: 262–263). Akhenaten was perhaps the one who was behind all of these innovations, as the chief sculptor of Akhenaten, Bak, mentioned in a carved inscription at Aswan that it was the king himself who taught artists the rudiments of their arts (Malek 1999: 266).

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محمد الشحات

٢٠٠٨ تركيب الفعل بحرف الراء في العربية قياساً على استخدام الفعل في iri المصرية القبطية، SECAS 3 II.



9

Classifying / Lexicalizing the Outside World

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ABSTRACT

This paper is an attempt to understanding the structure of Ancient Egyptian lexicon as a whole and how it evolved over time. A special attention is devoted to the linguistic expression of newly introduced concepts. While some solutions using internal or external resources have been extensively studied, borrowed concepts could sometimes prompt the creation of a new word after a process of semantic analysis. In this respect, Coptic cases like **mnt-ꝓꝓꝓ-ⲭⲓ-ⲙⲁⲉⲓⲛ** “divination” for translating Greek οἰώνισμα are examined. The paper also focuses on the use of prefixes for lexical creation in Coptic like **ⲁ(ⲛ)** “place”, **ⲁⲧ** “in-/un-, -less”, **ⲁⲱ** “numerous”, **ⲃⲱ** “tree”, **ⲙⲁ** “place, location”, **ⲙⲛⲧ** “matter, property”, **(ⲛ)** **ⲉⲧ** “the one who”, **ⲛⲁ** “the one of”, **ⲛⲙⲛ** “man”, **ꝓꝓꝓ** “the one who does”, **ⲉⲁ** “man”, **ⲱⲱⲱ** “worth, -able”, **ⲉⲓ-ⲛ** “form of”, and **ⲉⲛ** “within”. From a typological perspective, some parallels can be made between “Pharaonic” Egyptian as supported by the hieroglyphic writing and alphabetic Coptic as both phases of the language arguably ended up to typologically comparable solutions for expressing very close concepts. It is then suggested that what was expressed morphologically (< lexically) in Coptic could actually be conveyed in earlier stages of Egyptian by its graphic system by using a generic classifier. Finally, a typological comparison is made with the Chinese writing system. Indeed, instead of borrowing or creating words that would be semantically opaque, Chinese speakers usually analyze a complex idea into key basic concepts. The Chinese writing system thus seems to make a bridge between *linguistic* classifiers, as they are known in certain languages, and *graphic* classifiers that are limited to the graphic system, as is the case in Egyptian.

KEYWORDS: *ancient Egyptian lexicon – semantic classifier – Chinese writing – Coptic lexicon – typology – writing systems*

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1. PRELIMINARIES

Landscape organization, buildings, body language, everything we do as human beings in society translates our perception of the outside world, and the way we organize and classify it. For instance, how the ancient Egyptians understood the differences in social status is clearly expressed in the countless representations of Pharaoh receiving the submission of foreign leaders reduced to a very small scale that unequivocally show their social and symbolic insignificance compared to the majesty of the king.

Language is a particularly refined way for exposing and explaining the world. In a narrow sense, language is a sequence of phonemic units that are realized in oral discourse. Language can also conveniently—and hopefully as regards dead languages like Ancient Egyptian—be supported by a writing system. In the case of Ancient Egyptian, language is arguably augmented by hieroglyphs in the same way one now speaks of augmented reality. The hieroglyphic writing system is wonderful indeed, as it felicitously combines two types of information: phonology and semantics, the latter being expressed by the so-called logographic signs and a complex system of semantic classifiers, as illustrated by the following example (1). In the very simple Late Egyptian sentence *sdm.f p3 h3b.k n.f hr:f* “He has taken note (lit. heard) of what you sent him about,” the spelling is very close to an alphabetic system except for two signs. The first one—a logogram (or, more precisely, a radicogram; Polis & Rosmorduc 2015) depicting a cow’s ear—is used in a series of words derived from the root S-D-M, meaning HEAR (here, the verb *sdm* “to hear”). The second sign—the classifier of the moving legs is added to lots of words that share the idea of motion (here, the verb *h3b* “to send”).

Ex. 1: 

Of course, language, as oral expression, is also supported by intonation, some type of melody, and stress patterns. These are often the sole indication for making a difference between a neutral, unmarked statement, an interrogation, or an order. This is almost entirely lost in writing. The punctuation system, when and where it exists, remains a rudimentary, unsophisticated system of notation that only very partially compensates for the loss of orality.¹ It goes without saying that Egyptologists would be very happy to have even such a poor substitute! In contemporary cultures, the growing use of emoticons, although limited to certain sub-genres, is a partial and limited response to it.

Orality is also complemented by attitudes of the body that can affirm, stress, and sometimes contradict what the speaker intends to say. For ancient Egypt, there is luckily a rich iconographic documentation showing people engaged in different activities. One must however remain cautious on how to interpret it, as these gestures are arguably highly codified, as suggested by the numerous examples showing expressions for lamentation. In texts, emotions can sometimes be described by a specific body attitude, but this remains exceptional. In a passage from the *Two Brothers*, Anoup, who was chasing his younger

¹ On the so-called verse points in Egyptian, see Thacke 2001; Winand 2020. On the paratextual signs in ancient Egypt, see Motte & Sojic 2020.

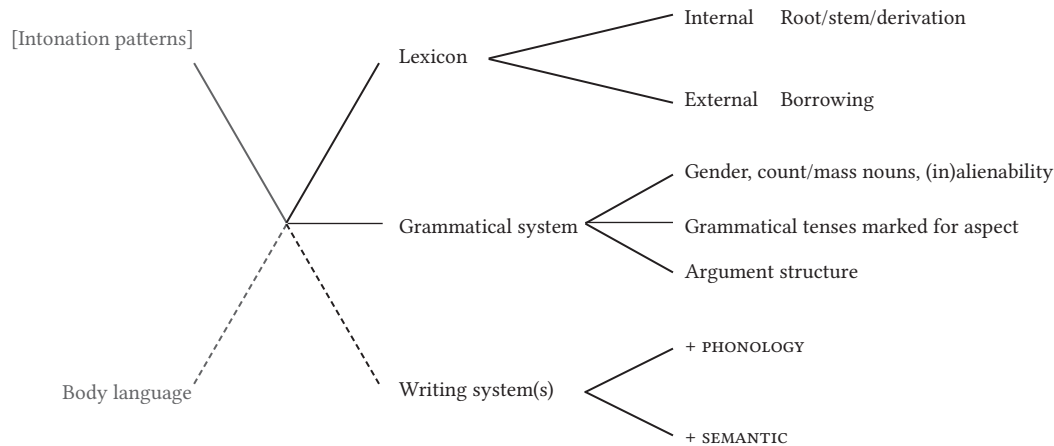


Fig. 9.1 Classifying the world with language.

brother, showed his disappointment by clasping his hands when he realized that he could not reach him:²

Ex. 2: *jw p3j.f sn ʕ3 hr jr:t zp 2 n hwy hr dr:t.f n p3 tm hdb.f j.jr:f*
 “and then his elder brother clasped twice on his hand because he had not killed him” (*Two Brothers* 6,7-8)

CLASSIFYING THE WORLD WITH LANGUAGE

Figure 9.1 tries to capture how ancient Egyptians classified the world with language.³

On the right side, are 1) the writing systems, which can help extending and refining the semantic expression as is definitely the case for Ancient Egyptian, at least for the pre-Coptic non-alphabetic stages; 2) the lexicon, which is what one has first in mind when dealing with semantic categories as expressed in language; and 3) the grammatical system, which is in its own way a powerful organizer of semantic classification.

On the left side are also mentioned, for the sake of completeness, intonation patterns and body language, as key factors for supporting and supplementing the oral expression. The gray color underlines their lower epistemological status for the study of Ancient Egyptian, not because they would be less relevant, but because they left almost no tangible, easy to use, traces in the documentation.⁴

² See Winand, forthcoming a: ex. 3. On words expressing emotion, see Beaux 2017.

³ A general presentation of the different stages of Ancient Egyptian (Old, Middle, Late Egyptian, Demotic, and Coptic) can be found in Winand 2021.

⁴ The general tone of a sentence can of course be sometimes mentioned. Formulations like “he said so while crying, weeping, or being angry” are quite common in literary texts, especially in Late Egyptian and Demotic literature. This remains however at a very general level, with no indication on how it affected the melody or the intonation pattern of the sentence.

- (1) The writing systems that supported the different phases of Ancient Egyptian (with the exception of Coptic) is a mix of phonological and semantic information. In the hieroglyphic system, there are basically two categories of signs: one for expressing the phonological structure (with some limitations), and another that expresses semantic categories.⁵ In the latter one, Egyptologists have identified two groups of signs: the logograms, which constitute a mixed category, expressing a lexical entity within a semantic class, and the semantic classifiers, whose function, as the name implies, is to link a word to a semantic class, without supplying any information on its phonological structure. While the logograms are more or less fixed, at least from the MK onwards, classifiers were constantly subjected to variation both in synchrony and diachrony.⁶
- (2) The lexicon of Ancient Egyptian, or rather Egypto-Coptic, is still very poorly understood as a principled semantic network.⁷ As regards the production of new words, one can roughly make a distinction between two kinds of processes: an internal one that makes use of the historical morphological system of root patterning and stem derivations, and an external one that imports into the lexicon words from other languages (see below).
- (3) As already hinted at, grammar is a very powerful system for conceptualizing the world. Broad semantic classes like gender, count or mass nouns, alienability or inalienability are often coded grammatically, although there is no need to do so. While in Ancient Egyptian there is a strong distinction for expressing possession between inalienable words and the rest of the lexicon,⁸ this is not the case—or very minimally—in French, nor in English.

INTERPLAY BETWEEN LEXICON AND GRAMMAR

In Ancient Egyptian, the grammatical system very fruitfully interacts with the lexicon. Indeed, grammatical tenses marked for aspect and variations in the verbal argument structure are powerful means to shape semantic categories. In languages where the expression of aspect is grammaticalized, as is the case in Earlier Egyptian, the relationships between grammatical aspect, argument structure, and verbal *Aktionsarten* open up a fascinating window onto the perception and the semantic classification of basic states of affairs (SoAs) by the Egyptians.⁹ From a semantic viewpoint, SoAs are phasal structures that can be

⁵ Polis & Rosmorduc 2015; for a general introduction to the hieroglyphic system, see Winand 2022a.

⁶ I leave here aside the formidable expansion of the hieroglyphic signs as a creative tool used by the *hierogrammateis* for expressing refined theological thought during the last period of the temples' activity. Semantic classifiers have been subjected to intense scrutiny by Egyptologists since the last century; see the pioneering work of Goldwasser 1995; 2002; 2006.

⁷ See Grossman, Polis & Winand 2012. On the lexicon organized as a web of related semantic networks, see Winand 2019.

⁸ See Winand, forthcoming a, for the non-predicative possession in Late Egyptian.

⁹ *Aktionsart* designates the inherent aspectual structure of a verbal lexeme according to a handful of basic semantic features. State of affairs is a neutral term that covers any type of event, action, and states. On this, see recently Winand 2021.

described with a short set of parameters like 1) durativity or extension in time; 2) dynamicity as opposed to stativity; 3) telicity, which implies that the process intrinsically has a goal which marks the end of the process; and 4) the possibility of having adjacent phases, pre- and post-phase, respectively.¹⁰ Aspectual selections amount to select, and hence give a special focus, to a particular phase of a given SoA. In this process, some type of recategorization frequently happens with certain semantic categories. This is the case, for instance, with *mwt* “to die” (fig. 9.2).

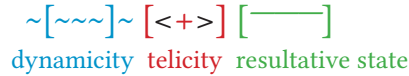


Fig. 9.2 Phasal selections for *mwt* in Egyptian.

This verb is semantically categorized in Ancient Egyptian as a non-durative telic SoA, with a pre- and a post-phase. The use of the progressive, which is in Egyptian a [+ DYNAMIC] [+ DURATIVE] [+ AGENTIVE] tense selecting a phase within the process, should theoretically be blocked.¹¹ However, the progressive can access the pre-phase of *mwt* as this verb has cognitively a pre-phase with semantic features compatible with the progressive. In this case, the meaning of *mwt* would be best expressed by specialized lexemes in other languages, like *to agonize* in English (*agoniser* in French). In Egyptian however, this SoA and its adjacent phases were expressed by one single lexeme (colexification process; François 2008).

How a community of speakers classifies complex SoAs is admittedly subject to a fair degree of variation. This can also change in diachrony, as shown by the case of falling, which can be analyzed as a complex SoA with at least two phases: cause (to fall) and result (to lay on the ground). In Earlier Egyptian, both activities were colexified by the verb *hr*. In Late Egyptian, however, at least in its earlier stage, the roles were split up into *h3j*, whose core meaning was originally “to go down,” for expressing the process of falling down, and *hr* for the resulting state.¹² In later Late Egyptian, *h3j* took over and finally became the sole lexeme for expressing this complex SoA (see Coptic 2ϵ).¹³ As a consequence, *hr* fell out of use.

How languages lexicalize complex SoAs is indeed a fascinating object of study. Very frequently, complex chains of SoAs are segmented into units, and then again subdivided into smaller ones. This of course depends on our cognitive capacities (the concept of non-durativity, for instance, is meaningful in lexical semantics, but less so in quantum physics), but it is also culturally conditioned as evidenced by the simple fact that different communities of speakers do not necessarily find the same solutions to express identical SoAs. Consider for instance the complex SoA of finding. Except for cases when this SoA is associated in some languages to the concept of meeting someone by mere chance, as in

¹⁰ See Winand 2006 for details, and Winand 2021 for a general updated presentation in English.

¹¹ See Winand 2021: §4.4.

¹² See Winand, forthcoming c.

¹³ See *Wenamun* 2,45: *jw t3 h3bw.t n t3j.f srp.t (hr) h3j.t r.j* “the shadow of his umbrella fell upon me” (perfective) vs. 2,46: *t3 h3bw.t n pr-ʕ3 ʕ.w.s. p3j.k nb h3 r.k* “the shadow of Pharaoh, your lord, has fallen onto you” (resultative perfect).

French “*je l’ai trouvé hier par hasard au restaurant*” (“I met [lit. found] him unexpectedly yesterday in a restaurant”), finding is most often associated with a pre-phase expressing the activity of looking for something. While some languages extend the scope of finding to include the pre-phase, as in French “*il est en train de trouver la réponse*,” which means that the subject is about to find the answer if nothing goes wrong, *ceteris paribus*, in Egyptian, for instance, the progressive is never found with the verb *gmj* “to find.” Other lexemes, like *wh3*, which originally means something like “to go here and there looking for something,” have to be resorted to for supplementing the missing pre-phase of *gmj*.¹⁴ Conversely, *wh3* does not combine with a perfective tense to mark the phase of finding itself or a resultative perfect for expressing the post-phase (fig. 9.3).

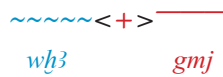


Fig. 9.3 Expressing the SoA of finding in Egyptian.

Ancient Egyptian is also an example of how grammar can to a certain extent “compensate” for a relative lexical poverty. For instance, by varying their argument structure, Egyptian verbs can express types of SoA that would usually be expressed by different lexemes in modern Western languages. Thus, by deleting its second argument, a telic verb frequently becomes atelic, as shown in Egyptian by the recategorization of *jrj* NP “to do, to make NP” in *jrj* Ø “to act,” sometimes “to behave,” and of *šm r* NP “to go somewhere” in *šm* Ø “to walk” without any defined goal.¹⁵ Variations of the verbal valency most often obtain by adding or suppressing an argument. Its syntactic expression can also be modified. For instance, the second argument of a verb that is statistically¹⁶ realized as a direct object can sometimes be expressed obliquely, with a PrepP. A good example of this is provided by the very common verb, *sḏm* “to hear.” While its object is overwhelmingly immediately linked to the verb, it can sometimes be introduced by the preposition *n* “to,” which basically expresses the benefactive. This results in a shift of meaning: *sḏm n* NP literally takes on the meaning of “to listen to the benefit/profit of NP,” hence in some contexts “to obey NP.” The shift from “to hear” to “to listen,” that is, from a non-agentive to an agentive activity, can also be “forced” upon *sḏm* by specific grammatical tenses that have [+ AGENTIVITY] in their set of semantic instructions, like the imperative, for instance, or by tenses that focus on the resultative state, like the perfect which extends the original process of *sḏm* to a post-phase (“to have listened to something,” and hence “to be fully informed”).¹⁷

¹⁴ See Winand 2015.

¹⁵ See Winand 2006: 127–128, and 2021: §3.1; 3.4.3; 4.4 for relevant examples.

¹⁶ I prefer to state that a construction is statistically prevalent rather than presenting it as the by-default, original, or primary construction.

¹⁷ See Winand 2006: 256–257, and 2021: §4.2. See also the sentence [*mtw*].*k sḏm n.j p3 nty* [] “and you obey me concerning what [...]” (P. Mond 1, 8) for a case combining a benefactive and an object.

2. ADAPTING THE EGYPTIAN LEXICON: A HISTORICAL OVERVIEW

I now turn to the role of the lexicon in shaping our classification of the world. My interest here is mainly diachronic. As is the case in any community of speakers, the Egyptian lexicon was in constant evolution and adaptation—new words replacing older ones for expressing ancient concepts, like LEg *ptr* “to see,” which succeeded to EEg *m33*, or ancient words adapting their semantic field to newer concepts, like Coptic ⲉⲕⲉⲕⲉ “wages,” which goes back to *b3k.w* “works.” New words were also created in Egyptian or borrowed from other cultures. Of course, some words in the lexicon remained semantically unchanged, in some cases even without experiencing major phonological transformations, like the ubiquitous EEg *sdm* “to hear,” which was wonderfully kept in Coptic ⲥⲱⲧⲙ (see *infra* 2.I). As already underlined, the hieroglyphic writing system could also help stressing a particular shade of meaning without automatically leading up to the lexicalization of a new entity.¹⁸

Figure 9.4 is an attempt to show how old concepts (I) were lexically expressed over time in Egyptian, and how newer concepts (II) were integrated into the lexicon. The term concept, here used for the sake of brevity, is a cover term for all kinds of ideas, artifacts, and SoAs that are lexicalized in a culture. The label “old concept” does not to the least imply that it is genuinely, genetically or ontologically Egyptian, but more succinctly that it was already integrated to the Egyptian culture from the earliest times of the written documentation. It is hardly disputable that the core of the Egyptian lexicon, whatever that means, was indeed continuously enriched by borrowing concepts and loanwords from neighboring cultures before the invention of writing. What I am interested in here is how ancient concepts were lexically expressed during the four-millennia history of Egypto-Coptic, and how newer concepts made their way into the lexicon. Newer concepts could of course emerge from within the Egyptian culture or be borrowed from abroad.

I. OLD CONCEPTS

As regards concepts already installed in the Egyptian culture, a major division exists between those whose lexical expression remained stable over time (I.a) and those whose expression was transformed or renewed (I.b). In the first case, words were continuously used over a long period of time without significant modification of their semantic field. Formally, one can subdivide this category into two classes according to the presence or absence of modifications in phonology or morphology. The verb *sdm* “to hear, to listen” → Coptic ⲥⲱⲧⲙ is a good illustration of a word which remained in use for centuries without undergoing major changes in its phonological or semantic structure (I.a.1). On the contrary, the phonological structure of *šm* “to go” → Coptic ⲙⲉ, which also remains semantically stable, was more deeply altered (I.a.2), already in later Late Egyptian, as shown by some innovative spellings.¹⁹ Of course, the division in classes should not neces-

¹⁸ For instance, it is very doubtful that  *wrr.t* “the great one,” here the white crown of Upper Egypt, was ever lexicalized as such.

¹⁹ See the spelling   for the infinitive in *Wenamun* (LES 73,9) and other texts from the TIP; Winand 2011: 106.

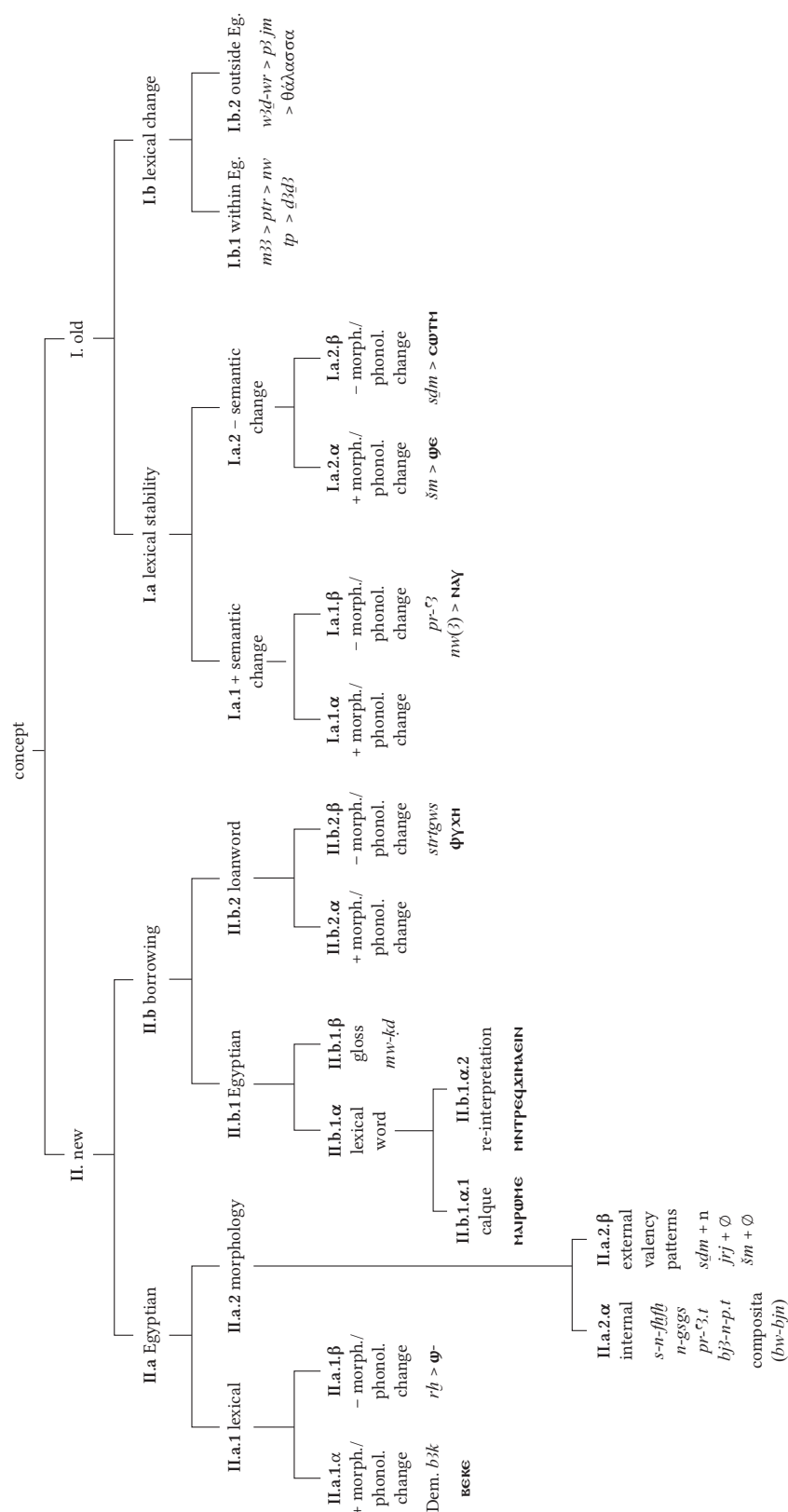


Fig. 9.4 Adapting the lexicon over time.

sarily be understood as a strict binary one, but rather as focal points along a continuous scale. The phonological stability of *sdm*, for instance, is only relative as shown by Coptic **ⲥⲱⲧⲙ** (voiced emphatic → voiceless dental), but felt strongly enough by the scribes to maintain the traditional spelling unchanged until the end of the hieroglyphic tradition.²⁰

In other cases, words experienced noticeable changes over time (I.b.1). As already observed in the preceding case, words can formally be more or less transformed. The verb *nw(3)*, which originally was linked to the hunters' activity of looking for their prey, expressed in EEg a particular mode of seeing, involving the full commitment of the agent in the process. In LEg, it expressed the activity of looking at something as opposed to *ptr*, which had taken over the generic activity of seeing from *m33*, before eventually assuming itself this function in Demotic and Coptic (I.a.1.β), thus having experienced over a long period of time a gradual process of agentivity loss.²¹

Old concepts can sometimes be expressed in the course of time by different lexemes without apparent significant semantic changes (I.b). Two options here present themselves, an internal and an external one. In the first case (I.b.1), a concept expressed by an Egyptian word is taken over by another Egyptian word. As already shown, the expression of the generic activity of seeing was successively expressed by *m33* (EEg), *ptr* (LEg and Dem.), and finally *nw* (Dem. and Coptic). The rationale at work in such transformations of the lexicon escapes us most of time.²² Another well-known example is the substitution of *d3d3* for *tp* "head." The new word, which originally meant "pot," became in LEg by metaphorical extension the usual noun for "head," replacing the older one, *tp*, as would also be the case later for the word "tête" in French from vulgar Latin *testa*, meaning "pot, jug," which replaced classical Latin *caput*.²³

In the latter case, a foreign word is chosen for expressing a concept already present in the ancient Egyptian culture, and as such lexically expressed by an Egyptian word (I.b.2). This is for instance the case for the sea, which was first expressed by an Egyptian compositum, *w3d-wr*, after a semantic extension of its core meaning (great green water surface → river → lake/sea), before being challenged by *(p3)-jm*, a Semitic word, and finally in Coptic by a Greek word, **θάλασσα**, which became the regular, common word for "sea."

II. NEWLY INTRODUCED CONCEPTS

The left side of figure 9.4 (II) deals with concepts that were introduced in Egyptian at a historical stage, and needed therefore a lexical expression. For our purpose, it does not

²⁰ One could also oppose in this respect *h3b* "to send," where the *aleph* was sometimes dropped from the spelling, as is the rule for the class of verbs having the A-3-C scheme.

²¹ See also the case of *šp* and *k3mn* for expressing blindness (Winand 2017).

²² Well-known semantic evolution processes are undoubtedly at work, but other factors can have a strong influence, like dialects (Winand 2022b). See in this respect the regionally conditioned division between **ⲃⲱⲕ** and **ⲙⲓⲥ** for expressing the generic expression of going in Coptic (Peust 1999: 327–328).

²³ Things are never so simple. As "caput" was no longer used for head, it remains the source of many words related to the concept of head, like *décapiter* "to behead," *capitale* "capital," etc.

matter whether these new concepts had their origin within or outside Egyptian culture. For lexically expressing these new realities, Egyptians were basically left with two options: either use the internal resources of their language (II.a), or take a loanword, which was of course the obvious, but not the only possible, solution when the concept was itself imported (II.b). The first option can in turn be divided in two categories. The first one remains in the domain of lexicon, strictly speaking (II.a.1), while the second rather extends the possibilities of the existing lexicon by using grammatical means, *sensu lato* (II.a.2).

Adapting existing vocabulary to new realities by some type of semantic extension was not unknown in Ancient Egyptian. Formally speaking, the word could remain phonologically stable or experience some more or less serious changes.²⁴ The first case (II.a.1.α) can be illustrated by a very old word, *b3k(w)* “work,” which was used in Demotic and Coptic (ⲃⲉⲕⲉ) to convey the meaning of “wages” in an administrative, technical sense.²⁵ The second case can be exemplified by the verb *rh*, which is an illustration of an interesting evolutive path (II.a.1.β). For most of its recorded history, *rh* expressed the SoA of acquiring, getting knowledge of (hence, knowing) something. In Coptic, the SoA of knowing (with its pre- and post-phases) was expressed by other lexemes already known in earlier stages, like ⲩⲙ (Coptic ⲉⲓⲙⲉ) and ⲥⲱⲛ (Coptic ⲙⲟⲟⲩⲛ). Old *rh* was nevertheless retained as a modal auxiliary in a strongly reduced phonological form (ϣ-). This last stage was actually the result of a process of specialization, as the epistemic value was already part of the semantics of *rh* previously.

The second possibility was to create a new word, by using internal Egyptian resources.²⁶ As a member of the Afro-Asiatic phylum, Ancient Egyptian originally had a system of root/stem derivations for creating its vocabulary. Contrary to what can be observed in Semitic languages, where this system of derivation was productively maintained, it was progressively abandoned in Ancient Egyptian. This notwithstanding, some words could still be created by using ancient *Nominalbildung* patterns. This however seems to be restricted to some highly educated people from the elite circles and to specific textual genres. Examples of this are 1) the creation of new causative verbs in Ptolemaic following the old derivative pattern *s-* at a time when the new analytic formation (*rdj* + subjunctive) had already prevailed for a long time; 2) the creation of new verbs based on the rare and sophisticated *n*-ABAB pattern, like *n-fift* attested in the *Tale of Sinuhe* or *n-gsgs* in the 18th

²⁴ I leave here aside marginal processes like semantic specialization obtained by creating a new lexeme with the opposite gender mark, like *dmj.t* vs. *dmj*, or *dw3.t* vs. *dw3*. On this, see Neven 2013; Chantraine 2018.

²⁵ Examples are numerous: e.g., ⲁⲉⲓⲕ “consecration (of church)” ← ⲩⲕ “kingly solemn entry” (Wb. 1,232,10).

²⁶ Societies can of course first consider the internal resources provided by their own language. The Ancient Egyptian lexicon was basically shaped by a system of derivations from a set of roots, very much like what has been extensively studied in Semitic languages. This way of increasing the lexicon was however no longer very productive already in Earlier Egyptian, and became almost completely lost in Later Egyptian (except for some refined compositions in *Egyptien de tradition*). For instance, the causative with prefix *s-* was replaced by a periphrastic construction in Later Egyptian, but was kept very much alive in Ptolemaic *Egyptien de tradition*, with new formations.

dynasty.²⁷ To this, one can also add several composita whose first element belongs to a restricted set of words, like *jwtj* (negative relative pronoun),²⁸ *bw* “place,”²⁹ *md.t* “matter, affair,”³⁰ *r3-ʿ* “activity,”³¹ *rmṯ* “man,” *s.t* “place,”³² or *kj* “shape, manner,”³³ which would be largely desemanticized to function like prefixes in noun formation in Later Egyptian.

New concepts could also—and very frequently did—come from different cultures ancient Egyptians happened to come across.³⁴ Very often new concepts are borrowed together with the names used to call them, i.e., loanwords (II.b.2). But it does need to be so. Cultures can also translate, adapt, or reformulate in their own languages the original expressions that designate the newly borrowed concept (II.b.1).

Loanwords in Ancient Egyptian have already received a lot of attention in the past, with a special focus on the Semitic words during the NK and the TIP, and the Greek words in Coptic (and to some extent in Demotic). As already observed for the other cases, morpho-phonological adaptation can happen during the process (II.b.2.β). This is, for instance, the case with στρατηγός (Demotic *strtgws*), and for countless Greek words when they entered the Coptic vocabulary: e.g., ἄλλὰ → ἀλλὰ “but,” ψυχή → ψυχή “soul,” κύριος → κύριος “master,” λίτρα → λίτρα “liter,” μή → μη (negation). On the other hand, words could also be morphologically integrated in Egyptian (II.b.2.α), as illustrated by some Semitic verbs that were used with typical LEg flexions like *bnd* “to dress,”³⁵ or *prh* “to flourish.”³⁶

In some cases, a word or an expression was created in Egyptian to name the newly borrowed concept. While the new concept was generally properly lexicalized (II.b.1.α), in some cases it remained outside the lexicon, being expressed by a periphrasis, or glossed (II.b.1.β).

It is appropriate to mention here interesting insights on how Greek concepts entered the Coptic lexicon, as different scenarios have been observed. Besides the obvious borrowing of xenisms, other phenomena would rightly deserve an in-depth discussion, like Greek

²⁷ On *nftft* “to make untangled, unravel,” see Vernus 2014; on *ngsgs* “to overflow,” see Paksi 2020: 191.

²⁸ E.g., *jwtj-ntr* “godless.”

²⁹ E.g., *bw-dw* “evil (lit. place of evil).”

³⁰ E.g., *md.t rmṯ rh* “experience (lit. affair of the man who knows);” *md.t rmṯ ʿ3* “richness (lit. affair of the great man);” in combination with *jwtj*: *md.t (n) jwtj mwt* “immortality (lit. affair of the man who does not die).”

³¹ E.g., *r3-ʿ-b3k* “building site (lit. work in progress).”

³² E.g., *s.t-m3ʿ.t* “(lit.) place of truth,” *s.t-nfrw* “(lit.) place of perfection,” *s.t-(n)-ms.t* → *cemici* “(lit.) place of birth.”

³³ E.g., Dem. *gj-n-wnm* “food (lit. the manner of eating).”

³⁴ Egyptian was never hermetically closed to foreign influence, as was the case for instance of classical Chinese. For the Semitic words that entered the Egyptian lexicon in the New Kingdom, see Winand 2017; Kilani 2019; for the Greek loanwords in Coptic, see the collective volume edited by Grossman et al. 2017.

³⁵ Old perfective: *bnd.kwj* (pBM EA 10687, r° 3,2), *bnd.tj* (pLeiden AMS 23b, r° ii,2).

³⁶ *prh.n.f*: pLeiden I 344, v° VI,7.

words challenging existing Coptic words for the same concept, different Greek words competing for the same concept in Coptic, and dialect differences.³⁷

The absence of a proper word in the lexicon in relation with a borrowed concept might *a priori* seem counter-intuitive, but it is actually very common. To start with, from a broader perspective, people do not necessarily master all the lexical subtleties of their own language and frequently resort to periphrasis for expressing what they have in mind. An example of this in Egyptian is offered by a well-known passage from the *Doomed Prince*, when the young boy wants to know how to call an animal—actually a dog—he is seeing for the first time.

Ex. 3: *jḥ p3 nty ḥr šm.t m-s3 p3 s ʿ3*
 “What is that which is walking behind the great person?”
 (*Doomed Prince*, v° 4,8)

Ancient Egyptian not infrequently used periphrases for concepts—generally abstract ones—that were not lexicalized. Here is a selection of relevant examples: the careful one is in Egyptian “the one who is not neglectful” *p3 nty bn sw ḥr jr.t ḥm* (pChB 4, v° 2,2); the benefactor is “the one who acts for him” *p3 nty ḥr jr.t n.f* (pChB 4, v° 4,11); the obedient one is “the one who bends himself” *p3 nty ḥr ḥn.f* (LEM 124,10); what is captured by one word in French, “*le nécessaire*,” is expressed in Egyptian by a periphrasis *p3 nty nb š3w jr.t.f* like in English “what needs to be done” (LRL 20,8); the suppliant is “the one who makes a request” *p3 nty ḥr dbḥ spr.w* (*Qadesh Poem* §180); someone’s actions are “what one does” as in *p3 nty twk ḥr jr.t.f* “what you do” (KRI 6,817,16); and so on.³⁸

Translating the semantic components in the host language, that is, making a calque (II.b.1.α.1),³⁹ is another common process when borrowing a foreign word. In the following examples, the Coptic words are the almost exact translation of the Greek model:

ⲙⲁⲓ-ⲣⲟⲙⲉ “philanthropist” (*mrj rmt* “who loves people,” φιλόανθρωπος);
ⲁⲧⲛⲟⲩⲧⲉ “atheist” (*jwty ntr<.f>* “the one whose god does not exist,” ἄθεος);
ⲙⲏⲧ-ⲗⲁⲥ-ⲉⲛⲁⲩ “duplicity” (*md.t ns sn* “double-tonguedness,” διγλωσσία);
ⲕⲣⲟⲟⲩ-ⲛ-ⲕⲟⲟⲩ “quadrangular” (*jfd n kʿh* “four of corner,” τετραγώνος);
ⲡⲉⲧⲁⲓⲟⲩ-ⲛ-ⲁⲓⲟⲩ “Pentecost” (the [feast of]-fifty-of-day);
ⲙⲏⲧ-ⲁⲧ-ⲁⲩ “poverty” (*md.t n jwty hnw(.f)* “the matter of the one who has no tool/
 goods, ἀκτημοσύνη < ἄ- + κτῆμα).

³⁷ As noted by Colin (2015: 57) *à propos* the transposition of the title of Augustus in Egyptian, it is not exceptional to have more than one “translation” equivalent: Σεβαστός > *sbsts* vs. *ntj ḥwj* vs. **ⲉⲧⲙⲟⲩⲧⲉ**. For the Coptic equivalent (found on an inscription dated AD 609/10), one can of course make a parallel with standard divine epitheta like that of Amun-who-listens-to prayers (*jmn p3 nty (ḥr) sdm nh.t*).

³⁸ Formally, periphraseis with a relative clause become frequent in LEg instead of adjectives or participles: *p3 nty wsr* “the strong one” (HO 5,1), *mntk p3 nty ḥr jr.t* “you are the one who acts” (pAnastasi II, 2,10).

³⁹ On the concept of calque in lexical borrowing, see Murphy (2010: 17).

Finally, a borrowed concept can prompt the creation of a new word after a semantic analysis (II.b.1.α.2). This has not been much discussed in the literature—and certainly not for Coptic. In this case, a new concept is analyzed into a set of semantic features, which are then translated in the host language. For instance, the word δεσμοτήριον “prison” was interpreted as the place of binding (**MA-M-MOYP** ← *mʕ n mr*), which admittedly retains something of the etymology of the Greek model (cf. δεσμός “bondage”). This is however no longer the case with the following example; indeed, **MNT-PQC-XI-MACIN** “divination,” which translates Greek οἰωνισμα, derived from a stem meaning bird,⁴⁰ is the result of a reanalysis of the divination procedure as a “matter of the one who takes signs (*omina*):” *md.t jrj.f Bj mnw*. Poverty was along the same mode of reasoning interpreted as a matter concerning the one who has no goods (**MNT-AT-ZNAY**).

3. EXTENDING THE LEXICON

As already mentioned, in Later Egyptian (i.e., Late Egyptian, Demotic, and Coptic), the old way of extending the lexicon by deriving new words from a stock of ancient roots fell out of use. Instead, Egyptian increasingly relied upon compound expressions that resulted from a semantic analysis of what needed to be expressed. Complex formations like **MNT-PQC-XI-N-SONC** “oppression” and **MA-N-X(I)-IOOP** “place of ferry, bridge” could not be easily found in Earlier Egyptian. The former one can be related to *md.t jrj.f Bj n kns* “(lit.) matter/ of the one who/takes/violence,” the latter to *mʕ nj dʒj jtrw* “(lit.) place/of/crossing/river.”

In this new type of formation, whose first exploratory phases can be spotted in Late Egyptian, if not earlier, Coptic favored a restricted set of elements expressing basic ideas like place, human, activity, matter, etc. These elements were mainly used as prefixes, before the head noun. Table 9.1 gives a list of the main prefixes used in Coptic with their prototypes in older stages.

The origin of these Coptic prefixes can be traced back to older stages of Egyptian:

- α(N)** “place” ← *ʕ nj*: not very much used in LEg except in *ʕ rsj / mhtj* “southern / northern district;”
- AT** “in-/un-, -less” ← *jwty* privative suffix (originally a negative relative pronoun, which was later lexicalized):⁴¹ see already LEg *jwty-hʒtj.f* “heartless (lit. “he whose heart does not exist”) → Coptic **ATZHT**; the suffix is still productive in Coptic, as shown by new composita built on Greek words (**ATΦΥΧΗ** “soulless”);⁴²
- αϞ** “numerous” ← *ʕʒ*: **ϞϞMBAΛ** “with numerous eyes” for rendering Greek nouns with the prefix πολυ- “many;” cf. LEg *ʕʒ (m)* “numerous in, rich of” (*ʕʒ h.t* “rich” [lit. abundant in goods]);

⁴⁰ Proto Indo-European *h₂éwis “bird” (cf. Latin *avis* “bird”); see Beekes 2010.

⁴¹ See Malaise & Winand 1999: §210–213.

⁴² During the lexicalization process, morphological adaptations sometimes happen: in **ATZHT**, for instance, the original suffix pronoun, which was grammatically required, has been dropped. See already in LEg *jwty ph.tj/ph.tj.f* “powerless;” *jwty* was also lexicalized as an autonomous noun meaning someone who has nothing (oPetrie 11, r° 3; see also the formula *ntt jwtt* “what exists and does not exist” (pLeyde I 350, V,3).

Table 9.1 Set of the main prefixes used in nominal compounds in Coptic.

ⲁ(ⲛ)	“place”	← ⲉ ⲛⲓ
ⲁⲧ	“in-/un-, -less”	← <i>jwty</i> privative suffix
ⲁⲱ	“numerous”	← ⲉⲥⲓ
ⲃⲱ	“tree”	← <i>bʒ.t</i>
ⲙⲁ	“place, location”	← <i>mʒʕ</i>
ⲙⲛⲧ	“matter, property”	← <i>md.t n</i>
(ⲛ)ⲉⲧ	“the one who”	← <i>pʒ-nty</i>
ⲛⲁ	“the one of”	← <i>pʒ-n</i>
ⲣⲙⲛ	“man”	← <i>rmt nj</i>
ⲣⲉⲓ	“the one who does”	← <i>jrj.f</i>
ⲥⲁ	“man”	← <i>z</i>
ⲱⲟⲩ	“worth, -able”	← <i>šʒw</i>
ⲉⲓ-ⲛ	“form of”	← <i>kj nj</i>
Ⲓⲛ	“within”	← (<i>r</i>)- <i>hnw</i>

- ⲃⲱ** “tree” ← *bʒ.t*: already attested in composition in Demotic (e.g., *bʒ.t hbnj* “ebony”), but still used with its original meaning “bush” in LEg;
- ⲙⲁ** “place, location” ← *mʒʕ*: this formation, not attested before Demotic (*mʒ-n-ⲉⲛⲓ* “living room,” *mʒʕ-n-swʀ* “drinking place”) and whose etymology remains unclear diachronically succeeds to older composita built on *s.t* “seat, place” (e.g., *s.t-jb* “predilection,” *s.t-ⲉⲓ* “standing place, halt”),⁴³ exceedingly used in Coptic in different morphological patterns for translating Greek words: **ⲙⲁ-ⲛ-ⲱⲱⲛⲉ** “dwelling place;”
- ⲙⲛⲧ** “matter, property” ← *md.t n*: Eg. *md.t* originally means “word, speech” (cf. *md.t n km.t* “Egyptian” as a language; see Coptic **ⲙⲛⲧ-Ⲓⲣⲱⲙⲁⲓⲟⲥ** “Latin”), before expressing the general idea of “matter” (cf. *md.wt ʕʒ.wt* “serious, important matters”); already used to form abstract nouns in Eg.: *md.t nfr.t* “good action,” *md.t bjn.t* “evil, bad action,” *md.t sn.nw.t* “duplicity” (lit. “double word”); in Coptic for expressing abstraction (Layton 2011: §109): **ⲙⲛⲧ-ⲟⲩⲁ** “unity;”
- (ⲛ)ⲉⲧ “the one who” ← *pʒ-nty*: very common in Coptic with some statives (**ⲛⲉⲧ-ⲟⲩⲁⲁⲃ** “holy” ← *pʒ nty wʕb.w* “the one who is pure,” **ⲛⲉⲧ-Ⲓⲛⲓ** “secret” ← *pʒ nty hʒp.w* “that which is hidden”),⁴⁴ cf. LEg *nkt nb nty nfr* “all good stuff,” **ⲉⲓ-ⲣⲙⲓⲓⲱⲩⲉⲛⲓ** (*w*) “a living person” (lit. a person who is living);⁴⁵

⁴³ But see Bohairic **ⲥⲉⲙⲓⲥⲓ** “place of birth” ← *s.t n msj.t* vs. **ⲙⲁⲙⲓⲥⲓ**.

⁴⁴ Cf. *nʒy.k md.t nty hʒp* “your secret words” (pBrooklyn 47.218.135, 5,14).

⁴⁵ Cf. *šb jw.f hʒp* “a secret reward” (pBrooklyn 47.218.135, 5,13).

- πΑ** “the one of” ← *p3-n*: this formation is exceedingly frequent in onomastics, already in LEg;
- PM(N)** “man” ← *rmt (nj)* + noun: see already *rmt-js.t* “crewman,” *rmt-n-km.t* “Egyptian” (Coptic **PMNKHMЄ**), but also with different types of extension like *rmt* + adjective (*rmt-ʕ3* “a rich man” → Coptic **PMMAO**) or *rmt* + *jw*-headed phrase (*rmt-jw.f-mwt* “a dead man” → Coptic **PMЄQMAAYT**);
- PEQ** “the one who does” ← *jrj.f: p3 (rmt) ntj / jw.f* + verb of quality for replacing adjectives (*rmt jw.f nfr:w* “a good man”);
- CA** “man” ← *z*: very common in Coptic for function names (**CANAQ** “butcher” **s-n-jw.f* “flesh-man”), already attested in EEg (e.g., *s-n-wsrt* “the one of the goddess Weseret,” i.e., Senuseret), but not much in use in LEg; in Demotic, however, attested in occupation names: *s-n-ʕk* “baker (lit. man of the bread);”
- WOY** “worth, -able” ← *š3w: / WOYMCTE* “appalling” (lit. worth of detestation); cf. LEg *š3w-mw.t* “which deserves death;”
- GI-N** “form of” ← *kj nj*: for expressing types of activity (**GI-N-OYWM** “eating,” also “food”), see Demotic *gj-n-wnm* “food,” *gj-n-swr* “beverage,” *gj-n-ʕh* “living means;” in LEg, the lexicalization is under way but not completely achieved, as shown by the possibility of having *nb* “every, all” inserted between the components: *p3 kj nb n mtn*, *p3 kj nb n gws* (pCGC 58032, 23).⁴⁶
- 2N** “within” ← (*r*)-*hnw*: in adverbial expressions (**2NOY6EPH** “quickly”).

As is clear from the following examples, these prefixes can be easily combined to form composita that can be highly sophisticated, as shown by how apparently simple notions like “lie” or “silence” were reanalyzed. The former can be expressed in Coptic by **MNT-PEQ-XЄ-WAXЄ**, that is literally “the property of the one who does say a discourse” (← **md.t jrj.f dd sdd*), to be understood as “the one who speaks too much,” which was apparently interpreted as a possible cause of lying.⁴⁷ For the latter, Coptic has the compositum **MNT-PEQ-KA-PW-Q**, that is literally “the property of the one who does put down his mouth” (← **md.t jrj.f h3ʕ r(3).f*).

Coptic also frequently used in postposition, after the head noun, **2OOYT** “male” and **C2IME** “female” to mark gender, as illustrated by the pair **BAAMT-2OOYT** “goat” (lit. goat-male) vs. **BAAMTE N-C2IME** “goat” (lit. goat-female).⁴⁸ This formation was already known in Late Egyptian, as shown in the Hittite Treaty or the Oracular Amuletic Decrees:

- Ex. 4: *h3 <n> ntr m ntr:w ʕh3wty m ntr:w hm.t*
 “thousands of gods, male gods and female gods” (KRI II, 229,12)⁴⁹

⁴⁶ Functionally, *kj* seems to take over from *shr-n: jr:[f p3] kj n smy m-[b3h] p3-rʕ [nty jw].fr jr.f* (pVandier 2,13). In Demotic, a *gj*-headed phrase sometimes functions like a circumstantial phrase: *mtw.f dd n.j p3 gj-n di.t 3k p3 dmj j.jr:w* “and he would tell me how the city was destroyed (lit. the way of letting the city be destroyed they did)” (pRylands IX, 1,7–8).

⁴⁷ Compare with **CA-N-MNT-N-OYX** “liar” (lit. “the man of the property of false” ← **z n md.t n ʕd3*).

⁴⁸ Cf. well-known formations like he-dog vs. she-dog in English.

⁴⁹ See also the opposition in Coptic between **NTHP N2OOYT** and **ENTHP NC2IME** (Vycichl 1983: 145).

Table 9.2 Correlations between lexical Coptic prefixes and hieroglyphic classifiers.

ⲁ(ⲛ)	“place”	
ⲁⲧ-	“in-/un-, -less”	 ,  , 
ⲁⲱ-	“numerous”	 
ⲃⲱ	“tree”	
ⲙⲁ-	“place, location”	 ,  , 
ⲙⲛⲧ-	“matter, property”	
(ⲡ-)ⲉⲧ-	“the one who”	
ⲡⲁ-	“the one of”	
ⲡⲙⲛ-	“man”	
ⲡⲉⲓ-	“the one who does”	 , 
ⲥⲁ-	“man”	
ⲱⲗ/ⲱⲟϥ-	“worth, -able”	
ⲃⲓ-ⲛ	“form of”	
ⲉⲛ-	“within”	
ⲥⲓⲙⲉ	“woman”	
ⲉⲟⲟϥⲧ	“man”	

While composita formed with this restricted set of prefixes are exceedingly common in Coptic, other types of composition are attested as well, based on the same principles of semantic (re)analysis, with metaphoric expressions sometimes playing a significant role. In the following list of examples, the semantic gloss has been provided in parenthesis. Besides another illustration of the use of ⲉⲟⲟϥⲧ “male” and ⲥⲓⲙⲉ “female” for expressing gender, the last two examples very clearly show how what is seen as two separate notions in English was conceived of as a single entity with two declensions in Coptic according to gender:

- ⲁⲗ-ⲙ-ⲡⲉ “hail” (pebble of the sky);
- ⲁⲓ-ⲛ-ⲉⲃⲓⲱ “bee” (fly of the honey);
- ⲉⲧ-ⲥⲁ-ⲡ-ⲉⲥⲛⲧ “inferior” (what is close to the ground);
- ⲙⲁⲡ-ⲟϥⲟ(ⲟ)ⲥⲉ “jaw” (bond of mastication);
- ⲡ-ⲉⲛⲧ-ⲁⲓ-ⲙⲟϥ “dead man” (the one who has passed away);
- ⲡ-ⲡⲉⲧ-ⲛⲁⲛⲟϥ-ⲓ “to make good” (to do what is good,” εὐεργετεῖν);
- ⲥⲙⲉ-ⲛ-ⲡⲁⲧ “tibia” (stick of the leg);

CMOT-N-200YT “testicles” (aspect of the male);

CMOT-N-NE-210ME “menstruation” (aspect of the female).

Now, it should be pointed out that what was expressed morphologically (< lexically) in Coptic could actually be conveyed in earlier stages of Egyptian by its graphic system, more precisely by using a generic classifier. Table 9.2 shows possible graphemic correspondents in “hieroglyphic Egyptian” to the Coptic prefixes already discussed.

SOME TYPOLOGICAL CONNEXIONS WITH CHINESE

The process of lexical creation starting with a semantic analysis of a borrowed concept followed by a lexical reconstruction is not without parallels. It is tempting indeed to make connections with the system used in other languages, as for instance in Chinese. The case of how the idea of computer is expressed in different languages will offer some useful introduction to the discussion. In English, the word was created in reference to the idea of computing, which is related to calculus. The word seems to enter the lexicon around 1640, meaning “one who calculates, a reckoner, one whose occupation is to make arithmetical calculations.” The word was then applied in 1897 to whatever machine able to calculate. The modern use, that is, “a programmable digital electronic device for performing mathematical or logical operations,” is first attested in 1945. The word then became extremely popular and was borrowed in many languages, like Russian or Japanese.

In other languages, the idea of computer was kept, but translated as a calque. This is the case in academic Arabic حاسوب *hasub*, or in Hebrew מְחַשֵּׁב *makhchev*. In these two languages, the root is connected to ancient Egyptian *ḥsb*, which precisely means to calculate. Thus, a possible equivalent for computer in hieroglyphic writing would be something like , that is, a chain of phonograms to write the morphological root, completed of course by the appropriate classifier. In French, the new machine was the subject of an intense intellectual reflection. It is the Latinist and philologist Jacques Perret who suggested to IBM to brand the new machine *ordinateur*, which means a device that brings order. Interestingly enough, it was the people from IBM that wanted to find a better word, for they considered that computer or “*calculateur*,” which would have been the exact French equivalent, was too restrictive to do justice to all the possibilities of the new machine (Guiraud 1959). Computer was nevertheless definitively retained in English. In Chinese, the concept was reanalyzed and split into two semantic components, electricity and brain: *diànnǎo* (电脑) /electricity + brain/.

As it seems, instead of borrowing or creating words that would be semantically quite opaque, Chinese speakers obviously prefer to analyze a complex idea into key basic concepts.⁵⁰ The word for “computer” combines two components: electricity and brain. When associated to the word “pool,” electricity creates a new compositum for expressing the concept of battery (*diànchí*), that is, a pool of electricity, which is just fine (电池). The

⁵⁰ The way Chinese create words was celebrated from the very beginning, already in the 16th century; see for instance P. du Halde cited by Warburton 1765: III, 87–88.

component pool is also found in a complex formation for expressing the idea of a swimming pool: *yǒuyǒngchí* (游泳池 [water + swim + pool]). The second component of the word for computer, i.e., *nǎo* “brain,” can be combined with a word meaning pocket to form the compound 脑袋 [brain + pocket] *nǎodài* “head.” The next example shows some variation with the basic element *dǎ* (打) for strike. Combined with the word for electricity, already introduced, and the word for speech, it creates a new compound for expressing the idea of calling by phone: 打电话 (*dǎ diànhuà*), 电话 meaning “phone.” If one now introduces the very common element 机 *jī*, meaning “tool,” dozens of new words can be created which all share the idea of /tool, utensil/. Thus, a lighter is a tool for striking fire (打火机 *dǎhuǒjī* [strike + fire + tool, device]), and a printer is a tool for striking a stamp, an imprint (打印机 *dǎyìnjī* [strike + imprint, stamp + tool]). With its strong visual shape at the end of the word, 机 looks like a hieroglyphic classifier. Or rather, it makes a bridge between linguistic classifiers, as they are known in certain languages, and graphic classifiers that are limited to the graphic system, as is the case in Egyptian. Figure 9.5 shows how these basic semantic elements combine to express complex ideas.

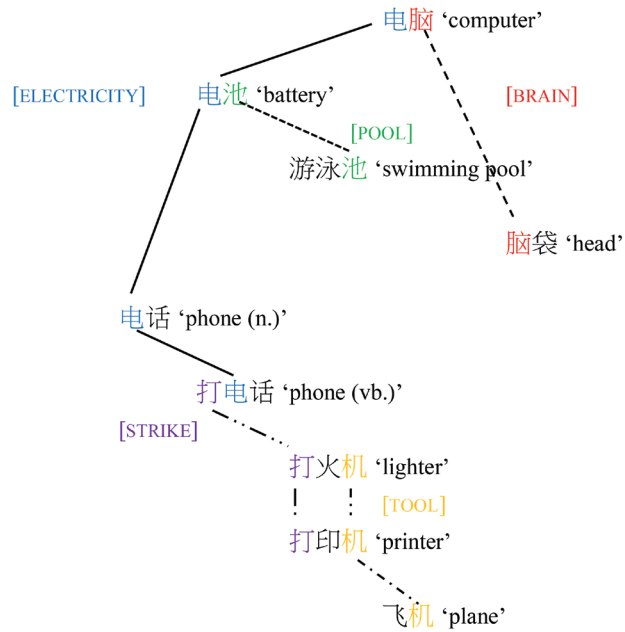


Fig. 9.5 Linguistic classifiers in Chinese.

4. SOME WORDS OF CONCLUSION WITH A PERSPECTIVE

Language is a privileged vehicle for classifying and organizing the world. The lexicon has for obvious reasons received most of the scholarly attention. As I alluded to in this article, albeit very briefly, grammar is also worth looking at in this respect.⁵¹ While it does not provide a fine-grained classification, it nonetheless deserves a closer attention because it *structurally* shapes one's representations of the world. Coding a semantic classification with grammar is indeed no trivial matter, for it clearly indicates how relevant a semantic class is for a community of speakers.

For languages that are supported by non-alphabetic systems, writing can also play a significant role. The number of signs in Chinese (sometimes estimated around 75,000) was a clear indication in the Western reception in the 17th and 18th centuries that there

⁵¹ See Winand 2006 and 2021.

were as many signs as living beings, natural entities, objects, ideas, and concepts to be expressed. It introduced the idea that Chinese writing was completely disconnected from any linguistic expression, as seemed implied by the fact that it was used by different people who did not speak Chinese.⁵²

In Later Egyptian, one can observe an increasing move to create complex expressions, *composita*, which result from a semantic analysis of new realities and concepts that entered into the lexicon. This new type of *Nominalbildung* is a natural consequence of the gradual disappearance of the set of pre- and suffixes, and the loss of the older, Afro-asiatic system of morphological derivation.

In the following, I suggest some possible parallels, from a typological perspective—this must be strongly emphasized—between “Pharaonic” Egyptian as supported by the hieroglyphic writing and alphabetic Coptic. The point here is to show that both phases of the language came up with typologically comparable solutions for expressing very close concepts. My first example deals with the concept of affliction.

affliction in EEg: *gmw*   [to be weary + bad/low]
nkm   [division + bad/low]
 affliction in Coptic: **πΩΩ-Ν-ΖΗΤ** (lit.) division of the heart
ΜΚΑΖ Ν ΖΗΤ sorrow of the heart

In pre-Coptic Egyptian, two basic nouns were used: *gmw* and *nkm*. Both are usually written with two semantic classifiers. The last, generic one is the swallow (G37), which is very common to express everything that is low, little or short, hence bad or evil.⁵³ As first classifier, *gmw* takes the weary man (A7), which expresses the idea of feebleness or weakness, both physically and psychologically, while *nkm* is more often associated with the crossed sticks (Z9), which globally convey the idea of separation, division, and opposition. As such, the classifiers give a very general idea of how *gmw* and *nkm* were perceived by the ancient Egyptians, a bad feeling that puts you down (*gmw*) or breaks you down (*nkm*). As it seems, the same semantic halo was retained in Coptic and transferred from the graphical to the lexical level. Thus **πΩΩ-Ν-ΖΗΤ** is arguably a close equivalent of *nkm*, while **ΜΚΑΖ Ν ΖΗΤ** is not very distant from *gmw*.

My second example is provided by the verb *rsw* “to be vigilant.” Written with the eye classifier (D6), it links the idea of being vigilant with the attitude of keeping one’s eye wide open. Once again, as part of the spelling of *rsw*, the eye classifier links the activity of being vigilant to a particular body attitude without being part of its lexical expression. This is however the case with Coptic **ϣϣ-ϥⲓⲁⲧ-ϥⲓⲣⲁⲓ**, which literally means “to raise an eye upward.”

to be vigilant in EEg: *rsw* [to keep an eye open] 
 to be vigilant in Coptic: **ϣϣ-ϥⲓⲁⲧ-ϥⲓⲣⲁⲓ** to raise an eye upon

⁵² Winand, forthcoming d. This explains why Chinese writing was once considered by the likes of Wilkins and Leibniz as a possible candidate to universal writing.

⁵³ See David 2000.

Table 9.3 Coptic composita and their ancient Egyptian predecessors.

Egyptian	Translation	Hieroglyphic spelling	Coptic equivalent
<i>jmnt.t</i>	“occident”		MANZΩTTI
<i>ʿ.t-sb3</i>	“school”		MANXICBΩ
<i>htm</i>	“prison”		MA MMOY P, MANCΩN2
<i>mnj.t</i>	“haven, pasture”		MANXICIOOP
<i>ʿh3wty</i>	“warrior”		PƐQXIMAA2
<i>jhwty</i>	“farmer”		PMNCΩP
<i>j3w.w</i>	“old man”		PMNAC
<i>b3kw</i>	“wage earner”		PMBEKE
<i>nfr.t</i>	“good” (n.)		MNTNOYCPƐ
<i>htm</i>	“ignorance”		MNTATEIME
<i>sn</i>	“brother”		CNHY N2OOYT (sg CON)
<i>sn.t</i>	“sister”		CNHY NC2IME (sg CΩNE)

In this case, one could of course suggest that **ϣι-ειατ-εζραι** is actually a calque from the Greek expression ὀφθαλμὸν αἶρειν. Hopefully, the evidence is not too limited, as shown by a small list of words for naming trees. In Egyptian, they are systematically written with a specific classifier (M1). In Coptic, the very same words are formed with the element **ΒΩ**, coming from Egyptian *b3.t* “bush,” which was used as a lexical classifier for all types of trees.

	<i>tr.t</i> “willow”	ΒΩ-N-ΤΩΡƐ
	<i>tpḥ</i> “apple”	ΒΩ-N-ΧΕΜΠƐ2
	<i>dt</i> “olive-tree”	ΒΩ-N-ΧΟƐIT

In the next example, the word *ʿhʿ.t* “funerary chapel” is written with two classifiers [MOVING LEGS + HOUSE], which resurfaced in Coptic, even if the meaning “standing place” is no longer exactly the same (cf. στάσις in *Daniel* 8,17).

	<i>ʿhʿ.t</i> “funerary chapel”	MA-N-A2Ɛ ƐPAT (lit. “place [□] where one stands [Λ] on one’s legs, station”)
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As it turns out, a systematic typological comparative study between the graphic level and the lexical means could indeed be highly rewarding. Table 9.3 provides a list of simple nouns with their Coptic equivalents. I here limited myself to the Coptic nouns whose first element belongs to the set of prefixes that have already been discussed.

Table 9.4 Possible typological correlations between hieroglyphic classifiers and Coptic prefixes.

MA	[place]	 
PEQ	[actor]	 
PM, PMN	[human]	
N2OOYT	[man]	
NC2IME	[woman]	
MNT	[abstract]	
AT	[negation]	 ^a

^a The presence of the classifier  suggests that ignorance was analyzed as the absence of knowledge, which is transparent in the Coptic equivalent **MNT-AT-6IME**.

The correspondences in Table 9.4 can be made between the semantic classifiers in the hieroglyphic writing and the first element of the Coptic *composita*.

One should not take the last section of this study for what it is not. The system of *graphic* classifiers that was used in the hieroglyphic writing was of course never mechanically and consciously replaced by a new system of *linguistic* classifiers in Coptic. It is rather tentatively suggested that some common cognitive processes could independently be at work, which eventually materialized in different ways.

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