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## The Question of Sumerian “Determinatives”

Gebhard J. Selz, Colette Grinevald, Orly Goldwasser

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# The Question of Sumerian “Determinatives”

## Inventory, Classifier Analysis, and Comparison to Egyptian Classifiers from the Linguistic Perspective of Noun Classification

Gebhard J. Selz, Colette Grinevald & Orly Goldwasser<sup>1</sup>

### Abstract

The two most ancient writing systems, Sumerian cuneiform and Egyptian hieroglyphs share one feature: the use of so-called “determinatives” thought to be of purely graphic nature and unpronounced. After considering the state of the art discussion of these cuneiform determinatives, the first contribution of this paper is to present a consolidated list of the alleged cuneiform determinatives, including a short discussion of the various entries, related to their semantics, estimated origin, frequency and chronological distribution. The second import of this paper is to further demonstrate that the Sumerian determinatives constitute a “noun classifier” system strikingly similar to better-studied classifier systems. This demonstration starts by establishing the particular categorization domains and functions of the Sumerian system, in order to then compare it with two classifier systems: one a noun classifier system in a contemporary Mayan language (Jakaltek), the other that of the Ancient Egyptian script, a much more complex system in its inventory, use and function but including a similar classification function. It is suggested in conclusion that a future path of research should discuss in detail how the Sumerian classifier system emerged and in what ways it forms the basis for the later evolution of classifiers in the cuneiform world, taking up both the issue of noun formation and noun classification in that script, to eventually establish Sumerian as the earliest attested language with true noun classification.

### Keywords

cuneiform determinatives; graphemic classifiers; lists of cuneiform classifiers; early writing systems; Sumerian classifiers; Egyptian classifiers, Jakaltek noun classifiers; domains of noun classification.

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We are grateful to Halely Harel for preparing the manuscript for publication.



## 0 Introduction

Cuneiforms and hieroglyphs are the two earliest writing systems known, both born before the beginning of the 3<sup>rd</sup> millennium BCE. Despite its origins as a pictorial system, the Sumerian script, developed along the shores of the Euphrates, evolved rapidly into the abstract script known today as “cuneiform”, while the hieroglyphic script, on the banks of the Nile in Egypt, kept its highly pictorial nature. These two complex script systems, cuneiform and hieroglyphic, both comprise hundreds of signs, but while they differ from each other in many respects, they do have in common a unique written phenomenon which has been traditionally called “determinatives”. These determinatives fulfill one of the three different semiotic functions that the signs may assume in both systems, the others being logograms and phonograms. Determinatives have always posed a challenge for analysis because, while they are almost always present, they are allegedly unpronounced.<sup>2</sup>

Both Assyriologists and Egyptologists have traditionally found these determinatives to be of little interest, since they consider them to be an extra-linguistic phenomenon that merely provides paralinguistic or metalinguistic information. The overall aim of this paper, however, is to show how momentous and elaborate this neglected phenomenon of determinatives is and how it can be demonstrated to resemble systems of categorization known in linguistic typology as “classifier systems”. As is the case with all other classifier systems of the world, a semantic analysis of the determinatives should also provide modern scholarship with another source of information about knowledge organization in the different cultures that were using the cuneiform script.<sup>3</sup>

The paper reveals the importance of the application of state-of-the-art methods from another academic discipline, in this case contemporary typological and cognitive linguistics, to the traditional fields of cuneiform studies. A similar analysis of determinatives as classifiers has recently been applied in the field of hieroglyphic studies, most notably by Orly Goldwasser, Frank Kammerzell and Eliese-Sophia Lincke.<sup>4</sup> A trans-disciplinary research model has been developing over the last decade by two of the co-authors, Goldwasser and Grinevald, resulting in a pilot study of grammatical and cultural aspects of the classification system of the Egyptian hieroglyphic script (Goldwasser & Grinevald 2012). This model is being applied here for the first time to the analysis of the cuneiform script, with the new collaboration of the Sumerologist Gebhard Selz. Among other things, this innovative interdisciplinary approach aims at building a new bridge between the fields of Assyriology and Egyptology.

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2 See below 6.1 for a preliminary discussion whether Sumerian determinatives were ever pronounced or not, however all scholars agree that Egyptian determinatives are unpronounced.

3 For classifiers system as mirror of knowledge systems in various cultures; see, inter alia, Craig (1986b), Denny (1976), Lakoff (1986), Senft (2000), Kilarski (2014).

4 For the theoretical framework, see Goldwasser (1999, 2002, 2005, 2006a), Lincke (2011); Lincke & Kammerzell (2012); Kammerzell (2015); Lincke (2015a). Werning (2011) presents the only up to date *corpus* analysis of classifiers, with many innovative discussions and insights as well as statistics.

This collaborative research between a Sumerologist, an Egyptologist, and a linguist – specialist in classifier systems – focuses on establishing that, from a linguistic typological perspective, the Sumerian determinatives constitute a *classifier system*. This article therefore presents for the first time a description of the Sumerian “determinatives” as *classifiers*, and does so by showing how they are comparable in many ways to other known classifier systems of the world. Two parallels are drawn to support this new analysis of cuneiform classifiers. One is a parallel with a well-studied classifier system of a contemporary Mayan language of Mesoamerica living as an oral tradition language, and the other with the classifier system of the Egyptian hieroglyphic script, for which a parallel demonstration has already been established.

The article will start (section 1) with a state-of-the-art description of determinatives in cuneiform script. In a quick review, it will recall that the existence of determinatives is widely acknowledged, and point to the fact that, to this date, no attempt has been made to place them within a wider *typological linguistic* context of parallel phenomena in other languages or scripts. It will then proceed (section 2) to establish a *consolidated inventory* of cuneiform determinatives, preceded by a presentation of the secondary sources used and the organization of information contained in the entries, then followed by an initial analysis of this list.

The next two sections, will turn to demonstrate how Sumerian determinatives show characteristics of classifier systems. The thematic organization of the list (section 3) will reveal how far the semantic domains covered by this system correspond to those of known classifier systems, in an expected mix of universal categories and categories specific to the local culture. The demonstration of how the Sumerian determinatives can be put in perspective with other classifier systems will first consider (section 4) the classifier system of Jakalteq, a contemporary Mayan language of Mesoamerica, and then the one of the Ancient Egyptian hieroglyphic script system (section 5) more recently described as such. The concluding section (section 6) will consider some of the implications of this study and point to possible future domains of research. Finally (section 7), it is underlined that applying the proposed term “classifier” identifies the Sumerian determinatives as indicative of a *linguistic system*.

## 1 State of the art of determinatives in cuneiform script

In cuneiform studies, little attention has been given so far to the determinatives in the cuneiform script. In this section, we intend to summarize some prevailing opinions which present the current state of the art research on these “determinatives”.

### 1.1 Determinatives in recent grammars of cuneiform languages

None of the recent grammatical studies – nor the respective sign lists – provide new insights in the phenomenon of “determinatives”. Two prominent scholars supply the following description, with the following labels and definitions.

Edzard (2003: 8–10) declares that determinatives are one class of “cuneograms” – alongside (1) logograms, (2) syllabograms, (3) “phonetic indicators” (a sub-class of [2]), and (4) “signs for numbers or the combined notation of measuring”. He then specifies that “they are signs which precede or follow words or names in order to specify them as belonging to semantic groups”, adding that “determinatives can be proven not to have been pronounced (although doubt may exist in specific instances)”; cp. fn. 36.

Jagersma (2010: 16, 18) labels determinatives as “auxiliary logograms” and establishes their function as one that identifies the following or preceding word as belonging to a specific semantic class. He further describes determinatives as “in origin word signs stripped of a pronunciation”. Jagersma’s remark points to a process which gave rise to the cuneiform determinatives which will be considered below.



So far, neither the different origins nor the various functions of these determinatives have been researched, and in general, no further significance is attributed to them. As a starting point, we will first provide an overview of the phenomenon known as “Sumerian determinatives” and discuss some of their distinctive features.

## 1.2 No single list of cuneiform determinatives

Whereas in Egyptology Alan Gardiner’s list of 1957 of “generic determinatives”<sup>5</sup> (which is by no means comprehensive or conclusive) serves as a basic reference point for the identification of such determinatives, there is no single list for the cuneiform world, although, as will be seen, a number of partial and differing lists do exist.

The reason for that rather surprising state-of-the-art may be that the development and evolution of such classifiers in Mesopotamia (and adjacent regions) occurred in a multi-lingual environment, right from the beginning. Already at the time when writing was invented, in the late 4<sup>th</sup> millennium Mesopotamia, there coexisted several linguistically diverse groups, although their various contributions to the evolution of the writing system is presently still obscure. Therefore, one has at least to consider the possibility that this linguistic environment influenced the development of the concept of determinatives, even if one contends that they are exclusively a written phenomenon. It can be further demonstrated that the replacement of the previously dominant Sumerian by Akkadian (and other Semitic languages) also affected the implementation of the classifiers in the script. Most important here is the fact, that in the cuneiform writing system the so-called Sumerograms played a salient role, right down into the 1<sup>st</sup> millennium BCE. Thus, the consulted authors’ differing judgment of the origin, evolution and adaptation of the cuneiform determinatives partially explains the variations in the extant lists.

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5 The list that was compiled for teaching purposes (Gardiner 1957: 31–33) refers mainly to Middle-Egyptian with some later additions. It suffers from many shortcomings. The first and foremost is that the most common classifiers, such as A1  or B1  get the same status on the list as other, rare, or very rare classifiers. Some of the classifiers are hosted by many words, while others forge very small categories that harbor 3 or 4 words only. All-encompassing determinatives’ lists in the grammars published since then are based on this list.

Looking at the graphemic features of the cuneiform classifiers, the early loss of iconicity of the ideograms, in contrast to the more stable and detailed iconicity of hieroglyphic script, might have furthermore influenced the system, imposing highly standardized sign forms on the cuneiform determinatives.

### 1.3 A diversity of common determinative lists used in cuneiform studies

There is no complete and generally accepted inventory of this script phenomenon. In cuneiform, especially for Sumerian, the most commonly used lists – selected here rather arbitrarily – are quite diverse, depending on the author’s individual notion of the phenomenon and the specific purpose of teaching the script (and language) of a given period. It may well be that the newly compiled list presented here will need further elaboration, especially for what concerns the proposed frequency and chronology of attestations. While existing data-bases may help, such statistics are presently difficult, if not outright impossible, to obtain.

The number of determinatives varies according to the aims of the various studies but remains in the range of few dozens, from 15 to 46. Borger (1978) has 46, Labat (1988<sup>6</sup>) 36, Ellermeier (1979) 31, Huehnergard (1996) 25, Falkenstein (1964 and 1949) 20. The lists are reduced to 22 and 14, in Foxvog (2016) and Edzard (2003) respectively, both authors exclude those items that are allegedly attested only in later stages of the system. Borger, Labat and Ellermeier are the standard cuneiform sign lists. Whereas Borger and Labat cover both Sumerian and Akkadian texts, Ellermeier concentrates on Sumerian.

Cuneiform determinatives are attested in all sorts of texts – historical, literary and administrative – but also, especially in the late periods, in all sorts of scholarly or “scientific” texts. Indeed, the latter texts make heavy use of Sumerian logograms, and there are indications that the Sumerian of these texts was indeed *a pronounced technical language*.

The determinatives clearly appear at the time when writing was invented (late 4<sup>th</sup> millennium) and there can be little doubt that this took place in close contact with Sumerian, probably being the dominant language at the time.

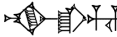

It is well-known that the concept of cuneiform determinatives spread also to the fringes of cuneiform writing in the west and in the east and even entered the writing of an entirely different language, the Indo-European Hittite.<sup>6</sup> To deal with these issues is beyond the scope of this paper; however, we contend that even the newly introduced determinatives of the 2<sup>nd</sup> and 1<sup>st</sup> millennium reflect the *Sumerian system* – as described below – even when used in Akkadian contexts. As it seems and as will be elaborated in the following, the type of noun classification that the determinatives reflect is a salient feature of the Sumerian *language*, no matter whether these classifiers were silent or pronounced.

### 1.4 The problem of transliteration

To this day, the transliteration and identification of determinatives in cuneiform texts is almost exclusively based on one or the other of the above mentioned standard sets. Their

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<sup>6</sup> Cohen (2010); for Luwian hieroglyphs, see Yakubovich (2008: 9–36) and Payne (2014).

number amounts, as we have seen above, generally to less than twenty and never exceeds thirty to forty in any given period. However, there is no common agreement among scholars on the corpus of determinatives and even the scholarly mode of transliteration is not always consistent. Most often, what individual authors see as (silent) determinatives is – in transcription – rendered in upper case: thus, the **buru**<sub>4</sub> bird (“a crow or a vulture”), in cuneiform  (NU<sub>II</sub>.BUR.MUŠEN) is transliterated as **buru**<sub>4</sub>(=NU<sub>II</sub>.BUR)<sup>mušen</sup> that is **buru**<sub>4</sub><sup>BIRD</sup>. Occasionally the identification of such (silent) classifiers is inconsistent. One finds, for instance, for  both transliterations <sup>gēs</sup>**gušur** and <sup>gēs</sup>**úr** “beam”. The Akkadian loan *gušūru* is almost certainly derived from **gēs-úr** meaning something like “wooden base, basis” and demonstrates that in this case **gēs-** WOOD has the function of a *pronounced(!) classifier*, i.e. ‘wood’.







### 1.5 Recognized characteristics of “determinatives”



Previous studies have already established a number of semantic and characteristic features of the determinatives:

#### A Semantic classification





The existence of semantic classification through determinatives in cuneiform script is widely accepted.

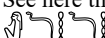
#### B Variation in position

Variation in position (pre- and post-noun) is acknowledged by all scholars, but little researched. In the cuneiform system, most determinatives appear *before* the word, as in  “nest”, where  GI REED is the determinative and the logograms  PLANTS+EARTH+PUT convey the semantics of a nest, or in  “tent”, where the determinative  KUŠ SKIN/LEATHER is followed by AB  SHRINE/DWELLING. However, in some cases, the determinative follows the word as is the case for determinatives for PLACE and FISH or BIRD (see list below).

This is in sharp contrast to Egyptian, where such “silent” hieroglyphs are always found at the end of the word, as in:  □ *sšy*, “nest” logogram with HOUSE determinative, and  □ *imw*, “tent” – phonograms *im-(m)w* and same determinative HOUSE.<sup>7</sup>

#### C Variation in the choice of “determinatives”

Occasionally attested is the possible variation in the choice of a determinative, as in the case of the alternation of the REED and WOOD classifiers. For instance, the noun “cedar” can be written simply with the logogram  EREN = “cedar tree”, but also with either the pre-classifiers (pre-determinatives) for  **ĜEŠ** TREE/WOOD, or perhaps  **ŠIM** AROMATICS, occasionally also with both.  = AROMATICS+TREE/WOOD cedar.

<sup>7</sup> See here the very rare exception in CT IV 269 in a single version, in pre-position, coffin T2Be, b – . We are grateful to Wolfgang Schenkel for this example.

This possibility of multiple classifiers is very rare or even doubtful in cuneiform, but is a common feature of the Egyptian system (see below, 5).

## 2 A consolidated inventory of cuneiform “determinatives”

As there exists, so far, no in-depth study of cuneiform determinatives, the consolidated list to be presented in this section may be useful for Sumerian studies in general. It was actually conceived, at the same time, as a major step towards building the ensuing argumentation that these “determinatives” are to be considered “classifiers”.

### 2.1 Information contained in the consolidated list of determinatives

The inventory to be proposed next in 2.2 offers a novel synthesis of much information of different nature, gathered from different sources and analyzed from different perspectives.

#### A The sources

The inventory is based on a selection of works, sign lists and grammars, widely used in teaching cuneiform. The selection includes the following: Borger (1978: 48); Falkenstein (1964: 21 and 1949: 34–35<sup>8</sup>); Labat 1988<sup>6</sup> (1948<sup>1</sup>): 20–22, Ellermeier (1979: XXXIV–XXXV); Huehnergard (1996: 537); Foxvog (2016), and Edzard (2003).

From the collection presented below it can be easily seen that the choice of which cuneogram is considered as determinative depends first on an author’s focus on a particular period, and also on the major language (Sumerian/Akkadian) considered. The lists also reflect the teaching purpose for which they were established, quite evidently sign lists (Borger, Labat, Ellermeier) differ from grammars (Falkenstein, Huehnergard, Foxvog, and Edzard). The most extensive list is by Borger and, for convenience sake, the reference to his sign numbers will be given first.<sup>9</sup>

In each entry of the proposed new list, the references to the works quoted will be presented in the following order, with the following abbreviations:

- Borger = Borger (1978: 48);
- F = Falkenstein (1964: 21);
- F-2 = Falkenstein (1949: 34–35);
- L = Labat (1988<sup>6</sup> [1948<sup>1</sup>]: 20–22);
- E = Ellermeier (1979: XXXIV–XXXV);
- H = Huehnergard (1996: 537);
- Fo = Foxvog (2016);
- Ed = Edzard (2003).

8 Falkenstein’s short list can be found in Falkenstein (1964: 20–21); I also include references to Falkenstein (1949: 34–35 [F-2]); there Falkenstein collects the instances in the inscriptions of Gudea where writing with and without determinatives (“eine etwas grössere Freizügigkeit”) are attested.

9 Numbers in brackets ([...]) are provided by the authors and follow the sequence of enumeration in a given source.

The number following these authors' name abbreviations (except for Borger, taken as the initial source) will correspond to the position of an item in the respective list of origins, thus L [3] refers to item 3 in Labat's list, or H [8] to item 8 in Huehnergard's list.

## B The form of the entry itself

Each entry of the list includes these features:

- A **number**, as established in the standard ordering according to the later sign forms used e.g. by Borger (arranged according to their elements – horizontals, *winkelhaken*, and verticals).
- A **hyphen** (–) in front or after the determinative to indicate its use as “pre–” or “–post” classifiers, they also abbreviated as:
  - PR for Pre-position classifier
  - PO for Post-position classifier
- The (Old Babylonian) **standardized written cuneiform** with reference to earlier forms (at least when they have a clear iconic referent),<sup>10</sup> showing the graphic type of a sign.
- The **standardized transcription** indicating the supposed Sumerian word from which the meaning is derived. These transcriptions refer to an alleged (standardized) reading of a sign and its meaning(s); minor variations are attested.
- An occasional **asterisk** indicates a suggestion or correction. For instance, “\***didli**” is the proposed transliteration and meaning of this sign, for which some scholars use the (less informative) sign name “HAL” instead.
- The **references** to the source lists, starting with Borger's list (and his numbering) and mentioning others by an initial. The serial number provided there refers simply to the sequence in which the determinatives are listed (the authors did not provide such numbering).

## C Additional information contained in the entries

Following the informative presentation of the entry itself just outlined, each entry provides the following additional information about each determinative:

- a (Literal) **Meaning** and its classifying **Use**
- b **Position** and **Lexical Origin**, occasionally with a brief discussion

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<sup>10</sup> The archaic sign forms (from Uruk) are based on Green & Nissen (1987), see also Falkenstein (1936); most of the forms represented here are based on digitally adapted (and more distinctive) forms by the Cuneiform Digital Library Initiative (CDLI) at <http://cdli.ucla.edu/tools/SignLists/protocuneiform/archsigns.html> (accessed 09-07-2017).

- c Earliest (estimated)<sup>11</sup> **Period** in which it appears and its estimated **Frequency** of use<sup>12</sup>, categorized as follows:

Period	Frequency
AR = Archaic (before 2800 BCE)	FR = Frequent
EA = Early (before 2000, mid or late 3 <sup>rd</sup> mill.)	RF = Relatively Frequent
CL = Classical	R = Rare
PC = Post-Classical (after 1750 BCE)	D = Doubtful
LATE = 2 <sup>nd</sup> or 1 <sup>st</sup> millennium	

#### D Sample entries showing all the information provided

Two entries have been chosen to illustrate the diversity of the information provided in this list. The first line shows the entry itself, and is followed by the additional information from the various fields just mentioned (and fully spelled out here for the demonstration but simplified a-c in the list):

19. **ġiš-/ġeš-** (Borger 296; F [4]; L [11]; E [7]; H [5]; Fo [7]; Ed [3]) .  
 (Meaning; Use) a. “wood, lumber, tree; wooden objects”.  
 classifies tree-names and wooden things.  
 (Position; Origin) b. PR; originally (in Sumerian) part of compound lexemes.  
 (Period; Frequency) c. AR/EA; frequent.

50. **-ku**, (Borger 597; F [17]; L [20]; E [17]; Fo [19]; Ed [6]) .  
 (Meaning; Use) a. “fish”; also: “amphibians, crustaceans”.  
 classifies all kinds of fish and extended to aquatic animals.  
 (Position; Origin) b. PO; originally part of compound lexemes.  
 (Period; Frequency) c. (AR?)/EA (from mid-3<sup>rd</sup> mill.); frequent.

















## 2.2 The revised consolidated list of cuneiform determinatives

Below is the inventory of determinatives in its present stage of development, organized to provide the different types of information mentioned in the previous section, as much as it has been collected so far. It contains in total 50 entries, some entries offering more extensive information than others, and some being still tentative analyses. That list of determinatives corresponds to the items that will be analysed later as “classifiers” in section 3.

11 This may occasionally be difficult, especially because the change from an alleged lexeme status of a classifier in noun compounding to a purely graphemic classifier is rarely traceable, cp. below fn. 35–36 and also Krebernik (2013: 188).

12 The preliminary status of these remarks is obvious, especially because precise statistics are presently not available.



1. **–\*didli (HAL)**  (Borger 2; F [0]; L [27]; E [0]; H [0]; Fo [0]; Ed [0]).
  - a. lit. “one (and) one”: individual things; later marking *pluralis paucitatis* “a few” or “several, various” (mensural).
  - b. PO; originally a Sumerian adjective meaning “single, countable”.
  - c. CI/LATE; rare.
  
2. **\*kuš (SU)**- (Borger 7; F [0]; L [16]; E [18]; H [13]; Fo [9]; Ed [14])     .
  - a. “skin, hide; leather”; classifies all sorts of leather products.
  - b. PR (and PO?); originally part of compound lexemes; count word and class noun?
  - c. AR(?) / EA (early 3<sup>rd</sup> mill.); relatively frequent.
  
3. **\*diġir (AN)**- (Borger 13; F [1]; L [4]; E [2]; H [2]; Fo [4]; Ed [1]).
  - a. “god (sky; heaven)”; iconically the depiction of a star, classifies (astral) deities.
  - b. PR; original lexeme status.<sup>13</sup>
  - c. EA (early 3<sup>rd</sup> mill.<sup>14</sup>); frequent.
  
4. **uru/eri**- (Borger 38; F [12]; F-2 [7]<sup>15</sup>; L [7]; E [32?]<sup>16</sup>; H [23]; Fo [15] Ed [0])       .
  - a. “city”, “town”; classifies names of cities.
  - b. PR; originally lexeme status.
  - c. EA (late 3<sup>rd</sup> mill.); relatively frequent.  
*comment:* Sometimes used together with the post-classifier **–ki** “place” which results in a kind of double classification (**eri-CITYNAME-ki** = “CITY name PLACE”), e.g. <sup>uru</sup>ġir-su<sup>ki</sup> designating the city Ġirsu; at least in such cases **uru** might have been pronounced, that is “the city Ġirsu”. In the writing **ki-CITYNAME-ki**, e.g. **ki lagaš<sup>ki</sup>** is to be interpreted as “the region Lagaš PLACE”; here the initial **ki** was certainly pronounced.
  
5. **iti/itu(d)**- <sup>17</sup>  (Borger 52; F [0]; L [5]; E [14]<sup>18</sup>; H [8]; Fo [0]; Ed [0]).
  - a. “month”; classifies month names; functions as a (unpronounced) classifier probably due to Akkadian influence.
  - b. PR; originally part of month names in compounds.
  - c. EA/CL (from the late 3<sup>rd</sup> mill. onwards); relatively frequent.

13 An attempt to assemble arguments for an original pronunciation of the divinity classifier is made in Selz (2016).











14 Cp. Selz (2008: 22) and fn. 33 and cp. also Selz (2016).

15 Falkenstein’s example (1949: 35 [F-2]) may rather attest speech variation, e.g. “city Ġirsu” vs. “Ġirsu”.

16 A question mark after E refers to Ellermeier (1979: XXXIVf.) and his remark: „sum. belegt?”

17 This sign form provides interesting evidence for early sign formation; the sign combines the *logogram* for day UD and the number 30. 30 days was the (administrative) length of the month since the Late Uruk period. In contrast to Egypt, Mesopotamia followed a calendar based on moon cycles. The system of incorporating numbers to or into UD “day” was very elaborate already in the Uruk periods; cp. Green & Nissen (1987: sign 569), and the more specific account in the CDLI list.

18 Ellermeier (1979: XXXIV) “vor Monatsnamen wohl nur akkadisch“.

6. **–\*mušen (HU)**  (Borger 78; F [18]; L [21]; E [23]; H [17]; Fo [20]; Ed [7]) .<sup>19</sup>
- “bird”; also “insects” and generally winged animals”<sup>20</sup>; later graphemic determinative for birds and insects.
  - PO; originally part of compound lexemes.
  - (AR[?])/EA (mid-3<sup>rd</sup> mill.); frequent.
7. **gi–**  (Borger 85; F [3]; L [12]; E [6]; H [4]; Fo [6]; Ed [11]) .
- “reed”; classifying reeds and reed products or objects.
  - PR; originally part of compound nouns; sometimes alternating with (19) **gīš–**.
  - (AR(?))/EA (after the mid-3<sup>rd</sup> mill.); relatively frequent.
8. **gada–**  (Borger 90; F [0]; L [0]; [5?]; H [0]; Fo [0]; Ed [0]) .
- “flax, linen”; only material; classifying linen garments (never used for the plant!) is more specific than (40) the general garment classifier and contrasts (44), the wool classifier.
  - PR; originally part of compound lexemes.
  - EA (from the late 3<sup>rd</sup> mill. onwards); relatively frequent.
9. **sa–**  (Borger 104; F [0]; L [19c<sup>21</sup>]; E [0]; H [0]; Fo [0]; Ed [0]) .
- “bundle”, “net”; count noun and measure word (mensural); cp. (11) in the meaning “piece”.
  - PR; originally part of compound lexemes, later marking braided or bundled items, like reed, fish etc.
  - CL (late 3<sup>rd</sup> mill.); relatively frequent.
10. **ganá/aša<sub>5</sub>–**, also **–iku<sup>22</sup>**  (Borger 105; F [0] L [0]; E [11<sup>23</sup>]; H [7]; Fo [0]; Ed [0]) .
- “field(-measure)”; classifying field names.
  - PR; PO if used as numeral for area measures (**iku**) (mensural); originally part of compound lexemes.
  - Early/CL; relatively frequent.




























19 Iconically most probably the depiction of a water-bird.

20 Cp. Foxvog (2016: 13).

21 According to Labat this determinative as well as **síg (siki)**, **má**, **sa**, **anše** and **udu** “peuvent être considérées come faisant partie de l'idéogramme” and are therefore not considered by Labat as “true” determinatives (Labat 1988<sup>6</sup>: 21).

22 Following numbers, the sign specifies area measures; see Ellermeier (1979: XXXIV); Huehnergard (1996: 537).

23 Following Ellermeier (1979: XXXIV) considered as determinative only “nach Flächenmassen” with the reading **iku**; the origin of GANÁ remains somewhat unclear; cp. GANÁ A.ŠÀ probably to be interpreted as GANÁ<sup>ašà</sup> FIELD (LOGOGRAM)<sup>FIELD (reading)</sup>.

11. **saġ-**  (Borger 115; F [0]; L 0; E [0]; H [0]; Fo [0]; Ed [0])   .
- “head”; as graphic marker in front of slaves’ names, originally designating slave (as counted items, also used as a count word: “piece”, mensural(?); cp. (9).
  - PR; originally lexeme status.
  - Early/CL; relatively frequent.
- [11a. **má-** ] (Borger 0; F [0]; L [19b]; E [0]; H [0]; Fo [0]; Ed [0]); probably not a classifier; very doubtful; meaning: “ship”. 
12. **mul-**  (Borger 129a; F [0]; L [6]; E [21<sup>24</sup>]; H [16]; Fo [10]; Ed [0])  ; cp. further (29) **múl**  and (35) **mul**<sub>4</sub> <sup>25</sup>.
- “star ; planets ; constellations”; classifying names of stars/constellations.
  - PR ; originally part of compound lexemes.
  - CL/PC (early 2<sup>nd</sup> mill.); rare.
13. **-urud(u/a)(-)**  (Borger 132; F [13]; L [16]; E [33<sup>26</sup>]; H [24]; Fo [16]; Ed [4])  
    .
- “copper” used before (and after?) “mediocre” metal (copper, bronze) and things made thereof; cp. (30) **-zabar** “bronze”.
  - PR and PO(?); originally part of compound lexemes?
  - EA/CL (late 3<sup>rd</sup> mill.); relatively frequent.
14. **uzu-**    (Borger 171; F [14]; L [18]; E [34]; H [26]; Fo [17]; Ed [0]).
- “flesh”; by extension also “body; entrails; omen” classifies occasionally some body parts like liver, stomach, heart, lung; also meat cuts (in recipes for soups!).<sup>27</sup>
  - PR; originally part of compound lexemes?
  - PC/LATE; rare.
15. **anše-**   <sup>28</sup> (Borger 208; F [0]; L [19d]; E [1]; H [0]; Fo [0]; Ed [0])    .
- “donkey; onager (wild donkey)”; classifies equids (extended later to the newly introduced horses, and still later also camels [which are not attested in Mesopotamia before ca. 1500 BCE]).
  - PR; originally lexeme status.
  - EA/CL (from late 3<sup>rd</sup> mill.); relatively frequent.












24 Ellermeier (1979: XXXIV) “nicht eigentlich sum”.

25 **UL** = **mul**<sub>4</sub>; based probably not only on phonetic similarity; the early meaning of **ul** “flower; bud” may have motivated the use of this sign as a *logographical* classifier for “star(s)”.

26 The only determinative which seems attested in pre- and postposition: “vor und nach Gegenständen, die ganz od. teilweise aus Kupfer of. Bronze gefertigt wurden” (see section 3.2.1). Ellermeier (1979: XXXV).

27 According to Steinkeller (1982: 358–359) an Akkadian invention; cp. Foxvog (2016: 13).

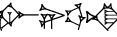

28 There are number of animal head signs, although not easy to distinguish; basic research on these signs was done by Mittermayer (2005).

16. **kaš** –  (Borger 214; F [0]; L [0]; E [15]; H [0]; Fo [0]; Ed [0])   
.<sup>29</sup>
- “beer”; may classify different varieties of beer.
  - PR; part of compounds (as often, difficult to distinguish between part of a compound vs. unspoken determinative).
  - EA (from late 3<sup>rd</sup> mill. onwards [?]); relatively frequent.
17. **šim** –  (Borger 215; F [10]; L [0]; E [23]; H [0]; Fo [12]; Ed [0]) .
- “aromatics; perfume”<sup>30</sup>; used before aromatic plants etc.
  - PR; originally lexeme status.
  - EA (late 3<sup>rd</sup> mill.); relatively frequent.
18. **na**<sub>4</sub> – (/ iä<sub>4</sub> /zä/)  (Borger 229; F [9]; L [13<sup>31</sup>]; E [24]; H [18]; Fo [11]; Ed [12])<sup>32</sup>  
 (earlier form is different: NUNUZ = ZATU 423 ).<sup>33</sup>
- “stone; stone objects; jewels”; used in front of stone names or items, graphically differentiated from **na** “stone” . (This sign is also most often used to write the syllable /na/); a writing like <sup>na</sup>**na**  STONE<sup>34</sup> is a case of a “repeater”; classifies stones and stone objects, also jewels.
  - PR; originally lexeme status<sup>35</sup>.
  - AR(?)/EA (mid 3<sup>rd</sup> mill); relatively frequent.
19. **ğiš** – / ğeš –  (Borger 296; F [4]; L [11]3; E [7]; H [5]; Fo [7]; Ed [3]) .
- “wood, lumber, tree; wooden objects”; classifies tree names and wooden things.
  - PR; originally part of compound lexemes.<sup>36</sup>
  - AR/ EA; frequent.

29 The major difference in the archaic forms are depictions jars with and without a spout.

30 Cp. also interesting writings of /šimġig/ = Akk. *kanaktu* “an aromatic tree” as: **šim-ġig**, <sup>šes</sup>**šim-ġig**; <sup>šes</sup>**ŠIM** and further **ŠIM-ga** “a plant” wr. <sup>šes</sup>**ŠIM-ga**.

31 Note Labat’s rendering of the sign as **zä**. Pronunciation and possible differentiation of readings remain unclear.


























32 Cp. further the interesting writings for “clay; pebble”: a)  **im-na** CLAY+STONE STONE and b) <sup>na</sup>**im-na**  STONE CLAY+STONE.

33 Depiction of a string of beads.

34 This example looks like a clear case of a “repeater” classifier as it was already defined by Allan (1977: 295), may be compared to the Egyptian “repeaters”, see below 5.6.2 (also 4.1.2). Ellermeier (1979: XXXV); Green & Nissen (1987: 261 [ZATU 423]) speculated about an original consonantal cluster (or morpheme [?]) /<sup>n</sup>za/ or /n<sup>2</sup>a/ of the conventionally differentiated reading /na/ “stone” and /za/ “precious stone, jewel”; similarly, Civil (2008: 51–52), also mentioning the reading **ia**<sub>4</sub>.

35 Edzard’s (2003: 9) example for **na**<sub>4</sub>-**nunuz** = *erimmatu* “egg-stone, a bead” demonstrates the contextual dependency for the question of “reading” the determinatives; In a given context the pronunciation /**nunuz**/ “egg” may have clearly referred to this type of jewelry, in another not; cp. “cherry”, German “Kirsche” (fruit), also used for *Kirschholz* (cherry wood) and *Kirschbaum* (cherry tree).











36 Edzard (2003: 9) states: “Akkadian loanwords clearly show that **ĞEŠ** cannot be part of the word”; he then, nevertheless, continues “note in contrast **ğeš-ür** with the Akkadian loanword *gušūru* showing that **ğeš** is part of the word”.

20. **gu<sub>4</sub>- / gud-**  (Borger 297; F [0]; L [0]; E [8]; H [0]; Fo [0]; Ed [0])  .
- “bull; oxen”; classifies all sorts of bovine animals.
  - PR; originally lexeme status.
  - late 3<sup>rd</sup> mill.; relatively frequent.
21. **-ta-àm**    (Borger 139; F [0]; L [30]; E. [0]; H [0]; Fo [0]; Ed [0]).
- “each”; marking distributive numbers.
  - PO; originates as grammatical (Sumerian) morpheme.
  - CL/PC; rare.
22. **dug-**  also written  (BI = dug<sub>x</sub>) (Borger 309; F [2]; L [17]; E     [3]; H [3]; Fo [5]; Ed [5]).
- “jar, jug, pitcher; vessels”; count noun, better measure word (mensural); classifies all types and names of vessels (for liquids).
  - PR; originally part of compound lexemes?<sup>37</sup>
  - AR(?) / EA from early 3<sup>rd</sup> mill.; relatively frequent.
23. **ú-**  (Borger 318; F [11]; L [10]; E [30]; H [21]; Fo [14]; Ed [10])      .
- “plants; grass; herbs, by extension also food and fodder; bread, loaf”; classifies all sorts and names of plants.
  - PR; originally part of compound lexemes?
  - (AR?) / EA (from early 3<sup>rd</sup> mill.); relatively frequent.
24. **é-**  (Borger 324; F [0]; L [0]; E [4?]; H [0]; Fo [0]; Ed [0])    , and cp. the sign **ĜÁ**    <sup>38</sup>.
- “house” > “container” ; may classify names of buildings.
  - PR; originally lexeme status “house” (original depicting the (front of a) house, later extended designating “container”).<sup>39</sup>
  - PC (2<sup>nd</sup> mill. onwards); rare/doubtful.

37 Well attest as “frame sign” in the archaic Uruk texts (ZATU 88–124), where it seems to function – as I suggest to term it – as a “quasi-determinative” designating “containers for liquids” = LIQUID; see also Green & Nissen (1987: 189). A similar frame sign is **ĜÁ/PISAN** (ZATU 162–183) referring to other containers BOX; cp. also **EZEM** (ZATU 150–157), **MAH (?)** (ZATU 340–351) and several other modified simple signs in the ZATU list. Compare here a similar case for LIQUID (mensural?) classifier in the Egyptian system, see below, Table 6.

38 First group represents probably the front of a house (with sopraporte). The second group is the sign **ĜÁ** (**ĝá** is also Emesal - the alleged women’s language - for house!).

39 The opposite evolution can be observed with sign **ĜÁ** “CONTAINER” which can later also designate a built structure. The sign forms, however, are sharply distinguished; both archaic forms are provided here for comparisons only.












25. **lú**— (Borger 330; F [7]; L [2]; E [19<sup>40</sup>]; H [14]; F [7]; F-2 [5]<sup>41</sup>; Fo [2]; Ed [8]) 
- “human”; “man”; classifies all sorts of professions and peoples (personal names, inhabitant of cities and countries)<sup>42</sup>.
  - PR; originally lexeme status (also count noun).
  - EA (late 3<sup>rd</sup> mill.); relatively frequent, especially in PC period.
26. **–sar** or **–nisig**  (Borger 331e; F [19]; L [23]; E [25<sup>43</sup>]; H [0]; Fo [21]; Ed [9])  

- “garden plot” (**sar**) or better “vegetables” (**nisig**); used to mark names of herbs, vegetables (lettuce, cucumbers, onions). Note the differing classification of plants; cp. (23) **ú**–, (7) **gi**–, (19) **ġiš**– / **ġeš**–, and (17) **šim**– (by nature or smell).
  - PO; originally part of compound lexemes.
  - EA; relatively frequent.
27. **kur**–  (Borger 366; F [0]; L [8]; [E [0]; H [12]; Fo [0]; Ed [0]) 
- “mountain (region); foreign land”; designates countries and mountain names.
  - PR; originates very early as lexeme in compounds.
  - EA/Cl (likely to be reduced to pure graphic status only after early 2<sup>nd</sup> mill.); relatively frequent.
28. **še**– (Borger 367; F [0]; L [0]; E [27]; H [0]; Fo [0]; Ed [15a]) 
- “barley”; extends to a graphic marker for all sorts of cereals (barley, wheat, emmer ...).
  - PR; originally lexeme status.
  - CL/PC; relatively frequent.
29. **múl** (**TE**)– (Borger 376; F [0]; L [0]; E [0]; H [0]; Fo [0]; Ed [0]).
- “star” used like (12) **múl**, related to (35), perhaps based on sign similarity to the ancient form of TE ; classifies names of constellation of stars in astronomical texts.
  - PR; origin uncertain.
  - PC/Late, problematic; rare.

40 Ellermeier (1979: XXXIV) comments: “vor Bezeichnungen für Angehörige bestimmter Personen-gruppen wie Berufen etc.”; cp. Huehnergard (1996: 537).

41 Because of various spellings (without **lú**) in other inscriptions of Gudea, Falkenstein (1949: 35 [F-2]) argues for **lú** as unpronounced determinative; it seems, however, that this is rather a case of speech variation, e.g. “the impure” vs. “the impure man”.

42 It seems likely that we can observe here how **lú** developed into a silent classifier. It may have started with simple genitive compounds like **lú-alan** “man (responsible for) the statue”. Whether compound nouns like **lú-ú-bíl** is “man (of the) firewood” (genitive compound) or “man burning fire material” remains uncertain. However, as it seems that in expressions like “scribe” < “(the one) writing a tablet” (**dub-sar**) – an exocentric compound - it was felt that the implicit classification “human” should be made explicit, at least in writing, e.g. <sup>16</sup>**dub-sar** “scribe”.




43 Ellermeier (1979) suggests the reading /**nisig**/ or /**nissag**/ for **SAR** meaning “greenery or the like”; in this case /**nisig**/ designates a superordinate class, like fish, bird, and place.

30. **-zabar** <sup>44</sup>, older form: <sup>45</sup> (Borger [0]<sup>46</sup>; F [0]; L [0]; E [0]; H [0]; Fo [22]; Ed [0]).
- “bronze”; bronze objects; classifies bronze (metal) objects.
  - PO, often combined with PR urudu- “copper”; lexeme status.
  - EA; rare.
31. **-hi-a**  (Borger 396+404; F [0]; L [26]; E [0]; H [0]; Fo [0]; Ed [0]); also, incorrectly transliterated as **-há**<sup>47</sup>.
- lit.: “various/mixed” (countable) items; originally a Sumerian adjective meaning “different (classes of) items”.
  - PO; later marking *pluralis paucitatis* “a few”; then also general plurals.
  - CL/Late; rare.
32. **IM/tu**<sub>15</sub>  (Borger 399a; F [0]; L [0]; E [12]; H [0]; Fo [0]; Ed [0]) <sup>48</sup>.
- “wind” cp. no. (33); classifies graphically the names of winds, the reading of this sign is debated.
  - PR; originally part of compound lexemes.
  - EA/CL (late 3<sup>rd</sup> mill.); relatively frequent.
33. **im-**  (Borger 399b; F<sup>49</sup>; L [0]; E [13]; H [0]; Fo [0]; Ed [0])  .
- “clay”; classifies things made of clay.
  - PR; clay originates as a *rebus* writing for **im-** “rain”, cp. (32)<sup>50</sup>.
  - EA/CL; rare.
34. **-kam, -kám** ,  (Borger 406; F [0]; L [28+29]; E [0]; H [9]; Fo [0]; Ed [0]).
- “of N (number) is it”; marks ordinal numbers; later writing also **-kám**  (Borger 143, L [28]); designates *ordinalia*.
  - PO; originates as a (Sumerian) grammatical morpheme: /(**a**)k/ + 3.ps. sg. of encl. copula /am/.
  - CL/PC; relatively frequent.

44 The sign **-zabar** is also attested in combination with the pre-determinative **urudu/a-**; cp. Foxvog (2016: 13).

45 Many former “compound signs”, here **KAxUD**, are, in later periods, written analytically, here **KA.UD**; **bar** being in both cases a phonetic (disambiguating) element.


46 Not considered as determinative by Borger; cp. his no. 381 and 28 (and 29).


47 Note also **HI.A.SAR**  (see ePSD), perhaps **hi-a nisig** „various (things), vegetables”; but cp. **hi-is**<sup>sar</sup>  and **HI**<sup>sar</sup>  = Akk. *hisu*, a vegetable; see further Selz (1993: 155–156, 503–504).

48 The iconic origin of this sign is uncertain. The sign may well depict a “sail”, see already Deimel **LAK 376** „Segel” and **LAK 377** „Segel+Taue”. This would provide an interesting parallel to the Egyptian situation, see below 5.5 with fn. 149; but for a different opinion see Lincke & Kammerzell (2012: 71–75).

49 Problematic, but cp. Falkenstein (1949: 35).



50 *Rebus* writings play a salient role in the evolution of Sumerian glottographic writing, which relates to the fact that the Sumerian language has (allegedly) numerous homonyms.

[34a **KAM-** sc. **útuł**  (?) only in F [6]; very doubtful<sup>51</sup>.]

35. **\*\*ul-**  (Borger 441; F [0]; L [0]; E [0]; H [0]; Fo [0]; Ed [0]); doubtful.

a-b. “bud; flower”; PR; due to phonetic (?) similarity and mythological speculations used for marking names of stars; sometimes read as  $mul_4$ , corresponding to (12) **mul** and (29) **múl**.




c. PC(?) doubtful and problematic; rare/doubtful.

36. **gig-**  (Borger 446; F [0]; L [0]; E [0]; H [0]; Fo [0]; Ed [0]) .

a. “sick; illness” meaning of sign is unclear; classifies names of illnesses.

b. PR; originally part of compound lexemes(?), a late invention?


c. PC/Late; rare.

37. **-ki**  (Borger 461; F [16]; L [22]; E [16]; H [10]; Fo [18]; Ed [2])  .

a. “place; cities and other geographic entities”; classifies names of countries and places.

b. PO; lexeme status.



c. EA (early 3<sup>rd</sup> mill.); frequent.

38. **\*diš-**  (Borger 480; F [15]; L [1]; E [0]; H [1]; Fo [1]; Ed [0]).

a. “one”; marks in the early 3<sup>rd</sup> mill. lines and entries; = one (item), later restricted to marking (usually male) personal names; mensural.

b. PR; originates as numeral.








c. EA/CL; frequent.

39. **-meš**  (Borger 533; F [0]; L [24]; also abbreviated as **-me**  : L. [25]; E [0]; H [0]; Fo [0]; Ed [0]).

a. “they are”; later marking noun plurals, esp. in non-Sumerian contexts; mensural.

b. PO; originally pl. of encl. copula.

c. EA; cp. also (1) and the remarks below; relatively frequent.

40. **túg-**  (Borger 536a; F [0]; L [15]; E [29]; H [19]; Fo [13]; Ed [13])     
  .



























a. “cloth; garment; textiles”; classifies garments in general (different from more specific (8) linen (44) wool).

b. PR ; originally part of compound lexemes, meaning (piece of) cloth.

c. AR(?)/EA; frequent.

51 Mentioned only in Falkenstein (1964: 21) “Gericht vor Speisen”; reading /**kam**/ here is obsolete; perhaps simply **útuł-** “bowl” or similar; used as a count word like **saĝ(-)** (11)?





















41. **zid**– (Borger 536b; F [0]; L [0]; E [35]; H [0]; Fo [0]; Ed [15b])  (?)<sup>52</sup>.
- “flour”; classifies all sorts of flour.
  - PR; originally part of compound.
  - EA (from late 3<sup>rd</sup> mill.); relatively frequent.
42. **tukul**– (Borger 0; F-2<sup>53</sup>; L [0]; E [0]; H [0]; Fo [0]; Ed [0]).
- “weapon”; iconic origin? If Falkenstein is correct it may compare to “unique classifiers” in Jakaltek and in Egyptian.
  - PR; part of compound nouns.
  - EA; rare/doubtful.
43. **udu**– (Borger 537; F [0]; L [19e?]; E [31]; H [22]; Fo [0]; Ed [0])   .
- “sheep”; classifies sheep and other ovine animals (cp. (15) donkey and (20) bull).
  - PR; originally part of compound lexemes.
  - EA (from late 3<sup>rd</sup> mill.); relatively frequent.
44. **sik(i)**– (Borger 539; F [0]; L 19a; E [26?]; H [19]; Fo [0]; Ed [0])       
         
- “wool”; classifies all sorts of (woolen) fabrics, with extension from wool to all sorts of other fabrics.
  - PR; originally part of compound lexemes, “made of wool”.
  - EA (mid 3<sup>rd</sup> mill.); relatively frequent.
45. **mi/munus**– (Borger 554; F [8]; L [3]; E [22]; H [15]; Fo [3]; Ed [0]) .
- “female; woman”; pure graphemic use for marking female personal names, professions, and female animals.
  - PR; lexeme status.
  - EA (late 3<sup>rd</sup> mill.<sup>54</sup>); relatively frequent.
46. **–min (II)**  (Borger 570; f [0]; L [27]; E [0]; H [0]; Fo [0]; Ed [0]).
- lit. “two”; marks *dualis* (esp. in Sumerogram in Akkadian contexts).
  - PO; numeral.
  - EA/Cl.; relatively frequent.

52 The iconic origin of the sign read **zid** remains unknown; it is perhaps an abbreviated depiction of a “sieve” as suggested by O. Goldwasser.




53 A. Falkenstein’s description of **tukul**- as determinative is exclusively based on the variants <sup>tukul</sup>**mit-tum** (RTC 198 rev 13) vs simple **mi-(i)-tum** in in RTC 197 rev., Gud. Cyl. B 7: 24 et passim; see Falkenstein (1949: 35).

54 In later Akkadian context, the sign is used to mark grammatically feminine of Akkadian nouns, e.g. **MUNUS+HUL** = FEMALE+EVIL = *lemuttu* “evilness”; cp. Borger (1978: 192 no. 554). A rare parallel for this process may be found in Egyptian. The Semitic loanword *brkt* –“blessing” הכרוב is a feminine noun in Biblical Hebrew. It gets the FEMININE classifier in a 20<sup>th</sup> Dynasty example, see Hoch (1994: 103–114).

47. **-àm**  (Borger 579a; F [0]; L [30]; E [0], H [0]; 99 Fo [0]; Ed [0]).
- “(X) is it”; originally 3. ps. sg. of the encl. copula /am/ (from the verb /me/ “to be”).
  - PO; following Sumerian logograms; not a true determinative; mensural.
  - CL/PC; relatively frequent.
- [47a **-aya**  (Borger 579b; F [0]; L [30]; E [0], H [0]; Fo [0]; Ed [0]); doubtful!
- “times”; marking multiplication number numbers.
  - PO; origin unclear; technical term? Only in Assyrian? Mensural?
  - PC; rare/doubtful.]
48. **íd/i-**  <sup>55</sup> (Borger 579c; F [5]; L [5]; E [14<sup>56</sup>]; H [6]; Fo [8]; Ed [0]).
- “river; watercourse, canal”; classifies names of rivers and canals.
  - PR; originally part of compound lexemes.
  - (AR[?])/EA (mid 3<sup>rd</sup> mill.); relatively frequent.
49. **ninda/inda-**  <sup>57</sup> (Borger 589; F [0]; L [0]; E [0]; H [0]; Fo [0]; Ed [0])     
.
- “bread”; classifies breads and pastries, also count noun.
  - PR; originally part of compound lexemes.
  - EA (from late 3<sup>rd</sup> mill.)/CL/PC; relatively frequent.
50. **-ku<sub>6</sub>**  (Borger 597; F [17]; L [20]; E [17]; H [11]; Fo [19]; Ed [6])     
 Cp. also archaic GIR      
- “fish”; also: “amphibians, crustaceans”; classifies all kinds of fish<sup>58</sup> and – by extension – other aquatic animals.
  - PO; originally part of compound lexemes.
  - (AR?)/EA (from mid-3<sup>rd</sup> mill.); frequent.

### 2.3 Comments on the proposed consolidated inventory

This section, in a kind of bird’s eye perspective, offers a preliminary analysis and synthesis of the information given in the entries of the list just presented. The partial neglect of

55 In ED texts the composite sign  **ÍD** = A+ENGUR = WATER+GROUND WATER DEPTH was also written A  for which an (artificial) reading **id<sub>3</sub>** is proposed; likewise, the simple sign **ENGUR**  alone may be transcribed as **id<sub>3</sub>**.

56 Ellermeier (1979: XXXIV) “als Det. vor Monatsnamen wohl nur akkad”.

57 The modern transcription **inda<sub>3</sub>** replaces traditional **ninda** (cp. Hh XXIII v 19); the connection between **inda<sub>3</sub>** and **inda<sub>2</sub>** was already proposed in Selz (1999). The loss of an initial /n/, well attested for many other Sumerian words, seems the plausible explanation.

58 Together with (6) BIRD one of the most frequently used determinatives, pointing to the importance of birds and fish in early Mesopotamian diet.

Note, that in a few cases were **ku<sub>6</sub>** FISH is attested preceding the noun (see **ku<sub>6</sub>suhur** vs. **suhur<sup>ku<sub>6</sub></sup>** in Falkenstein 1949: 35 n.2) this may be indicative of a reading **ku<sub>6</sub>-suhur** as is suggested by the phonetic (Emesal) writing **ku<sub>6</sub>-da-s(š)uhur<sup>(ku<sub>6</sub>)</sup>**; cp. Falkenstein (1952: 62).

chronological (and linguistically based) varieties is justified by the fact that, on one hand, no sufficiently verifiable and calibrated data are yet available; on the other hand, our main intention is to discuss the overall system of cuneiform determinatives in order to reanalyze them as “classifiers”.

### 2.3.1 The consolidated list: Information analysis

After the various comments made on the variation between the source-lists used for establishing the proposed inventory, the following section will consider the additional information contained inside the entries, in the order it is given in the entries.

**a. Meaning:** First we give here the (general) lexical semantics of an entry; cp. also the discussion of the thematic organization of the inventory in section 3 below.

**Use and function:** This is an abbreviated description of the use and the most important function of a determinative; see further the extensive discussion in Section 3 of the thematic organization of the system.

**b. Position: PR or PO, or both.** It is a striking phenomenon of the system of Sumerian classifiers that they can be found both in pre- (PR) and post- (PO) position. Generally, the assignment to a position before or after the noun is strict, the only possible exception being (13) **–urud(u/a)(–)** for which some scholars also accept a post-noun position.<sup>59</sup> A possible post-position for this determinative (13) might be motivated by the fact that the comparable determinative (30) **–zabar** “bronze” is exclusively attested in post-noun position. The position marked as PR (i.e. pre-posed to the noun) is the most common, while the PO position (postposed to the noun), which is rather rare (type), is attested on the other hand with some widely-used classifiers (token): For instance, PO is used for (6) BIRD, (13) COPPER, (26) VEGETABLE (garden plots), (30) BRONZE, (37) PLACE NAME, and (50) FISH.<sup>60</sup>

Most puzzling in terms of position is the interesting thematic field of animals, with both PR and PO, with PR for mammals, quadrupeds, terrestrial animals, but PO for non-terrestrial ones such as (6) birds and (50) fish, which can be counted by the hundreds. So far, the striking and clear differentiation between pre- and post-classifiers has found no explanation. Of course, this PO position could be pointing to their possible origin as lexemes in final position of a compound. Therefore, we suggest that a connection may exist to the fact that in Sumerian two kinds of noun+noun compounding are attested: the common left-headed and the rather rare right-headed nominal compounds (See Jagersma 2010: 117–120).<sup>61</sup> The PO system does not seem to be productive in the historical periods which coincides nicely with the common hypothesis that the

59 Ellermeier (1979: XXXV): “vor und nach Gegenständen, die ganz od. teilweise aus Kupfer od. Bronze gefertigt wurden”.

60 The generally post-position “déterminatifs grammaticaux” are not considered here; see below 2.3.2, subsection C and 3.2.3.

61 If this assumption is accepted, we may connect it with our theory of a spoken origin of the Sumerian classifier system, to which a separate article is in preparation.

right-headed noun+noun compounds allegedly belongs to a protohistoric stratum of the Sumerian language. This would mean that such right headed compounds are considered to be not any longer productive in the historical phases of the Sumerian language – so the parallel to the PO system is obvious.

**Origin:** Most important for any further research are the great majority of determinatives which, in our list, are designated as “originally part of compound lexemes” or having “lexeme status”, attested both as pre- and post-classifiers. This notion is not entirely new, but it is neither generally accepted nor discussed in detail by anyone. Labat (1988<sup>6</sup>: 21) remarked about a selected number of such determinatives: “Il existe quelques autres déterminatifs qui, en réalité, peuvent être considérés comme faisant partie de l’idéogramme”.<sup>62</sup> As already mentioned, Edzard’s statement (2003: 9) is more rigorous: “Determinatives can be proven not to have been pronounced (although doubt may exist in specific instances)”. In our opinion the original lexeme status of the overwhelming majority of the classifiers is a prominent feature linking language and script.

Thus, almost all of the entries in the list are attested as *independent lexemes*, so they have lexeme status. A possible exception is (48) **na<sub>4</sub>-/iä<sub>4</sub>-/zä-**. This seems to be the only case where the system uses a specific *grapheme*, however its origin and evolution remain presently uncertain. Therefore, the use of all determinatives may mirror the alleged Sumerian system of noun-compounding, especially the left-headed and right-headed noun+noun compounds. The fact that this may point to their having been originally pronounced, as already mentioned, is a suggestion that merits a profound discussion which is at this point beyond the scope of the present article, but will be treated in a separate article in preparation.<sup>63</sup>

Another interesting group in our list are those determinatives which sometimes are (allegedly) later inventions, sometimes originating in a specific Akkadian language environment: (1), (5), (10), (12), (14), (21), (24), (29), (30[?]), (31), (33), (36), (39). They prove that the system of classifying nouns was *productive* long after spoken Sumerian had died out. However, even these younger inventions must be considered part of the Sumerian system, in much the same way as the ‘newly introduced’ Medieval Latin is a form of Latin. The well-known fact that the use of determinatives as Sumerograms spread from the Mesopotamian core to neighboring languages (as far as they are written in cuneiform) corroborates this notion, notwithstanding the fact that West Semitic or Hittite languages induced alterations.

62 Cp. also Borger (1978: 48), who commented on this list in the following way: “Es ist mehrmals nicht mit Sicherheit zu entscheiden, ob ein Determinativ oder ein Logogramm bzw. ein Teil eines Logogramms vorliegt”.

63 Selz suggested already in (2008: 15, fn. 6) a connection between the well-known phenomenon of lexical lists (thematic lists) and the “determinative” phenomenon. Recent elaborations of the implicit semantic classifications in logographically written scripts (Hyman 2006, Hilgert 2009, Zand 2009, Civil 2010 and Johnson 2012) indicate that an in-depth research of determinatives versus lexical lists may not only improve our understanding of the emic mental mapping of the Mesopotamian world but also support the hypothesis that the Sumerian classifiers originated as elements of the language; see also below 6.1.

- c. **Periods of use:** Rather complicated – and questionable – is our preliminary attempt to indicate the (earliest) period(s) in which the determinatives are attested. This depends very much on whether one accepts the identification of these determinatives as (always) *unpronounced graphic* elements or whether they should be considered as (initially) pronounced parts of the language. Therefore, our indication AR (Archaic) is speculative.<sup>64</sup> It is only with those determinatives marked as Cl(assical) or L(ate) that the assumption of pure graphic character (as reading help) is virtually certain. For the time being, we would simply refer to the fact that the thematic organization of the most important Sumerian determinatives corresponds not only to the organization of the earliest “thematic lists<sup>65</sup>” but also shows a surprising parallelism with other classifier systems, as will be shown later.

The outcome of this tentative periodization is, however clear enough: The system overall is productive, even as late as the 1<sup>st</sup> millennium BCE and seems to keep a – more or less – stable number over time.

**Frequency:** Almost all entries are marked as having some frequency, whether they are “relatively frequent” – as 31 of them are, or very “frequent” for 7 of them. Only 9 of the entries are marked as “rare”, and 3, resp. [5], as “rare/doubtful”. For lack of reliable statistics, the proposed and estimated frequency is not very informative, and depends, of course, in addition, very much on the genre of texts in which they are attested, and, last but not least, on our familiarity with the texts. However, judged to be rather rarely attested, and marked as rare, are (1), (12), (14), (21), (29), (30), (31), (33), (36), and rare and doubtful are: (24), (35), (42), [(11a)], [(47a)]. Setting aside the mensural ones (discussed below in 3.2.3) perhaps the most interesting cases of rare attestation are (14) “flesh”, (29) “star”, and (36) “illness”, which, while being quite late inventions, actually prove the productivity of the system.

### 2.3.2 Different authors and different lists

The list was drawn up, somewhat arbitrarily, by choosing widely used lists as given in sign lists and grammars by various authors. Little is known of the reasons that led some authors to include a particular determinative not found in the other scholars’ lists. In general, the motivation for such inclusion or exclusion is rarely made explicit.

Indeed, the variation in the numbers and the types of determinatives chosen by the individual authors is astonishing, as can easily be seen in the following table, in which determinatives shared by all lists are in **bold** and the ones shared by all but one are in **bold and italics**:

64 From a methodological point of view, we restricted our research the phenomenon of the allegedly silent determinatives.

65 These “thematic lists” (Englund 1998 and Civil 2008, also Civil 2010: 58–147) classify the surrounding physical and societal world (Veldhuis 2004), and already their earliest specimens (3000 BCE) group their material into different classes: (numbers), grain and grain products, fish, birds, domestic animals, wood and wood products, dairy products, containers, textiles, metals, persons, place names and time indications (Veldhuis 2006: 188; slightly different labels are used in Englund 1998: 88).

Table 1 | Comparison of different lists of Sumerian “determinatives”

	<b>Selz</b>	Borger	F(alkenstein)	L(abat)	E(llermeier)	H(uehnergard)	F0(xvog)	Ed(zard)
A FEW	<b>1</b>	2	-	27	-	-	-	-
HIDE	<b>2</b>	7	-	<b>16</b>	<b>18</b>	<b>13</b>	<b>9</b>	<b>14</b>
GOD	<b>3</b>	<b>13</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>1</b>
CITY	<b>4</b>	<b>38</b>	<b>12</b>	7	<b>32(?)</b>	<b>23</b>	<b>15</b>	-
MONTH	<b>5</b>	52	-	5	14	8	-	-
BIRD	<b>6</b>	<b>78</b>	<b>18</b>	<b>21</b>	<b>23</b>	<b>17</b>	<b>20</b>	<b>7</b>
REED	<b>7</b>	<b>85</b>	<b>3</b>	<b>12</b>	<b>6</b>	<b>4</b>	<b>6</b>	<b>11</b>
LINEN	<b>8</b>	90	-	-	5(?)	-	-	-
NET	<b>9</b>	104	-	19c	-	-	-	-
FIELD	<b>10</b>	105	-	-	11	7	-	-
HEAD	<b>11</b>	115	-	-	-	-	-	-
SHIP	<b>11a</b>	-	-	19b	-	-	-	-
STAR	<b>12</b>	129a	-	6	21	16	10	-
COPPER	<b>13</b>	<b>132</b>	<b>13</b>	<b>16</b>	<b>33</b>	<b>24</b>	<b>16</b>	<b>4</b>
FLESH	<b>14</b>	<b>171</b>	<b>14</b>	<b>18</b>	<b>34</b>	<b>26</b>	<b>17</b>	-
DONKEY	<b>15</b>	208	-	19d	1	-	-	15a
BEER	<b>16</b>	214	-	-	15	-	-	-
AROMATICS	<b>17</b>	215	10	-	23	-	12	-
STONE	<b>18</b>	<b>229</b>	<b>9</b>	<b>13</b>	<b>24</b>	<b>18</b>	<b>11</b>	<b>12</b>
WOOD	<b>19</b>	<b>296</b>	<b>4</b>	<b>11</b>	<b>7</b>	<b>5</b>	<b>7</b>	<b>3</b>
BULL	<b>20</b>	297	-	-	8	-	-	-
EACH	<b>21</b>	139	-	30	-	-	-	-
JAR	<b>22</b>	<b>309</b>	<b>2</b>	<b>17</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>5</b>
PLANT	<b>23</b>	<b>318</b>	<b>11</b>	<b>10</b>	<b>30</b>	<b>21</b>	<b>14</b>	<b>10</b>
HOUSE	<b>24</b>	324	-	-	4(?)	-	-	-
HUMAN	<b>25</b>	<b>330</b>	<b>7</b>	<b>2</b>	<b>19</b>	<b>14</b>	<b>2</b>	<b>8</b>
VEGETABLE	<b>26</b>	<b>331E</b>	<b>19</b>	<b>23</b>	<b>25</b>	-	<b>21</b>	<b>9</b>
MOUNTAIN	<b>27</b>	366	-	8	-	12	-	-
BARLEY	<b>28</b>	367	-	-	27	-	-	-
STAR	<b>29</b>	376	-	10	-	-	-	-
BRONZE	<b>30</b>	-	-	-	-	-	22	-
VARIOUS	<b>31</b>	396+404	-	26	-	-	-	-
WIND	<b>32</b>	399a	-	12	-	-	-	-
CLAY	<b>33</b>	399b	?	-	13	-	-	-
(ORDINALIA)	<b>34</b>	406	-	28+29	-	9	-	-
?	<b>34a</b>	?	6	-	-	-	-	-
BUD(?)	<b>35</b>	441	-	-	-	-	-	-
ILLNESS	<b>36</b>	446	-	-	-	-	-	-
PLACE	<b>37</b>	<b>461</b>	<b>16</b>	<b>22</b>	<b>16</b>	<b>10</b>	<b>18</b>	<b>2</b>
ONE	<b>38</b>	480	15	1	-	1	1	-
(PLURAL)	<b>39</b>	533	-	24 (25)	-	-	-	-
TEXTILE	<b>40</b>	<b>536a</b>	-	<b>15</b>	<b>29</b>	<b>19</b>	<b>13</b>	<b>13</b>
FLOUR	<b>41</b>	536b	-	-	35	-	-	15b
WEAPON	<b>42</b>	-	F-2	-	-	-	-	-
SHEEP	<b>43</b>	537	-	19E(?)	31	22	-	-

	Selz	Borger	F(alkenstein)	L(abat)	E(llermeier)	H(uehnergard)	FO(xvog)	Ed(zard)
WOOL	<b>44</b>	539	-	19A	26(?)	19	-	-
WOMAN	<b>45</b>	<b>554</b>	<b>8</b>	<b>3</b>	<b>22</b>	<b>15</b>	<b>3</b>	-
TWO	<b>46</b>	570	-	27	-	-	-	-
„IS IT“	<b>47</b>	579a	-	30	-	-	-	-
(TIMES)	<b>47a</b>	579b	-	-	-	-	-	-
RIVER	<b>48</b>	<b>579c</b>	<b>5</b>	<b>5</b>	<b>14</b>	<b>6</b>	<b>8</b>	-
BREAD	<b>49</b>	589	-	-	-	-	-	-
FISH	<b>50</b>	<b>597</b>	<b>17</b>	<b>20</b>	<b>17</b>	<b>11</b>	<b>19</b>	<b>6</b>

Remarks to Table 1:

A. 18 core items

Of the 50 determinatives listed, there is a core of 18 items widely shared across the different lists (Table 2 below), including 11 being mentioned by all the authors (in **bold**) and 7 by all but one (in **bold italic**). Those 18 items will be identified again in **bold** and **bold italic** in the general table showing the thematic organization of the whole system (Table 3 in subsection 3.2.1) in order to capture then what seems to constitute maybe the core components of this classification system.

Table 2 | Core determinatives mentioned by all authors or *all but one*

<i>Determinatives mentioned by</i>	<i>Numbers in the new list</i>	<i>Total</i>
<b>All</b>	<b>3, 6, 7, 13, 18, 19, 22, 23, 25, 37, 50</b>	<b>= 11</b>
<b><i>All but one</i></b>	<b><i>2, 4, 14, 26, 40, 45, 48</i></b>	<b>= 7</b>
<b>Core determinatives</b>		<b>= 18</b>

It is very likely that the authors of our lists grasped the most salient determinatives of the Sumerian system, those that we may assume to offer a glimpse – when taken all together – of the major items of this classification system:

**All:** (3) DEITY, (6) BIRD, (7) REED, (13) COPPER, (18) STONE, (19) WOOD, (22) JAR, (23) PLANT, (25) HUMAN, MAN, (37) PLACE, (50) FISH.

***All but one:*** (2) SKIN/LEATHER, (4) CITY, (14) FLESH, (26) VEGETABLES, (40) CLOTH, (45) FEMALE, (48) RIVER.

Despite the fact that – following our authors – we take a bird’s-eye perspective and ignore any chronological features, this list apparently provides a good insight into the most salient classes of the cuneiform classification system that persisted from the beginning of writing in the 4<sup>th</sup> millennium down to the late 1<sup>st</sup> millennium BCE.

B. The most restrictive list – Edzard

Edzard enumerates only 14 determinatives, lacking 4 of the items (4) **uru-**, (14) **uzu-**, (45) **munus-**, and (48) **id**, considered determinatives in the opinion of all other authors. This fact may imply that from Edzard’s point of view these items are either later inventions or

have been pronounced (as part of composite nouns) and therefore should not be included in a list of determinatives. This leaves us with a *minimum core* of 14 determinatives.

C. “Déterminatifs grammaticaux” – excluded by most authors

“Déterminatifs grammaticaux” are the determinatives labelled so by Labat (1988<sup>6</sup>: 22) and adding up to a handful: (1), (21), (34), (38), (39), (45), (47a[?]). These determinatives actually possess a different classifying function and correspond in classifier systems to the so-called “mensural classifiers”, as opposed to the larger other set corresponding to more familiar “sortal classifiers”, an issue considered in 3.2.3 below. While the co-occurrence in the Sumerian inventory of determinatives of both sortal and mensural types of classifiers is in itself a striking characteristic of the system, the emphasis of this initial study will be on the sortal ones.

D. Purely graphic – or echoing noun+noun compounding?

It is worth underlining here again that, according to the opinion of the authors used as sources, all these determinatives are considered as unpronounced, purely graphic elements. However, as will be argued below (section 3), there is no doubt that they constitute an interesting classification system, akin to the classifier systems discussed in the linguistic literature. And it is also worth noting how this classification function might be mirrored in a feature of the Sumerian language, specifically its noun+noun compounding forms, a fact explicitly mentioned by Labat (1988<sup>6</sup>: 20, and alluded to also by Edzard 2003: 9).

## 2.4 In conclusion

The inventory of signs presented above is a revised list of Sumerian determinatives, which is offered as reference for future work and re-consideration. As mentioned, it is based on a compilation of established lists that all differ one from the other, and it constitutes an altogether more complete inventory. This list is innovative in pointing to the kind of information that would be desirable or even necessary to gather *systematically*. It provides new (preliminary) information by estimating the frequency of use and by dating the periods of (earliest) use of these determinatives. At this point, this list represents just the initial step of a larger research project aiming at completing the information provided in this inventory through a more systematic study of the texts available. It is also an essential initial step to provide evidence that the determinatives here collected attest to the existence of a *cuneiform classifier system*, as will be shown in the following section.

## 3 Thematic organization of Sumerian “determinatives”: a “classifier system”

The inventory given above provided some general information about various basic properties of the items, such as the forms of the determinatives, their origin and their use, all with the explicit aim of completing and rearranging some of the information found in already



established lists. This section aims now at taking a different approach to the proposed new list, by considering how this inventory of the determinatives of the Sumerian script (and language) projects an interesting thematic organization of the world of the Sumerians, of the kind which is very characteristic of *classifier systems* around the world.

### 3.1 The classification of noun entities mirrors a “noun classifier” system

To readers unfamiliar with the field of classifier studies, the thematic organization of the inventory of the (allegedly unpronounced) classifiers to be proposed here may on first sight appear somewhat arbitrarily constructed. It will however be shown later how it actually corresponds in convincing ways to ontologies commonly revealed by other systems of classifiers from around the world. In fact, this discussion of the thematic organization of the Sumerian system will be later compared with that of two other systems: one the (pronounced) noun classifier system of a contemporary Mayan language and the other the graphemic (unpronounced) classifier system of the Ancient Egyptian hieroglyphic writing.

An overall characteristic of the thematic organization of the Sumerian system is that it corresponds in an interesting way to specifically one of the subtypes of classifiers identified in the literature on classifier systems: the particular one known in the literature on the typology of classifier systems as a “*noun classifier*” system.<sup>66</sup> Systems of “noun classifiers” have been found so far mainly in native oral tradition languages of the American and Australian continents.

One of the defining traits of “noun classifier” systems is that their categorization schema relies principally on the *essence* of the entities, therefore distinguishing classes for humans, animals, plants, etc.<sup>67</sup> This is said in contrast to so-called “numeral classifier” systems which are better known and widespread in languages of Asia. Those are used specifically when counting entities (hence their name “numeral”) and have the characteristic of relying for their categorization schemas principally on the *shape* of those entities, distinguishing minimally between 1D long objects, 2D flat objects and 3D round objects.<sup>68</sup> What identifies the Sumerian system as a “*noun classifier system*” is its combination of classes for animates, humans and animals, with an array of classes for inanimate entities of the world (section 3.2).<sup>69</sup> These inanimate classes include a number of different classes for the vegetal and the mineral worlds, as well as for the natural environment.

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66 Identified early in Jakalteek in Craig (1986a) and argued as one subtype of classifier systems, in Grinevald (2000, 2004), and refined in Grinevald (2015). For an extensive source of data on classifier systems in a great variety of languages, see Aikhenvald (2000). On noun classifiers, verb classifiers sortals and mensurals, see Bisang (forthcoming).

67 E.g. Senft (2000).

68 So, while in a noun classifier categorizing by material/essence, one could find for instance: a ‘MAN-hunter,’ a ‘WOOD-canoe’; in a numeral classifier doing it by *shape*, one could find instead ‘two-BIPED hunter,’ ‘one-LONG RIGID canoe.’

69 The basic distinction between animate and inanimate entities is also reflected in the morphology of the Sumerian *grammar* in a gender system marked in noun and verbal phrases, in which the morpheme /n/ refers to the animate / personal class / human class of a given noun and the morpheme /b/ to a class combining inanimate / impersonal / non-human entities. For a recent critique of the

In addition, as is known of classifier systems in general, the Sumerian system also includes classes that reveal the importance of certain *cultural elements* linked to this part of the world in ancient times. Finally, it will be seen that while the Sumerian classifier system is principally based on criteria of the essence of the nominal entity, it also relies in places in its categorization on the notion of the *functionality* of the items. This is also found in other noun classifier systems, where it is taken as a way of underlining the importance of particular interactions of humans with certain elements of their environment. This will be discussed in particular with the case of the categorization of animals.

### 3.2 The thematic organization of the Sumerian “classifier” inventory

The first step in analyzing the Sumerian determinatives as classifiers is therefore to consider their overall thematic organization. This will be done first by presenting an overview of all the items given in the proposed consolidated list by arranging them in a table according to the semantic domains they cover, independent of the periods in which they appeared and of their formal characteristics (Table 3 below).<sup>70</sup> The general presentation of this thematic table of the items of the new list will then be followed by a consideration of the semantic principles of categorization evidenced by the semantic domain cuts observed, and then by two case studies that of the classification of illnesses and of animals – in anticipation of illustrative comparisons with other systems discussed in sections 4 and 5 below.

#### 3.2.1 Overall thematic organization of the determinatives list as evidence for a Sumerian classifier system

The main point of Table 3 below is to offer a first overview of all the semantic domains covered by the 50 items of the newly proposed list, while keeping most of the information already presented on the items. For instance, all the items of the list are identified by their given number and their position, indicated again by a hyphen (–) placed either before or after a classifier, depending on whether it is found before or after a word. The information about which belong to the core determinatives of Table 2 is also repeated, with the items mentioned by all sources used given in **bold** and those in all sources but one given in *bold italics*.

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extant terminologies for such a marking system, see Jagersma (2010: 102) who proposes “to call the two gender classes human and non-human”. On the complex relations of gender systems and classifier systems see Kilarski (2014) with bibliography.

70 Ignored here is the question of whether “new” classifiers were introduced later by Akkadian speaking scribes, in arguing that all the cuneiform classifiers attested are Sumerian logograms that attest to the existence of a Sumerian system, no matter whether Sumerian was still the vernacular or not (see discussion above).

Table 3 | Thematic organization of the Sumerian classifier system

SORTAL		MENSURAL
ANIMATE	INANIMATE	
<p><i>Human and deity</i></p> <p>–DEITY (3)</p> <p>–HUMAN, MALE (25)</p> <p>–HUMAN, FEMALE (45)</p> <p>–HUMAN (38)</p> <p>–ILLNESS (36)</p>	<p><i>Vegetal</i></p> <p>–WOOD/LUMBER/TREE (19)</p> <p>–REED (7)</p> <p>PLANT/GRASS– (23)</p> <p>–BARLEY, CEREAL (28)</p> <p>VEGETABLES/GARDEN PLOT– (26)</p> <p>[BUD– (used only for stars) (35); cp. (12), (29)] AROMATIC, PERFUME– (17)</p>	<p><i>Unitizers/plural</i></p> <p>–ONE, UNIT (38)</p> <p>INDIVIDUAL THINGS– (1)</p> <p>–HEAD (11)</p> <p>DUALIS– (46)</p> <p>PLURAL– (31), (39)</p>
<p><i>Animals</i></p> <p><b>Quadrupeds</b></p> <p>–BOVINE (20)</p> <p>–SHEEP (43)</p> <p>–DONKEY (15)</p> <p><b>More animals</b></p> <p>FISH– (50)</p> <p>BIRD (and INSECT)– (6)</p> <p><b>Body Parts of humans and animals</b></p> <p>–FLESH (14)</p> <p>–SKIN/LEATHER (2)</p>	<p><i>Mineral world</i></p> <p>(and man-made objects)</p> <p>–STONE (18)</p> <p>–CLAY (33)</p> <p>(–)COPPER– (13)</p> <p>BRONZE– (30)</p> <p>–WEAPON (42)</p>	
	<p><i>Manufactured</i></p> <p><b>From vegetal</b></p> <p>–FLAX LINEN (8)</p> <p>Never used for the plant!</p> <p>–CLOTH/TEXTILES (40)</p> <p>–BEER (16)</p> <p>–FLOUR (41)</p> <p>–BREAD (49)</p> <p>–SHIP (11A[?])</p> <p><b>From animal</b></p> <p>–ANIMAL HIDES (2)</p> <p>–WOOL (44)</p> <p>–CLOTH/TEXTILES (40) may include wool items</p> <p>See also <i>mineral world</i></p>	<p><i>Natural elements</i></p> <p>–WIND (32)</p> <p>–STAR 1 (older) (12), (35)</p> <p>–STAR 2 (younger) (29); cp. (35)</p>
	<p><i>Spatial</i></p> <p>PLACE– (37)</p> <p>–MOUNTAIN/LAND (27)</p> <p>–RIVER (48) 1</p> <p><b>Man-made spaces</b></p> <p>–FIELD/PIECE OF LAND (10)</p> <p>–HOUSE (/CONTAINER) (24)</p> <p>–CITY (4)</p> <p>–GARDEN PLOT/VEGETABLES (26)</p>	<p><i>Mensuratives Arrangements and containers</i></p> <p>–BUNDLE (9)</p> <p>–JAR, JUG, PITCHER (22)</p> <p>–BOWL (34A) (?)</p>
		<p><i>Time</i></p> <p>–MONTH (5)</p>

### 3.2.2 Domains and subdomains

As is commonly found in noun classifier systems, the organization of the world in the sortal Sumerian classifiers falls first into two major domains: one of animates and another of inanimates, and a number of subdomains within each.

Several remarks need to be made about the domain of animates in the Sumerian system: first that the subdomain of humans and deities is not very developed; second that it was

decided to place the class of ILLNESS in this domain on the basis of how this item is treated in other systems, as will be mentioned in (3.3.2), and third that the animal domain will be the object of more attention below (3.3.3), in order to point in particular to the absence of generic animal *classifier*.<sup>71</sup>

As for the organization of the inanimate world, it is subdivided into vegetal, mineral and natural world semantic regroupings. As expected, the vegetal domain has more classes than the mineral one, reflecting the universality of the more intense and diversified interactions of humans with this domain, as evidenced by the several classes of products derived from vegetal entities. For the domain of natural elements, it is interesting to note that it includes neither sun nor moon, which are commonly found in other classifier systems. A domain of time has been included although it is an intangible entity that could have been considered a *mensural*, a measure of time. In any case, it includes only one class, that of month.<sup>72</sup> One of the most interesting domains of the Sumerian system is the well-developed set of classes that have been regrouped here into a domain of spatial entities. This domain includes not only natural spaces (indeterminate place, mountain/foreign land/netherworld, river) but clearly what could be considered as man-made spaces (field, city, house, garden plot[?]) a categorization that may reflect their importance for this great civilization, which is known for its sophisticated urban centers and advanced administrative control of land and agricultural plots.

### 3.2.3 Setting aside the Sumerian determinatives considered as *mensural* classifiers

It is worth noting that the first level organization of all the items of the list into semantic domains and subdomains is a primary distinction between the two semantic types of classifiers, known as “sortal” and “mensural”. While sortals classify according to “sort”, categorizing the entities according to salient characteristics – such as essence (like most of the Sumerian classifiers) or shape (in the case of numeral classifiers), mensurals are concerned with counting either individual units and called “unitizers”, or types of measures or of arrangements, called “mensuratives”.<sup>73</sup>

The coexistence of both sortals and mensurals within the Sumerian system of determinatives (being reanalyzed here as *noun* classifiers) is a very special feature of this classifier

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71 There are, however, Sumerian *lexical* terms which attempt to establish more generic animal classes; see below 3.3.3.

72 Note, however, that Englund (1988: 164–168) identified passages with time indications in the earliest lexical lists from Uruk; see also Veldhuis (2014: 99).

73 Mensurals are known from numeral classifier systems, where they co-exist with sortals. Sortals are those classifiers that categorize by some semantic feature of the entity, in the case of numeral classifiers, by the shape of the entity as in “2- QUADRUPED cats” or “3-ROUND oranges” while “mensural” classifiers provide some meronymic information on the nature of the units to be counted, either as *unitizers* like “1-HEAD of cattle”, “2-PAIR of glasses” or as *mensuratives* indicating a kind of *measure*, like types of containers, as in “3-BAGS of oranges” or “2-BOTTLES of wine”, see Craig (1992: 281) and Grinevald (2000: 1020). An attempt to relate this terminology to the varieties of “number notation systems” attested in the archaic Uruk tablets, seems to be a highly promising endeavour; cp. Green & Nissen (1987: 114–144).

system, since it combines in one system sortals – typical of *noun* classifier systems and a few mensurals usually associated with *numeral* classifier systems.

The determinatives relabelled here as “mensural classifiers”, together with those for ordinal (33)<sup>74</sup> and distributive (21) numbers, are, with the exclusion of **DIŠ** (38), attested in post-position only. Most scholars do not include (all of) them in their lists of determinatives (section 2.3.2) and in classical Sumerian texts they preserve their literal meaning. However, later logographical (“Sumerian”) written texts make extensive use of them as graphemic classifiers at which point they were used in a stereotypical manner. Most probably their wide-spread use was motivated by linguistically mixed texts in which the earliest examples often use Sumerian for the formulaic textual parts.<sup>75</sup> Therefore, original code-switching froze, and these “déterminatifs grammaticaux” became a merely graphical element of the script and in this case their position after the nouns is easily understandable.<sup>76</sup>

Typologically, these “déterminatifs grammaticaux” treated here as *mensural* classifiers include both unitizers and mensuratives (see fn. 73). The Sumerian unitizers include the written number (**diš**, [38]) “one” that identifies individual units (animate and inanimate) and is amply used already in the earliest texts marking specific entries and it is the only “grammatical determinative” written in front of the noun (PR). The repetition of the number “one” in the form **aš**<sup>77</sup> is **didli**, lit. meaning “one by one”, designating a countable plurality of items, else *pluralis paucitatis*. Related classifiers are **min** (46) (repeated **DIŠ**), referring to the *dualis*, and the plural markers **hi-a** (31) and **meš** (39). **Hi-a** is a past perfect particle of the verb **/hi/** “to mix” attributing a (given) set of countable items to a superordinate class, e.g. **udu-hi-a** SHEEP + MIXED > “various (types of) sheep”.<sup>78</sup> The plural marker **-meš** has the form of the enclitic copula in the 3.ps.pl., in the literal meaning “(sheep) they are”. The singular form **-am** of the copula (47), with the meaning “(X) is it/he/she”, singularizes an item much in the same ways as the number **diš** (38).

The mensurals of Sumerian include also classifiers that originate as count words, such as HEAD (PIECE) (11), BUNDLE (9), JAR/JUG (22), and perhaps also BOWL (34a), and eventually even FIELD MEASURE (10). They may correspond to unitizers and mensuratives expressing

74 The formation of ordinal numbers in Sumerian is interesting. The literal interpretation is “of NUMBER is it/he/she”. Grammatically, these are headless genitives+encl. Cop. (3. ps). The ordinal 2, “the second”, in Sumerian *\*/min-ak-am/*, designates that something /someone is belonging to the quantity domain “TWO”.

75 On this phenomenon see Selz (in press a). This sort of multilingualism is a phenomenon to be studied from a contact linguistic point of view and should be kept apart from the well attested forms of bilingualism which, in Assyriology, designates the phenomenon of text transmitted in two languages, e.g. Sumerian and Akkadian (or other languages).

76 A related phenomenon in the hieroglyphic script are perhaps what Werning has called “Grammatoklassifikatoren” (Werning 2011: 101–113) such as the 1<sup>st</sup> SG., DUALIS and PLURAL classifiers. In Sumerian, however, the “déterminatifs grammaticaux” originated as frozen (and standardized) language elements.

77 For the difference between **AŠ** (ZATU 37) and **DIŠ** (ZATU 81) in the archaic periods see Green & Nissen (1987: 177 and 187).

78 In so far as it refers often implicitly to brand, shape, color or age of the sheep, **hi-a** is not a true mensural, but a sortal classifier.

the units and measurement used.<sup>79</sup> They probably developed to unpronounced classifiers simply by adaption to an already existing system of unpronounced determinatives.

To sum up, the main point here is that the mix within a single system of *noun* classifiers, of two sorts of classifiers – the mensural (typical of numeral classifier systems) and sortal (common to all subtypes of classifier systems) – is actually a very interesting typological feature of our system.






### 3.3 Categorizing principles of the Sumerian determinatives analysed as *sortal* classifiers

In Table 3 above the attested items of the proposed list of cuneiform classifiers are structured not only along the grid of sortal and mensural classification but more specifically according to their thematic function. In what follows, all the attention will be given to the sortal kind, in order to prepare the comparison with other classifier systems in sections 4 and 5.

#### 3.3.1 Level of categorization, size of the classes and class extension


The Sumerian system does not include a high generic classifier, meaning just “a thing”, although comparable nouns are, of course, attested (compare the Egyptian system discussed below). However, as in all classifier systems, the classes defined by the different classifiers vary in size, some being large classes with dozens or more of items and others much more restricted classes with a more specific selection. An example of this difference in size in Sumerian is, for instance, the contrast between the large class of CLOTH/TEXTILE, and the more limited LINEN class for just linen items. There does not seem to be, however, a clear case of “unique classifiers” identified so far in the Sumerian system, i.e. classifiers for just a single item, as there are in the Jakaltek and the Egyptian systems (Craig 1986a, Goldwasser & Grinevald 2012); the only possible exception in Sumerian might be the class of WEAPON (42).

The larger classes in the Sumerian system may either be large by the sheer number of items of the same nature (like the hundreds of birds and fish identified in the Sumerian system), or by various processes of class extension, in which case the classifier loses partially its original semantics. Several such cases of extension will be considered below.

In the animal domain of quadrupeds, the process of extension of a class by absorption of new items that have entered the culture is illustrated by the case of the classifier DONKEY (15) (*Equus asinus asinus*)-  developed from the more iconic    <sup>80</sup> extended beyond its prototypical value of the specific species of domestic animal to head

79 It is often unclear whether the sign **GANÁ** has to be interpreted as part of a field name or determinative or whether even a reading **iku**, a square measure (of ca. 3.500 m<sup>2</sup>), is correct. We note here, that in the cuneiform systems of number notations *the form of a number* sign often implies a specific measure. The number 5 might be written differently whether 5 (talents), 5 (mina), or 5 (shekels) are intended.

80 It is remarkable, that for animals, especially those of larger size, the cuneiform script depicts just the *heads* of these animals, not their shape. The complex and diverse situation for the various animal heads were studied by Mittermayer (2005); for the ANŠE sign cp. 28–35 and esp. 30.

a class that includes wild donkeys (probably the Asiatic onager, *Equus hemionus*, also *Equus hemionus hemippus*) and perhaps even deer. It finally comes to head a class that has absorbed various foreign or wild animals, such as the horse (first attested as <sup>ansē</sup>si<sub>2</sub>-si<sub>2</sub> [<sup>DONKEY</sup>sisi, /sisi/ being a wanderwort]), then called the “donkey from the mountain” ANŠE.KUR.RA = read /sisi/ , and later occasionally even the camel as ANŠE.A.AB.BA “donkey of the sea (lands)”.<sup>81</sup>

Another example of class extension is the case of the BULL/CATTLE (20) classifier used for all sorts of bovines, including *Bos primigenius* and probably also *Bos gaurus/frontalis*. The SHEEP (43) classifier seems occasionally also to be used for other small livestock,<sup>82</sup> which might be motivated by the *lexically* well attested use of “sheep” as an intermediate taxon meaning “small livestock”, specifically “sheep” and “goat”.<sup>83</sup>

In the plant domain, it is the case of the extension of the BARLEY (28) classifier to classify other cereals. Meanwhile, in the manufactured, man-made objects domain, one finds, for instance, the WOOD (19) classifier being used first for all sorts of trees, but also for objects “made of wood” (Egyptian shows a similar classification, see Goldwasser 2002: 51). Similarly, the COPPER (13) and BRONZE (30) classifiers, as well as the classifier for animal hide SKIN/LEATHER (2), regroup together all sorts of manufactured objects “made of bronze/copper” or “made of leather”.



### 3.3.2 The case of ILLNESS

It is especially interesting that ILLNESS (36) has a classifier of its own in the (late) Sumerian system, to the extent that, as will be mentioned later, the concept of illness is often marked in classifier systems, although in different ways. In Sumerian, ILLNESS forms a class of its own; it is perceived as a result of demonic forces. In Jakaltek (see below, section 4) it is singled out by being included in the male human entities. In the Egyptian Middle Kingdom, “be ill” may be classified by the SETH classifier – the male god of confusion and

81 We note that on the *language* level a similar extension is attested. The most common syllabic writings for the camel are **am-si-har-ra-an** and **am-si-kur-ra**, both with the Akkadian translation *ibilu*. The first expression means literally “the elephant (**am-si** = *pīru* “elephant”) of the caravan route”, the second “the elephant of the mountains”.

82 Cp. **udu dur** SHEEP ‘young male donkey’: ELA/Ur III/Susa **1(diš) udu dūr ga-lu-hu-ul-ga** MDP 23, 162 293 3 and perhaps **udu durah** SHEEP ‘wild goat’: ELA/Ur III/Drehem: **1sila<sub>4</sub> 4 udu dara<sub>4</sub>** (DURAH) UCP 9-2-2, 036 1; **/alu/** “ram” in Akk. = *ālu*, seems also written **udu a-lu** SHEEP ‘ram’ (AUCT 2, 358 4; even **/šegbar/**, in Akk. *šapparu*, “a deer or mountain goat”, may occasionally also take the SHEEP classifier (TL 263 8(?)). Compare here Goldwasser (2017).

83 A similar extension of *lexical* use is attested for **maš** designating the he-goat and commonly also used to designate goats in general. However, occasionally even **u(z)d<sub>5</sub>** “she-goat” is used as broader term (Selz 1989: 422 = Nik I 193).

We note in passing that the **maš** sign  “goat” has no obvious iconic referent and is generally thought to belong to the group of abstract signs. However, the suggestion of Selz (2000: 195) of a phonetic relation to **maš** “interest; share; ‘half’” depicted (iconically by two crossed wedges) may be corroborated by the iconically similar hieroglyph (also uses as classifier) BREAK, DIVIDE (two crossed sticks) , see Gardiner (1957: 538, Z9–10).



disturbance, who is most often personified.<sup>84</sup> The point to be made here is that the concept of illness seems to have some universal importance to humans that is revealed in classifier systems of different times and continents, and is signaled in the Sumerian system as well.

### 3.3.3 The case of the classification of animals: a functional categorization

In the Sumerian knowledge organization as evidenced by the classifier system of the script, there is first the noticeable absence of any generic category of “animal”.<sup>85</sup> The animal world is actually divided into five classes, which seem to correspond in an interesting way to some *utilitarian* perception of the animals in addition to physical similarities.<sup>86</sup> This clear utilitarian classification distinguishes between classes of BIRD, FISH, BOVINE, SHEEP, and DONKEY. This statement is corroborated by the observation that for all these groups of animals specific *lexical lists* are attested, right from the beginnings of writing onwards.<sup>87</sup>

The role of the classes of BIRD and FISH is clear, as they are important element of the nutrition system and have a clear economic value, as shown by numerous economic documents from the earliest phases of writing.

The same utilitarian function could be applied also to livestock classes of BOVINE, SHEEP and DONKEY, which additionally relate to the late 3<sup>rd</sup>–2<sup>nd</sup> millennium *lexical* generic terms: /**niġki**/ lit. “things (creatures, moving) on earth”, in Akk. *nammaštū* “the ones that move around” and /**niġurlimmu**/ lit. “four-legged things (creatures)” > “quadrupeds”, in Akkadian *būlu* “herd” (intermediate taxon) for livestock<sup>88</sup>, also /**niġziġal**/ “living beings” > “creatures”, lit. “breathing things” (= Akkadian *šiknat napišti*, also *namaššū*), or /zišagġal/ “the breathing ones”.<sup>89</sup> The livestock classes may also point to the functional importance of these animals, including, among other things, their use as working animals. The BOVINE class is set aside for being the most important working animals, also important for their dairy production, and to a lesser extent for meat consumption and leather production. The SHEEP class is set aside as smaller livestock also used for dairy products and meat consumption, but with the additional, and especially important, industrial value of their wool. The functional value of the class headed by the DONKEY, with its later inclusion of

84 On the Seth classifier, see Te Velde (1967: 22–23), Goldwasser (1995: 102–103, 2005: 108–110); McDonald (2007) and Allon (2007). The common classifier for the lexeme *mr* “be ill” since the Middle Kingdom is the  NEGATIVE classifier, see DZA 24.127.330–350 (for the “bad bird” classifier, see fn. 137 below). The  SETH classifier is an alternative classification for this lexeme. Names of illnesses may take the GLAND classifier, see Gardiner (1957: 539, Aa2).

85 The Sumerian *language*, at least at the turn from the 3<sup>rd</sup> to the 2<sup>nd</sup> millennium, knows more generic terms, see next paragraph, but this has to be kept apart from the “classifier system”.

86 See Denny (1976) for an early discussion in classifier studies of the three principles of categorization: by *essence*, by *form* or by *function*. In the case of birds, *form* must have also played a central role as some birds were not regular part of food supply (we are grateful to an anonymous reader for this remark). On the “utilitarian classification” which is activated in many cultures, see Hunn (1982).

87 It was Niek Veldhuis who actually stressed the environmental foundation of the earliest lists, noting that any reference to metaphysical aspects are missing in these texts; see Veldhuis (2006: 187) and cp. Selz (2011: 57–58 with fn. 37).

88 Compare here intermediate taxa in the Egyptian script, see Goldwasser (2002: 69–78).

89 An extensive discussion of the taxonomy of the animal kingdom is given in Selz (in press b).



the horse and the camel, is principally that of a *transport* class, to the extent that none of these animals is normally used for meat consumption in the Ancient Near East.<sup>90</sup>

The other argument for a functional classification of the animal domain resides in the fact that the animals that remain unclassified, from large carnivores such as lions and panthers to smaller quadrupeds such as dog, cat, monkey or mouse, are all of limited utilitarian value. This extends to reptiles, such as snake or worm, which remain unclassified too.

To sum up, animal classification in the Sumerian script system shows the following characteristics:

1. Animals are classified mainly according to utilitarian and functional considerations.
2. Animals which have no utilitarian function – such as big carnivores (e.g. lion, panther) or other animals (e.g. dog, mouse, cat) remain unclassified.
3. The classification clearly differs between domesticated and non-domesticated animals.
4. Birds and fish are classified by their own specific classifier.
5. Snakes and worms are not classified.<sup>91</sup>

## 4 The Sumerian classifier system in typological and areal perspective

The analysis of the Sumerian determinatives as consisting of a noun classifier system relies critically on two previous studies of other classifier systems to be introduced in this section. The first one is of a classifier system from a Mayan language of Mesoamerica which was itself the original source of comparison to establish the analysis of Egyptian determinatives as classifiers.<sup>92</sup> These two systems will be considered in turn, from both a typological and areal perspectives, in order to point to interesting similarities and expected differences between them and the Sumerian (cuneiform) system.<sup>93</sup>

### 4.1 Comparison with the Jakalteq (Mayan) noun classifier system

The particular classifier system of Jakalteq<sup>94</sup> to be considered first was at the origin of typological discussions of the variety of classifier systems, and was instrumental in the identification of a particular subtype of classifiers of nominal entities, now established in the literature under the label of “noun classifiers”. A quick overview of the contribution

90 On the donkey, see, Way (2011: 107) and Greenfield et al. (2012).

91 Compare here the Egyptian classifier system which has a single class for snakes and worms, see Goldwasser (2002: 68–69), and discussion below.

92 See the analysis in Goldwasser & Grinevald (2012) of the determinatives of Egyptian scripts as a classifier system, on the basis of a comparison with the classifier system of Jakalteq.

93 In fact, from a historical point of view, the ancient Mayan logosyllabic writing system shows astonishing similarities with the cuneiform system. G.J. Selz thanks Alfonso Lacadena with whom he extensively discussed the different features of the two script systems during a workshop of the COST A 31 (*Stability and adaptation of classification systems in a cross-cultural perspective*).

94 A Mayan language of the Q’anjob’alan branch spoken in Guatemala. Originally spelled Jacalteq (when Grinevald was still called Craig), later written Jakalteq following the establishment of official alphabets for Mayan languages of Guatemala, and renamed later yet Popti.’ Today usually called Jakalteq Popti.’ but here simply referred to as Jakalteq.

of Jakaltek to the study of classifier systems in the context of its comparison with the Egyptian system can be found in the Appendix of Goldwasser & Grinevald (2012).<sup>95</sup>

#### 4.1.1 About “noun classifier” systems

As argued early in Craig (1986a, 1986c, 1992) and then further in Grinevald (2000, 2015), principally and originally on the basis of the Jakaltek system of classifiers, there exists a “noun classifier” subtype of classifiers, which is to be distinguished from the much better known “numeral classifier” subtype found, for instance, in East Asian languages such as Chinese or Thai (see discussion above 3.1).<sup>96</sup>

The argumentation to make such a distinction relies on a combination of morpho-syntactic<sup>97</sup>, lexical and semantic characteristics, most of which can be shown to be shared (even if through another medium) by the cuneiform and Egyptian “determinative” systems.<sup>98</sup> From a structural point of view, noun classifiers stand in a position right next to the nouns they classify and form with them a morpho-syntactic unit<sup>99</sup> (while numeral classifiers form units with quantifiers and numbers instead, and possessive classifiers with possessive forms<sup>100</sup>). From a lexical point of view, they originate in nominal lexical items which come to be grammaticalized as classifiers, with expected accompanying phonological reductions and semantic changes. From a semantic point of view, they categorize nouns by their characteristic of essence or nature (for instance human vs. animal vs. vegetal vs. mineral etc.) rather than by shape – the way numeral classifiers do (as in 1D-long vs 2D-flat vs 3D-round, etc.).<sup>101</sup>

#### 4.1.2 Jakaltek as a noun classifier system

Jakaltek classifiers consistently stand directly to the left of the noun they classify and form a construction unit: *classifier+noun*, i.e. all classifiers are in pre-position (PR). It is easy to argue that the classifiers have originated in nouns, and that the classification is done on the basis of the essence of the items and the material they are made of. Part of the evidence lies

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95 The Appendix by Grinevald is entitled “Basics on Classifier Systems” (pp. 46–51).

96 For overall views of classifier systems see Aikhenvald (2000) and Senft (2000). For numeral classifiers, see Bisang (1999). The small group that we termed “mensural classifier” in the cuneiform system was discussed above.

97 “Morphosyntactic » to the extent that the forms belong to some established paradigms and appear in specific positions as part of certain constructions of the language, independent of the medium of their expression.

98 Classifiers may surface in different media. For a general discussion of classifiers in Sign Languages see K. Emmorey (2002), and for specific comparison of classifiers in Sign Language and Egyptian script system, see Lincke & Kutscher (2012).

99 The (unpronounced) classifiers of the cuneiform and Egyptian scripts appear in similar syntactic positions.

100 For a discussion of the different morphosyntactic constructional characteristics of the different types of classifiers see Craig (1992), Grinevald (2000).


101 Talking of the sortal classifiers which categorize the entities themselves, and not the mensural ones which specify either units for counting or arrangements (see table 3 in 3.2.1.).

in the existence of what are known as *repeater* classifiers, classifiers that are a (somewhat modified) replica of a lexical noun source.<sup>102</sup> For all but one of the Jakaltek classifiers the source nouns have remained identifiable as illustrated below (with classifiers indicated in CAPS): (1) with no reduction, but others exhibiting different degrees of phonological reduction (2) with a case of truncation and (3) cases of fusion in the speech chain<sup>103</sup>:

(1) a. *ix ix*      b. *ixim ixim*      c. *ch'ench'en*  
       WOMAN woman      CORN corn      ROCK rock

(2) a. *naj winajb. no' noq'*  
       MAN man      ANIMAL animal

(3) a. *tx'otx' tx'otx' > [tx'otx'otx]*      b. *te' te' > [tete']*      c. *ha' ha' > [haha']*  
       SOIL soil      PLANT tree      WATER water

Although rare in the Sumerian system, a similar instance of repeater may be the case of <sup>na</sup><sub>4</sub>na  = 'STONEstone' (18).

Jakaltek classifiers come from source nouns that define three levels of categorization: *generic, specific, unique*.<sup>104</sup> This terminology refers to the *size of the category* discussed and not to the relationship between the classifier and host word. An example of *generic* classifiers is the one for plants and plant products, to be contrasted to the *specific* one for corn and products derived from it, and to the *unique* one just for dog, while there is a *generic* one for all the other animals. This distribution between generic, specific and unique classifiers is very clear and central to the categorization system of the Jakaltek noun classifier system (Craig 1986a, Grinevald Appendix in Goldwasser & Grinevald 2012).

#### 4.1.3 The thematic inventory of the Jakaltek system

The analysis of the thematic inventory of the Jakaltek classifier system originally appeared in Craig (1986a). Table 4 below summarizes the organization of the inventory and shows first how the two dozen classifiers of the system can be subdivided into two even subsystems. The first one counts a dozen classifiers of *social interaction*, labelled this way to specify that they not only organize humans (plus deities and spirits) according to gender, kinship and prestige parameters, but can also express *discursively marked choices*. They allow speakers some freedom of choice to express either positive or negative feelings towards the person classified, indicating special closeness for a non-kin by using a kin classifier, for instance, or distance from a kin by using a non-kin classifier (Craig 1979: 43–44; 1986a: 269–270). The other subsystem of so-called *physical and functional interaction* is basically organized around physical characteristics (form) of entities (whether of the animal or vegetal domain for instance) with no speaker variation possible, while pinpoint-

102 For the term “repeater” see Allan (1977: 292); Senft (2000: 22); Grinevald (2003: 98); Goldwasser & Grinevald (2012: 48–49). For the list of lexical sources of all Jakaltek classifiers see Craig (1979: 45).

103 Examples are from Craig (1979: 45); Grinevald (2002: 1026); Craig (1986a: 256).

104 The Jakaltek system does not have a general or neutral classifier, one devoid of semantic content.

Table 4 | Jakalteck classifiers – thematic organization<sup>a</sup>

Social interaction	Physical and Functional interaction			
		Generic	Specific	Unique
1. DEITY MALE <i>kumam</i>	<i>Animal</i>	13. ANIMAL <i>no'</i>		14. DOG <i>metx'</i>
2. DEITY FEMALE <i>kumi'</i> <sup>b</sup>				
3. RESPECTED HUMAN <i>ya'</i>				
<i>Non-kin</i>	<i>Vegetal</i>	15. PLANT/WOOD <i>te'</i>	16. CORN <i>ixim</i>	
4. MALE <i>naj</i>				
5. FEMALE <i>ix</i>				
6. YOUNG MALE <i>naj ni'an</i>				
7. YOUNG FEMALE <i>ix ni7an</i>				
<i>Kin</i>				
8. MALE <i>ho'</i>				
9. FEMALE <i>xo'</i>	<i>Mineral</i>	20. ROCK <i>ch'en</i>		22. SALT <i>atz'am</i>
10. YOUNG MALE <i>ho' ni7an</i>				
11. YOUNG FEMALE <i>xo' ni7an</i>				
12. INFANT <i>unin</i>	<i>Natural elements</i>	23. WATER <i>ha'</i>		24. FIRE <i>k'a'</i>

- a Table 4 gives a compounded presentation of information found in Craig (1986a :266–267 and 278), Goldwasser & Grinevald (2012, Appendix 50–51).
- b The Jakalteck classifiers are written here in the new official alphabet: hence different transcriptions from the early source (Craig 1986a); so *c* (as in 1. *cumam* and 2. *cumi7*) was changed to *k* (as in 1. *kumam* and 2. *kumi'*) and all glottal stops written originally with 7 (as in 2. *cumi7*) are now written with apostrophe ' (as in *kumi'*).

ing the items with culturally important functions either through special class extensions or through identification of *specific* and *unique* classes.<sup>105</sup>

There is a similarity in the way the classifier systems of both Jakalteck and Sumerian divide up the world that humans live in and interact with. Admittedly, there is a major

<sup>105</sup> Craig (1986a: 263–293) offers cultural explanations for these cases: the *specific* ones of CORN and WEAVING for instance as being pan-Mayan and locally essential cultural items, respectively, and the *unique* ones including the DOG as emblematic of male maturity, SALT as essential currency in commerce in the region and FIRE as not having any derived product.

difference between the two inventories in the fact that half of the Jakaltek system is concerned with the categorization of human entities, with detailed distinctions of status, sex, kinship and age, which means much more detail than what the Sumerian system grants to this domain.<sup>106</sup> But, on the other hand, the other half of the system, the one which categorizes the non-human world, is quite similar in both systems, relying on the categorizing feature of the *material essence* and consistency of the entities, and occasionally also on that of their *function* for humans. So, in both systems, the non-human classifiers cover similar general domains of the surroundings of the speakers, which for the sake of comparison of inventories will be divided into animal, vegetal, mineral and natural domains.<sup>107</sup> One noticeable difference in the list of domains is how Sumerian has developed an interesting set of classifiers of spatial entities like houses, fields, (cultivated plots), and cities, while Jakaltek – a language spoken in a predominantly rural and agricultural environment – does not include in its classification such a domain linked to a notion of functional or administrative locations. Therefore, in Jakaltek, a house as a building is in the WOOD/PLANT class and there is no classification and no lexical item equivalent of HOUSE as a functional place, while villages, market places and fields, while being named, are not classified at all.<sup>108</sup>

In terms of size of the classes, both systems are comparable in the contrast between large classes headed by a generic and smaller, more specific, classes that categorize items with marked cultural value. For instance, both systems set apart some culturally significant food plant from the general class of plants but, interestingly, it is CORN in the Jakaltek Mayan system and BARLEY in the Sumerian one. And while unique classifiers, i.e. classifiers heading a class of just one item, are present in the Jakaltek system, they do not seem so far to have been detected reliably in the Sumerian system, although some are found in Ancient Egyptian.<sup>109</sup>

#### 4.1.4 About animals and illnesses in the Jakaltek system

The categorization of animals is an interesting case for comparison between the three classifier systems considered. Jakaltek has one very large ANIMAL class, headed by a lexeme that stands for the generic term “animal” in the lexicon. This class includes all the different kinds of animals, independent of shape or size, domestication or habitat (quadrupeds: cats, pigs or horses; bipeds: birds, chickens; but also, fish, snakes and bugs). The class is in fact very large, since it has been further extended to include all animal parts and products (egg, milk, meat, horns, wool), as well as all manufactured objects, made

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106 There are, however, indications that in the early Uruk texts similar differentiations are attested lexically.

107 Our etic English terminology reflects typical dissection of the world by western societies and is widely used for discussion in scientific literature, including classifier studies, cognitive linguistics and ethno-biology (E.g. Brown 1999; Berlin 1992; Hunn 1982). The emic information is represented, ipso-facto, in the classifier systems discussed in the article, and it naturally fits only partially the modern nomenclature.

108 The system interestingly only classifies tangible items of identifiable material, leaving nouns like sun/moon/stars or beer/cocacola and other drinks of unidentified origin, as well as locations unclassified, see Craig (1986a: 273–274).

109 See Goldwasser & Grinevald (2012: 20).

with animal material (hides, sandals, woollen blankets). However, in a very idiosyncratic way, dogs are excluded from this ANIMAL class and are assigned a class of their own, in a culturally significant manner (considered in 4.1.2-4.1.3 above).

Meanwhile, the Sumerian classifier system shows (see 3.3.1 and 3.3.3) neither a generic *classifier* for ANIMAL or any similar class,<sup>110</sup> but has several specific classes with functional value. This fact stands in contrast to the Ancient Egyptian classifier system which has developed a large superordinate category classified by of HIDE & TAIL =“(having) hide & tail” classifier which was extended from a class created around the prototype of (made of) HIDE/LEATHER (see below 5.6), ending up classifying the live animal world of Ancient Egypt (see below).

Another interesting point of comparison between the three classifier systems considered here is the special treatment they consistently give to illnesses within their classificatory scheme, although each in its own way. So, while illnesses are not given a specific class in Jakaltek, they are indeed singled out in that system too, and given importance in the categorization schema by being assimilated into the class of MALE/HUMAN NON-KIN, actually an act of personification through the classifier system which resembles the Egyptian personification of illness by the classifier of the god Seth (see below<sup>111</sup>).

#### 4.1.5 Variation across systems

Beyond finding some interesting parallelisms of a typological nature in the way any two noun classifier systems categorize their worlds, such as the one pointed out between the spoken Jakaltek system from native America today, and the written Sumerian one from the Old World in Ancient times, one should not expect *any* two systems of classifiers to ever have the same inventory or classification scheme. This is so to the extent that classifier systems develop very locally and are lexically based and reflect local culture. There will never be two fully matching classifier systems. This can be illustrated by the documented differences found even between very close languages, such as the sister languages of Jakaltek, all languages of the same Q’anjob’alan branch of the Mayan family, and all spoken in the same isolated area of the Cuchumatanes Mountains. Table 5 below shows a sample of the classifiers of four close sister languages in order to illustrate the kinds of variation that are found across the otherwise very similar systems. In this sample, the same conventions used for the Sumerian system earlier apply: classifiers shared by all the languages are in **bold**, those found in all but one language in ***bold italics*** the rest show different patterns of variation, including cases of a classifier appearing in only one language.

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110 To prevent possible misunderstandings: The Sumerian *language* increasingly developed intermediate and superordinate taxa to name various categories of animals (see above 3.3.3), yet this phenomenon has to be sharply distinguished from the established set of classifiers.

111 On the cognitive analysis of this process within the Egyptian script as an intrusion of Lakoff’s “Myth and Belief Principle” into the classifier system, see Goldwasser (2005: 107–109).

Table 5 | Sample Variations in noun classifiers inventories in the Q'anjob'alan languages of the Guatemalan Cuchumatanes (after Hopkins 2012)<sup>a</sup>

<i>Generic</i>	<i>Specific</i>	<i>Unique</i>	Q'anjob'al	Jakaltek	Akatek	Chuj
Illness as MALE/ HUMAN				+		
		ILLNESS	∅	∅	∅	+
<b>ANIMAL</b>			+	+	+	+
		DOG	∅	+	∅	∅
<b>TREE/ WOOD</b>			+	+	+	+
		<b>MAIZE, GRAIN</b>	+	+	+	+
		<b>PLANT, HERB</b>	+	∅	+	+
		<b>CORD, VINE</b>	+	+	+	+
		CLOTH	∅	+	∅	+
		THREAD	∅	+	∅	?
		PLASTIC	∅	∅	∅	+
<b>EARTH/ CLAY</b>			+	+	+	+

a For the actual forms of all these classifiers, see Grinevald (2016: 288, Table 8).

The table shows a selection of core classifiers shared by all the languages (**ANIMAL**, **TREE/WOOD**, **MAIZE/GRAIN**, **CORD/VINE**, **EARTH/CLAY**), and how Jakaltek distinguishes itself from the other languages, by either being the only one having invented a certain classifier **DOG** or the only one not to have a classifier **PLANT/HERB**.

#### 4.1.6 Conclusion

The point of this section was to underline the similarities that can be drawn by a comparison between the Jakaltek and Sumerian systems of classifiers, in particular in the thematic organization of their respective worlds. Of course, a major difference between the two classifier systems is that the one in Jakaltek and sister Q'anjob'alan languages consist of *pronounced* items, clearly identified in the last decades in new studies of these contemporary oral tradition languages of the Mayan family of languages spoken in the Mesoamerican region of the so-called New World. By contrast, the pronunciation of the Sumerian determinatives analyzed here as comparable classifiers is generally denied, as they are mostly taken to be a feature of script only (but compare 6.1). As shown, the spoken classifiers in Jakaltek can easily be linked to lexical nouns still used in the language, even if they sometimes show reduction when used as classifiers (see above). A similar link to

lexical nouns is argued by Selz for the Sumerian determinatives considered as classifiers, a link repeatedly noted as part of the new information in the consolidated list presented in section 2 above. Formally, all classifiers in Jakaltek show pre-position like most of the classifiers in the cuneiform system, and unlike the Egyptian classifier system (see below).

The other parallel drawn between the two systems relates to the process of class extension, which was shown to be more open and more extensive in Jakaltek than in Sumerian. In Jakaltek, extensive class extensions of the three basic generic classifiers for the animal, vegetal and mineral worlds, have created very large classes for all the objects or products derived from those basic materials. So, for instance the WOOD/PLANT class includes all objects “made of wood”, such as house, pieces of furniture (bench, table, bed) or kitchenware (spoon, bowls), but also drinks “made of plants” like coffee or alcohol, demonstrating that the classification is really by essence or natural source of the entities. A similar process of class extension was detected in the Sumerian system, although at a more specific categorization level, where classifiers of different materials (WOOD, REED, COPPER, BRONZE, and STONE) mark not only the material itself, but also other objects or products made thereof. The same phenomenon is well known in the Egyptian system.<sup>112</sup> As noted, the Sumerian system appeals more often to a notion of functionality in its classificatory schema, as seen with the specifics of the animal classes and the spatial classifier pointing to man used and built entities (cp. above 3.2.2).

## 5 A short comparative perspective on the Egyptian classifier system

The Egyptian hieroglyphic script is the other great script system that was born in the Ancient Near East and timewise was probably parallel to the Sumerian system. Both systems present a long, documented, diachronic development, from their early stages in the second part of the 4<sup>th</sup> millennium to the first centuries AD in Mesopotamia and Egypt. The Egyptian script has already been shown to boast a richly documented, long-lived system of classifiers which provides a rare source of diachronic data for the typological study of classifier systems.<sup>113</sup>

Unlike the cuneiform script, the Egyptian script recorded throughout its long history a single language: Ancient Egyptian – an Afro-Asiatic language. A number of other fundamental differences between the Ancient Egyptian and the Sumerian systems are noted below.

### 5.1 Formal characteristics: presence, position, complexity

Although the diachronic development of the Egyptian classifier system can clearly be traced, it was actually little noticed and hardly studied until the last two decades.<sup>114</sup> The system is not as rigid as the Jakaltek system just described, and in this respect closer to the

112 See Goldwasser (2002).

113 E.g. Goldwasser (2002, 2006a); Goldwasser & Grinevald (2012); Lincke & Kammerzell (2012); Kammerzell (2015); Lincke (2015a).




114 For history of research and its problematics, see Goldwasser (2006a) and Kammerzell (2015).



cuneiform one. As a matter of fact, the presence of Egyptian classifiers was not absolutely obligatory, as it could depend on various factors, such as period of use and materiality, technical considerations of space, context or writing-form – hieroglyphs, cursive hieroglyphs, hieratic – or different textual genres.<sup>115</sup>

Once the identification of Egyptian “determinatives” as classifiers is acknowledged, one can turn to their basic structural characteristics. The first one is that all of them are *post*-position (PO) classifiers,<sup>116</sup> and that unlike other classifier systems – the Sumerian one included – the Egyptian system exhibits frequent complex constructions of multi-classifiers. These classifier constructions combine up to 4 or even 5 classifiers that obey strict ordering principles, as discussed in Goldwasser & Grinevald (2012) and Lincke & Kammerzell (2012).

## 5.2 Kind of classifier system

While the cuneiform classifier system is strictly of the “noun classifier” subtype of classifiers, and as such comparable to other noun classifier systems found in world (such as the Jakaltek presented above in section 4, or others discussed in Aikhenvald 2000), the Egyptian system is of a somewhat different type, until recently not identified in the typology of classifier systems. It constitutes, interestingly, a rare type of system that classifies at once nouns, verbs, and sometimes even adverbs or prepositions.<sup>117</sup> So while Ancient Egyptian has many classifiers clearly categorizing nominal entities similar to the Sumerian ones, such as: HUMAN/MALE , PLANT , HOUSE , etc., there exists in parallel a number of “event oriented” classifiers that classify lexemes clearly of a verbal nature.

The reasons for the tendency of the Egyptian system to classify both nouns and verbs may well be related to Ancient Egyptian being a language of the Afro-Asiatic branch, well known for a particular typological feature of the structure of its lexicon that sets those languages apart from other languages, such as Indo-European languages: The central and salient notion of a highly productive consonantal lexical-semantic “root skeleton”.<sup>118</sup> The vast majority of the languages of the world are characterized instead by the fundamental contrast between the linguistic categories of “noun” and “verb”, a contrast less imminent in Egyptian.<sup>119</sup>

115 Here see Lincke (2011) on classifiers in the Pyramid Texts, Shalomi-Hen (2000, 2006) on classifiers in the Coffin Texts, Werning (2011) for classifiers in New Kingdom religious and lapidary historical texts and Kammerzell (2015) on tendencies in New Kingdom hieratic classifiers. Also Sumerian displays a number of variations with and without classifiers (for a collection of examples see Falkenstein 1949: 34–35). These variations often serve as proof for the claim that Sumerian classifiers are unpronounced, a pure phenomenon of script.

116 For a very rare example from the Middle Kingdom Coffin Texts, see fn. 7 above.

117 *Verb* classifiers (to be carefully differentiated from *verbal* classifiers), see Goldwasser & Grinevald (2012: 47), such as those of Australian languages, were not identified until relatively recently, see Schultze-Berndt (2000), Schultze-Berndt & Sagna (2010), for one of the first descriptions of such systems.

118 For a discussion of the Semitic root from the view point of Historical Semitics see Kienast (2001: 59–68 [with extensive bibliography]).

119 E.g. Goldwasser (2006b).

A question that comes to mind immediately is why the Mesopotamian system that later was also used for recording various Semitic languages and dialects never turned to the classification of roots (hence of verbs too). One could argue that the reason for this may well be because the Mesopotamian classifier system discussed above was in fact *devised* for Sumerian, a language which is clearly a non-Semitic language, since no cognates of Sumerian have been identified so far (Edzard 2003: 2–3). Therefore, the cuneiform classifier system developed in a non-Semitic language devoid of a key notion of consonantal “root”. As argued above, the cuneiform classifying system maintained itself as a basically Sumerian system in its essence, and even remained productive until the 1<sup>st</sup> millennium BCE. However, this argument is challenged by recent studies on Luwian hieroglyphs which developed independently in Anatolia mainly from the 13<sup>th</sup> century to the 9<sup>th</sup> and 8<sup>th</sup> centuries BCE. The hieroglyphic Luwian system also shows a mixed system of noun *cum* verb graphemic classification.<sup>120</sup> As Luwian hieroglyphs record mainly Luwian, an Indo-European language, the explanation of “root classification” may be not entirely satisfactory. Moreover, the Chinese *writing system* also shows a mixed graphemic classifier system that classifies *nouns cum verbs*, as has been recently shown by Chen.<sup>121</sup>

### 5.3 Number and inventory of classifiers in the Egyptian script

Even without a thorough study, it is very clear that the Egyptian classifier system counts many more classes than the Sumerian system. An inventory of the overall Egyptian classifier system was never established in a methodical way in Egyptology.<sup>122</sup> The basic “list of classifiers” available (but not even numbered!) was compiled more than half a century ago by Alan Gardiner. This list, which he presented for teaching purposes in his grammar book of Middle Egyptian, is however the fruit of his many years of profound experience with Egyptian texts and remains, to this day, the standard list in Egyptology.<sup>123</sup> The list contains what he considered to be about 90 “generic determinatives”, although the number of classes represented in it should probably be considered somewhat smaller, partly for reasons explained below. Meanwhile, a number of other classifiers should be added to it, since many logograms could be activated as classifiers under specific circumstances. Almost all classifiers possess inherently a lexeme (and logogram) *status* as argued above for Sumerian and Jakaltek (lexeme only).<sup>124</sup> Some classifiers in Gardiner’s list seem to be variations of a single classifier meaning. These variations are in part due to the high iconic nature of the hieroglyphic script that enforces in many cases the choice of a single *picto-*

120 See Payne (in press).

121 See Chen (2016). On verb classification in *numeral* classifier system, see fn. 131 below.

122 Inventories are in the process of being created for single texts and some corpora, see Werning (in preparation).

123 Gardiner (1957: 31–33). Borghouts (2010: 49–50) presents a “lightweight” list of less than 70 classifiers, yet the essence of the list as its order is not changed; other shortened similar lists appear in different grammars. Werning, in a new approach, gives a new combined list of classifiers used in a few texts studied by him, see Werning (2015: 15).

124 For a recent semiotic analysis of the role Egyptian hieroglyphs may play in the script system, see Polis & Rosmorduc (2015) with bibliography.





*rial prototype* for the representation of a complex generic concept.<sup>125</sup> Such a complication is not found in the cuneiform system, since it lost its iconicity very early.<sup>126</sup> Moreover, in different periods of the Egyptian classifier system, different prototypes may compete for the representation of the same generic category. Such is the case of the concept GOD for which the earliest pictorial classifier is a falcon god  (falcon on a standard), later challenged, from the 5<sup>th</sup> dynasty onwards, by another prototypical pictorial representation – that of a human manifestation of the divine  – which was probably originally that of the god Osiris.<sup>127</sup> The human prototype manifestation  implies a clear development in the conceptualization of the divine that is now presented as a personified god capable of loving, thinking, being angry and finally having mercy and showing care – all characteristics of humans, but hardly of a falcon. A third contestant for the representation of the divine is the banner  which is a metonymic, non-specific pictorial representation of the concept GOD through its function as “temple banner”. However, the three variations of the GOD or DIVINE classifier continue to exist side by side throughout history.<sup>128</sup> Next to this example, there are other classifiers in Gardiner’s list that are either rarely used or head very small classes with very few members.

Table 6 below is meant to open up a “dialogue” with the new consolidated list of the Sumerian classifiers presented in section 2.2 and 3.2.1 with Table 3. It displays those Egyptian classes (as defined by their classifiers) that refer to categories *somewhat similar* of those found in the cuneiform script. As is to be expected of classifier systems, there is no complete parallelism between the two systems, in which categories differ greatly in range, number of members, centrality, semantic range etc. The suggestion of mensurals in Egyptian is tentative.<sup>129</sup> However, it is hoped that the table provides the reader with an overview of how the repertoire of the Egyptian and the cuneiform systems compare.

#### 5.4 Prominent Egyptian classes with no parallel in the cuneiform system

There exist two types of classes in the classification system of Ancient Egyptian that are not found in Sumerian: one classifying *events* generally realized as verbs, and a few very general and inclusive “*abstract*” classes.

125 See Goldwasser (2002).

126 Right from the beginning, the Sumerian writing system embraces all sorts of “abstract” signs; in other cases, the iconicity of a sign might have been grounded in cultural conventions not traceable for us. The loss of iconicity was certainly promoted by the most common writing material – clay.
















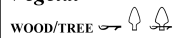





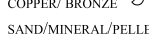
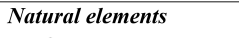


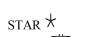




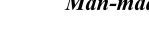









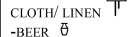


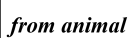


127 See Shalomi-Hen (2000: 98–101; 2006). For the anthropomorphic DIVINE, see Goldwasser (2002: 113–114). See the “classification game” of the word *ntr* in the Old Kingdom tomb of Nyankhnefertem, in Myśliwiec, Kuraszkiewicz & Kowalska (2010: pls. CXIII, CXXXVIII).

128 The banner hieroglyph gains popularity in the Middle Kingdom in the Coffin Texts. Its use declines in the New Kingdom, yet it is well known in royal texts, even sporadically during the early days of Akhenaten. It becomes popular again in the Late Period, see Shalomi-Hen (2000: 91–92); Goldwasser (2002: 115) and Goldwasser (2006c: 269 [fig.1], and 273–274) on possible reasons for its use in certain contexts.

129 Here compare the discussion of Werning on ‘grammato-classifiers’ in the Egyptian system, in Werning (2011: 102–113 and 154).

Table 6 | Egyptian classes that *correspond to cuneiform classes*<sup>a</sup>

Classes in **bold** are large classes, with many members. Classes with asterisk\* are small-scale classes.


SORTAL		MENSURAL	
ANIMATE	INANIMATE		
<p><b>Human and deity</b></p> <p>MAN </p> <p>WOMAN </p> <p>CHILD </p> <p>OLD MAN </p> <p>OFFICIAL </p> <p>EXALTED PERSON </p> <p>KING </p> <p>DEAD, ENEMY </p> <p>GOD </p> <p>GODDESS </p> <p><b>Animals</b></p> <p>CATTLE </p> <p>BIRD and INSECT </p> <p>FISH </p> <p>SNAKE/WORM </p> <p>QUADRUPED/ANIMAL </p>	<p><b>Vegetal</b></p> <p>WOOD/TREE </p> <p>*LUMBER </p> <p>*VINE, GARDEN </p> <p>GRAIN </p> <p>PLANT/ FLOWER </p>	<p><b>Mineral world</b></p> <p>STONE </p> <p>COPPER/ BRONZE </p> <p>SAND/MINERAL/PELLETS/FRUIT... </p> <p><b>Natural elements</b></p> <p>SUN ☉ (also for TIME)</p> <p>WATER </p> <p>SKY </p> <p>DARKNESS </p> <p>STAR </p> <p>WIND </p> <p>FIRE </p> <p><b>Spatial</b></p> <p>MOUNTAIN/ DESERT/FOREIGN LAND </p> <p>RIVER /CANAL </p> <p><b>Man-made spaces</b></p> <p>IRRIGATED LAND/ LAND </p> <p>*ROAD </p> <p>HOUSE </p> <p>*CONTAINER (BOX) </p> <p>TOWN </p>	<p><b>Unitizers/plural</b></p> <p>ONE, UNIT 1</p> <p>DUALIS 𐎗</p> <p>PLURAL 111</p> <p>1 PERSON </p>
	<p><b>Body parts of humans and animals</b></p> <p>FLESH </p> <p>HIDE/SKIN </p> <p>GLAND </p>	<p><b>Manufactured from vegetal</b></p> <p>CLOTH/LINEN </p> <p>-BEER </p> <p>-BREAD </p> <p>- BOAT/SHIP </p> <p><b>from animal</b></p> <p>HIDE/LEATHER </p>	<p><b>Mensuratives</b></p> <p><b>Containers</b></p> <p>JAR, JUG, PITCHER </p>


a This list is by no mean inclusive from the point of view of *Egyptian* classifiers repertoire. Additionally, all English “names” of categories are tentative. In many cases, it is difficult to reach a defined translation, a correct “name” for a class, even if the classifier is iconically transparent. When activated as classifiers, the hieroglyphs distance themselves from their iconic meaning. A clear example is the hieroglyph ☉ SUN mentioned in the table. It embraces a class of nouns such as ‘sun’, ‘day’, ‘light’ – with extensions of ‘spend the day’, ‘yesterday’ and verbs like ‘shine’, ‘rise’. Later it clearly extended to TIME, in lexemes such as ‘hour’, ‘period’, ‘eternity’ or ‘moment’, e.g. Gardiner (1957: 485, [N5]), and Faulkner (1962: 1). For discussions on the “name” of categories see Goldwasser (2002: 13–14) and Lincke & Kammerzell (2012: 67–75).


5.4.1 Principal *event* classes<sup>130</sup>


Considering that actual events cannot easily be captured directly in the pictorial, they are classified by one of two types of entities: either the body part involved in an action or the tool used by the agent performing an action. Below are some examples of the most common classifiers for such categories. The “names” of the categories are of course highly tentative (categories that embrace a large member of words are in bold):


*a. actions – by body part*<sup>131</sup>


**MOVEMENT** (walking legs) 


**ACTION OF FORCE** (man holding a stick – also in tools below) 


**‘EAT, DRINK, TALK, FEEL, THINK’** (man putting something into his mouth)<sup>132</sup> 


SEE (eye) 

SMELL (nose) 


HEAR (ear) 


**ACTION OF TEETH AND MOUTH** (tooth) 


**COPULATE** (phallus) 


**EMBRACE** (embracing hands) 


*b. actions – by tool*


CULTIVATE (hoe) 


BIND (rope) 

WRITE (scribe’s tools) 

BREAK, DIVIDE (crossed sticks) 


CUT (knife) 

**ACTION OF FORCE** (man holding a *stick* – see above body parts) 

These ‘event classifiers’ that classify roots in verbal function may also classify semantically related nouns. In such cases the tools or body-parts are necessary central semantic components in the nominal entity classified. This is the case of the PHALLUS  classifier linked to the action of copulating but at the same time classifying the nouns ‘male’, ‘bull’, ‘husband’ and others. On the other hand, the very widely used event classifier MOVEMENT

130 For the seminal works on verb-event classifiers in the Egyptian script, see Kammerzell (2015) and Lincke (2011 and 2015a). On event classes in classifier languages, see Bisang (forthcoming).

131 Chinese *numeral* classifiers (in *spoken* language) has been shown lately to classify also verbs. In this case we see a similar cognitive procedure of classification of an action by a body part involved, see the examples of FIST classifier for the verb ‘to punch’ in Bisang & Wu (2017: 258–259).





132 This classifier  represents the deep-structure conceptual metaphor [THE BODY IS A CONTAINER]. In this case it unites material and abstract entities that ‘go in and out’ of the body or reside in the body (stomach) from the emic Egyptian point of view, such as food, speech or feelings, as well *sib* translated as ‘perception’ ‘knowledge’ (DZA 28.913.940 and Goldwasser 2006b: 479–480 for explanation and discussion). For conceptual metaphors in the Egyptian *script* see Goldwasser (2005) and in Egyptological studies in general Nyord (2015). For explanation and definition of this specific conceptual metaphor in different cultures, and the concept in general, see Lakoff & Johnson (1980).

↖ includes very few “entity nouns” that are not created from verbal roots. One wonders if it has to do with the fact that this classifier actually seems to refer *iconically* to the “event of moving” and not just to a static limb necessary for the action.






Almost all classes show diachronic extensions, e.g. ACTION OF FORCE is extended in the New Kingdom into ADMINISTRATION.<sup>133</sup> SMELL is extended to “things you could see on the ‘nose-face’”, e.g. joy, contempt etc. WRITING, represented by the scribe’s palette, is extended to include a word for ‘red’, probably the specific color used on the scribal palette to be differentiated from other shades of red.<sup>134</sup>



#### 5.4.2 Overriding generic classes

Already by the end of the Old Kingdom a few large abstract generic classes had become conspicuous in the Egyptian script system. The most prominent ones are:

DOCUMENT “ABSTRACT” later RESIDUAL<sup>135</sup> (DEFAULT) – (written, sealed papyrus roll)   
 FOREIGN<sup>136</sup> (weapon, typical of enemies – throw-stick)    
 SMALL/NEGATIVE (sparrow)<sup>137</sup> 

#### 5.5 Similarities and differences in thematic classes of the Egyptian and cuneiform systems: some remarks

An important domain where the Egyptian classifier system shows more classes than the cuneiform is in the animate human classification, where, next to the large superordinate classes of HUMAN/MALE , HUMAN/FEMALE , one finds a number of classifiers for more specific classes such as EXALTED MAN , IMPORTANT MAN , as well as the pejorative classifier<sup>138</sup> DEAD MAN/ENEMY . This large number of classifiers is closer to the detailed human classification shown in the Jakaltek case above.



Body parts of humans and animals also play a specific role in both systems. In Egyptian, the FLESH  classifier embraces a large taxonomic category of flesh and limbs as well as different sorts of meat, and a similar classifier is also attested in Sumerian. The  classifier has an iconic origin in a sign of HIDE/LEATHER, a class known also in Sumerian. In Egyptian it gets by the end of the 3<sup>rd</sup> millennium an intriguing extension to be considered next (in 5.6. below). Illness and sufferings related lexemes are usually classified by GLAND, NEGATIVE, or both.<sup>139</sup> Yet during the Middle Kingdom certain words

133 Administration was obviously related in the mind of the writers to coercion and use of power.

134 Goldwasser (1995: 70).


135 For “residual” categories in the Egyptian system, see Kammerzell (2015: 1403).









136 For the diachronic development of this classifier, see Allon (2010).








137 See David (2000) on the early development and use of the classifier  during the Old Kingdom. For the later dramatic extension of the  category into NEGATIVE, see Kammerzell (2015: 1407).

138 See Goldwasser & Grinevald (2012: 25–26). Considered as “referent classifier” by Lincke & Kammerzell (2012: 48–50) and Lincke (2015a).

139 See Gardiner (1957: 539–540). This classifier is of high frequency in medical texts.

pertaining to illnesses take an alternative classification, that of the god SETH  (see above 3.3.2).<sup>140</sup>

Vegetal classification is represented in the Egyptian script by the classifiers WOOD , TREE  and the combined classifier <sup>141</sup>, PLANT  and later, rather rarely, WINE . There is a general classifier for all sorts of GRAIN  – a measuring container with some seeds escaping from it.<sup>142</sup> However, there is no classification for gardens, and vegetables get the generic classifier PLANT , their importance as food products being unmarked in the Egyptian script system. Incense is not a highly-marked category even though an INCENSE  classifier is known.

For human productions from plant material, Egyptian has CLOTH/TEXTILE  but WOOL has no recorded importance in the Egyptian sources and is indeed absent from the classifier system – pointing to a remarkable difference to the Mesopotamian (clothing) customs. In edible substances, the BREAD/CAKE  classifier enumerates dozens of variations of cakes and bread indicating how the Egyptians were very fond of cakes, as can be seen in the Onomasticon of Amenemope for example.<sup>143</sup> Several kinds of drinkable substances are also classified: BEER is classified by a beer jug <sup>144</sup>, later extended to create a category of JUG or generic (DRINKABLE) LIQUID, beer being the prototypical drink of the Egyptian society in a way quite similar to the Sumerian situation (cf. no. 16 in the Sumerian list above). In comparison, urine which is a non-drinkable liquid takes the WATER  classifier.<sup>145</sup> WINE  and MILK  are also marked during earlier periods by a specific jug-classifier of their own, but are later classified in many texts by the generic (DRINKABLE) LIQUID classifier – the generic beer-jug.<sup>146</sup> There are also other different containers that play the role of classifier, such as the COFFIN/BOX .

The mineral world is represented with STONE, COPPER, and SAND, also for sand-like derived materials. Yet CLAY which in the cuneiform system is used for classification of all sorts of wet earth, mud, etc.<sup>147</sup> is unmarked as a specific classifier in the Egyptian system.<sup>148</sup>

140 See Goldwasser (2005: 108).

141 For a detailed discussion on the relation of the concepts “wood” and “tree”, see Goldwasser (2002: 39–55).

142 A container that was used for many sorts of measurable grains stands here metonymically for the grains themselves, see Gardiner (1957: 516–517, U9; U10).

143 Gardiner (1947: 228\*–233\*).






144 The high iconicity of the Egyptian script made it possible to differentiate various liquids according to their container form. Oil, beer, wine and milk and other liquids were stored in different containers.



145 DZA 22.577.750.







146 See DZA 21.157.060-090. For the “generic” jug see Gardiner (1957: 530, W22).

147 Note that CLAY possessed a salient utilitarian value in Sumerian society for both, building and manufacturing containers – and tablets!

148 The word *k3h* that carries the meaning, ‘clay’, ‘mud’ also takes the STONE classifier. Here a procedure of chaining, through the *shape* of the stone, to ‘brick’ and then to ‘clay’ may be reconstructed. See the discussion in Lincke & Kammerzell (2012: 23–25), and DZA 30.316.620. Another word for clay is *sin*, that shows different “lump form” classifiers, see DZA 28.932.220–240.

The Egyptian script includes the natural elements WIND  (represented by a concrete item, sail)<sup>149</sup> and STAR , as well as SKY , a classifier sometimes extended to the abstract notion ABOVE. However, rather surprisingly, a classifier for SUN  is not attested in the cuneiform system, while it is a very central member in the Egyptian classification system and culture. The sun held the most important religious significance in Egypt. It is a high, superordinate concept that puts together all words pertaining to sun, actions of sun, light etc. It is mainly SUN (and not the moon like in the Sumerian world) that classifies the category TIME in Egyptian, as the Egyptian calendar is a sun-calendar and not a moon-calendar. However, the moon hieroglyph  is used as a logogram or classifier in the words *iʿh* ‘moon’ and *ʒbd* ‘month’.<sup>150</sup>

WATER  as a natural element is a conspicuous classifier in the Egyptian system. It classifies “water”, “urine”, as well as water bodies such as “sea”, while another classifier stands for the class of WATER-WAY . In the New Kingdom, these two classifiers are usually combined in a double-classifier construct. The Sumerian system shows a single classifier for “water-ways, rivers and canals” (see (48) in the list above).

The spatial domain is represented in Egyptian in a number of classifiers which echo those of the spatial domain of the cuneiform system shown in Table 3, such as the ones for MOUNTAIN  (27), FLAT LAND , FIELD/PIECE OF LAND  (10). The Egyptian script shows in addition a classifier for ROAD  and related words which does not exist in the cuneiform corpus.<sup>151</sup> Man-made spaces are also represented first by the HOUSE  classifier – a large class that includes all building, institutions and extends further also to the notion of HABITAT to optionally include stable, bird’s nest and lion’s den as well as tent. The TOWN  classifier<sup>152</sup> is an early and very productive classifier. As shown earlier, TOWN is an important classifier also within the cuneiform system. The prominence of TOWN classifiers in both systems seems to coincide with the fact that these two cultures were the most advanced, largest urban societies of the Ancient Near East.<sup>153</sup>

149 The same in the Sumerian system; cp. (32). For a different analysis of this classifier and its relation to WIND in the Egyptian system, see Lincke & Kammerzell (2012:18–19).

150 For the SUN classifier during the Amarna period, see Goldwasser (2010). For the MOON, see Gardiner (1957: 486, N11,12). Note, however, that in Sumerian the sign for the (younger) classifier MONTH **itu(d)** is a composite sign consisting of **UD** (“day”) and the number 30, thus explicitly referring to the administrative calendar developed sometime in the 4<sup>th</sup> millennium. In this (normalized) administrative system a year had 12 months of 30 days each. Altogether, we can say the moon calendar was very important for the Mesopotamians structuring of time.

151 The classifier ROAD classifies regularly also the adverb “here”.

152 Regulski (2010, 162–163).


153 The definition of “town” in Egypt and Mesopotamia is a topic that reaches out of the scope of this article. For the problematics of town definition in archaeology in general, see recently Smith (2016) with bibliography. In Egyptology, see Bietak (1979), Loprieno (2003: 242–246), and Lincke (2015b) – a view from the classifier system.





## 5.6 Animal classification in the Egyptian script – a brief comparative overview

The animal world, on the other hand, is a domain where the classifier system of the Egyptian script reflects a different cultural attitude when compared to the cuneiform system.



### 5.6.1 classifier HIDE & TAIL – stage 1

From the Old Kingdom onwards, the classifier  which carried the iconic meaning HIDE or HIDE (& TAIL) was used as a classifier for different types of hide. Somewhat later, it was extended to classify artefacts “made of HIDE”. All members in this class (stage 1) were always *inanimate*, and almost all members that were not a “kind of hide/leather” could be defined as *manufactured* (“made of”).<sup>154</sup>

Central members<sup>155</sup> in this class are the nouns *msk3* “leather” known since the Old Kingdom, and *dhr* (since the Middle Kingdom) both referring to types of treated hides. During the Old and Middle Kingdom, the word *imm* used to denote human skin, could also get the HIDE & TAIL classifier.<sup>156</sup>


The noun *hnr*   “reins” probably a loanword, is linked to the appearance of the horse in Egypt in the New Kingdom. It is an example (there are many others) of the continuation of the extension process of the “made of HIDE/LEATHER” – “manufactured” relations, the reins being analysed as made of leather and classified accordingly.<sup>157</sup>

### 5.6.2 The classifier HIDE & TAIL – stage 2

During the Old Kingdom, animals are classified in most cases by their own icon (e.g. ‘dog’   = phonograms – *tsm* + DOG classifier).<sup>158</sup> In these cases, the classifying icon repeats through *iconic* depiction the same information given by the previous hieroglyphs which are themselves used as phonograms. These cases correspond to what is known in the literature on classifier systems as “repeaters”<sup>159</sup>, originally classifiers that do not represent a concept ranking higher in the taxonomic hierarchy and seems to “repeat” the lexical information, although they generally later come to head themselves classes of items at a lower taxonomic rank.<sup>160</sup>

154 As we have seen similar extensions are well-attested in both, the Sumerian and the Jakaltek system of classification. For an extensive discussion of this classifier see Goldwasser (2002: 57–89) and discussions and statistics for different animals in Müller (2002).

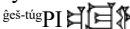
155 I consider a word a central member in the category if most of its occurrences, or almost all, take a certain classifier.



156 For *msk3*, see DZA 24.393.860–24.394.010; *dhr*, see DZA 31.447.960–DZA 31.447.980. *imm* “skin”, “human skin”. (DZA. 20.910.280–300) is a less central member in the category. When referring to human skin the lexeme *imm* shows- especially in the medical papyri – the  HAIR classifier, as part of the concept of “what covers the human being”?







157 Goldwasser (2002: 57–63, 79).

158 See Müller (2002: Appendix II, 25).


159 See above in 4.1.2 with examples in Jakaltek.


160 Already Allan (1977: 292, 295); see also Senft (2000: 22). Similar cases are attested in the cuneiform system. Occasionally, a syllabically written word is followed by the corresponding *logogram*, e.g.  that is the syllabically written word for “ear; reason, wisdom”/ḡeštuḡ/ is repeated by


By the end of the Old Kingdom, the classifier  was suddenly extended to the classification of *living animals* that “*have (?) HIDE & TAIL*”. In stage 1, as seen above, the hieroglyph of the HIDE & TAIL was representative of the concept of HIDE, the tail being mostly ignored. Only when  came to classify *live* quadrupeds, the tail did become a meaningful part of the icon.

The first animal known to get the  classifier was the lion, a big carnivore with no obvious utilitarian qualities. Another example appears on clay tablets recently published and found in the provincial town of Balat, dating to the end of the Old Kingdom. The HIDE & TAIL is found as classifier in a place-name *mw-m3*      “the water of the *antelope*”.<sup>161</sup> The antelope species may have played here the lexical role of prototype for all desert animals that come to quench their thirst in the pools of the oasis. However, the appearance of HIDE & TAIL here, cannot be the due to a reluctance to present the full animal hieroglyph. Although written in hieratic on clay, the tablets from Balat never refrain from presenting the names of the various animals with rather *iconic repeaters*, showing in detail the differences between various quadrupeds, the difference being especially marked by their different horns. Yet, a repeater classifier would therefore represent only *one sort* amongst the many sorts of quadrupeds that existed in the area and were also attracted to the pond.





Was it the high iconicity of the script (very different in that respect from the Sumerian one) that limited generalizations, what pushed the writers in some cases into the use of the more generic classifiers?

In the Middle Kingdom, the extension into the “animate” animals became a clear tendency in the script, with dog, cat, mouse, as well hippo and pig, getting the , and being all recorded also in lapidary hieroglyphic inscriptions as well as in cursive script and hieratic.<sup>162</sup>

The schematic diagram below, represents the development and extension of the  category from the Middle Kingdom period to the New Kingdom. The category is extended by the New Kingdom to include many members that have no hide or no tail, or both. Clear examples are the scorpion or the turtle. The turtle is a clear fringe member in the category and its classification oscillates between FISH and HIDE & TAIL.<sup>163</sup>

the logogram , which standing alone has also the reading *ġeštug*) and is iconically the depiction of an ear. However, in many related instances the syllabically written pronunciation of a logogram is only partially rendered. Therefore, in cuneiform studies these syllables are perceived as reading help (*matres lectionis*) for the logogram and are never considered in terms of classification.

161 Pantalacci & Lesur-Gebremariam (2009: 247). Compare here “animaux sauvages”, Meeks (2012: 525, fn. 74).

162 Here see Müller (2002: 23\*–32\*). Interestingly, the panther gets the  classifier only in the New Kingdom and mostly in hieratic texts, see    (DZA 20.042.590).

163 See for such examples in the lexeme *šḫw* ‘turtle’ in three versions in the coffin texts of the very same sentence – CT V 30f (I am grateful to Niv Allon for this example), and see also Goldwasser (2002: 68).

In the Middle Kingdom and in the New Kingdom imaginary animals make part (even if as fringe members) of the HIDE & TAIL category as well.<sup>164</sup>

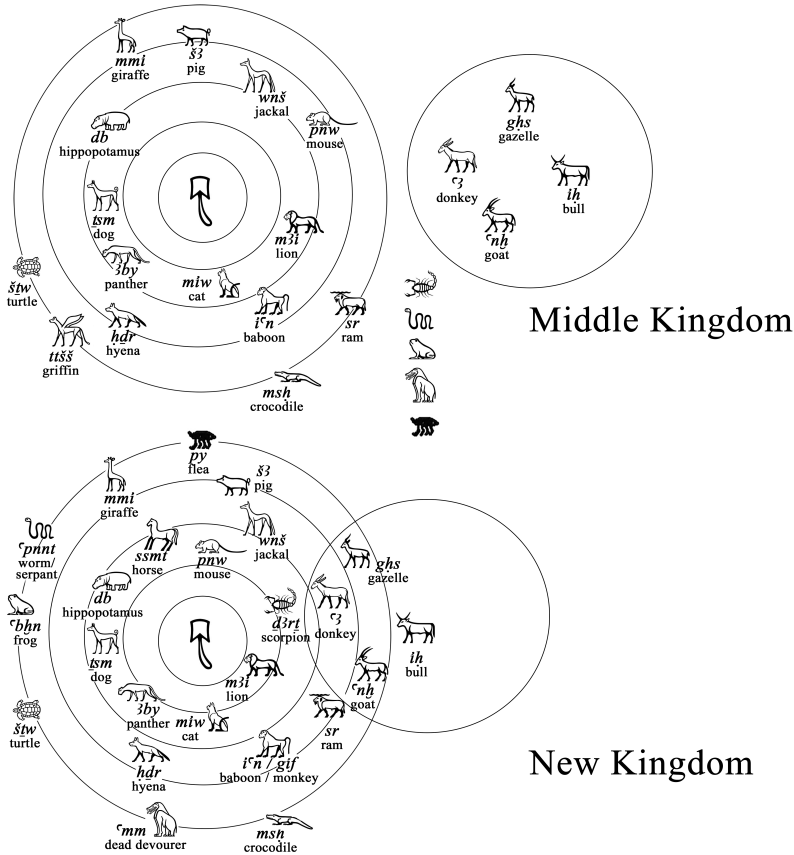










Figure 1 | A tentative schematic representation of the mental organization of the Egyptian animal universe: *Middle Kingdom* vs. *New Kingdom* (first presented at « Langage et Cognition » Issu de l'ACI COGNITIQUE, Paris 2008, based on Müller 2002.).


At this stage, a quick comparison of animal classification in the Egyptian script and the cuneiform script points to following:

1. The Egyptian HIDE & TAIL classifier is not sensitive to the differentiation between domesticated and non-domesticated, or between carnivores and herbivores. Lions, antelopes, mice, donkeys, dogs and cats belong to the same category.
2. Unlike the cuneiform classification, the Egyptian classification of animals in the script is basically *non-utilitarian*. It is a sortal classification based on *observable characteristics*

<sup>164</sup> Parallel versions of the Coffin Texts show an alternating classification of the  *ttšš* 'griffin' with HIDE & TAIL and in the parallel text  with DIVINE classifier, see CT V 91b; e. For this griffin in the Middle Kingdom, see Gerke (2014: 139,16). For the classification of the  *mmyt* 'dead devourer' in the Book of the Dead with the HIDE & TAIL classifier, see DZA 21.721.330.

of the animals, disregarding their *function* and or specific relations to man. Members of the category  are those “having hide and tail”. In its essence, this classification is similar to the Aristotelian category QUADRUPED which observes the characteristic of “having four legs”.<sup>165</sup> The most dominant members in this category of the Egyptian script are *mammalia* (“having *mammae*”) by the Linnaeus classification.<sup>166</sup>

3. By extension processes, almost all quadrupeds may get classified in the script through  by the New Kingdom.<sup>167</sup> Newcomers, such as the horse, first appearing in the Egyptian texts in the middle of 16<sup>th</sup> century BCE, are immediately analyzed as  and put into the script with the correct classifier.<sup>168</sup> The only animal that has a kind of “hide & tail” but keeps being classified almost always with a repeater is the crocodile.<sup>169</sup> However, even some clear fringe-members, such as the turtle – in the Middle-Kingdom – and flea and scorpion in the New Kingdom are occasionally classified in this class.<sup>170</sup>
4. BIRD  and FISH  which have NO HIDE & TAIL are kept in separate categories. As we have seen above, FISH and BIRD also appear as separate categories in cuneiform, which, in both Egyptian and Sumerian systems, have dozens of members. By the end of the New Kingdom it seems that the generic category HIDE & TAIL starts to be further extended, to occasionally include also birds – thus moving towards the higher generic concept ANIMAL.


Unlike the Sumerian system, snakes and worms do get classified by the Egyptian system. The classifier  is hosted by words describing all kind and sizes of snakes and worms – termed SWORM in an earlier work by Goldwasser.<sup>171</sup> By the end of the New Kingdom the category HIDE & TAIL starts, in rare cases, to include SWORM members – thus confirming the extension of the HIDE & TAIL category into a higher superordinate concept that includes now also reptiles.

However, the Egyptian *lexicon* lags behind. It is worth noting that the Egyptian lexicon, unlike the Sumerian one, lacked a *lexeme* that would refer to all these sorts of creatures at once. When the Bible is translated into Coptic, the Egyptians resort to using a Greek loanword – “*zōon*”.<sup>172</sup>

165 This specific animal categorization is likewise known in the Sumerian *lexicon* (see above 3.3.3), but it never entered the classifier system.

166 The word “mammal” is modern and comes from the scientific name *Mammalia* coined by Carl Linnaeus in 1758, derived from the Latin *mamma* (“teat, pap”). All female mammals nurse their young with milk, which is secreted from special glands, the “mammary glands”.

167 The Egyptian script system always keeps the parallel option to classify an animal by repeater or unique, or both by repeater and the generic HIDE & TAIL. See the tables by Müller (2002: Appendix II).

168 See Goldwasser (2017). Also all loanwords referring to quadrupeds get the , e.g. Goldwasser (2002: 67).

169 This may be due to the special place of the crocodile within the Egyptian culture. It may be parallel to the case of the dog in Jakaltek, Craig (1986a: 281).

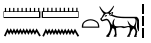
170 See examples in (Müller 2002: 42\*–44\*) and discussion in Goldwasser (2002: 68). Fringe members are defined as such if they only rarely show the HIDE & TAIL classifier.

171 Goldwasser (2002: 57, 68).

172 Crum (1939: 904). Vycichl (1984: 191). I am grateful to Ariel Shisha-Halevy for calling my attention to this fact.

### 5.6.3 The special case of “things moving” (on the earth) – a comparative note

In the Sumerian *classifier system*, as we have seen in the consolidated list above, BOVINE SHEEP and DONKEY are three different intermediate categories that organize the animals according to their utilitarian qualities. In the meanwhile, the Sumerian lexicon developed a few generic superordinate lexemes for animals such as “things (creatures, moving) on earth” (see 3.3.3 above), however these organizing principles do not surface in the classifier system.

The Egyptian *lexicon* shows a parallel development to the one noted in the Sumerian lexicon. Egyptian shows, from the Middle kingdom on, a new lexeme *mmnt*  “herds” literally “the roaming ones” used in many administrative texts to describe privately owned herds of different kinds of large quadrupeds.<sup>173</sup> These herds were a sort of “roaming property” and this may be the reasoning behind the semantics of this term in Egyptian.

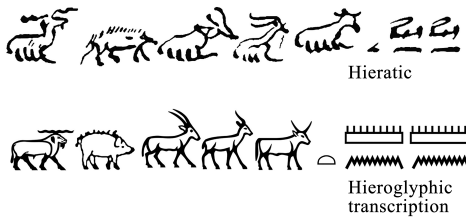



Figure 2 | “Dismantling” the collective noun “roaming ones” by five(!) classifiers (after Möller 1910: 34).

A playful writing of the word *mmnt* with 5 different classifiers<sup>174</sup> for different animals (bull, gazelle, oryx, wild boar (?)<sup>175</sup> and ram) seems to point to the long-rooted habit of the Egyptians of mixing what is regarded in the Western tradition as “desert/steppe animals” with livestock such as bull, donkey etc, a situation which the five classifiers of the above lexeme seem to manifest clearly. Recent studies of tomb decoration since the Old Kingdom have shown very clearly that the Egyptian treated in a similar way desert quadruped (including hyena) and domesticated quadruped.<sup>176</sup>

However, in most occurrences the word *mmnt* takes the BOVINE classifier alone, the prototype that stands for all big quadrupeds of this sort.<sup>177</sup> It is noticeable that BOVINE is somewhat differentiated from the other members of the  category. The fact that BOVINE is rather a late comer in the HIDE & TAIL group is probably due to its high utilitarian importance in the Egyptian culture, that kept it apart from other animals.<sup>178</sup>

173 DZA 24.080.670–700. For a discussion of *mmnt*, see Goldwasser (2002: 74–78), and Meeks (2012: 528).

174 For a lexicographical discussion of different *lexemes* referring to groups of animals, see Meeks (2012). He compares the Egyptian *lexical categories* to the Aristotelian classification of ‘animal’, not referring to any modern discussions on animal categorization in anthropology, cognitive linguistics, etc.

175 To be differentiated from Gardiner’s E12, wild boar image after Borghouts (2012: 43, sign E12).

For the pig and wild boar in Egypt, see Vernus & Yoyotte (2005: 556–560).

176 Herb & Foerster (2009); Fitzenreiter (2009).

177 Müller (2002: Appendix II, 21).

178 See detailed discussions in Goldwasser (2002: 58–89). The major intermediate taxon for livestock and desert animals, *wt/ḳwt*, which is known since the Old Kingdom and its various animal

Worth noting is the fact that the horse does not join the classifiers groups of *mmnt*, thereby signifying its different prestigious status in the Egyptian society. As a matter of fact, unlike the other “herd animals”, horses were not used in pharaonic Egypt as source for meat or hide products, as far as is known.

However, when birds are concerned, the cognitive extension that includes BIRD in higher generic order can be detected in script and lexicon at once. As birds start to push into the HIDE & TAIL category in the classifier system, the same tendency can be detected for the semantic extension of the lexeme *mmnt*. Already during the 19<sup>th</sup> Dynasty, we find a rare example of the lexeme *mmnt* classified by the BIRD classifier (!).<sup>179</sup> Birds (such as geese) were probably able to join the fringes of this collective noun category as they were also tended in “herds” and could be conceived as “moving property” used for man’s needs.<sup>180</sup> In this case the function has overridden the perceptual consideration of wings and two legs. Here we clearly have a utilitarian analysis that interferes with the perceptual analysis of *form* that usually stands in the base of Egyptian fauna classification. However, all these “herds” were naturally domesticated or partially domesticated.


## 6 Concluding overview

The main aim of this paper was to review the little-discussed and poorly understood phenomenon of the cuneiform determinatives, the so-called “Sumerian determinatives.” The main motivation for this endeavour came from outside Assyriology, most directly from the many insights into the system of Egyptian classifiers, which has received much attention in recent decades. A comparison with the cuneiform system seemed promising, especially because in both fields the determinatives had been considered a pure graphemic feature said to have been established by scribes for the supposed purpose of disambiguating linguistic information. Granted that in both scripts the determinatives indeed fulfil this function, we have argued here that in addition they fulfil another clear “classifying” function: that is, they provide additional semantic, pragmatic, and cultural information about the host words. Using a linguistic approach borrowed from the now well-established field of classifier studies of oral and signed languages, an earlier study of Egyptian determinatives had already proposed to reanalyse determinatives as a new type of graphemic classifiers. This path of research on Egyptian determinatives having already yielded highly interesting results, it had become evident for some time that taking the same approach to analyse the determinatives of the cuneiform system seemed highly promising.

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classifiers (including pig!) is discussed in Goldwasser (2002: 60–72), and also by detailed tables and statistics by Müller (2002: 13\*–18\*). See also Meeks (2012: 525–528).

179 See Goldwasser (2002: 75, Nauri decree).

180 In English, the word ‘bird’ carries a strong semantic component of “flying”. The Biblical Hebrew compound כנף בעלי כנף “the ones that have wings” i.e. “the winged ones” may be more fitting to the description of the category  in Egyptian.

## 6.1 Sumerian classifiers in a comparative perspective

In order to understand the cuneiform classifier system, we first reviewed what are considered as determinatives by various scholars in the field of Assyriology. In a second step, we built a new inventory of these determinatives, consolidating the widely-diverging lists of determinatives. After observing that the differences between the various authors were partially explainable by their specific aims, we proceeded to tentatively discuss the individual determinatives with respect to a number of parameters: their (literal) meaning, position, lexical origin and use and, in addition, estimates of their (relative) frequency and of the periods of their earliest attestation. The first result of our observations is that the cuneiform system of determinatives can correctly be labelled a “*Sumerian system*” of determinatives. The salient reason being the fact, that the overwhelming majority of the cuneiform determinatives possess a clear origin in Sumerian lexemes. This also holds for newly introduced determinatives like FLESH (14) or STAR / CONSTELLATION (29). This conclusion might be surprising, as Sumerian vanished as a vernacular at the turn of the 3<sup>rd</sup> to the 2<sup>nd</sup> millennium BCE. However, some varieties of Sumerian survived, much like Latin in medieval times, not only in temples and schools, but also as a professional jargon. This use as a technical language is amply attested in numerous ancient reference works, especially from the 1<sup>st</sup> millennium BCE, and has to be studied as a late form of Sumerian, which has rarely been done until now. In this perspective, the fact that a number of “grammatical determinatives” originate from frozen Sumerian phrases, e.g., Sumerian numerical expressions, seemed interesting and prompted us to include them in our discussion about mensural classifiers. Although the Sumerian system continued to live on in a dominantly Semitic (Akkadian and Aramaic) speaking region, there are no traces of any influence of these languages upon the Sumerian classifier system.

Next, we compared the different lists we used in order to get comparative data of what the individual authors considered as determinatives. The picture is complicated, as the system of remained productive over time: some determinatives disappear but others are newly invented. The new determinatives follow the use established at the beginning of the 3<sup>rd</sup> millennium. However, for the Early and Classical periods (ca. 2600–1750), we were able to identify 18 core items (Table 2). One of the most striking and well known facts of the Sumerian system is that its classifiers occur *before* or *after* the respective nouns. This situation partially corresponds to pre-position classifiers in most classifier languages, including Jakaltek as discussed above. However, it stands in sharp contrast to the post-position of Egyptian classifiers. The suggested explanation is that the Sumerian phenomenon is related to a specific feature of Sumerian noun compounding, where both left-headed and right-headed noun+noun types of compounding are allegedly equally attested.

Typologically, we took note of the coexistence in Sumerian both mensural and sortal classifiers, which makes it a rare noun classifier “mixed system,” since mensural classifiers have only been known so far from numeral classifier systems. The domains of sortal classifiers that classify either by shape (numeral classifiers) or by essence (noun classifiers) are particularly interesting, in that they are especially valuable for the study of lexical semantics. In agreement with a central feature of Sumerian grammar, which

morphologically marks two genders, human and non-human, also described as animate vs. inanimate,<sup>181</sup> the sortal domain of Sumerian classifiers can be subdivided into animate and inanimate worlds. We also observed how the size of classes and the level of classification vary, and how occasional superordinate classes such as CLOTH/TEXTILE (40) are created. However, generic classifiers (e.g. QUADRUPED, ANIMAL) as well as unique classifiers (classes that include a single member) are not attested in the cuneiform script,<sup>182</sup> a major difference from the other two systems considered, the Jakaltek and the Egyptian.

The extension of classes is rather well attested and seems to reflect cultural considerations, where, e.g. BULL/OXEN (20) or SHEEP (43) classifiers extend semantically to become intermediate taxa “cattle” or “small livestock.” Highly interesting is also the case of the DONKEY (15) classifier which later incorporated horses and even camels. The Sumerian classification of animals into five classes is remarkable, reflecting their utilitarian and functional significance – as in the thematic lexical lists, attested already in the earliest period of cuneiform writing. Another kind of extension, also well known in the Egyptian and Jakaltek systems, is the type of extension “made of,” observed with the classifiers WOOD (19), REED (13), COPPER (26), BRONZE (30), and STONE (18). They come to designate not only the material itself, but objects or products made thereof.

## 6.2 Comparisons in the present and the past

Not only for morpho-syntactic reasons but especially for their semantic implications the Sumerian system and the system of Jakaltek, a living Mayan language, show parallels and cover basically the same entities of the world. Like the Jakaltek and most other contemporary oral classifier systems, Sumerian classifies exclusively nominal entities (a “noun classifier system”). Although showing general resemblance of the semantic repertoire, Jakaltek unlike Sumerian is more detailed in categorizing human entities, with distinction of status, sex, kinship and age playing an important role. On the other hand, the classification of spatial entities, well attested in the Sumerian classifier system is absent in the Mayan language. A strong parallel exists in the two systems between the status of CORN classifier in Mayan Jakaltek and the functionally equivalent Sumerian BARLEY (28) classifier. In addition, Jakaltek, like Egyptian but unlike Sumerian, knows three *unique classifiers* DOG, SALT and FIRE. Jakaltek also attests a level of superordinate, generic, classifiers as in the very extensive ANIMAL class. A similar generic ANIMAL classifier is unknown in the Sumerian classifier system.

In order to demonstrate that one should not expect a perfect matching of the classifier systems, a short comparison to the similar but different noun classifier systems of the

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181 On earlier discussions on the various terminologies see Selz (in press b) where it is suggested that the morphological grid /b/ vs. /n/ actually refers to the general vs. an individualizing notion of the referents.

182 Of course, this does not mean that generic classification was unknown; the language has elements to form such abstract nouns; however, they did not enter the domain of (silent) classifiers, the so-called determinatives, on which we focus here; see various discussion above, and also Selz (forthcoming).



Q'anjob'alan languages and the Guatemalan Cuchumatanes was included. One way to understand such variation between systems of even very closely-related languages is their dependence on local cultural issues, yet the overall picture of the thematic organization of those types of classifier systems coincides with what we have observed for both the Sumerian and the Jakaltek systems.

The Egyptian graphemic system of classifiers was further shown to have several specifics. That these classifiers are unpronounced is generally accepted. But when compared with the Mesopotamian multilingual situation, a major difference emerges. The Egyptian classifier system was used for three millennia in a script which recorded a single, albeit ever-changing, language. Another specific trait is that, as a rule, classifiers are *post*-positioned in the Egyptian script. Moreover, Egyptian classifiers, like the classifiers in the Chinese *script* and hieroglyphic Luvian (but unlike Sumerian and Jakaltek), operate not only on nouns but also on verbs. At least two dozen “event classifiers” could be safely identified in Egyptian. The number of classifiers attested in the Egyptian system is certainly much higher than in Jakaltek or Sumerian. A precise figure<sup>183</sup> during different periods and in different genres is difficult to establish, due to numerous considerations, including graphic variations connected to the high iconicity of Egyptian hieroglyphs. Classification of a host word by several co-occurring classifiers is common in Egyptian but rare in cuneiform and unknown in Jakaltek. Changes and alternations in classifiers are well known, and reflect changes or developments in Egyptian concepts, as well as specific contextual and/or pragmatic considerations. All in all, the Egyptian system is more multi-layered in its inventory as well as in its highly productive nature.

## 7 A final word – why *classifiers*?

At this juncture, it is worth clarifying yet another point, which is that calling Sumerian determinatives *classifiers* is not just a way of simply renaming them. The traditional term “determinative” is neither informative about the role that these signs play in the script, nor is it productive in relating the Sumerian system to any phenomenon in linguistic typology. Moreover, the connection to linguistic typology is, in the case of the Sumerian classifiers system, also corroborated by several points of contact between the script and the *Sumerian language*.

The recognition that determinatives are indeed classifiers brings along with it the understanding of what such systems can “be” and what they can “do”, as shown by the multiple typological studies of such systems in the languages of the world. So, this is not a case of simple relabelling, but one of identifying a *linguistic system*, which entails expectations about finding a number of characteristics already outlined from the study of other such systems in other languages. This includes questions about the formal characteristics of the systems, their origin and path of evolution, their categorization principles – including the different possible levels of categorization and the possibilities of class extensions – and their “*raison d'être*”. Particularly interesting is how such systems are expected to outline

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183 Here compare Werning (2011: vol. I, 326); Werning (1998), for first attempts.

the particular classification of the world of the speakers, in a mixture of universal categories and culture-bound ones. The new analysis of Sumerian “determinatives” as classifiers brings Sumerian cuneiform classifiers and the language(s) they encode into the domain of linguistic typology, which studies how the languages of the world function, also through their various classifier systems.

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