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Digitizing Seth
Digital Approaches to Sethian Classification in the *Coffin Texts*[1]

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Abstract. To illustrate the benefits of digital research on hieroglyphs in Egyptology, this article presents the results of a case study into the use of the hieroglyphs of Seth and the Sethian animal as classifiers in the corpus of the *Coffin Texts*. This study covers two different approaches. One approach uses the research platform *iClassifier* to study the classifier strategies applied by the scribes of the *Coffin Texts* for lemmata that can take Sethian classification. Secondly, the animal depicted with the lemma *sr* (to foretell) in the *Coffin Texts* is discussed using a *t*-SNE layout based on image similarity.

Keywords. Classifier, coffin texts, digital humanities, hieratogram, mortuary texts, Seth, giraffe, cat.

The Ancient Egyptian god Seth is well-known during the Pharaonic period and beyond.[2] Besides his presence in religion, Seth has a presence in the Hieroglyphic script as well. Seth and his animal represent an interesting case, especially in their use as classifiers in the Ancient Egyptian scripts. In textual material, Sethian classifiers—Seth in the form of an anthropomorphic body with the head of the Seth animal  (C7) or Seth as an animal  (E20),  (E21)—take on a wider collection of semantic domains in their metaphoric use than most other divinities in Ancient Egypt did.[3] Many of these are related to negative things like [ILLNESS] and [PAIN], but there is a clear association with [NOISE] as well, which is most clearly visible in his connection with [THUNDER] and [DISTURBANCE].

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2 See te Velde 1977; Castillos 2021.

3 Goldwasser 1995: 99–103; Goldwasser 2005: 108–109.

This association with [noise], [thunder] and [disturbance] is due to the same common base, namely the opposite of order or chaos.[4]

Although the study of Sethian classification in Ancient Egypt has been ongoing,[5] the development of digital tools is creating new opportunities in Egyptology. To illustrate the benefits of digital tools, this article will discuss Sethian classification in the *Coffin Texts* as published by de Buck and Allen (*CT* I–VIII) as a framework.

1. Lemmata that can take Sethian classifiers

Throughout the Pharaonic period, Sethian classifiers show up in a limited set of lemmata. These lemmata reflect the semantic domains in which a Sethian classifier can be used. This list of lemmata was originally proposed by te Velde to contain 24 lemmata.[6] Later, this list was expanded by McDonald to a list of 38 lemmata.[7] Some additional changes and additions to this list that can have Sethian classification have been made for this article. For example, the lemma *nšn* (storm) was returned to the form proposed by te Velde as *nšnỉ* (to rage), representing the root of the lemma and its derivates.[8] The verb *ḫnn* (to trouble, to decay, to disturb) was taken as the root of *ḫnn.w* (disturbance, tumult). Besides *nbw.tï* (the Ombite [Seth]), the similar lemma *ỉm.ï-nbw.t* (the one who is in Ombos [Seth]) was added. This resulted in the following list of 39 lemmata:[9]

Lemma	**Translation**	**Date of Sethian classification**[10]
ꜣkr	earth god (Aker)	MK
ỉnḏ	to be sick, to be sad, to be vexed	FIP
ỉh	pain, sickness, shout	OK
ꜥꜣ	ass, donkey	MK-NK
ꜥš	to call, to summon	NK
bꜥr	Baal (divinity)	NK

4 McDonald 2002b: 220–221.

5 See te Velde 1977; McDonald 2000, 2002a, 2002b, 2007; Allon 2007; Soler 2021 among others.

6 te Velde 1977: 22–23.

7 McDonald 2007: 34–37.

8 Winand & Stella 2013: 36–37.

9 I left out the hapax *išš.ï* (the spewer), see: *išši* (Lemma ID 32110) https://thesaurus-linguae-aegyptiae.de/lemma/32110, edited by Altägyptisches Wörterbuch, in: *Thesaurus Linguae Aegyptiae*, Corpus issue 17, Web app version 2.0.2.1, 8.8.2023, ed. by Tonio Sebastian Richter & Daniel A. Werning on behalf of the Berlin-Brandenburgische Akademie der Wissenschaften and Hans-Werner Fischer-Elfert & Peter Dils on behalf of the Sächsische Akademie der Wissenschaften zu Leipzig (accessed: 8.30.2023), as it is a single attestation in which the  (E20) classifier is damaged (so the reading is in doubt). See Kitchen 1983: 545,4.

10 Based on McDonald 2007: 34–35. Note that this date only refers to the periods in which Sethian hieroglyphs were attested as a classifier with a lemma. The date does not reflect the period when the lemma was in use, which is generally much longer.

pr.yt	crisis	FIP
pḫpḫ	storm, tempest	NK
mn	to be ill, to suffer	FIP-MK
mr	to be ill, to suffer	FIP-MK
nb.wï	the two lords (Horus and Seth)	NK
nbw.tï	the Ombite (Seth)	MK-NK
ỉm.ï-nbw.t	the one who is in Ombos (Seth)	MK-NK
nmʿ	to be biased	MK-NK
nhmhm[11]	to roar	NK
nhs	Nehes (a designation for Seth)	NK
nšnỉ	to rage, to be furious	OK-NK
nqm	to suffer	FIP, NK
nṯr.wï	the two gods (Horus and Seth)	NK
rḫ.wï	the two rivals (Horus and Seth)	NK
rsw.t[12]	awakening, dream	MK
hmhm.t	roar, war-cry	NK
ḥrr.t	Hereret (divinity)	FIP
ḥtr.w	yoked asses	NK
ḫ³.t	disease, illness	FIP
ḫ³ḫ³.tï	storm, tempest	NK
ḫnn	to trouble, to decay, to disturb	MK-NK
swh³	admiration, glory, roar	MK-NK
snm	storm, rain	NK
sr[13]	to announce, to predict, to foretell	MK-NK
srq	snow (loanword)	NK
sh³	to damage, to disturb, to corrupt	MK-NK
sšn	storm	OK
stḫ/stš	Seth	OK-NK
š³[14]	desert dweller (Seth animal)	MK-NK
qrỉ/qrr	storm, storm cloud	MK

11 In te Velde and McDonald listed as *nhnh,* but it is understood to be the same lemma. See: *nhmhm* (Lemma ID 85630) https://thesaurus-linguae-aegyptiae.de/lemma/85630, in: *Thesaurus Linguae Aegyptiae*, Corpus issue 17, Web app version 2.01, 12.15.2022 (accessed: 7.10.2023).

12 Taken as a separate lemma, even though it would go back to the root *rs* (to wake or watch). However, as the use of a Sethian classifier is currently only known from one source, letter to the dead Nag' ed-Deir 3737, it is better not to include the entire root lemma and derivates for a single attestation. Note that the interpretation of the sign used as a classifier of *rsw.t* in this letter to the dead has been discussed in Szpakowska 1999 and McDonald 2002a.

13 For the inclusion of *sr* in this list, traditionally classified with a giraffe 𓃬 (E27), see the discussion in § 3 and McDonald 2007: 36; McDonald 2009: 367–368 among others.

14 Which includes the variant *ỉ³š* which is attested in the Graeco-Roman period in Dendera, classified by a donkey. See *LGG* VII: 3 and Cauville 1997: 102,8, plate 70.

kꜣhs	to be harsh, to be overbearing	MK
khꜣ	to raise (a voice), to utter (a bellow), to roar	NK
khb	to harm, to be violent, to roar	NK

This list represents the lemmata that have been attested to receive a Sethian hieroglyph as a classifier during the Pharaonic period. For most lemmata, the use of a Sethian classifier only occurred in a specific period, even though the lemma itself might be attested before or after that period. For example, in the lemma *ḫꜣ.t* Sethian classification only occurs during the First Intermediate Period,[15] even though the lemma itself is attested without Sethian classifiers beyond that period as well. In the corpus of the *Coffin Texts* as published by de Buck and Allen, only 25 of these 39 lemmata are attested: *ꜣkr, ỉh, ꜥꜣ, ꜥš, mn, mr, nb.wï, nbw.tï, ỉm.ï-nbw.t, nmꜥ, nhmhm, nšnỉ, nqm, nṯr.wï, rḥ.wï, rsw.t, hmhm.t, ḥrr.t, ḫꜣ.t, ḫnn, sr, stḫ/stš, šꜣ, qrỉ/qrr, khꜣ*. Note that this does not mean that all these lemmata are attested with Sethian classifiers in the corpus of the *Coffin Texts*, as is discussed in more detail in § 2.1. In fact, there are only 11 lemmata which are attested with Sethian signs as classifiers in the corpus of the *Coffin Texts*.

Even though the lemmata that do not show Sethian classifiers in the *Coffin Texts* do not provide any additional information about the classification strategy of using Sethian classifiers in the *Coffin Texts*, it is worthwhile to be aware that the strategy of using Sethian classifiers is not all-encompassing in the lemmata. Nor does the use of a Sethian classification strategy represent the primary classification strategy applied to these lemmata in the corpus.

The list of 25 lemmata that could take Sethian classifiers that occur in the *Coffin Texts* shows the underlying semantic domains that could be covered by Seth in the *Coffin Texts* as well. These are [divine], [force], [effort], [anger], [noise], [thunder], [disturbance], [illness], [pain], [dream] and [animal]. This stresses the wider metaphorical use of Sethian hieroglyphs in the Ancient Egyptian language.

In order to study the use of Sethian signs as a classifier, the *Coffin Texts* word index by van der Plas & Borghouts was used.[16] Through this index, the attestations of these lemmata—with and without a Sethian classifier—in the *Coffin Texts* were located in the supports.[17] In total, there were 1981 tokens[18] collected from the available *Coffin Texts* material.[19] Of these 1981 tokens, 193 were

15 For more detail, see McDonald 2007: 34–37.

16 Plas & Borghouts 1998, with additional entries based on Molen 2000.

17 For this article, the word *support* is a reference to an object—a coffin, papyrus, tomb etc.—which carries *Coffin Texts*. However, the word support is not intended to minimize the influence of the materiality on the texts, especially in the presentation of the script. Note that in this article the supports are referred to by the sigla assigned to them by de Buck and Allen, rather than fully following the sigla as updated by Willems 2014: 230–315.

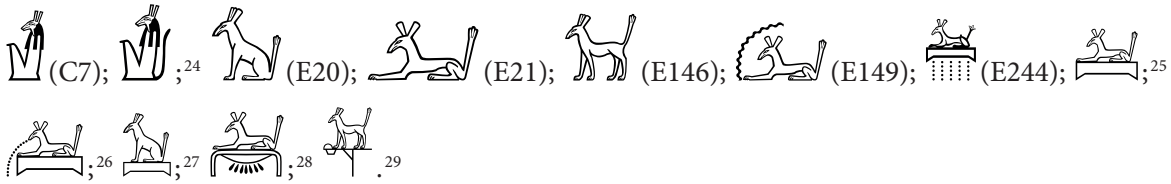
18 In the context of this article, a token refers to a single attestation of a word or hieroglyphic sign.

19 *CT* I–VIII. Note that except for of M1Be, other supports outside these publications were not included, due to limited opportunities for accessing the material.

reconstructions and were ignored for this article. Thus, there were 1788 tokens which were at least partially visible and considered worthwhile for inclusion. Some of these 25 lemmata which could take Sethian classifiers are widely represented in the corpus of the *Coffin Texts*. For example, *sṯḥ/sṯš* has a total of 726 tokens, and *nšni* has 250 tokens. On the other side is *nqm,* which is attested only once.[20]

2. Sethian classification in the *Coffin Texts* through *iClassifier*

In order to study Sethian classification in the *Coffin Texts*, the digital research platform *iClassifier*[21] was used.[22] In total, there are 71 different classifiers attested over the 1981 tokens in the *Coffin Texts* sources studied in this article, although some of them are grammatical classifiers[23] like 𓏛 (Z2). In the *Coffin Texts*, the following Sethian signs have been attested as classifiers:


(C7); ;[24] (E20); (E21); (E146); (E149); (E244); ;[25] ;[26] ;[27] ;[28] .[29]

20 *CT* IV: 330,c (B1L).

21 *iClassifier* 1.0, a digital research platform © Goldwasser/Harel/Nikolaev. *Conceptualization*—Orly Goldwasser, *Computational realization*—Haleli Harel, *Programming*—Dmitry Nikolaev, *Financing*—Orly Goldwasser. More information on the project can be found at https://www.archaeomind.net/ (accessed 08.06.2023) and in Harel et al. 2023.

22 Besides the discussion below, the results of the study are available on the *iClassifier* reports page. https://www.iclassifier.pw/reports/#!digitizingseth (accessed 10.07.2023).

23 Harel et. al. 2023: 138–139.

24 A unique variant of C7 with a tail. This sign occurs once in the *Coffin Texts*, see *CT* V: 168,c (S1C). See Sign TSL_1_7112 https://thotsignlist.org/mysign? id=7112 (accessed: 31.07.2023), in: *Thot Sign List*, edited by Université de Liège and Berlin-Brandenburgische Akademie der Wissenschaften. Supposedly this sign exists in Helck 1957: 1658,7. When verified with a photo of the original stela—see Petrie 1897: plate X—some traces of a line at the back of the sign can be seen, but based on the quality of the rest on the inscription I highly doubt that is an intentional tail, rather than an artefact of the stone or damage. However, I have not seen the stela in person to verify.

25 A more common variant of E244, with 50 attestations over 31 attestations of E244. Note that there is one erroneous variant that looks like 𓃩 (E21) on 𓊃 (N37), see *CT* VII: 517,c (B5C).

26 A rare variant of E244, with seven attestations.

27 One attestation only, see *CT* II: 340,b (S2C). The status of this as a separate class of E244 can be disputed, as based on the original one could argue the Seth animal is lying down as well. However, this was included as de Buck considered the transcription valid enough to include.

28 A new sign not yet recorded in existing sign-lists, now added, see Sign TSL_1_7113 https://thotsignlist.org/mysign?id=7113 (accessed: 31.07.2023), in: *Thot Sign List*, edited by Université de Liège and Berlin-Brandenburgische Akademie der Wissenschaften.

29 Attested twice in the same support (T2L), once as a classifier of *sṯḥ/sṯš*: *CT* VII: 46,e, and once as logogram in *sṯḥ/sṯš*: *CT* VII: 46,f.

There is one additional classifier that can be considered "Sethian," depending on interpretation. This is  (Aa21), which is primarily used for *wḏʿ* (to judge, to separate, to cut).[30] Traditionally, this sign has been taken as a logogram following or replacing the phonetic or logographic spelling of the word 'Seth' in the *Coffin Texts*, translated as 'the one who is judged.'[31] That *stḫ/stš* is replaced by *wḏʿ* can, for example, be seen in *CT* spell 335.[32] Here B1P has  , where most of the other witnesses use *stḫ/stš*, either spelt logographic ( [33] /  [34]) or phonetic ( /).[35] It becomes more problematic when Seth is written as  ,[36] which is either *stḫ wḏʿ* (Seth, the one who is judged), as a compound lemma that is classified by  (A40), or two separate lemmata where *stḫ* is unclassified. As the other witnesses in the same phrase use either *stḫ/stš* or *wḏʿ*—but not both—it is difficult to say what the original intent of the scribe was. Thus, it is possible that  (Aa21) could be taken as a classifier or logogram for Seth in this phrase.[37] For the remainder of this article, any cases of doubt concerning the (Aa21) were treated as logograms, rather than classifiers.

2.1. *iClassifier* network

One of the primary benefits of *iClassifier* is that one can visualize the classifiers and lemmata in a network. In the case of the 25 lemmata of the list above that were attested in the *Coffin Texts*—with or without Sethian classifiers—the following network can be drawn:

30 Sign TSL_1_958 https://thotsignlist.org/mysign? id=958 (accessed: 10.07.2023), in: *Thot Sign List*.

31 "*wḏʿ*" (Lemma ID 52400) https://thesaurus-linguae-aegyptiae.de/lemma/52400, in: *Thesaurus Linguae Aegyptiae*, Corpus issue 17, Web app version 2.01, 12.15.2022 (accessed: 7.5.2023).

32 *CT* IV: 234–235,b.

33 See Sq1C or Sq7C.

34 T2Be.

35 B9C,a; M8C.

36 *CT* II: 394,a (B6C). As suggested by an anonymous reviewer, it might be possible that this variation is due to a combination of two separate vorlage.

37 Note that I currently prefer to stay on the safe side by treating all cases of (Aa21) as *wḏʿ* over *stḫ/stš*, following the tradition set by the translations of Faulkner 1973: 49, note 30, and the *TLA*.

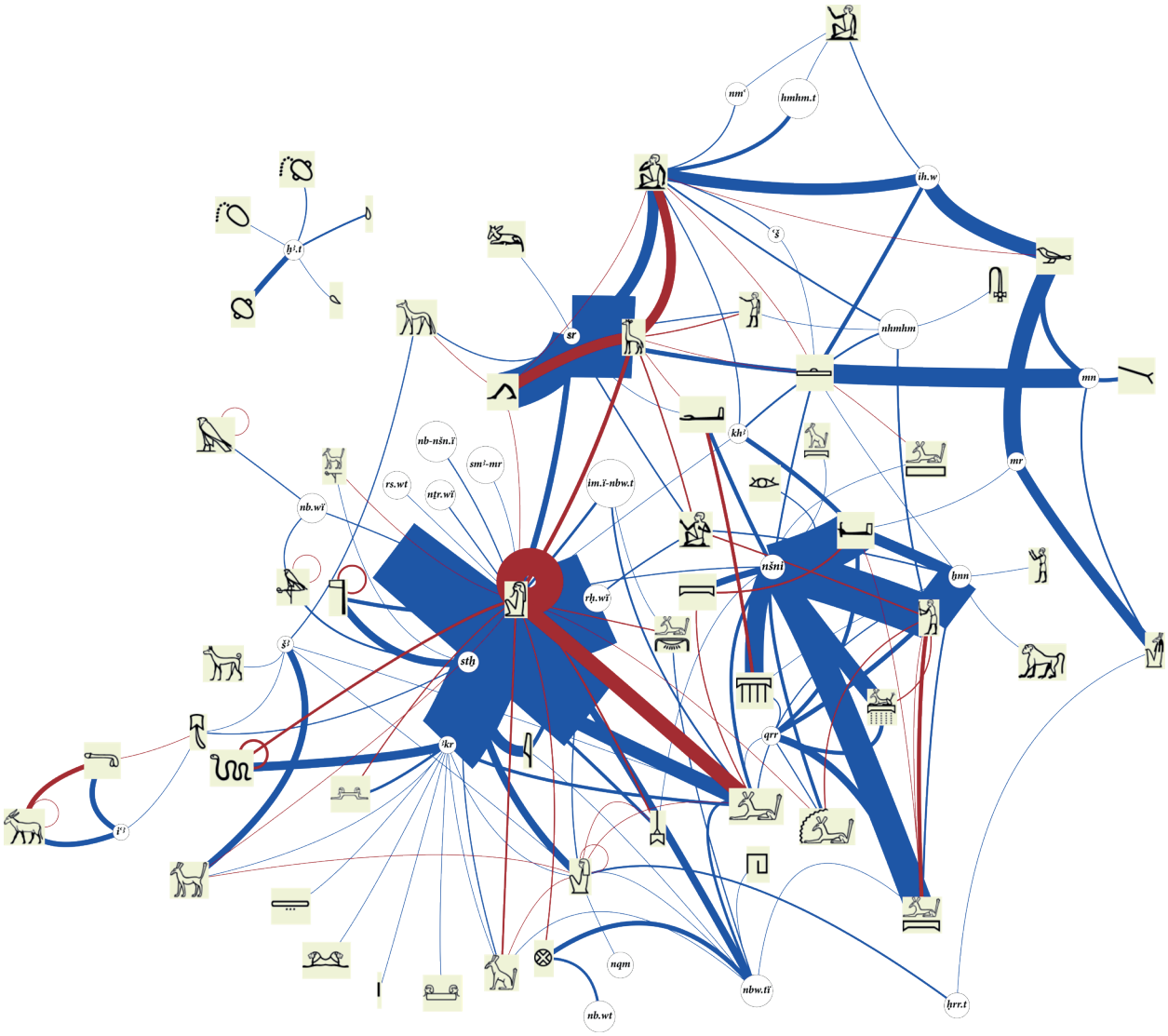


Fig. 1. Classifier network for the 25 lemmata that could take a Sethian classifier attested in the Coffin Texts ©*iClassifier*, Jorke Grotenhuis

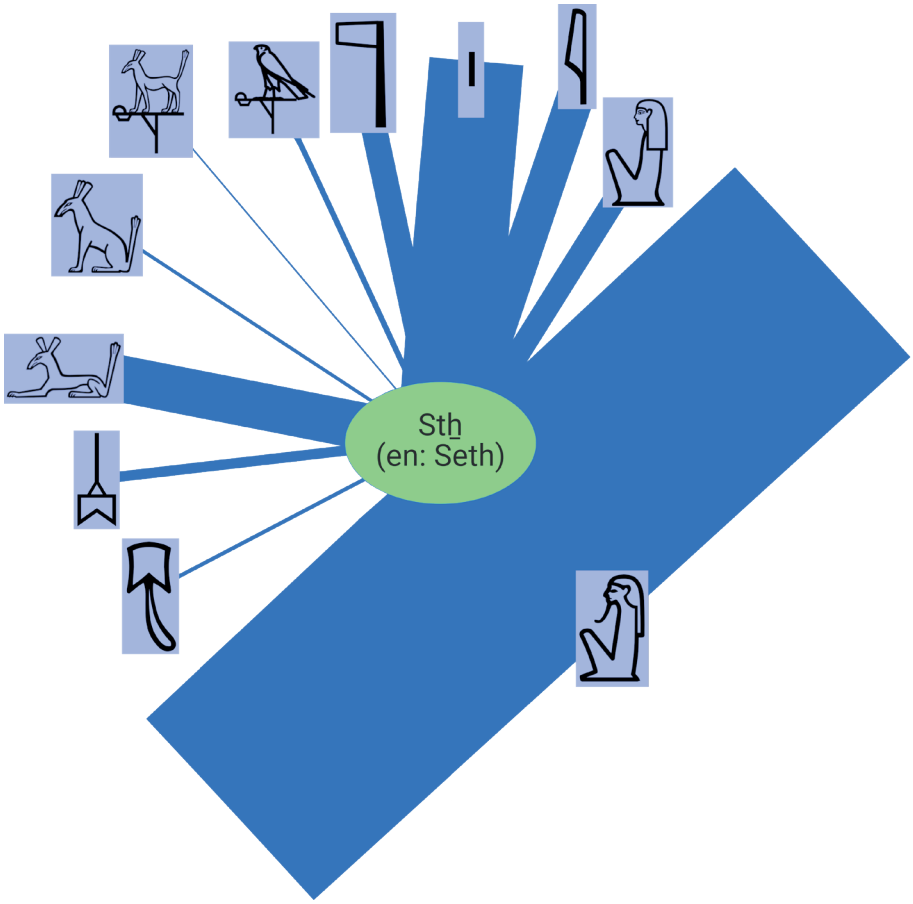
In this network, the classifiers are depicted as hieroglyphic signs, and the lemmata as transliteration. The blue lines represent the connection between a classifier and a lemma. The red lines depict the co-occurrence of a classifier with another classifier in the same lemma.[38] The width of the line reflects the number of connections.[39] For example, the very thick line between the lemma *stḥ* and the 𓂝 (A40) sign shows that there are many tokens of the lemma *stḥ* that use the 𓂝 (A40) as a classifier. A red circle with a classifier indicates a co-occurrence of a sign within a lemma, where the same sign is used multiple times. For example, in the lemma *rḥ.wï* (the two rivals [Horus and

38 As it is possible in the *Coffin Texts* for lemmata to be classified by multiple classifiers, this connection could tell a lot about the information structure of the Ancient Egyptian mind. See Goldwasser 2002: 16–17, 2005: 100–101.

39 Note that the length of the lines and the clustering of lemmata and signs hold no meaning.

Seth]), which can be classified with a double 𓀀 (A40).[40] There is one lemma, *ḫ³.t* (disease, illness) which is free-floating, as there are no shared classifiers between this lemma and any of the other 25 lemmata.[41] Even though included in the list of McDonald, the lemma does *ḫ³.t* not show a Sethian sign as a classifier in the *Coffin Texts*.[42]

One of the first sections to address is the very wide blue line between 𓀀 (A40) and *sth/stš*. As 𓀀 is the primary classifier for [DIVINE] in the *Coffin Texts*, the use of 𓀀 is not surprising. The width of the line is due to the high number of tokens of the lemma *sth/stš* (726), and 370 of these tokens are classified by 𓀀. Remarkably, Sethian signs used as classifiers are relatively rare with this lemma, as can be seen in fig. 2. However, the 𓃭 (E21) is quite commonly used as a logogram.[43]



Classifier combination	Total
𓀀 (A40)	340
𓌳+𓇋 (M17+Z1)	15
𓃭+𓀀 (E21+A40)	15
𓇋 (Z1)	14
𓌳 (R8)	11
𓀀+𓇋 (A40+Z1)	9
𓃭 (E21)	7
𓁶 (B1)	7
𓄡+𓀀 (Aa21+A40)	3
𓁶+𓇋 (B1+Z1)	3
𓄿 (G7)	3
𓃩+𓀀 (E20+A40)	2
𓎛+𓇋 (F27+Z1)	2
𓌳 (M17)	1
𓄡+𓁶 (Aa21+B1)	1
𓆑+𓀀 (E146:R12+A40)	1
𓄡 (Aa21)	1

Fig. 2. Classifier co-occurrence graph for the lemma *sth/stš* (Seth) with the classifier combination table for the same lemma
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40 See for example *CT* I: 19,c (B3Bo, B2Bo, B4Bo, B1P, B4C, T9C)

41 Obviously, the classifiers attested for *ḫ³.t* occur with other lemmata in the *Coffin Texts*. However, these classifiers do not occur with any of the other 23 lemmata discussed in this article.

42 This reflects the gradual shift of Seth away from [ILLNESS], where Sethian signs are replaced by 𓄿 (G37) or 𓃀 (Aa2 and its variants), see Allon 2007: 18.

43 With 338 of the 726 tokens using 𓃭 (E21) as a logogram.

Fig. 2 represents the different classification strategies used in the *Coffin Texts* for the lemma *stẖ/stš*. As with fig. 1, the width of the lines represents the number of co-occurrences between the lemma and a sign. One thing of note here is that the 𓅆 (G7) is an uncommon classifier for [DIVINE] in the *Coffin Texts*, as the 𓀭 (A40) is preferred in most supports. The use of 𓏤 (Z1) and 𓇋 (M17) as classifiers in this lemma is due to some of the supports avoiding the use of humanoid signs. For example, this occurs in the supports L3Li, M54C and T1Be. The use of 𓁐 (B1) instead of 𓀭 (A40) is something that occurs due to the cursive script in some of the supports.[44] For example in the support G2T, where the distinction between 𓀭 (A40) and 𓁐 (B1) is practically lost. See for example in *ḥw.t-ḥr* [45] vs *skr* .[46]

The majority of the tokens of *stẖ/stš* are classified by a single classifier (384 out of 726 tokens). However, classification strategies with multiple classifiers are used for the lemma *stẖ/stš* (Seth) as well, as can be seen in fig. 2. Most of these tokens with multiple classifiers are a combination of a sign with 𓏤 (Z1), but a combination of an animal followed by 𓀭 (A40) occurs as well. Interestingly enough, the 𓃩 + 𓀭 (E21+A40) group only occurs in one set of supports, Papyrus Gardiner II–IV.[47] As these papyri were collected by Gardiner as a group, it could be suggested that they were written by the same scribe(s), who used this classification strategy.[48] If this strategy reflects a local tradition or a personal preference of the scribe(s) cannot be proven, due to the lack of certainty of the provenance and date of these papyri.[49]

As stated above, there are in total 71 different signs in the *Coffin Texts* used as classifiers for the 25 lemmata of the 39 lemmata that can take Sethian classification. However, that does not mean that every classifier is used for all of the 25 lemmata. In most cases, every sign only classifies a few of these 25 lemmata in total. This can be seen in the long-tailed distribution graph[50] of fig. 3:

44 See Shalomi-Hen 2008: 183.

45 *CT* V: 159,c (G2T).

46 *CT* V: 122,b (G2T).

47 P. Gard. II: British Museum EA 10676,1–32; P. Gard. III: ISAC Museum Chicago 14059–87 (formerly Oriental Institute); P. Gard. IV: P. Louvre E14703. For a discussion of this group of supports, focused on P. Gard. II, see Gestermann 2003 and Regulski 2018: 236–238. For P. Gard. III, see Bandy 2010: 161–162.

48 Besides the work of Regulski 2018, which focused on P. Gard. II, no study has yet been done on the number of hands that worked on these papyri. A combined edition of these three papyri would be beneficial for future research.

49 Regulski 2018: 237–238.

50 Harel 2023: 122–126.

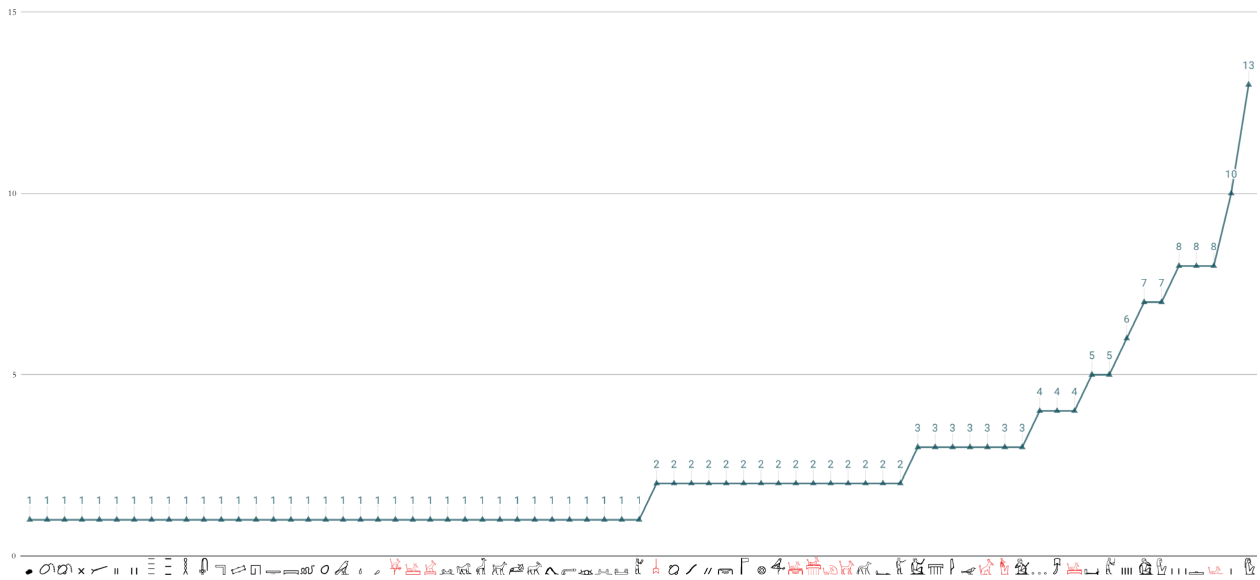

Fig. 3. Long-tailed distribution graph representing the occurrence rate of classifiers based on lemma in the 25 lemmata that can take a Sethian classifier in the *Coffin Texts*. Sethian classifiers are highlighted in red
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In this long-tailed distribution graph, the different classifiers attested in the corpus of the *Coffin Texts* for the lemmata that could take Sethian signs as classifiers are set out based on the number of lemmata in which they occur. The further the hieroglyphic sign is to the right, the higher the number of lemmata in which they occur.

As stated above, the (A40) is the sign that occurs as a classifier with the most lemmata, as it is attested in thirteen different lemmata: *ꜣkr, mr,*[51] *nb.wï, nbw.tï, ỉm.ï-nbw.t, nšnỉ, nṯr.wï, rḥ.wï, rsw.t, sr, stẖ/stš, qrỉ/qrr, khꜣ*. For the lemmata which use a Sethian hieroglyph as classifier, most of these signs are only used in one or two lemmata. The (E21) is the Sethian classifier that occurs in the most lemmata out of all the Sethian signs used as a classifier. In this corpus, the sign is used as a classifier in the following eight lemmata: *ꜣkr, nbw.tï, ỉm.ï-nbw.t, nšnỉ*, *ẖnn, stẖ*, *šꜣ* and *qrỉ/qrr*. Of the 25 lemmata that could take a Sethian classifier in the *Coffin Texts*, the combined Sethian signs are only attested in 11 out of the 25 lemmata.

By the quick decline of the graph, one can see that most signs used as a classifier in the 25 lemmata that can take a Sethian classifier in the *Coffin Texts* are only used in one or two lemmata at most. Most of the signs—the left side of the graph—only classify one lemma.

The use of alternative classification or multiple classification in the *Coffin Texts* paints a picture in which semantic domains the Sethian classifiers occur. If one looks at the non-Sethian hieroglyphs that may classify the same lemmata classified by Sethian classifiers, one finds the domains of [divine]: (A40) and (B1); [force], [effort]: (A24) and (D40); [noise], [thunder], [tumult]: (A2), (N4); or [bad], [evil]: (G37).

51 As one attestation in a construct *smꜣ-mr* (the sick scalp), see *CT* VII: 150,b (P. Gard. IV).

Thus, as alternatives to Sethian classifiers occur, one should consider how common the strategy of using Sethian signs as classifiers *Coffin Texts* is. Additionally, this variation poses the question of why Sethian classifiers are used over non-Sethian classifiers. The following section will discuss the percentage in which the strategy of using Sethian classifiers was applied in the *Coffin Texts*. Additionally, the classification strategy of using Sethian signs is viewed through a diachronic and diatopic lens.

Based on the corpus data, it becomes clear that the classification strategy of using Sethian signs as classifiers in the *Coffin Texts* is rare. As can be seen in fig. 4, for the lemmata that could take Sethian classification in the *Coffin Texts*, there is a general Sethian classification rate of 9 % overall.[52] However, there is a high rate of classification in general for this corpus, with 74 % of the tokens having at least one classifier in the *Coffin Texts*. However, it needs to be noted that there is a varied number of supports responsible for the data in each column, as the remaining textual material is overrepresented in some regions,[53] and underrepresented in other regions.[54]

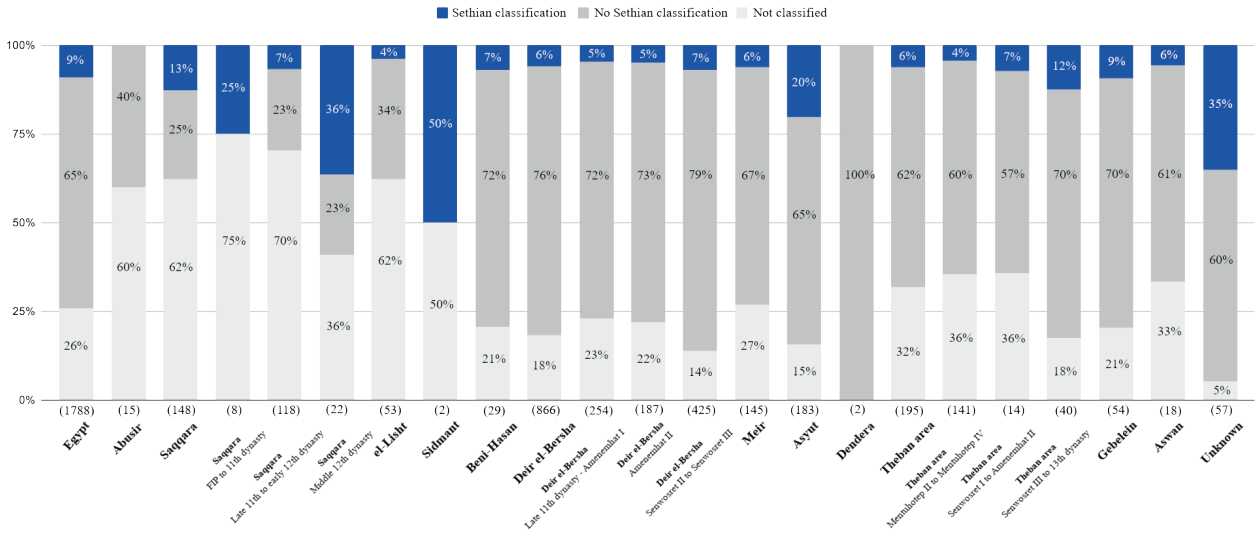

Fig. 4. Sethian classification in the *Coffin Texts*, set out based on region and chronological Sethian classification rates in those regions. The numbers in brackets are the total number of tokens
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Note that due to the use of percentages, some entries in fig. 4 are deceptive. For example, in Sidmant the use of Sethian classifiers has a rate of 50 %. However, this is only because there are only two tokens from Sidmant in the corpus, one with a Sethian classifier.

52 Note that the figure represents absolute numbers only, weighted identically. The supports had a large repertoire of texts to choose from to be part of the decoration. Therefore, different spells and a different number of spells could be part of the decoration. Thus, by chance one support could have many more attestations in of the lemmata discussed here than any others, as these lemmata would not be mentioned in every *PT* and *CT* spell available.

53 For example in Deir el-Bersha, see Hoffmeier 1996: 48.

54 For example Aswan, which is only represented by a single support (A1C).

Discarding Sidmant and only looking at the rate of Sethian classification overall in every region, the rate of Sethian classification is generally below 10 %. Thus, the classification strategy of using Sethian classifiers instead of non-Sethian classifiers—for example  (A40)—was not popular in the *Coffin Texts*. The only outliers here are Asyut with 20 % Sethian classification and the group with an unclear provenance[55] with 35 % Sethian classification. If the suggestion that Papyrus Gardiner II–IV and Y1C originate from Asyut—suggested by Schenkel, Regulski and Jürgens[56]—is correct, that would overlap with the higher tendency to use Sethian classification.

At the same time, it is interesting to see that the tokens from the supports from the most northern regions[57] are much less likely to use classifiers at all. Most of the other regions have a rate of more than 70 % of the tokens with some type of classifier.

In Deir el-Bersha, which has a low rate of Sethian classification (7 %), one can see that there is a minimal diachronic development where the rate of Sethian classifiers slightly increases over time.[58] As one can see in fig. 4, the first two periods of coffin decoration in Deir el-Bersha—late 11th Dynasty to the reign of Amenemhat II—have a rate of 5 % Sethian classification. The last period of coffin decoration in Deir el-Bersha—the reign of Senwosret II–III—has a rate of 7 % instead. Thus, it could be argued that over time, the use of Sethian classifiers becomes slightly more likely.[59]

This seems to be visible in the supports from the Theban area as well. Although the division of periods for coffin decoration varies from Deir el-Bersha, the same tendency to increase the rate of Sethian classification occurs. In the supports decorated during the reign of Mentuhotep II–IV, there is a rate of 4 % Sethian classification. For the reign of Senwosret I to Amenemhat II, there is a rate of 7 %. In the final period of coffin decoration—Senwosret III to the 13th Dynasty—there is a rate of 12 %. This rate is deceptive, however. All the tokens with Sethian classification from this later period come from one support—T2Be—out of a group of three supports.[60] Therefore this is more likely to be a scribal preference rather than a diachronic and diatopic pattern.

In Saqqara, there seems to be a different pattern which starts with a rate of 25 % Sethian classification during FIP to the 11th Dynasty, which drops down to a lower rate of 7 % during the late 11th

55 P. Gard. II–IV and Y1C.

56 Schenkel 1996: 125; Regulski 2018: 237 for P. Gard. II–IV and Jürgens 1996: 55–56 for Y1C.

57 Abusir, Saqqara and el-Lisht.

58 As Deir el-Bersha is overrepresented in the corpus (see Hoffmeier 1996: 48), the three chronological periods shown in fig. 4 represent a meaningful number of supports for every period. For the period of the late 11th Dynasty to the reign of Amenemhat I, there are seven supports: B1Bo, B2Bo, B3Bo, B4Bo, B6Bo, B7Bo and B6C. The second period, set during the reign of Amenemhat II has seven supports as well: B3C, B4C, B9C, B10C, B11C, B15C and B1Y. The final period of coffin decoration in Deir el-Bersha is from the reign of Senwosret II–III. This period consists of 15 supports: B1Be, B1C, B5C, B7C, B12C, B13C, B16C, B17C, B20C, B1L, B2L, B3L, B4L, B1P and B2P. The dates of the supports used in this article were based primarily on Willems 1988.

59 For a list of the chronology of the *Coffin Texts* supports, see fig. 14 at the end of the article.

60 T1Be, T2Be, T3Be.

Dynasty to the early 12th Dynasty. The final period of coffin decoration in Saqqara—the middle of the 12th Dynasty—has a higher rate of Sethian classification of 36 %. However, both the first and second period of coffin decoration in Saqqara are deceptive. In comparison to the second period of coffin decoration, which has 12 supports,[61] both the earlier and later-dated supports only have three supports each.[62] Moreover, the earlier period in Saqqara only provides eight tokens of lemmata that can have Sethian classifiers. Two of these eight tokens have a classifier, which explains the 25 %. For the later period, there are 22 tokens which could take a Sethian classifier, with eight of these with a Sethian classifier. Note that these 22 tokens are all from the same lemma, namely *nšnỉ*.[63] Thus, there is no proof of diachronic variation in Saqqara either.

For the *Coffin Texts*, there seems to be only marginal variation in the use of Sethian signs as classifiers based on either diatopic or diachronic variation. Moreover, the data shows that the use of Sethian signs as classifiers was rare at best, only passing the 10 % in Asyut and the supports from an uncertain origin. In Deir el-Bersha, there are some suggestions of a gradual rise in the use of Sethian signs over time, but the variation is so low (<2 %) that it is likely negligible. It can be noted however that there is a distinction in the level of classification in general between supports from the north and the south. There is a higher tendency to use classifiers in the south than there is in the north, which might reflect local preferences.

2.2. Sethian classification tendencies in the *Coffin Texts*

As discussed above, of the 39 lemmata that could use a Sethian classifier at some point in the Pharaonic period in Ancient Egypt, only 25 are attested in the *Coffin Texts*. However, as one can see in the lemmata list of McDonald above, most of these lemmata are not attested with a Sethian hieroglyph as a classifier until the New Kingdom. Yet, of these 25 lemmata, there are only 11 lemmata which use a Sethian classifier in the *Coffin Texts*. These lemmata are *ꜣkr* (Aker, earth god), *mn* (to be ill), *mr* (to be ill), *nbw.tï* (the Ombite), *ỉm.ï-nbw.t* (the one who is in Ombos), *nšnỉ* (to rage), *ḫrr.t* (Hereret), *ḫnn* (to trouble), *stḫ/stš* (Seth), *šꜣ* (Seth's animal) and *qrr* (storm). The exact rate of Sethian classification for these lemmata can be seen in fig. 5:

61 Sq2Be, Sq3Be, Sq3C, Sq4C, Sq5C, Sq6C, Sq9C, Sq10C, Sq11C, Sq1Sq, Sq3Sq and Sq4Sq.

62 FIP to the 11th Dynasty: Sq1Cop, Sq13C, Sq1Ch; Middle of the 12th Dynasty: Sq1C, Sq2C, Sq7C.

63 All in the same spell, *CT* spell 335. See *CT* IV: 238,c, 240,a, 242,a.

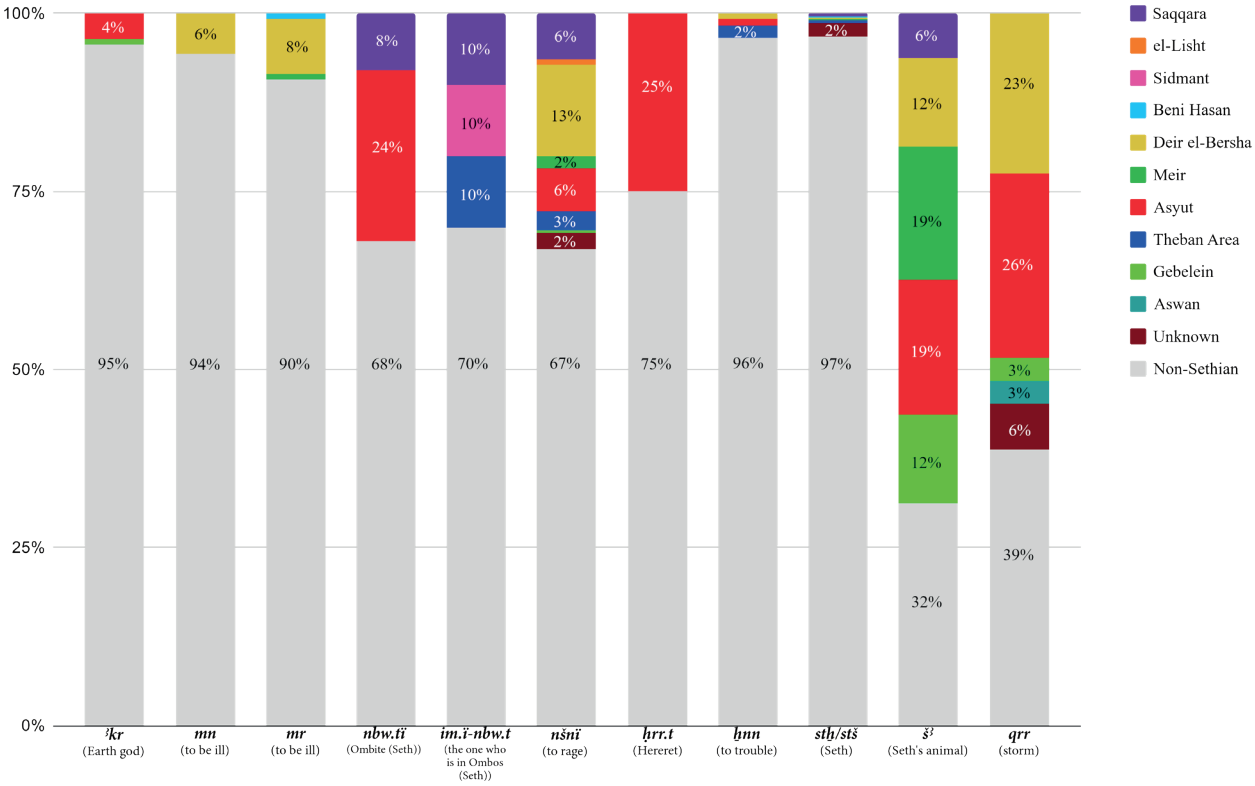


Fig. 5. The occurrence rate of Sethian classification in 11 out of 25 lemmata in the *Coffin Texts* that show Sethian classification, sorted by region. The non-Sethian grey group represents tokens without classifiers as well as tokens with non-Sethian classifiers ©*iClassifier*, Jorke Grotenhuis

For five of these lemmata—*ʾkr, mn, mr, ḫnn* and *stḫ/stš*—the rate of Sethian classification is about the same as could be seen in fig. 4, barely scratching 10 %. However, it shows that the other lemmata—*nbw.tï, ỉm.ï-nbw.t, nšnỉ, ḫrr.t, šʾ* and *qrr*—are much more likely to receive Sethian classifiers. This reflects the gradual development of the categories which Sethian hieroglyphs classify, where [ILLNESS] and [PAIN] are in retreat, while the connections with [ANGER], [DISTURBANCE], [THUNDER] and [NOISE] are on the rise.[64]

In the same vein as Fig. 4, some of these rates are deceptive. For example, *ḫrr.t* has a rate of 25 % Sethian classification, from Asyut. However, this represents one out of four tokens. Thus this is not a representative result of this rare lemma in the *Coffin Texts*.[65] Note however that the classifier here is the sole attestation of the seated Seth  (C7) variant with the tail  in the *Coffin Texts*.[66]

The same potential for overinflation of the rate of Sethian classification can be applied to the lemmata *nbw.tï, ỉm.ï-nbw.t, šʾ* and *qrr*. However, it is less extreme in these cases. *nbw.tï* has a total of 25 tokens, *ỉm.ï-nbw.t* is attested with 10 tokens, *šʾ* with 16 tokens, and *qrr* with 31 tokens. The other

64 See Allon 2007: 18–19.

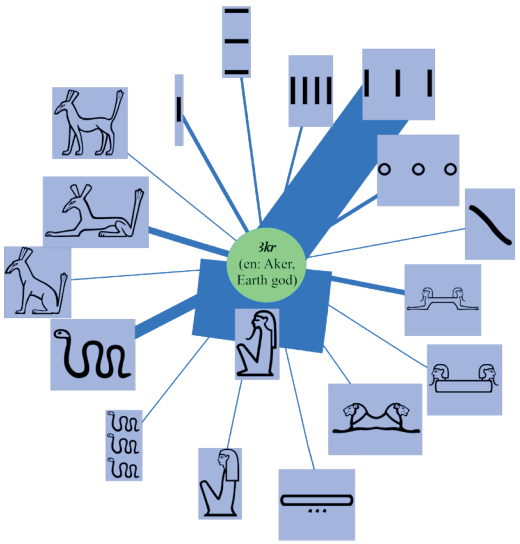
65 For more detail about *ḫrr.t*, see McDonald 2007: 26–29.

66 See note 24.

lemmata have at least 50 tokens and are less likely to misrepresent the rate of Sethian classification. Even so, the lemma *š³* (Seth's animal) has a very high rate of Sethian classification, where it is primarily classified by (E146).[67]

Remarkably, one can see in fig. 5 that Sethian classification in these lemmata is to some extent dependent on the origin of the support. For example, *³kr* is only classified with a Sethian sign in Asyut and Gebelein, although rarely. In Gebelein *³kr* is only classified once with a Sethian sign out of three tokens.[68] Additionally, Sethian classification in *³kr* only occurs in one of the two supports from Gebelein (G1T and G2T). In Asyut there are four tokens of *³kr* with Sethian classification out of 17 tokens, all from the same assemblage (S1C and S2C).[69] Thus, for *³kr,* the use of a Sethian classifier seems to reflect a preference of the scribe(s).

The classification strategies for the lemma *³kr* are rather interesting, however, with a broad repertoire of signs available for classification, see fig. 6. Moreover, the rate of classification for this lemma is high, with only eight out of 113 tokens without a classifier, or with a grammatical classifier only.



Classifier combination		Total
	(A40)	57
	(A40+Z2)	24
	(I14+Z2)	7
	(E21+A40)	4
	(A40+N33A)	3
	(Z2)	3
	(C274B+A40+Z2)	2
	(A40+Z1*Z1*Z1*Z1)	2
	(A40+Z1+Z2)	1
	(C274B+Z2)	1
	(C274B+Z2)	1
	(C146+A40+Z2)	1

Classifier combination		Total
	(E128+Z2)	1
	(E20+B1+Z3A)	1
	(I14 :I14 :I14)	1
	(E21+A40+Z2)	1
	(Z1)	1
	(A40+Z1)	1
	(I14+A40)	1
	(I14+A40+Z2)	1
	(Z5+Z2)	1
	(A40+Z3A)	1
	(C274B)	1
	(N16)	1

Fig. 6. Classifier co-occurrence graph for the lemma *³kr* (Aker, earth god) with the classifier combination table for the same lemma
©iClassifier

67 Which is not remarkable, considering the lemma is specifically Seth's animal. However, the jackal (E17, *CT* II: 96,d [S1C]), and the dog (E14, *CT* I: 397,b [B1P]) are used as well.

68 *CT* II: 112,e (G2T).

69 *CT* I: 398,a (S1C); *CT* VI: 177,c (S1C), 206,c (S1C, S2C).

As this lemma is a divinity, the high number of classifications with 𓀭 (A40)[70] is not surprising. The high number of grammatical classifiers like 𓏺𓏺𓏺 (Z2) is due to the tendency to use the plural *ꜣkr.w* (Earth gods) in the varied spells in which this lemma occurs.[71] The land and double-headed classifiers are to be expected as well.[72] Although rare in comparison to the seated god, there are two patterns of classification with an animal, one through Seth, the other through the 𓆓 (I14) snake. The connection between the snake and the earth is not unexpected,[73] but one has to wonder where the connection between the earth and Seth comes from. One route McDonald suggests is that the Sethian animals are corruptions of lions.[74] Alternatively, some intentional connection between the gods could exist, depending on the reading of 𓎛𓀭 in *CT* spell 366:[75]

smn ṯb(w)=i ḥr ꜣkr ỉn ꜣs.t smn=s wỉ ḥr ꜣkr wḏꜥ m nṯr ʿnḫ

My sole is made firm on Aker by Isis, she makes me firm on Aker (and) the one who is judged, as a living god.

If Aker and *wḏꜥ* are taken as two separate divinities (which the spelling with a 𓀭 [A40] classifier for both suggests), there could be a connection between the two gods, as they are mentioned as a duo. If such a connection between the gods existed, it could explain why the Sethian animal shows up with Aker. However, this connection occurs in a single spell only, in only three witnesses,[76] and with some doubt, as *stḫ*/*stš* is not spelt out. Thus, one can wonder how likely this explanation for the use of the Sethian animal would be.[77]

In the 11 lemmata in which the use of Sethian classifiers is attested in the *Coffin Texts*, it is clear that this was a rarer classification strategy employed by the scribes. Alternative classification strategies using traditional hieroglyphic signs were preferred over the use of Sethian hieroglyphs. The only exception to this is with the lemma *šꜣ* (Seth's animal), which is 68 % classified with a Sethian sign. The higher tendency of *qrr* (storm) and to some extent *nšnỉ* (to rage) to use Sethian signs as

70 99 out of 113 tokens.

71 For example see *CT* spell 75, *CT* I: 398,a.

72 For example, 𓊪 C274B is currently only known as a classifier for Aker. See: Sign TSL_1_1629 https://thotsignlist.org/mysign?id=1629 (accessed 10.07.2023), in: *Thot Sign List*.

73 See for example *zꜣ-tꜣ* (Lemma ID 126130) https://thesaurus-linguae-aegyptiae.de/lemma/126130, in: *Thesaurus Linguae Aegyptiae*, Corpus issue 17, Web app version 2.01, 12.15.2022 (accessed: 7.16.2023).

74 McDonald 2007: 36, no. a.

75 *CT* V: 27,d–e (B2L). Faulkner 1977: 7 prefers not to read *wḏꜥ* at all, following the sentence structure in Sq6C.

76 B1C, B2L, and B2P, which all originate from Deir el-Bersha and are all dated to the same period (Senwosret II–III).

77 An even less likely suggestion could come through the overlap between *šꜣ* (Seth's animal) and *šꜣỉ* (pig)—in as far they are not the same lemma or root—where due to the tendency of pigs to root around in the earth there could be a connection. But as pigs do not show up as classifiers for Aker in the *CT*, I highly doubt this to be the case.

classifiers in comparison to *mn* and *mr* (to be ill) illustrates the development of the metaphorical semantic categories Sethian signs classify. Sethian signs move away from illness and pain, while the connection with anger and storm grows. Within singular lemmata, the strategy of using Sethian hieroglyphs as classifiers was often only attested in a few regions, but these cases likely represent a personal preference of the scribe rather than a diatopic or diachronic variation pattern.

2.3. Domain-specific Sethian signs for classification.

Not only is there a tendency to only classify certain lemmata depending on the region. In the *Coffin Texts,* there is the tendency to use certain Sethian signs only for certain specific lemmata centred around a common theme. Below there will be a discussion of three different domain groups that have specific hieroglyphs used to classify these groups.

One of these domain groups is [STORM], [THUNDER] and [NOISE]. This domain has been discussed in some detail by Allon 2007 and more recently by Soler 2021, who used *iClassifier* for the study of storm-related lemmata in the *Coffin Texts*. Even so, it is worthwhile to discuss this section due to the occurrence of a group of sign classes that are—in the *Coffin Texts*—uniquely used with the lemmata associated with [STORM], [THUNDER] and [NOISE]: *nšni* (to rage); *qrr* (storm) and *ḫnn* (to trouble, to disturb). The different classifier strategies for these lemmata can be seen in fig. 7.[78]

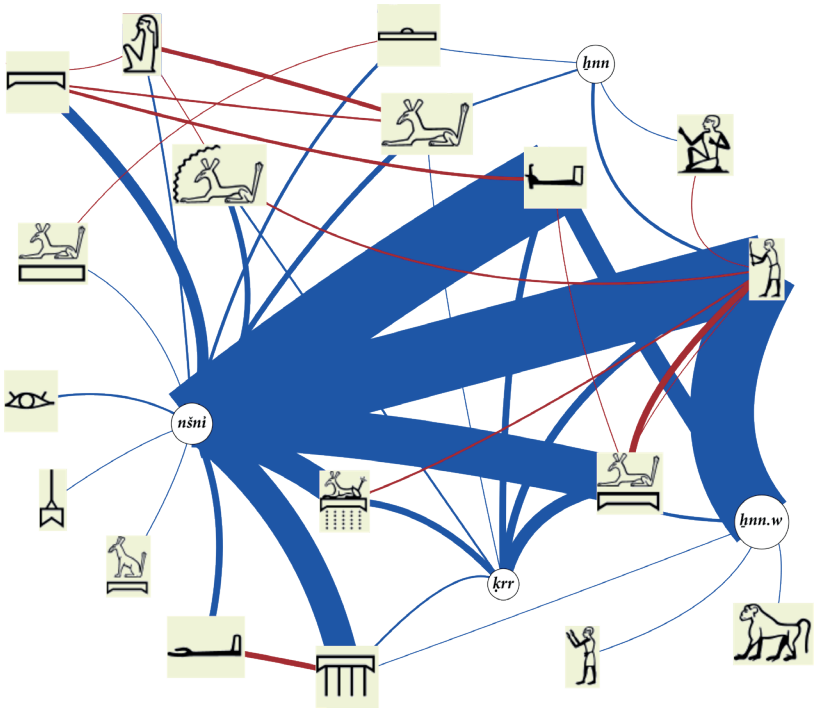


Fig. 7. Classifier network for *nšni* (to rage), *qrr* (storm), *ḫnn* (to trouble) and *ḫnn.w* (disturbance) ©*iClassifier*, Jorke Grotenhuis

78 Note that for the sake of clarity, this image differentiates between *ḫnn* and *ḫnn.w,* even if they should be understood as the same lemma.

The classifier strategy of using  (A24) and (D40) here is to be expected, as they generally classify [FORCE, EFFORT].[79] Additionally, it is interesting to see the single attestation of the metaphoric classifier  (E32) with *ḫnn.w* (tumult),[80] considering the tumult an angry monkey can cause.[81] These three lemmata show a higher tendency for using Sethian classifiers, especially for *nšnỉ* and *qrr,* see fig. 5. For the specific classifier strategies employed by the scribes for *nšnỉ*, *qrr,* and *ḫnn* separately, see fig. 8:

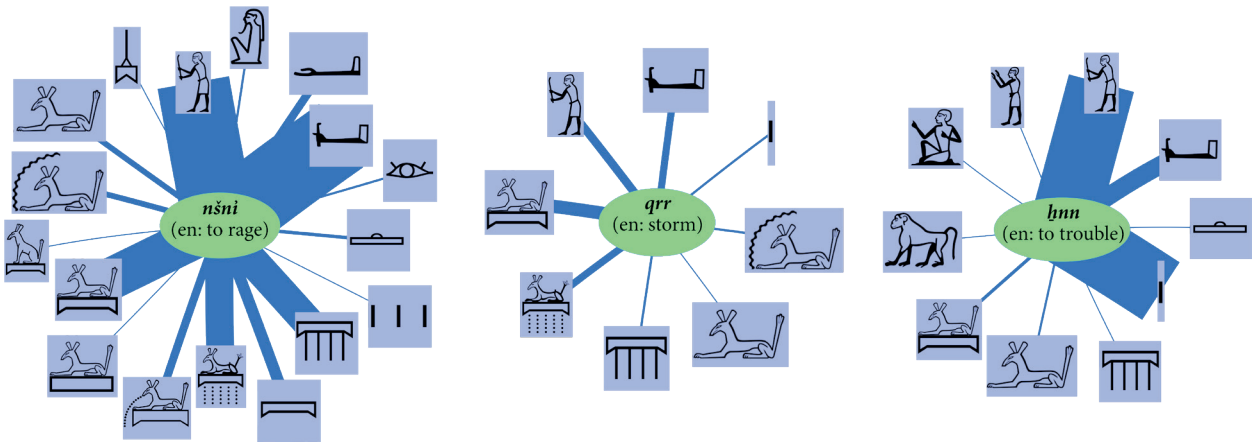


Fig. 8. Classifier co-occurrence graph for the lemma *nšnỉ* (to rage), *qrr* (storm) and *ḫnn* (to trouble)
©*iClassifier*, Jorke Grotenhuis

Although all three lemmata can be classified by  (E21), the unique feature of these lemmata is the use of  (E244) and its classes (,  ,) which only occurs with these [STORM] and [NOISE] related lemmata. The same is true for  (E149), which only occurs in *nšnỉ* and *qrr* as a classifier for storm or rage.[82] In the *Coffin Texts*, these signs are used intentionally due to the connection with weather, water and the sky, essential ingredients for a storm.[83] However, it should be noted that the Sethian signs are much more dominant in *nšnỉ* and *qrr* in comparison to *ḫnn*. This suggests that the more direct connection between *nšnỉ* and *qrr* to a storm reflects that the development of the semantic clusters covered by Sethian hieroglyphs towards "weather disturbances"[84] was underway before the later identification of Seth as Baal.[85]

79 Goldwasser 2005: 99; Kammerzell 2015: 1409–1410.

80 *CT* VI: 212,h (S1C).

81 Goldwasser 2005: 104.

82 The only attestations of this classifier with *nšnỉ* is when it is either used as a noun (rage, storm), or as a deverbal (the one who rages), see *CT* VII: 154,t (P. Gard. III).

83 I do not intend to state that the signs were developed by the scribes by throwing different aspects of the storm together, but that the sign was intentionally chosen by the scribe as it reflects the parts of the storm.

84 Allon 2007: 18.

85 Even though Baal was known in Egypt as early as the 13th Dynasty (Allon 2007: 19), I cannot conclude that this connection already exists in the *Coffin Texts*, as nearly all supports are dated to the 12th Dynasty or earlier.

Note that the class of (E244) is a new sign shape, as it is a class that has been mentioned before,[86] but was up to now not included in any sign-list.[87] There is no doubt that this is a distinct class when compared to the graphemes in the supports: for ,[88] instead of which is used for .[89] However, the exact presentation of this hieroglyph can vary based on the handwriting of the scribe.

These three lemmata above are not the only case where there are specific signs used to classify specific lemmata. There is a hieroglyph which only occurs with the lemmata *nbw.tï* (the Ombite) and *ỉm.ï-nbw.t* (the one who is in Ombos): .[90] This sign reflects a graphical pun with the combination of Seth with the *nbw* phonetic value of (S12). Not only does this sign occur in the *Coffin Texts* as a classifier,[91] but it is used as a logogram as well.[92] However, due to its specific function, in the *Coffin Texts*, the sign is not used outside these two lemmata.

Finally, there is the curious case of the (C7). In the *Coffin Texts*, this sign is only attested as a classifier for the lemmata *mn* (to be ill) and *mr* (to be ill). Remarkably, the is in the *Coffin Texts* never used in connection with the lemma *sth*/*stš*.[93] This is not due to a tendency to evade any type of seated god with an animal head in the *Coffin Texts*, as (C3) is attested for Thot.[94] This tendency to only use the seated god as classifier for *mn* and *mr,* rather than any other Sethian hieroglyph is remarked upon by McDonald 2002b: 104, 143–146, 187, 190–196, 222–223, who notes that for [ILLNESS], [PAIN] the preferred use was (C7), not any other Sethian hieroglyph,[95] stating: "As the determinative of these words, seems to have a meaning that cannot adequately express."[96]

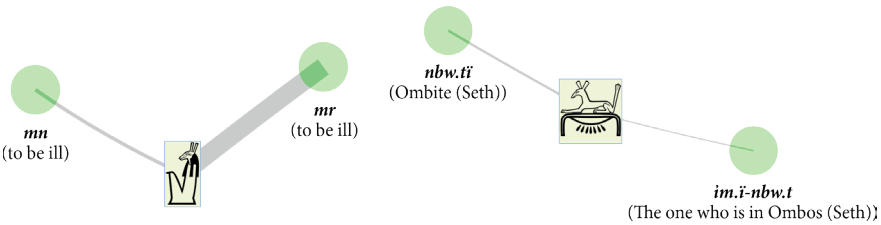


Fig. 9. Lemma co-occurrence graph for (C7) and ©*iClassifier*, Jorke Grotenhuis

86 McDonald 2002b: 90.

87 See Sign TSL_1_2678_03 https://thotsignlist.org/mysign?id=2678 (accessed: 31.07.2023), in: *Thot Sign List*.

88 *CT* VI: 348,u (B3Bo).

89 *CT* VI: 156,c (B2Bo).

90 See Sign TSL_1_7113 https://thotsignlist.org/mysign?id=7113 (accessed: 31.07.2023), in: *Thot Sign List*, edited by Université de Liège and Berlin-Brandenburgische Akademie der Wissenschaften.

91 *CT* III: 360,b (S1C,a and c); *CT* VIII: 230, PT204a (Sed1Sed).

92 For example, see *CT* VIII: 230, PT204a (B2Bo, B3Bo, B4Bo).

93 See fig. 2 and fig. 9.

94 For example, in *CT* IV: (B5C). However, is only used as a logogram in the *Coffin Texts*.

95 When a Sethian classifier is used at all.

96 McDonald 2002b: 223.

Thus, in the *Coffin Texts*, it is possible for domain groups to have Sethian signs that are uniquely connected to those domain groups. The sign  (E244) and its classes are uniquely associated with lemmata related to [storm] and [noise]. Due to the graphical pun the sign represents,  is only attested as a reference of Seth's connection to Ombos. Third,  (C7) has a unique connection with the lemmata of *mr* and *mn* (to be ill). Sethian signs not only have a broad collection of semantic domains in their metaphoric use but even develop unique sign variants for these semantic domains.

3. The *sr*-animal in the *Coffin Texts*

As stated above, the lemma *sr* (to announce, to foretell)[97] was included in this study as one of the lemmata that can take a Sethian classifier, following McDonald.[98] One could wonder about its inclusion in this discussion, as in the transcription of de Buck the animal used in this lemma is  (E27), the giraffe. In the varied types of cursive scripts in the *Coffin Texts*,[99] this interpretation of the animal becomes a problem. In Cannuyer's work, when the attestations of the lemma *sr* in the *Coffin Texts* are addressed,[100] de Buck's transcriptions are taken as the hieroglyphic representation in the supports, except for cases when de Buck himself mentioned that there is any variation.[101] The reality is much more interesting, however. McDonald has shown that alternative animals could be interpreted based on the cursive script in the *Coffin Texts*.[102] However, this is limited to a few examples.

For this article, all the tokens of the *sr*-animal in the *Coffin Text* have been collected. Note that these tokens include both classifiers and logograms.[103] In total, 178 attestations of the lemma *sr* and its derivates were collected in the *Coffin Texts*. Of these 178 attestations, 27 were reconstructions or are no longer visible. 48 tokens used a classifier that was not an animal, for example,  (A2) or  (D54). Seven tokens were without a classifier. In total, it was possible to collect 96 hieratograms[104] of *sr*-animals in the *Coffin Texts*.[105] Digital facsimiles were made of these hieratograms.[106]

97 For an in-depth study of the lemma and the giraffe in Ancient Egypt, see Cannuyer 2010.

98 McDonald 2007: 36, 2009: 367–368. Note that the overlap between the E27 and E20 was already mentioned in Gardiner 1957: 460–461.

99 Ranging from Fischer script type 2, 3a, 3b and very rarely 4. See Fischer 1976: 41.

100 Cannuyer 2010: 250–284.

101 McDonald 2012: 229–230.

102 McDonald 2009: 367–368.

103 The only token of a *sr*-animal as a logogram in the *Coffin Texts* which I could locate is in *CT* I: 321,d (M1Be).

104 See Verhoeven 2001.

105 In some tokens the animal was no longer recognizable in the original. For some other tokens, I could not access an image of the original to create the facsimile of the token.

106 I am grateful to Olaf Kaper and the Netherlands Institute for the Near East (NINO) in Leiden, Patricia Rigault and the Musée de Louvre, Foy Scalf and the Institute for the Study of Ancient Cultures (ISAC) in Chicago for their aid in the creation of the digital facsimiles.

In order to create an overview of the types of *sr*-animal in the *Coffin Texts*, the new method for visualization of Hieratic signs used in the AKU-project[107] in Mainz was applied to the 95 hieratograms. This was done using the program *VIKUS viewer*[108] as described in Gerhards & Konrad, 2022. Not only is this a visualization tool, but it allows for digital clustering of the tokens based on image similarity,[109] using *t-distributed stochastic neighbour embedding* (*t*-SNE).[110]

Following this method, the following image collecting and clustering of the shapes of the *sr*-animal was created:

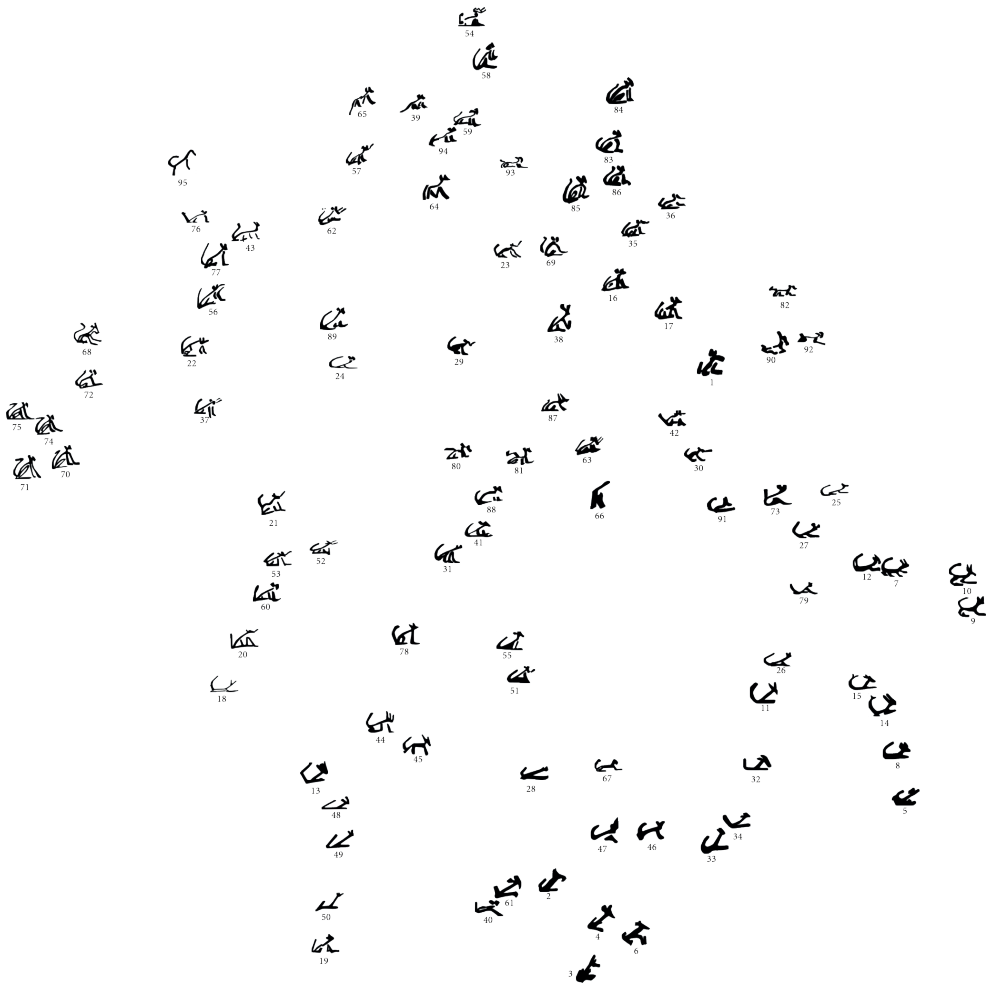


Fig. 10. Similarity distribution of individual hieratograms of the *sr*-animal in the *Coffin Texts* calculated using *t*-SNE (parameters used: epsilon = 50, perplexity = 5). The hieratogram numbers refer to the numbers in the annex

107 https://aku.uni-mainz.de/ (accessed 10.07.2023). See Gerhards & Konrad 2022; Gülden 2022, 2023.

108 https://vikusviewer.fh-potsdam.de/ (accessed 10.07.2023). I am indebted to Tobias Konrad and Siebren Frölich for their aid and expertise which allowed me to run the program.

109 In order to reduce my biases in assigning shape similarity. However, the influence of biases can only be reduced as Peursen 2010: 12 states: "Even in image capture and editing, which may at first sight be a rather straightforward and 'objective' procedure, 'virtually all parameters in the process […] require intellectual, critical choices, interpretation, and manipulation."

110 Maaten & Hinton 2008.

As one can see in fig. 10, there is a wide distribution of the tokens that clusters the hieratograms in small groups based on graphical similarity. Most clusters consist of two to three hieratograms but can be as large as four or five hieratograms. It needs to be noted here that the results of the *t*-SNE technique can be misleading.[111] For example, even though the distance between single hieratograms is important to create clusters, the size of the cluster itself[112] and the distance between clusters is meaningless. In the same vein, the thickness of the lines of the hieratograms could be a reason for clustering as well. Even so, one can see that there is a difference between the signs generally clustered near the top of fig. 10 versus those who are near the bottom.

One of the most encouraging results in fig. 10 is that most hieratograms from the same support ended up in the same cluster, as could be expected when signs were written by the same hand. For example, the cluster at the far left (no. 70–71, 74–75) consists of four  type hieratograms, which all come from G1T. More impressively this occurs too in some clusters which I would not have created. For example, in the small cluster consisting of  and  (no. 44–45). At first glance, these are two distinct shapes. However, both of these hieratograms come from the same support (B6C). So, there is an underlying similarity between the two hieratograms that the *t*-SNE picks up where a human might not. This stresses the need to keep a critical human eye during the analysis and clarifies that digital tools should not be relied upon to answer questions. Instead, these tools should be used to aid the user to formulate questions and suggest additional avenues of research.

Based on the clustering of these hieratograms in fig. 10, it seems unlikely that there is a regional or chronological pattern underlying the writing of the *sr*-animal in the *Coffin Texts*. Most clusters represent separate supports or a wide mixture of supports. The personal preference of the scribe(s) seems the most likely explanation for the variation in shapes. This is illustrated in fig. 11, where the hieratograms are colour coded by region of origin.

111 Wattenberg, Viégas & Johnson 2016. http://doi.org/10.23915/distill.00002 (accessed 10.07.2023).

112 i.e., how much space the cluster takes in comparison to other clusters.

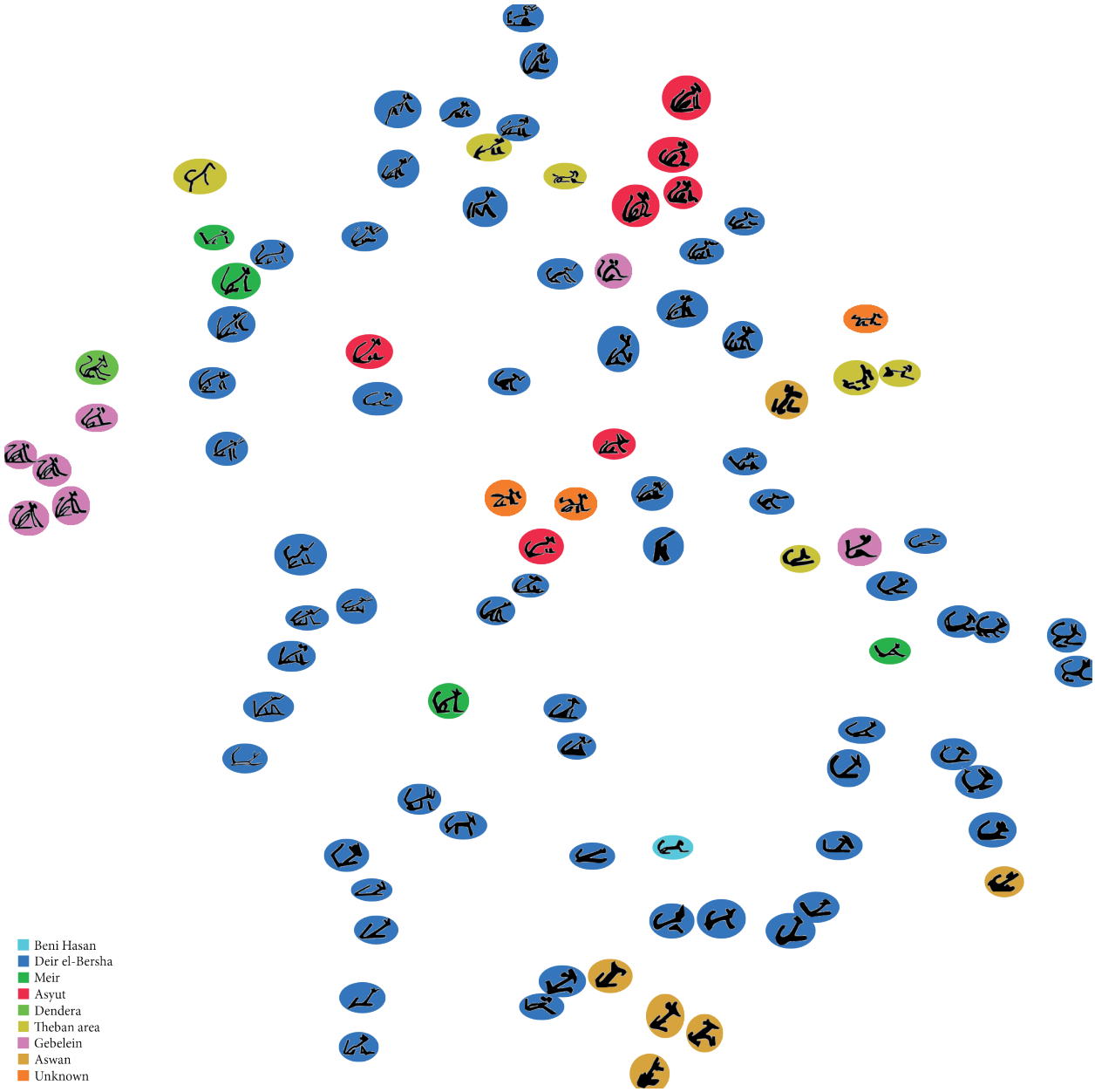


Fig. 11. Similarity distribution of individual hieratograms of the *sr*-animal in the *Coffin Texts* calculated using *t*-SNE (parameters used: epsilon = 50, perplexity = 5). The hieratograms are colour-coded based on the region of origin

Based on the hieratograms available for this study, it quickly becomes clear that the  (E27) is a bad choice to represent the *sr*-animal in hieroglyphic transcriptions of the *Coffin Texts*. Even if some hieratograms could be considered long-necked, for example  (no. 49) or  (no. 28), both of these two hieratograms have an upward tail. This makes reading the *sr*-animal as a giraffe extremely unlikely. Based on Cannuyer 2010: 57–194, the tail of a giraffe in Ancient Egyptian iconography is nearly always downwards. This leaves the question, if the *sr*-animal is not a giraffe in the *Coffin Texts*, what animal did the scribes use?

The first candidate would be a Sethian animal, either  (E20) or  (E21).[113] Especially based on the hieratograms in the bottom right corner of fig. 10, this interpretation is possible. Additionally, the use of a Sethian animal as a classifier of *sr* is known from other sources as well.[114] However, this does not fit that well for all of the supports. The scribe(s) seem to have made some effort to distinguish between the *sr*-animal and the Seth animal depending on the supports. This is illustrated in fig. 12:

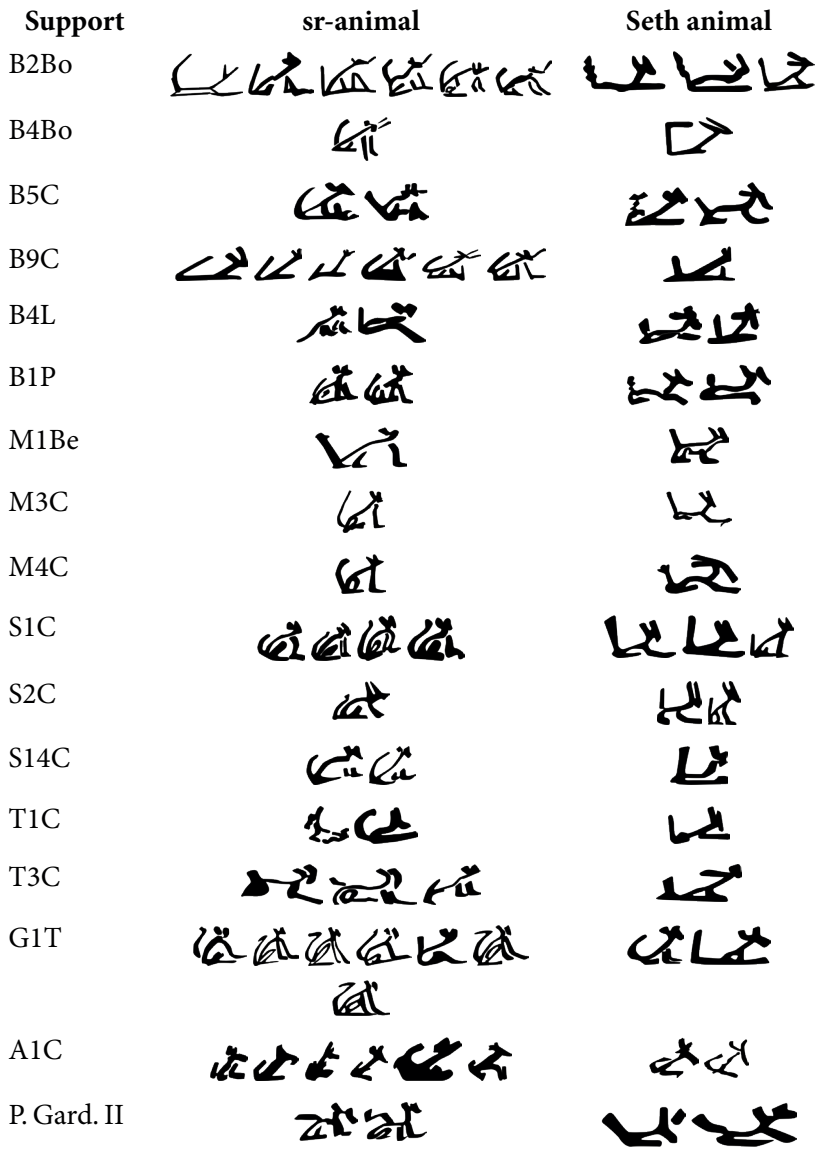


Fig. 12. The hieratograms of the *sr*-animal and the Seth animal in the same supports of the *Coffin Texts*

113 Due to the cursive writing, it is often difficult to decide if  (E20) or  (E21) is the better fit.

114 For example in the shipwrecked sailor, P. Petersburg 1115, col. 31 (compare with the classifier of *nšn.ï* in col. 32). See Golénischeff 1913: 2, plate 2.

For A1C, there is little doubt that the *sr*-animal is Seth, as both animals are sufficiently similar. However, when one compares either S1C or G1T with the shape of the Seth animal in the same support, there are clear differences between the shapes of the hieratograms. For example, in S1C, the tail of the *sr*-animal curves forwards. For the Seth animal, the tail is straight upwards. The same is mostly true for G1T, where the tail of the *sr*-animal not only curves forward but curves backwards again at the tip. However, there is a straight-tailed animal under the *sr*-animals (), and a curved tail under the Seth animals () in G1T. Thus, some variety exists.

For the other primary animal, which clusters mostly in the top part of fig. 10, the suggestion by McDonald 2009: 368 that this represents a cat (or at least a feline) seems likely. Especially the hieratograms of S1C () and G1T () with the distinctive tail support this interpretation.[115] When the hieratogram from D1C () is added as well, this interpretation seems even more likely.[116] However, as the standard hieroglyph of the cat (E13) has the tail in an incorrect position, it would ideally require the addition of a class of with the tail curving towards the back, not the front, for example .[117] Even so, this would constitute a potential over-generalization of the hieratograms of the *sr*-animal in the *Coffin Texts,* which can be argued to be a feline animal. For example, the technically represents a single front and rear leg variant of the cat, whereas the nicest examples from S1C and G1T prefer to have two front legs.

In Deir el-Bersha a variant of the *sr*-animal occurs that did not cluster as expected. These are the animals with strokes on the nose, for example: (no. 37), (no. 52) or (no. 57).[118] These variants with strokes were added randomly by the scribe(s) to the supports while using variants without strokes as well. Thus these variants do not represent a pattern in any of the supports. It is most likely that the strokes on the nose intended to 'disarm' the sign.[119] This does pose the question of what animal is used in these cases. In Deir el-Bersha, there is no clear preference for either Seth[120] or a feline, with most supports from Deir el-Bersha having both the feline and Seth type. When the seated shape of most of these hieratograms with strokes on the nose are compared,

115 Based on the tail of the animal, it was suggested to me that it could be a monkey as well, but based on the ears and leg position I find that unlikely.

116 Although this hieratogram seems to be closer to a lion(es) than a cat to me, therefore the description of the animal as a feline.

117 See Sign TSL_1_2446_01 https://thotsignlist.org/mysign?id=2446 (accessed: 17.09.2024), in: *Thot Sign List.*

118 All the hieratograms in this corpus with arguably one or two strokes on the nose are: (20), (21), (22)?, (23), (29), (30), (35), (37), (42)?, (44), (51), (52), (53), (54), (56)?, (57), (62) and (63).

119 As the Sethian animal represents disorder and chaos, one could expect the sign to be considered dangerous and to be made harmless by the addition of a stroke. However, it is remarkable that most of the Deir el-Bersha attestations occur in the *Coffin Texts* spells located on the bottom of the coffins.

120 The stroke(s) on the nose are not attested for any cursive hieroglyphs which are without a doubt used for Seth.

they mostly fall on the feline side. However, the disarming strokes make more sense in the context of Seth, rather than a feline.[121] Thus, if this should be taken as a form of the  (E202A) type of sign, or a feline variant can be discussed.

Then there are some hieratograms that do not clearly fall within the Seth or seated feline group of shapes. For example, B16C has two *sr*-animals  and  (no. 64–65). Together with a single attestation from B4L  (no. 39), these represent standing animals with their tail down. This could be represented by a jackal  (E17), or at least a dog. As McDonald 2009: 368 points out, however, the jackal is slightly different in B16C. Still, a canine would be a decent fit.[122] In the same vein, one could argue that this is still a feline animal, for example  (E90).[123]

Then there is a lying down animal that curves the tail forwards:  (no. 80–82),  (no. 92).[124] These signs would most likely be sufficiently represented by a feline as well, specifically the recumbent lion  (E23). This can be supported by a case of in P. Gardiner 2, where there is less doubt of the sign:  [125] in the lemma *i³r.w* (rushes). Alternative interpretations are possible as well, as the in this case has the head a lot lower, and does not have the unusual bends in the tail.[126]

A final variant of the *sr*-animal to be discussed is most likely a corruption due to how the hieratogram is created. This is most clearly visible in T1C:  (no. 90), where the *sr*-animal is represented by what should be considered the newborn bubalis antelope  (E9).[127] This is not the only *sr*-animal with one ear, see for example  (no. 41) and  (no. 55), but  represents the most extreme case in the *Coffin Texts*. As the intentional connection between the antelope and *sr* is unlikely, the variation seems to occur through the script,[128] as in the Middle Kingdom the (E9) and  (E21) can be similar in cursive/hieratic scripts.[129]

The reinterpretation from the *sr*-animal to the likely comes from the way the head of the *sr*-animal is formed by the scribes. For Seth, the *sr*-animal and the antelope, the scribe would use two strokes to draw the head. It is the placement, curve and angle of the strokes which form the

121 Unless taken as the whiskers of a cat, but I find that a stretch.

122 McDonald 2009: 369, n. 32.

123 In the context of the Unicode hieroglyphic repertoire expansion, I was able to acceptably verify this sign for the Graeco-Roman period, see *Edfu* VIII: 93,6. However, it could be argued it is a lioness instead of a cat there.

124 Note that it could be argued in these cases that the animals are walking. Due to the horizontal lines at the tip of the legs the animals show, I preferred to consider the animals to be lying down.

125 *CT* III: 177,a (P. Gard. II,b).

126 But it has the tail coming from the back, and the forward curving front line of the head, so it is at least possible.

127 Sign TSL_1_2850 https://thotsignlist.org/mysign?id=2850 (accessed: 12.07.2023), in: *Thot Sign List*.

128 Likely due to an unclear precursor text, even though there is some variation from the (E9) in the original:  , see *CT* IV: 208,c (T1C).

129 See Möller 1909: 18, no. 143–144.

basis of the interpretation of the type of animal that is depicted. To form Seth, the two strokes start at roughly the same height, with the frontal stroke generally a bit longer than the back. Sometimes the frontal stroke curves at the bottom of the stroke towards the front. For the *sr*-animal, the two strokes start at the same height and are generally the same size. The frontal stroke can have a slight curve towards the back of the sign. The antelope differs from the Seth and *sr*-animal by having the strokes start at different heights, with the frontal stroke a lot lower than the back and often longer. This creates the suggestion of a brow with a single ear behind it. See fig. 13 below:

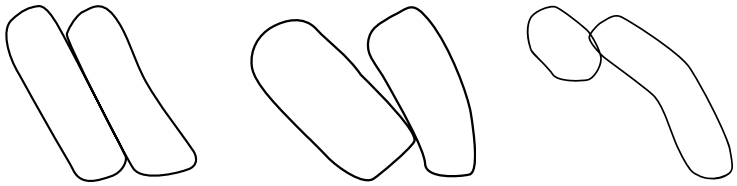


Fig. 13. Stroke pattern for the head of the Seth animal,[130] *sr*-animal[131] and antelope[132] in S1C

As the stroke patterns are similar between the three animals, a small error can quickly cause a change in interpretation if the body is poorly made. Especially in the case of  (E9) and  (E21), where the body—except for the tail—can be rather similar. Thus, the reinterpretation of the *sr*-animal in T1C by the scribe as an antelope is not unexpected.

The hieratograms of the *sr*-animal in the *Coffin Texts* make it clear that the standardization by de Buck into  (E27) is not only wrong, but it hides a wide variety of shapes that are used in this lemma as well.[133] Additionally, this standardisation can restrict the interpretation of the lemma *sr,* as the animal can represent different aspects of the lemma.[134] The giraffe is more related to 'foretell,' as it can see things earlier due to the spatial aspect of its long neck.[135] The proposed interpretations of the *sr*-animal in the *Coffin Texts* fall more under the aspect of 'announce', where the animal represents the audible aspect of the lemma. Seth is well connected with [NOISE], and the relation with sound can be applied to cats (meow), lions (roar) and dogs (bark) as well.

Based on the available hieratograms of the *sr*-animal in the *Coffin Texts*, it becomes clear that care should be taken with cursive texts in transcriptions. However, some level of standardization

130 *CT* II: 341,a.

131 *CT* I: 404,c.

132 *CT* II: 279,b.

133 The variation in depicted animals poses the question of why the scribe did not write a cursive form of the (E27) hieroglyph (as far as this even exists), instead of using a different animal. However, I consider this corpus too limited to be able to provide a satisfying answer to this question, due to limited sources and a too varied type of script. A broader study including other genres and types of cursive and hieratic writing might be beneficial, as there might be other signs that behave differently between hieroglyphic texts and cursive scripts.

134 See Cannuyer 2010: 604 for a summation of the function of the lemma.

135 McDonald 2012: 231.

would be needed for the border cases. Even if oversimplified, it would be recommended that any *Coffin Texts* transcription would replace the giraffe with either a Sethian animal or a feline (cat, lion). But any transcription choice should be made on a case-by-case basis only.[136]

Conclusions

Sethian signs represent a rare type of classification strategy in the *Coffin Texts*, as alternative strategies using other hieroglyphic signs are more popular with the scribes. Generally in the corpus, there is at most 10 % Sethian classification within the lemmata, with some slightly higher tendencies in Asyut. However, the number of lemmata that are attested with Sethian classifiers is low, with only 11 lemmata being attested with some type of Sethian sign. Even there, in general, the tendencies to use Sethian signs over non-Sethian signs are generally low and often reflect only the personal preferences of the scribe.

In the metaphorical semantic domain of Sethian signs, one can recognise the development of Seth away from the domains of [ILLNESS] and [PAIN], which is only primarily still attested in Deir el-Bersha, more towards the domains of [ANGER], [NOISE], [THUNDER] and [DISTURBANCE]. This is in line with the development of Seth towards becoming a god of storm, rather than chaos and disorder.

It is remarkable that in the *Coffin Texts* there are some Sethian signs which are specifically used as classifiers with some specific semantic groups. These include  (E244) and its classes for storm-related lemmata. The sign  is only used in the lemmata *nbw.tï* (the Ombite) and *ỉm.ï-nbw.t* (the one who is in Ombos). Third,  (C7) is only attested in connection with [ILLNESS] in *mr* and *mn* 'to be ill.' Thus, the scribes used certain Sethian signs only in very specific contexts.

In the case of the lemma *sr* (to announce, to foretell), it was shown that at least partially, in the *Coffin Texts*, the *sr*-animals could be better interpreted as a Seth animal, rather than the standard transcription by de Buck as a giraffe. However, a large section of the *sr*-animals would be better described as a cat or a feline: the exact shape of the *sr*-animal is varied among the different scribes and seems to reflect a personal preference in writing. This stresses that care needs to be taken during the process of transcription, as interesting details can be easily lost in transmission.

136 Note that I still consider the transcriptions of de Buck to be one of the most trustworthy transcriptions in Egyptology, but it shows the benefit of working with (images of) original material, rather than relying on transcriptions.

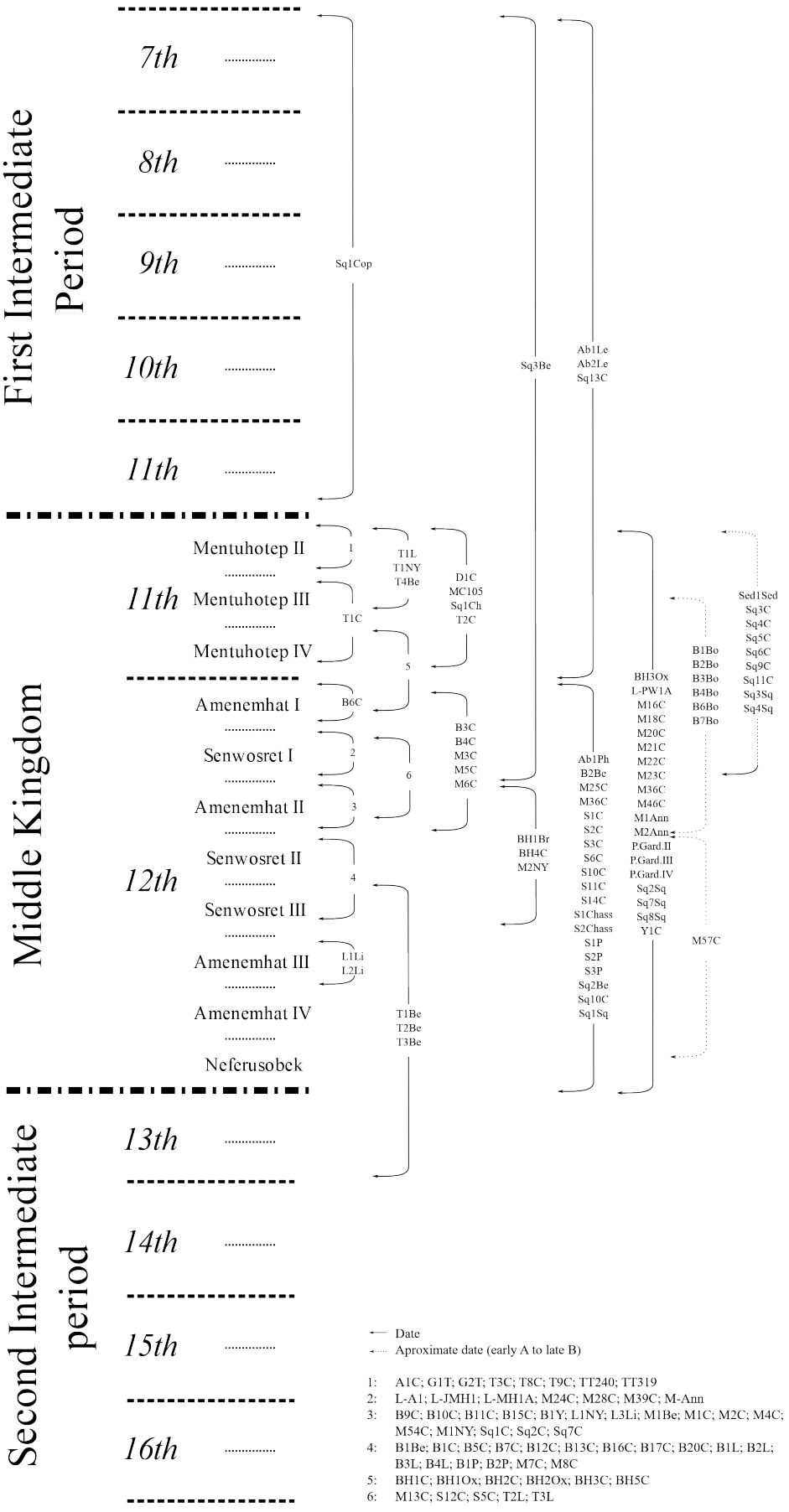


Fig. 14. The chronology of the *Coffin Texts* supports

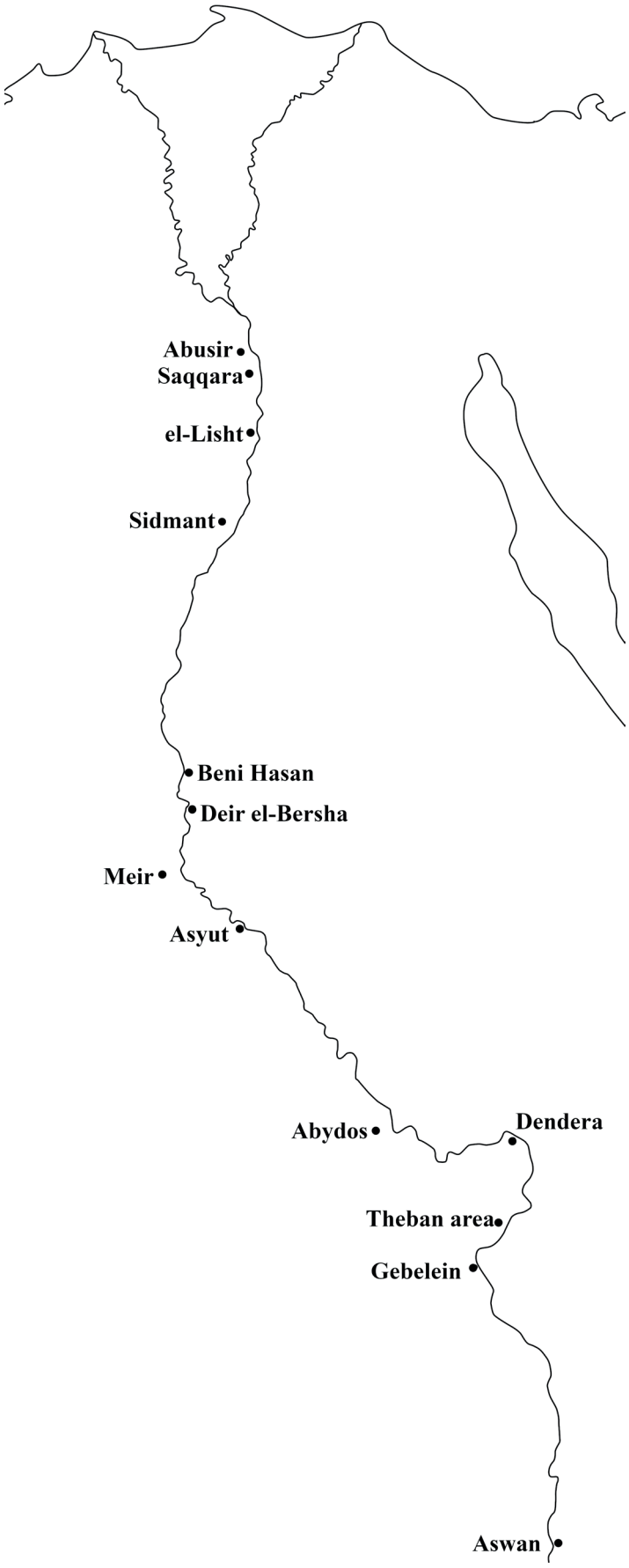


Fig. 15. A map of Egypt showing the regions discussed in this article

Tokens of the *sr*-animal in the *Coffin Texts*

	Token	Support	Location			Token	Support	Location
1		A1C	*CT* I: 321,d		43		B6C	*CT* I: 320,d
2		A1C	*CT* III: 320,g		44		B6C	*CT* IV: 75,g
3		A1C	*CT* III: 323,b		45		B6C	*CT* V: 367,h
4		A1C	*CT* VI: 263,c		46		B6C	*CT* VII: 401,b
5		A1C	*CT* VI: 264,l		47		B6C	*CT* VII: 428,b
6		A1C	*CT* VII: 133,e		48		B9C	*CT* V: 367,h
7		B1B0	*CT* I: 320,d		49		B9C	*CT* VI: 94,b
8		B1Bo	*CT* VI: 53,e		50		B9C	*CT* VII: 401,b
9		B1Bo	*CT* VI: 173,r		51		B9C	*CT* VII: 402
10		B1Bo	*CT* VI: 308,k		52		B9C	*CT* VII: 430,b
11		B1Bo	*CT* VII: 314,a		53		B9C	*CT* VII: 442,c
12		B1Bo	*CT* VII: 401,b		54		B10C	*CT* I: 191,e
13		B1Bo	*CT* VII: 428,b		55		B12C	*CT* I: 140,g
14		B1Bo	*CT* VII: 430,b		56		B12C	*CT* I: 191,e
15		B1Bo	*CT* VII: 442,c		57		B12C	*CT* I: 211,a
16		B1P	*CT* I: 320,d		58		B12C	*CT* I: 229,d
17		B1P	*CT* I: 404,c		59		B12C	*CT* VII: 401,b
18		B2Bo	*CT* IV: 75,g		60		B12C	*CT* VII: 402,b
19		B2Bo	*CT* VII: 314,a		61		B13C	*CT* I: 140,g
20		B2Bo	*CT* VII: 401,b		62		B13C	*CT* I: 191,e
21		B2Bo	*CT* VII: 402,b		63		B13C	*CT* I: 211,a
22		B2Bo	*CT* VII: 428,b		64		B16C	*CT* I: 211,a
23		B2Bo	*CT* VII: 430,b		65		B16C	*CT* I: 229,d
24		B3Bo	*CT* I: 140,g		66		B17C	*CT* I: 229,d
25		B3Bo	*CT* VI: 236,i		67		BH2C	*CT* I: 321,d
26		B3Bo	*CT* VI: 253,n		68		D1C	*CT* IV: 75,g
27		B3Bo	*CT* VI: 254,a		69		G1T	*CT* I: 321,d

	Token	Support	Location			Token	Support	Location
28		B3C	*CT* VII: 314,a		70		G1T	*CT* III: 320,g
29		B3C	*CT* VII: 428,b		71		G1T	*CT* III: 323,b
30		B3C	*CT* VII: 430,b		72		G1T	*CT* VI: 263,c
31		B3C	*CT* VII: 442,c		73		G1T	*CT* VI: 264,l
32		B3L	*CT* V: 383,a		74		G1T	*CT* VII: 140,o
33		B3L	*CT* VII: 401,b		75		G1T	*CT* VII: 140,p
34		B3L	*CT* VII: 402,b		76		M1Be	*CT* I: 321,d
35		B3L	*CT* VII: 428,b		77		M3C	*CT* I: 320,d
36		B3L	*CT* VII: 430,b		78		M4C	*CT* I: 321,d
37		B4Bo	*CT* VII: 314,a		79		M20C	*CT* I: 320,d
38		B4C	*CT* VII: 442,c		80		P. Gard. II	*CT* VII: 197,b
39		B4L	*CT* I: 140,g		81		P. Gard. II	*CT* VII: 248,l
40		B4L	*CT* VII: 314,a		82		P. Gard. III	*CT* VII: 152,c
41		B5C	*CT* V: 367,h		83		S1C	*CT* VI: 48,c
42		B5C	*CT* VII: 511,e		84		S1C	*CT* I: 320,d
85		S1C	*CT* I: 404,c					
86		S1C	*CT* VI: 53,e					
87		S2C	*CT* VI: 200,b					
88		S14C	*CT* I: 320,d					
89		S14C	*CT* VI: 96,d					
90		T1C	*CT* I: 65,c					
91		T1C	*CT* V: 176,l					
92		T3C	*CT* I: 320,d					
93		T3C	*CT* I: 404,c					
94		T3C	*CT* III: 320,g					
95		TT319	*CT* VI: 277,f					

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