

## INSIGHT INTO THE TRANSMISSION OF ANCIENT MAGICAL SIGNS: THREE TEXTUAL ARTEFACTS FROM PERGAMON\*

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### ABSTRACT

The paper is focused on a new discovery of a rare repetitive sequence of ancient magical signs inscribed on three stone artefacts from Pergamon. The results of a new analysis lead to a re-interpretation of the artefacts and contribute in two ways to the research in late antique ritual practice: They enrich our fragmentary knowledge of the writing practice of magical signs and provide new information about the transmission of texts inscribed on artefacts. The paper is structured as follows: I will first provide a short overview of the occurrence and application of magical signs in antiquity. This will be followed by a summary of the earlier description and interpretation of the three textual stone artefacts. Based especially on the analysis of the sequences of magical signs these interpretations will then be refuted step by step and re-evaluated, leading to a new reconstruction of the entire inscribing process. Subsequently alternative interpretations of the stone artefacts will be outlined in brief. The final conclusion includes a discussion of present interpretations of ancient magical signs.

**KEYWORDS:** MAGICAL SIGNS, MAGICAL ARTEFACT, PERGAMON, *CHARACTÈRES*, LATE ANTIQUITY.

### OJEADA A LA TRANSMISIÓN DE LOS SIGNOS MÁGICOS ANTIGUOS: TRES OBJETOS RITUALES CON TEXTO PROCEDENTES DE PÉRGAMO

### RESUMEN

El artículo se centra en un nuevo descubrimiento de una extraña secuencia repetitiva de signos mágicos antiguos inscritos en tres objetos de piedra procedentes de Pérgamo. Los resultados de un nuevo análisis permiten reinterpretar los objetos y contribuyen de dos formas a la investigación sobre la práctica ritual tardo-antigua: 1) enriquecen nuestro conocimiento fragmentario de la práctica de escribir signos mágicos y 2) proporcionan nueva información sobre la transmisión de textos inscritos en objetos rituales. El trabajo se estructura así: Primero ofreceré una breve panorámica de la concurrencia y aplicación de signos mágicos en la Antigüedad. Seguirá un resumen de la descripción e interpretación anterior de los tres objetos de piedra con textos. Partiendo en particular del análisis de las secuencias de signos mágicos, se refutarán y reevaluarán paso a paso estas interpretaciones, para proponer una nueva reconstrucción de todo el proceso de inscripción. A continuación se delinearán brevemente interpretaciones alternativas de los objetos de piedra. La conclusión final incluye una discusión de las interpretaciones actuales de signos mágicos antiguos.

**PALABRAS CLAVE:** SIGNOS MÁGICOS, OBJETOS MÁGICOS, PÉRGAMO, *CHARACTÈRES*, ANTIGÜEDAD TARDÍA.

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### 1. *Magical Signs*

The term “magical signs”<sup>1</sup> comprises a large group of formally diverse signs that were used in ancient ritual practice<sup>2</sup>. Their application is attested throughout the Roman Empire on artefacts<sup>3</sup>, in ritual handbooks<sup>4</sup>, and in literary sources<sup>5</sup>. The earliest attested magical signs are found on a Greek curse tablet from the Athenian Agora<sup>6</sup>, on two lamellae from *Segontium*<sup>7</sup> and Billington<sup>8</sup> in Great Britain and on another lamella from *Augustoritum* La Vedrenne<sup>9</sup> in France. These artefacts are dated to the late first and early second century CE. Shortly afterwards magical signs are attested on papyri as well as on gems<sup>10</sup>. In antiquity these signs were predominantly termed *χαρακτῆρες*, but also *τὸ σημεῖον* and *τὸ ὄνομα* in individual cases. The main sources

- 1 A comprehensive study of these signs has been a desideratum for almost 100 years (see e.g. EITREM, 1927, p. 170, NOCK, 1929, p. 233; BRASHEAR, 1995, p. 3443; JORDAN, KOTANSKY, 1996, p. 164, note a, b: 1-13; GRAF, 1996, p. 260, note 13. The German Research Foundation will fund the project “Handbook and analysis of ancient magic signs from their beginning to the seventh century CE”, conducted by the author, for a three year period. The project will be located at the University of Erfurt and start in January 2017.
- 2 The application of magical signs is a widespread phenomenon known from antiquity and is attested to the present. See for a first-time classification DZWIZA, 2013, pp. 115-117; For an example of their application in 20th cent. Estonian practice see KÕIVA, 1998, p. 39: “Drawing magic signs before incantation, during or after it in order to conclude and confirm the message, to put a stop to the progress of a disease or finish a ritual has been generic and common even in the 20th century. Magical signs were made during the ritual and while reading incantations. However, a larger number and greater variety of signs are connected with written spells, first and foremost letter formulae, legend incantations, and words based on number magic – this aspect will be dealt with at greater length under performance customs.”
- 3 See e.g. defixiones, gemstones, papyrus and parchment amulets, nails.
- 4 For detailed information and an analysis see DZWIZA, 2013, pp. 80-243.
- 5 See e.g. Iamblichus, III.14; Julianus imperator, *orat.* VII; *The First Book of Jeu*.
- 6 Ed. pr. ELDERKIN, 1937, pp. 389-395, no. III; JORDAN, 1980, pp. 62-65; GAGER, 1992, pp. 180-183, no. 84. Inv. no. IL 493. SEG 30 326.
- 7 The original is kept in storage in the local town Council of Cardiff, a replica is on display in the National Museum of Wales (Cardiff), without inv. number (see KOTANSKY, 1994, pp. 3-12, no. 2). For the latest publication of the lamella see SERMON, 2011.
- 8 British Museum, ref. 2003.T93 (2004). SEG 56 1181.
- 9 KOTANSKY, 1994, pp. 44-45, no. 10. SEG 33 824. The lamella is kept in the Musée de Limoges without inv. number.
- 10 A few “magical” gems depicting magical signs are indeed dated to the late first century CE, but here two problems occur: 1) the signs on these early gems are often engraved on the bottom side as sole decoration of this side and in a much less elaborate quality as the rest of the engraving. It seems likely that the signs were engraved subsequently. See e.g. Berlin, Ägyptisches Museum, inv. no. 9816; inv.no. 11927. 2) For the dating of magical gems –as well as for their classification as “magical”- hardly any clear criteria were outlined so far.

for this term are the Greek instruction manuals<sup>11</sup>, complemented by a few literary sources<sup>12</sup> and even lesser inscriptions on artefacts<sup>13</sup>. The term *χαρακτήρες* in context with these signs is attested for the first time in a ritual context related to an individual sign in a ritual instruction dated to the late first / early second century CE<sup>14</sup>.

In Greek sources these signs usually did not compose legible words<sup>15</sup>, in opposite to Coptic sources where they were more frequently used to write the names of angels or other divine beings<sup>16</sup>, or even for the abbreviation of Jesus Christ<sup>17</sup>. Attestations of repetitive sequences of magical signs are very rare<sup>18</sup>.

Very few papers have been published in which magical signs are discussed in various lengths, but without any comprehensive research of the diverse sources as a fundament, only based on the authors' individual subjective experience. Still, a variety of theories concerning their origin exists<sup>19</sup>, as well as interpretations of their

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<sup>11</sup> See DZWIZA, 2013, pp. 122-124. Note that this analysis is focused on instructions to manufacture inscribed artefacts. There are additional mentionings of the term *χαρακτήρες* in contexts without inscribed artefacts, see e.g. PMich inv. 534, a cryptographic papyrus kept in Ann Arbor, University of Michigan = PGM LVII, 27, 28.

<sup>12</sup> See e.g. Iamblichus, III.14; Julianus imperator, *orat.* VII, §11, 216c; Salustius, *Of Gods and of the World*, 15, §2; Augustin, *De doctrina Christiana* 2, 24, 37; See also *Pistis Sophia* I, 62 and the *First Book of Jeu* (numerous occurrences).

<sup>13</sup> E.g. P.IFAO III 50, see DANIEL, MALTOMINI, 1990, no. 19.

<sup>14</sup> P. Mich. inv. 534, a fragment of a cryptographic papyrus roll kept in the Michigan collection, H: 29 cm, W: 21 cm, s. PREISENDANZ (1974)2, 184-186, PGM LVII, purchased in Egypt by B.P. GRENPELL and F.W. KELSEY in March-April 1920. The date, though, needs to be considered with care, for it is based on Augustan scraps that were attached to the papyrus.

<sup>15</sup> A rare exception can be found on a gem in the Egyptian Museum in Berlin, inv. no. 11943, and on a parallel in the Kassel collection, without inv.no (in preparation for publication by the author).

<sup>16</sup> See e.g. Berlin inv. no. 8503, P. Heidelberg Inv. Kopt. 679, London Oriental Manuscript 6796, P. Heidelberg Inv. Kopt. 685 = *The Magical Book of Mary and the Angels*.

<sup>17</sup> See e.g. London Oriental Manuscript 6795, 6796.

<sup>18</sup> See NÉMETH, 2011, pp. 95-110. A sequence on two curse tablets from Apameia was published by VAN RENGEM, 1984, pp. 213-238. See also 1) P. Mil. Vogl. inv. 1251, MALTOMINI, 1979, pp. 94-112, pl. VII-VIII. DANIEL, MALTOMINI, 1992, pp. 253-262. 2) P. Mil. Vogl. 16, PERNIGOTTI, 1979, pp. 19-53. PERNIGOTTI, 1993, pp. 93-125.

<sup>19</sup> E.g. Egyptian origin or strong influence of the hieroglyphs: WÜNSCH, 1905, pp. 31-32, HOPFNER, 1921, p. 222 (follows Wünsch), PIEPER, 1934, p. 126, AGRELL, 1936, the entire monograph is focused on ascribing the magical signs from the bronze disc from the so-called „Pergamon-kit“ to hieroglyphs, FRANKFURTER, 1994, p. 208, SKEMER, 2006, p. 24; Jewish invention: WORRELL, 1923, p. 381 note 4, BARB, 1966, p. 303; Greek origin: MORGAN, 1983, p. 46 note 14 with reference to KROLL,

meanings<sup>20</sup>. An ongoing cataloguing and analysing project of the magical signs resulted so far in the documentation of more than 1000 different types which can be classified into nine main groups based on formal criteria<sup>21</sup>.

## 2. *The Pergamon objects*

In 1899 a group of six metal and three stone artefacts was discovered in the “Unterstadt” of Pergamon, with no more information concerning the find spot provided<sup>22</sup>. In 1905 Richard Wünsch published these objects plus an additional tenth one as “Zaubergerät aus Pergamon” (Pergamon-kit) and interpreted them as a divinatory apparatus.<sup>23</sup> Based on palaeographical and iconographical arguments he dated the group to the first half of the third century CE. Today nine of the ten objects are kept in the Antikensammlung Berlin, one is lost<sup>24</sup>.

Since Wünsch’s publication the apparatus theory remained untouched for almost 100 years, until a serious doubt was expressed<sup>25</sup>. An in depth analysis of each object conducted by the author, including microscopic photographs and material analysis, proved that the individual objects were indeed much more likely to be used as individual instruments serving different functions than constituting an apparatus<sup>26</sup>.

## 3. *The three stone artefacts from Pergamon*

The three stones vary in size between 8 to 11 cm in length and 4.5 to 5.55 cm in width. Each of them is about 1 cm thick. The smallest artefact is flat on one side but concave on the other side. The two larger artefacts are flat on both sides. All three stones resemble slices of stone axes in their shape. Each artefact is inscribed on both sides with different designs for each side. Both layouts are composed of

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1972, BOHAK, 2008, p. 272; Origin in Cuneiform: KING, 1887, p. 306, WINKLER, 1930, p. 214, BARB, 1964, p. 14 note 81, follows WINKLER, 1930; Origin in Southern Arabic: GROHMANN, 1933, p. 314; Origin in Samaritan: GASTER, 1971, reprint of 1928, p. 607.

<sup>20</sup> See below note 40.

<sup>21</sup> DZWIZA, 2012, pp. 307-308. DZWIZA, 2013, pp. 115-117.

<sup>22</sup> *Mitteilungen des Deutschen archäologischen Instituts, athenische Abteilung*, 1899, pp. 199-200, no. 63.

<sup>23</sup> WÜNSCH, 1905. The tenth object is a ring, but since there are two rings among the objects and Wünsch does not mention which one of them was the additional one, it is not possible to determine which one belonged to the original group of nine objects.

<sup>24</sup> One of the two copper plates is lost.

<sup>25</sup> GORDON, 2002, pp. 188-198.

<sup>26</sup> See for a short overview of the “Pergamon kit” DZWIZA, 2011, pp. 239-241; 542-543.

a combination of text, magical signs and geometrical features. The stones were mentioned the first time in 1899:

Sodann drei schwarze, glatt polirte, einigermaßen ovale Steine, jeder mit Zaubertexten auf beiden Seiten<sup>27</sup>.

Wünsch later describes the stones in more detail but focuses in his transcription and discussion on the smallest one. He provides drawings of a cross-section of the small stone (labelled #1 from here onward)<sup>28</sup>, the smaller side of the largest stone (#2)<sup>29</sup>, the smaller side of the second largest stone (#3)<sup>30</sup>, and cross-sections of the last two. His main descriptions and interpretations were the following:

Mit ihren ebenen Flächen passen sie so aufeinander, daß sich mir die Vermutung aufdrängte, sie seien durch Zersägen aus einem, ursprünglich einheitlichen Stein hergestellt<sup>31</sup>.

=> All three artefacts belong to the same stone.

Die Inschriften der drei oberen Seiten sind dieselben, ebenso stimmen die Texte der unteren Seiten miteinander überein<sup>32</sup>.

=> The inscriptions on all three top sides are identical, and so are the inscriptions of the bottom sides of the stones.

Wie kleine Abweichungen lehren, sind sie von einem gemeinsamen Original, nicht etwa ein Stein vom anderen abgeschrieben<sup>33</sup>.

=> All three stones were copied from a shared original, not one stone from another.

That he erred in all three cases will be shown in this paper. Neither are the three stone slices of one and the same stone, nor are the inscriptions on all three stones identical, and there is evidence that they have not been copied from one lost original, but that stone #1 served as template for stone #3 which –at least in parts- served as template for stone #2.

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<sup>27</sup> See note 22 above.

<sup>28</sup> WÜNSCH, 1905, no. 8.

<sup>29</sup> WÜNSCH, 1905, no. 10.

<sup>30</sup> WÜNSCH, 1905, no. 9.

<sup>31</sup> WÜNSCH, 1905, p. 16. In his following sentence he refers to a colleague, Dr. Zahn, who thought that all three stones were of different material.

<sup>32</sup> WÜNSCH, 1905, p. 16.

<sup>33</sup> WÜNSCH, 1905, p. 16.

#### 4. Description of the stones

The basic information concerning the three stones is provided in table no. 1. The specification of the stones as well as their Mohs scale have not been determined yet. See also images nos. 1-5.

stone	inv. no.	weight	size	material	reference Wünsch
#1	8612.3	69.2 g	~ 8.2 x 4.5 x 1 cm	black stone with green speckles, completely polished	object no. 10
#2	8612.1	146.3 g	~ 11 x 5.55 x 1,3 cm	grey stone, smoothed on the upper and the bottom side, but not on the edge	object no. 8
#3	8612.2	104.4 g	~ 11 x 5.5 x 1 cm	same as #2	object no. 9

Table 1: Description of the three stone artefacts

#### 5. Refutation of Wünsch's statements

##### 5.1 Do all three artefacts belong to the same stone?

The three artefacts resemble in their shape slices of stone axes<sup>34</sup>. The smallest stone (#1) is of a black shiny material with green inclusions, completely polished and inscribed most carefully. It is the only stone with a perforation for a thread or strip. The two larger stones (#2 and #3) are made of a different material, grey, more dense, less shiny and without any inclusions. The surfaces were smoothed before the inscriptions were incised, but the edges are slightly porous. These two grey stones originally belonged to the same stone axe which was cut in two, eventually even three slices<sup>35</sup>. The examination brought to light that the three inscribed artefacts are made from two different kinds of stones.

5.2 Are the inscriptions on all three top sides as well as on the three bottom sides identical?

To begin with, the inscriptions were placed on alternating sides (see images nos. 1-5). The white chalk was probably used by Wünsch to facilitate the reading of the letters and

<sup>34</sup> The inscription of stone axes and their application in ritual contexts is attested several times, see e.g. Berlin Inv. Nr. 30900 and a compilation of axes in QUAST, 2011.

<sup>35</sup> A potential third slice is not preserved.

stone #1, bottom side



image no. 1b

© SMB/Antikensammlung, Foto: Johannes Laurentius

stone #1, top side



image no. 1a

© SMB/Antikensammlung, Foto: Johannes Laurentius

image no 2b



stone #2, bottom side

© SIB/Archäensammlung, Foto: Johannes Laurentius.

image no 2a



stone #2, top side

© SIB/Archäensammlung, Foto: Johannes Laurentius.



stone #3, bottom side

image no 3b



© SHB/Antikensammlung, Foto: Johannes Laurentius.

stone #3, top side

image no 3a



© SHB/Antikensammlung, Foto: Johannes Laurentius.

stone #2, bottom side



stone #1, bottom side



stone #3, top side



© SMB/Antikensammlung, Foto: Ingrid Geske.

image no. 4

stone #2, top side



stone #1, top side



stone #3, bottom side



image no. 5

© SMB/Antikensammlung, Foto: Ingrid Geske.

signs). This means that the top side<sup>36</sup> inscription of the small stone #1 is found on the top side of stone #2 but on the bottom side of stone #3 (see image n° 5). The two additions with the image number will help readers, I think. Accordingly the bottom side inscription of the small stone is found on the bottom of stone #2 but on the top of stone #3 (see image n° 4).

The two larger grey stones were incised with almost the same texts and magical signs as the small stone depicts, but in a less careful and less practiced hand. “Less careful” concerns the realization of the design, whereas the lack of practice is related to the quality of the letters<sup>37</sup>. In addition some minor differences within the texts appear but these could have happened accidentally. The design of both decoration patterns —top and bottom side- was carried out very neatly on stone #1. For example on its bottom side an inscription runs along the inside of an enclosing ring. The circular inscription is closed on stone #1, but on stones #2 and #3 this circle of letters shows a clear gap between the initial and the final letter. The engraver did not plan and distribute the letters well enough. Another example for the differing quality of the engravings can be observed on the same side below the rows of magical signs. On stone #1 two clearly separated columns of four and three names each are inscribed. On the two grey stones these names are inscribed, too, but the separation into two individual columns is missing. The final letters of the left names touch the first letters of the right names. These are slight differences in the *design*, a noticeable difference between the *inscriptions* can be observed on stone #3. The bottom part of the composition —παρθα φωζα- is entirely missing. This omission could either have happened accidentally, was conducted on purpose or the inscription was never finished. The last interpretation is rather unlikely because, as will be shown, stone #3 seems to have served as template for stone #2. The major difference though can be observed in the deliberately altered sequence of magical signs on the two grey stones compared to the sequence on stone #1. This alteration has not been recognized so far and will be introduced and discussed in the following.

### 5.2.1 The sequences of magical signs on the three artefacts

Wünsch mentions the magical signs on the stones but he does neither observe nor discuss them in more detail<sup>38</sup>. He does, however, provide a drawing but only from

<sup>36</sup> The labeling of a “top side” and a “bottom side” are used here for reasons of clarity and comprehensibility. “Top side“ here describes the side with the smaller surface, “bottom side“ the one with the larger surface; See images nos. 1-3 below.

<sup>37</sup> To a certain degree this could be due to varying Mohs scales which I doubt, for the hardness of a stone (at least in our case here) does not have any influence of the quality of the execution of the layout.

<sup>38</sup> Wünsch discusses “magical signs“ in general, but he does not look at the signs on the stones closely, otherwise he would have noticed the variations.

stone #3. Due to his statement that the inscriptions of all three stones are identical, one gets the impression that the magical signs were also identical, which is not the case. On stone #1 the sequence of signs comprises 23 signs in four rows (7, 6, 5, 5). On stones #2 and #3 the same sequence served as a basis but it was altered in two instances: The first insertion takes place between sign 13 and 14, where the engraver adds three new signs. The second insertion was made between sign 18 and 19 of the original sequence –here one new sign was added. Stones #2 and #3 depict the same altered sequence of signs, but the signs are distributed differently over the individual lines. On stone #2 we have four rows with 9, 9, 6 and 3 signs. Stone #3 depicts four rows with 7, 7, 7, and 6 signs.

The following drawings illustrate the layout and sequence of the magical signs on stone #1 and the insertions of additional signs on stones #2 and #3. The boxes mark the location of the inserted signs. Some of the letters and signs in the photographs appear white which is due to a modern chalking of the inscriptions by Wunsch.

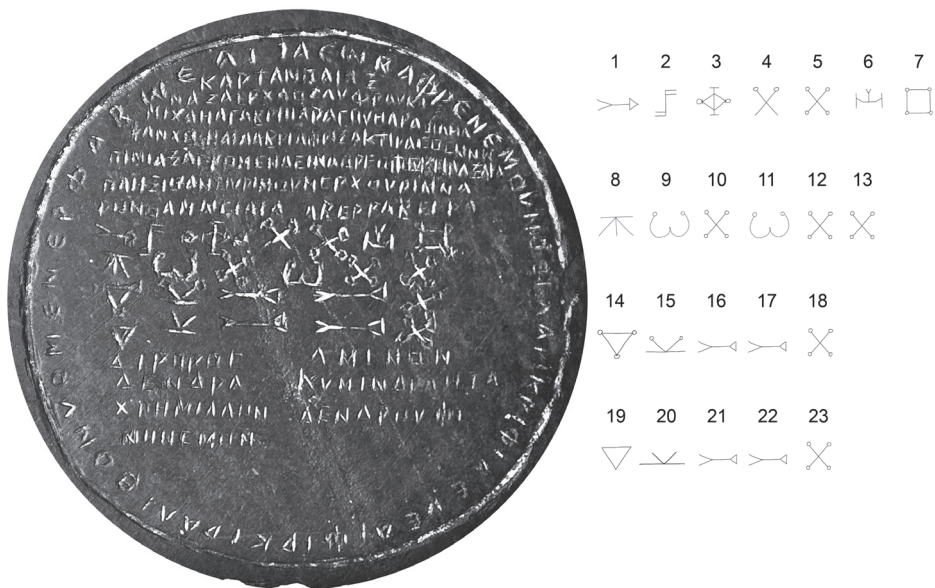


Image nos. 6a and 6b: Stone #1: Four rows with magical signs: 7|6|5|5 = 23 signs (Drawing)  
 © SMB/Antikensammlung, Photograph: Johannes Laurentius.

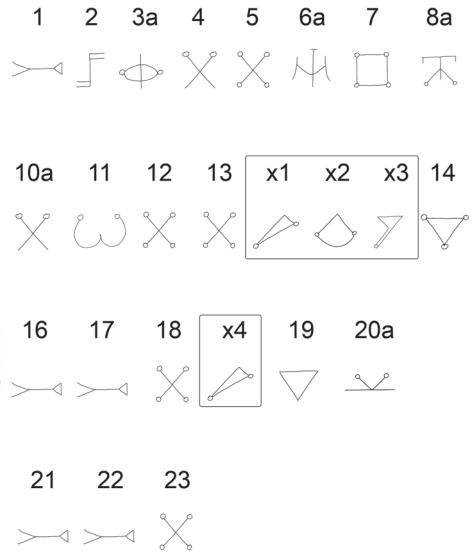


Image nos. 7a + 7b: Stone #2: Four rows with magical signs: 9|9|6|3 = 27 signs (Drawing - the added signs are framed). © SMB/Antikensammlung, Photograph: Johannes Laurentius.

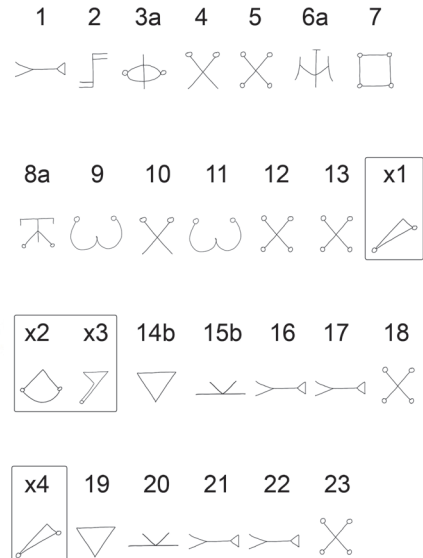


Image nos. 8a + 8b: Stone #3: Four rows with magical signs: 7|7|7|6 = 27 signs (Drawing - the added signs are framed). © SMB/Antikensammlung, Photograph: Johannes Laurentius.

Besides the modification of the sequence and the number of signs in each row, some of the signs appearing on all three stones show slight modifications of their designs like additional little rings or their omission, the omission of lines or, as is the case with sign no. 6 on stone #1, instead of the letter “Y” written on top of the letter “M” now a “T” is written intertwined with the “M” on the two other stones. Altogether seven signs of stone #1 were modified on stones #2 and #3: 3, 6, 8, 10, 14, 15, and 20. Noticeable is that three of the seven modified signs appear in identical shape on stones #2 and #3 (3a, 6a, 8a), two further modified signs were incised only on stone #2 (10a, 20a) while stone #3 depicts in these cases an identical version of the signs of stone #1, and the remaining two altered signs (14b, 15b) can be found on stone #3 while stone #2 shows the same signs as were used for stone #1. So while each of the grey stones depicts altogether five –but not the same five- altered signs compared to stone #1, both also show each two signs –again not the same two signs- which are identical with the signs on stone #1 but altered compared to the remaining stone.

The following table 2 provides an overview of the mutual appearances of the modified signs.

stone #	number of signs						
#1	3	6	8	10	20	14	15
#2	3a	6a	8a	10a	20a	14	15
#3	3a	6a	8a	10	20	14b	15b

Table 2: Mutual appearances of the modified signs

It can thus be concluded that, while the underlying decoration pattern of all three stones is identical, their inscriptions are not. Besides the omission of  $\pi\alpha\iota\phi\theta\alpha\ \varphi\omega\zeta\alpha$  on stone #3 the inscriptions differ in the sequence of the magical signs as well as in slight modifications of seven signs.

### 5.3 Were all three slices copied from one lost original?

The previous results lead to point three and Wunsch’s interpretation that the inscriptions of all three stones were copied from one lost original and not from one another. A comparison of the inscriptions shows significant differences between stone #1 on one side and the two stones #2 and #3 on the other side.

The small stone #1 displays a precise execution of letters, signs and spacing between individual passages as well as an elaborate execution of the design. It was also inscribed with a shorter sequence of magical signs. As opposed to this the inscrip-

tions and layouts of the two grey stones were far more sloppily executed. They also depict an altered sequence of magical signs which is based on the sequence of stone #1.

A brief palaeographical examination shows that there are variations in the lettering as well. For example the letter  $\phi$  in  $\beta\alpha\phi\rho\epsilon\nu\epsilon\mu\omicron\nu\nu$  is clearly round on the small stone #1, but square and rather awkward on the grey stones. Other examples can be found in line four on the bottom side of #3 and the top side of #2, compared to line 4 on the top side of #1 (see images nos. 4 and 5). The two  $\phi$  in  $\pi\alpha\iota\phi\theta\alpha\ \phi\omega\zeta\alpha$  are also round on the small stone but square on stone #2. On stone #3 these words are missing. Furthermore the engraving of magical signs on stone #1 was conducted more elaborately and with fewer individual strokes per letter. Also the individual strokes needed for one sign are well connected almost constituting a continuous line, none of the small strokes “stick out”. In contrast the signs on stone #2 and #3 were engraved in an inferior quality and with more strokes which do not always connect well. Overall it can be observed that the strokes on stone #1 were generally engraved in a higher quality, when more than one stroke was needed to engrave e.g. a curve as part of a letter or sign, these lines are regular in size and depths and more precisely connected with each other.

These arguments indicate that the stones were very likely inscribed by two different hands and that stones #2 and #3 were copied from stone #1.

There is another strong argument against the theory that all three stones were copied from one lost original, but instead showing clearly that the magical signs of the two grey stones were copied from one other. This interesting feature turned up while I was copying the magical signs of stone #2 on paper and accidentally shifted out of the line, which resulted in the copy of a wrong sign. When taking a closer look at the two grey stones I recognized that the engraver of stone #2 made the exact same mistake as I did. What happened is that on stone #3 the first sign in the third row is different from the first sign in the third row of stone #2 simply because on stone #2 the line breaks earlier (compare the drawings in images no. 6-8). So when I began to copy the third line of magical signs of stone #2 I coincidentally looked at stone #3 instead of stone #2 and copied the swing-like looking sign (illustrated below in images no. 9 a and 9b). A close examination of stone #2 shows that at the same spot –the beginning of line 3- the engraver also incised this swing-like sign but erased it and instead incised the correct sign. Traces of the bow of the swing are still visible. This is the strongest of all arguments for the theory that stone #2 –at least the sequence of magical signs- was copied from stone #3.

These results make it very likely that the three stones were not copied from one lost original. Instead I would suggest that the small stone #1 was inscribed by hand 1 and served as template for the grey stones #2 and #3, which were both inscribed by hand 2.



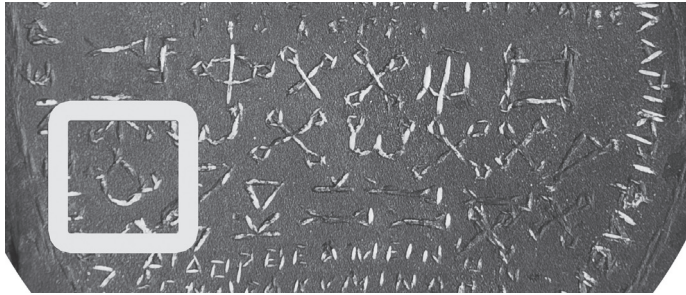


Image no. 9a: Detail of the engraving of stone #3  
© SMB/Antikensammlung, Photograph: Johannes Laurentius

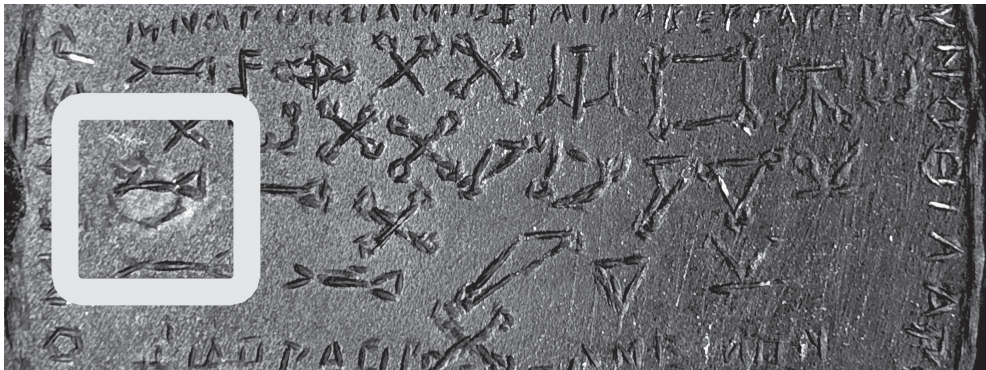


Image no. 9b: Detail of the engraving of stone #2  
© SMB/Antikensammlung, Photograph: Johannes Laurentius

#### 6. *Alternative interpretations of the stone artefacts*

Apart from the theory that the small stone served as template for stones #2 and #3, and that at least the sequence of magical signs from stone #3 served as template for stone #2, two other possible explanations for the present observations shall be mentioned: 1) the master-apprentice-constellation, 2) the reverse order of the inscribing-process. These possibilities will not be discussed in detail, but outlined in brief.

Concerning 1: The small stone #1 might be the work of an experienced practitioner whereas the two grey stones could be the results of the work of an apprentice<sup>39</sup>.

Concerning 2: There is at least a theoretical option that the two grey stones were manufactured first –remembering that there might even have been a third grey sto-

<sup>39</sup> Evidence for a master-apprentice relationship can be found e.g. in Lucian's *Alexander and Lover of Lies*. See e.g. OGDEN, 2008.

ne- and that the small stone is the final result of repeated practice. The sequence of magical signs would then have been reduced, not supplemented. The theory of the two hands would in this case be obsolete. However, the striking difference between the qualities of the engravings is obvious. It would be a great “jump” from the grey stones to the small stone.

*7. How can the new discoveries enrich the fragmentary knowledge of ancient magical signs?*

The increasing number of attempts to interpret ancient *charaktères*<sup>40</sup> can be classified into two main groups: 1) interpretations of a small amount of identical or very similar looking signs depicted on a small amount of specified objects, which makes it possible to review the material, 2) generalizing interpretations without detailed information about the source material, which makes it impossible to verify neither the sources nor the interpretation. An odd controversy can be observed between the two groups: Despite the fact that an increasing number of sources has been published over the last roughly 80 years, demonstrating that in individual contexts individual signs or sequences of signs were assigned a specific meaning, still the approach to classify magical signs as “taken as a whole”<sup>41</sup> and label the majority of the signs as meaningless keeps emerging from time to time<sup>42</sup>, despite the facts that magical signs appear in thousands of different types, that their application is attested over hundreds of years in various languages e.g. Greek, Latin, Demotic, Coptic, Hebrew, Aramaic, Syriac texts, in polytheistic as well as monotheistic, in Pagan, Jewish, Coptic and Christian contexts from all over the Roman Empire.

*Charaktères* are classified e.g. as “des signes ou des lettres incompréhensibles”<sup>43</sup>, supposed “to replicate the efficacious and symbolic roles of hieroglyphs”<sup>44</sup>, repre-

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<sup>40</sup> To gain an overview see ROTH, 1805, p. 80, KING, 1887, p. 368, WÜNSCH, 1898, pp. 98, 99, WÜNSCH, 1905, pp. 32-33, HOPFNER, 1924, pp. 1183, 1184, 1186, BONNER, 1950, pp. 12-13, FRANKFURTER, 1994, pp. 205-211, KOTANSKY, 1994, p. 2, BRASHEAR, 1995, pp. 3440-3441, BUSCHHAUSEN, HORAK, HARRAUER, 1995, p. 57, no. 71, SIMPSON, 1997, p. 56 (right column), DIELEMAN, 2005, pp. 96-101, GIANNOBILE, 2005, especially pp. 161-163, BOHAK, 2008, pp. 250; 270-272, GORDON, 2011, pp. 31, 34, 35, 27 (offers various “interpretative models”), MASTROCINQUE, 2012, p. 545. This list is by no means complete –there are various interpretations specifically related to a small groups of artefacts– but it provides the reader with the basic lines of thoughts circulating.

<sup>41</sup> GORDON, 2011, p. 34.

<sup>42</sup> For two more recent publications on the matter see FRANKFURTER, 1994, GORDON, 2011.

<sup>43</sup> BERNAND, 1991, p. 23.

<sup>44</sup> FRANKFURTER, 1998, p. 256.

senting “a diverse corpus of “letters of power” distinctive for its lack of a referential system”<sup>45</sup>. It is stated that “the semantic power of *charaktêres* was not dependent on actual antecedents or “meanings” to the symbols. It was based, rather, on the *idea* of a sacred alphabet or writing system”<sup>46</sup>. *Charaktêres* are interpreted as “vacant but esoteric signifiers”<sup>47</sup> and in addition “it has often been suggested that *charaktêres* may be linguistic signs in some indirect but full sense, either as nonce ciphers (in which case it is readily conceded that there would be no hope of deciphering them) or as ideographs for particular deities, sacred names or voces. While this possibility cannot finally be excluded in any individual case, it seems highly implausible for the phenomenon of *charaktêres* taken as a whole”<sup>48</sup>. It is also assumed that “It did not matter how complicated they were, since, unlike true writing systems, individual signs did not need to be remembered”<sup>49</sup>.

The observed writing practice of the magical signs on the three stone artefacts from Pergamon disproves these assertions. It shows that the individual signs seem to have been of major importance to the practitioner, who did not change the decoration pattern or the textual inscriptions (except for leaving out one “*παιφθα φωζα*“ once), but modified only the sequence of magical signs. Especially the correction of the engraving of one sign corroborates this theory. For nonce ciphers the questions would be: Why bothering to copy a long sequence of signs, some of them even with rings at their ends, others with triangles, which both were awkward to engrave, if they would not have had any specific meaning? Why inserting additional signs at the same spots, twice? And again: Why undertaking the effort to scratch out a falsely copied sign and re-engrave the right one? Also describing signs as being “vacant” as well as “esoteric” at the same time –if “esoteric” is used by the author to express “secrecy”- only makes sense when “esoteric” is also meant to express “meaninglessness”, because otherwise the two terms contradict themselves. However, it should be taken into consideration that just because the explication of a sign is only available to a restricted group of people –or even just one person- does not make the sign itself vacant, just limited in its understanding and eventually difficult to be reconstructed in its meaning from today’s point of

<sup>45</sup> FRANKFURTER, 1998, pp. 209-210. He adds in brackets: “(aside from rare and idiosyncratic exceptions)” but omits to give an example or a reference. Frankfurter offers further theories concerning functions of magic signs mainly related to individual though sometimes late sources.

<sup>46</sup> FRANKFURTER, 1998, pp. 206-207.

<sup>47</sup> GORDON, 2011, p. 35.

<sup>48</sup> GORDON, 2011, p. 34.

<sup>49</sup> GORDON, 2011, p. 31.

view. Finally, a “lack of a referential system” would need to be specified in more detail. Expecting a referential system for “the phenomenon of charaktères taken as a whole” would demonstrate a fixation on the definition of a system on the basis of a strict set of rules applied to the signs consisting of a canonical visual appearance of a sign on one hand and a canonic information attached to each sign on the other.

This is actually classic circular reasoning: Assuming an existence of a “reference system” at a first step, then picking out an unclassified amount of sources to observe, that many of these sources do not fit the criteria of the assumed system (which were not outlined in the contexts of the theories) and therefore drawing the conclusion that most of the signs are vacant of any meaning. This way does not help to understand the writing practice of magical signs and has failed to do so before already. Instead I would suggest considering that there are different sets of rules that can be used to define different kinds of referential systems. In case of the magical signs the underlying reference system could be based on two simple features: the goal (which would be the establishing of a communication with higher powers) and the method (which would be writing), whereby the individual configuration of the elements of writing and concepts of how to establish communication would be up to the practitioner. Such a system would be highly personalisable and reflect to a high degree of individual mindscapes (“Vorstellungsräume”).

I think that two of the core reasons for the widely held attraction to integrate magical signs into ritual practice were –and still are- exactly these two features: the possibility to embed individual ideas and concepts of the existence and ways of communicating with higher powers and therefore individual meaning to individual applications of the signs, as well as to modify existing signs or even to create new signs. Accordingly I see the set of rules applying to the overall phenomenon of ancient magical signs not within canonical looks and meaning comparable to an alphabet or a standard writing system, but within the context of which the signs were used in (individual communication with higher powers) and the belief that individualised signs could be used for individualised meanings concerning the concepts underlying the communication modalities. Therefore, I would say, concerning “meaning”, “legibility” and “function” no overall valid system does exist, but instead I think that each attestation of the writing practice of ancient magical signs should be regarded as possible representation of an individual “sub system”. Individuality is a major criteria for any sub system applied to magical signs, and stands at the beginning of each of these systems. The degrees of their acceptance, transmission and dissemination throughout the Roman Empire and antiquity cannot be used to rule out meaning

for less distributed –or rather: so far less attested- sub systems. It is primarily the underlying concepts which are “incompréhensibles” to the modern day reader, an understanding of the signs themselves would be the second step in an analysis<sup>50</sup>.

I think it needs to be taken into consideration more seriously that the assigning of a specific function, a specific meaning and an individual shape to a sign –including their underlying concepts- was based on and originated in small regional networks of knowledge, or was even restricted to one individual user. This would suggest that *interpreting* magical signs needs to be conducted not in a generalized way on the base of assuming a canonical reference system, but rather on a more local or even individual level. Each context of a sign or group of signs needs to be observed individually, while the aim of the superior task should be to gain a solid knowledge of the overall sources to enable high quality comparisons. Apart from pragmatic functions of writing like fixation, visualization, recording and preservation, additional functions of inscriptions result out of concepts, especially when integrated in ritual practice. Therefore thinking about and looking for evidence of potential concepts of magical signs and their application is essential for reconstructing potential functions and meaning. I would also suggest for further investigations to consider that practitioners of magical signs *did actually believe* they could accomplish something specifically with these signs, and to reconsider the attitude that the majority of ritualists were egoistic, eventually “quasi-literate practitioners”<sup>51</sup> or “semi-literate”<sup>52</sup> frauds trying to rip off their “illiterate, ignorant clientele”<sup>53</sup> “unable to tell the difference between real and imitated writing”<sup>54</sup>. Fortunately I am not alone with this idea. In the most recent study on ancient magical signs Mastrocinque concludes: “En abordant ces différentes systèmes d’évaluation des caractères, il faut garder à l’esprit qu’un même caractère, ou la même série de caractères, peut avoir différentes significations selon la doctrine qui l’utilise, sachant que les caractères étaient employés dans divers milieux religieux de l’époque impériale”<sup>55</sup>. To close with Augustine, basically anticipating Roth in 1805<sup>56</sup>: “(...) those signs by which the ruinous intercourse with

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<sup>50</sup> E.g. a sub system would need to be first figured out as based on a cryptographic concept, and then the deciphering of the signs and the reconstruction of their individual meaning can be undertaken.

<sup>51</sup> GORDON, 2011, p. 33.

<sup>52</sup> FRANKFURTER, 1994, p. 207.

<sup>53</sup> BRASHEAR, 1995, p. 3440.

<sup>54</sup> FRANKFURTER, 1994, p. 207.

<sup>55</sup> MASTROCINQUE, 2012, p. 545.

<sup>56</sup> ROTH, 1805, p. 80: “Was soll man von den Abraxas sagen, von jenen Steinen oder vielmehr Talismans, welche die Basilianer und andere Gnostiker so gerne trugen, und auf welchen sie

devils is maintained have meaning just in proportion to each man's observations"<sup>57</sup>. Augustine was a fierce opponent of the practice of using magical signs but still he attested them a function (establishing intercourse with what he labels devils) and individual meaning, although trying to reduce the measure of their meaning by reducing it to a single man's observation.

### 8. *Summary and Conclusion*

The examination of the three late antique textual stone artefacts from Pergamon resulted in a range of new evidence, revising and updating Wunsch's interpretations concerning their materiality, inscriptions and manufacturing process. In addition they shed new light on the writing practice of ancient magical signs. The artefacts were in fact crafted out of two different stones, not out of one single stone. The inscriptions turned out to be not identical on all three artefacts, but instead the engraver of the two larger grey stones altered the design and added new signs to a sequence of magical signs at two different spots. It also happens that the quality of the inscriptions varies noticeable concerning the quality of the design in general as well as the execution of the individual letters and signs. This leads to the conclusion that the stones were inscribed by two different hands, not just by one as was stated by Wunsch. Stone #1 was inscribed by a first well practiced hand, stones #2 and #3 by a second, less practiced hand. This as well as the reconstruction of the transmitting process of the signs on stones #2 and #3 implies that the small stone #1 very likely served as template for stones #2 and #3. Eventually stone #2 was inscribed last and partly copied from #1 –since the bottom line  $\pi\alpha\iota\phi\theta\alpha\ \phi\omega\zeta\alpha$  can be found on #1 but not on #3- and partly from stone #3, as especially the correction of an accidentally miscopied and corrected sign on stone #2 attests. This shows that the three stones were copied from each other and not from one lost original. I would consider it rather likely that the three artefacts represent an ensemble of a template with two of its copies.

Why the engraver added specific signs and chose two specific places to insert them remains unresolved. What the three stones clearly do resolve is that the depiction of magical signs in the present case underlied not only a system but the choice of individual magical signs played a role, too. The signs here were chosen and applied with great care and it seems highly probable that the engraver assigned them an individual meaning; otherwise all the effort he or she underwent would not have been

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geheimnisvolle Figuren und Charaktere setzen ließen, die vielleicht im Grunde nichts bedeuteten oder in Ansehung deren sie sich wenigstens alle Mühe gaben, daß sie von Niemand verstanden werden, als von den Anhängern ihrer Sekte?"

<sup>57</sup> *On Christian Doctrine* II, 24.

necessary. If this alteration would just have been applied for creative reasons or out of “random inspiration”<sup>58</sup> the question would be: Why bothering then to insert the exact same signs at the exact same spots on two stones, instead of being creative and just add various signs at various spots or - even more creative - engrave complete new sequences of signs? And why bothering to scratch out one sign and replace it by another to maintain the correct sequence? The additional signs were also very unlikely engraved for the sake of impressing the practitioner’s clients for they would have hardly had a chance to notice the alterations. This feature rules out the theory –at least in this case- that magical signs were applied for their recipients rather than to serve as part of a ritual practice with an assigned meaning<sup>59</sup>. Another feature raises an additional question: While neither the legible text nor the decoration patterns show major differences on all three stones (besides the missing  $\pi\alpha\iota\phi\theta\alpha\ \phi\omega\zeta\alpha$ ), the sequences of magical signs do indeed so. The interest and concern of the engraver of the two grey stone slices appears to have been focused on the magical signs rather than on the inscriptions. Why?

The three stone artefacts provide a so far unique insight into the transmission of ancient signs. Still, besides all the information they grant, they raise questions as well, questions that cannot be resolved right now. The underlying concept for the application of magical signs, for their associated meaning and for the choice of individual signs can hardly be reconstructed by the three objects themselves, especially because their contexts are missing. However, they show very well that the choice and the application of these signs were more than just mere arbitrariness of a conman. The results may support the idea that accepting the possibility of individual meanings of magical signs as well as individual concepts behind their application for the majority of magical signs, and looking for theories and methods that could help to reconstruct these individual concepts and meanings better, could be the key to learn not only more about the signs themselves, but also about their practitioners and clients.

#### BIBLIOGRAPHY

AGRELL, S.,

- *Die pergamenische Zauberscheibe und das Tarockspiel*, Lund, 1936.

BARB, A. A.,

- “Three Elusive Amulets”, *Journal of the Warburg and Courtauld Institutes*, 27 (1964) 1-22.

- Book review: THEODORE SCHRIRE, *Hebrew Amulets. Their Decipherment and Interpretation* (1966), *Folklore*, 77, 4 (1966) 302-303.

- Book review: A. DELATTE, PH. DERCHAIN, *Les intailles magiques gréco-égyptiennes*, (1964), *Gnomon*, 41 (1969) 298-307.

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<sup>58</sup> GORDON, 2011, p. 31.

<sup>59</sup> GORDON, 2011, p. 24.

- BERNARD, A.,  
- *Sorciers grecs*, Paris, 1991.
- BOHAK, G.,  
- *Ancient Jewish Magic*, Cambridge, 2008.
- BONNER, C.,  
- *Studies in Magical Amulets. Chiefly Graeco-Egyptian*, Ann Arbor, 1950.
- BRASHEAR, W. M.,  
- "The Greek Magical Papyri: An Introduction and Survey; Annotated Bibliography (1928-1994)", in W. HAASE (ed.), *Aufstieg und Niedergang der römischen Welt II*, 18.5, Berlin, New York, 1995, pp. 3380-3684.
- BUSCHHAUSEN, H., HORAK, U., AND HARRAUER, H.,  
- *Der Lebenskreis der Kopten: Dokumente, Textilien, Funde, Ausgrabungen*, Wien, 1995.
- DANIEL, R. W., MALTOMINI, F.,  
- *Supplementum Magicum I*, Opladen, 1999.  
- *Supplementum Magicum II*, Opladen, 1992.
- DIELEMAN, J.,  
- *Priests, Tongues, and Rites. The London-Leiden Magical Manuscripts and Translation in Egyptian Ritual (100-300 CE)*. Religions in the Graeco-Roman World, 153, Leiden, 2005.
- DZWIZA, K.,  
- "Das 'Zaubergerät' aus Pergamon", in: R. GRÜSSINGER, V. KÄSTNER, A. SCHOLL (Hrsg.), *Pergamon - Panorama der Antiken Metropole. Begleitbuch zur Ausstellung in den Staatlichen Museen zu Berlin*, Petersberg, 2011, pp. 239-241, 542-543.  
- "The 'Catalogue and Statistical Analysis of the Charaktères' project: a first introduction", in: F. M. SIMÓN, M. PIRANOMONTE (eds.), *Contesti magici-Contextos magicos. Atti del Convegno internazionale*, Roma, 2012, pp. 307-308.  
- "Schriftverwendung in antiker Ritualpraxis anhand der griechischen, demotischen und koptischen Sammelschriften des 1. - 7. Jahrhunderts, Teil I: Analyse", Erfurt, Heidelberg, 2013. <http://www.db-thueringen.de/servlets/DocumentServlet?id=23500>
- EITREM, S.,  
- Review of Karl Preisendanz, Akephalos. Der kopflose Gott, Beiheft zum "Alten Orient" 8 (1926), 23-37, *Gnomon*, 3 (1927) 176-179.
- ELDERKIN, G. W.,  
- "Two curse inscriptions", *Hesperia*, 6 (1937) 389-395.
- FRANKFURTER, D.,  
- "The Magic of Writing and the Writing of Magic: The Power of the Word in Egyptian and Greek Traditions", *Helios*, 21, no. 2 (1994) 189-221.
- GAGER, J. G.,  
- *Curse Tablets and Binding Spells from the Ancient World*, Oxford, 1992.
- GASTER, M.,  
- *Studies and texts in folklore, magic, mediaeval romance, Hebrew apocrypha and Samaritan archaeology I*, New York, 1971 (reprint of 1928).
- GIANNOBILE, S.,  
- "Il dio egizio 'Ptah' nella documentazione magica: Amuleti e papiri", *Zeitschrift für Papyrologie und Epigraphik*, 152 (2005) 161-167.



GORDON, R. ,

- "Another View of the Pergamon Divination Kit", *Journal of Roman Archaeology*, 15 (2002) 188-198.
- "Signa nova et inaudita: The Theory and Practice of invented Signs (*Charaktères* in Graeco-Egyptian Magical Texts)", *MHNH*, 11 (2011) 15-45.

GRAF, F.,

- *Gottesnähe und Schadenzauber*, München, 1996.

GROHMANN, A.,

- Book review of H. A. WINKLER, *Siegel und Charaktere in der mohammedanischen Zaubererei*, Berlin, Leipzig 1930, *Archiv Orientalní*, 5 (1933) 311-315.

HOPFNER, TH.,

- *Griechisch-Ägyptischer Offenbarungszauber*, Band I, Leipzig, 1921.
- KROLL, W. (ed.), *Paulys Realencyclopädie der classischen Altertumswissenschaft*, Suppl. IV, cols. 1183-1188, s. v. *χαρακτῆρες*, Stuttgart, 1924.

JORDAN, D. R.

- "Hekatika", *Glotta*, 83 (1980) 62-65.

JORDAN, D. R.; KOTANSKY, R. D.,

- "Two Pkylakteries from Xanthos", *Revue Archéologique*, Nouvelle Série, Fasc. 1 (1996) 161-174.

KING, C. W.,

- *The Gnostics and their remains, Ancient and Mediaeval*, London, 1887.

KÖIVA, M.,

- "Palindromes and Letter Formulae: Some Reconsiderations", *Folklore: Electronic Journal of Folklore*, 8 (1998) 21-50. <http://www.ceeol.com/aspx/issuedetails.aspx?issueid=5955b816-178e-4073-9c8e-dd87ec8a96a1&articleId=08735608-94ba-426c-b631-088b007aa0d9>

KOTANSKY, R.,

- *Greek Magical Amulets. The Inscribed Gold, Silver, Copper, and Bronze Lamellae*. Part I: Published Texts of Known Provenance, Opladen, 1994.

KROLL, J. H.,

- *Athenian Bronze Allotment Plates*, Cambridge, 1972.

MALTOMINI, F.,

- "I papiri greci" (= EDDA BRESCIANI, *Nuovi papiri magici in copto, greco a aramaico*, I), *Studi Classici e Orientali* 29 (1979) 94-112, pl. VII-VIII.

MASTROCINQUE, A.,

- "Les Caractères, Formes des Dieux d'après les papyri et les gemmes magiques", in: GEORGOUDI, S., KOCH PIETRE, R., SCHMIDT F. (eds.), *La Raison des signes. Présages, rites, destin dans les sociétés de la méditerranée ancienne*, 2012, pp. 537-546.

MORGAN, M. A.,

- *Sepher Ha-Razim*, Chico, 1983.

NÉMETH, G.,

- "Sequences of charakteres in some circus defixiones in Latin from Hadrumetum", *Acta Classica Universitatis Scientiarum Debreceniensis*, 47 (2011) 95-110.

- NOCK, A. D.,  
- "Greek Magical Papyri", *Journal of Egyptian Archaeology*, 15 (1929) 219-235.
- OGDEN, D.,  
- *In Search of the Sorcerer's Apprentice: The Traditional Tales of Lucian's Lover of Lies*, Wales, 2008.
- PERNIGOTTI, S.,  
- "I codice copto" (= EDDA BRESCIANI, *Nuovi papiri magici in copto, greco e aramaico*, I), *Studi Classici e Orientali*, 29 (1979) 19-53.  
- "Una rilettura del P.Mil Vogl. Copto 16", *Aegyptus*, 73 (1979) 93-125.
- PIEPER, M.,  
- "Die Abraxas-Gemmen", *Mitteilungen des Deutschen Instituts für Ägyptische Altertumskunde in Kairo*, 5 (1934) 119-143.
- PREISENDANZ, K.,  
- *Papyri Graecae Magicae - Die griechischen Zauberpapyri*, Bd. I, Stuttgart (re-edited by ALBERT HENRICH), 1973.  
- *Papyri Graecae Magicae - Die griechischen Zauberpapyri*, Bd. II, Stuttgart (re-edited by ALBERT HENRICH), 1974.
- QUAST, D.,  
- "Ein Steinbeil mit magischer Inschrift aus der Sammlung des Prinzen Christian August von Waldeck", *Archäologisches Korrespondenzblatt*, 41 (2011) 249-261.
- ROTH, J. F.,  
- *Mythologische Daktyliothek. Nebst vorausgeschickter Abhandlung von geschnittenen Steinen*, Nürnberg, 1805.
- SERMON, R.,  
- "A Graeco-Hebrew amulet from Roman Britain", *Transactions of the Caernarvonshire Historical Society*, 72 (2011) 14-28.
- SIMPSON, C. J.,  
- *The Excavations of San Giovanni di Ruoti*, Vol. II, *The Small Finds*, Toronto, 1997.
- SKEMER, D. C.,  
- *Binding words: textual amulets in the Middle Ages*, University Park, 2006.
- VAN RENGEN, W.,  
- "Deux défixions contre les Bleus à Apamée (VI<sup>e</sup> siècle après J.-C.)" in: BALTU, J. (ed.), *Actes du colloque Apamée de Syrie. Bilan des recherches archéologiques 1973-1979*, Bruxelles, 1984, pp. 213-238 [= *Fouilles d'Apamée de Syrie. Miscellanea*. Fasc.13].
- WINKLER, H. A.,  
- *Siegel und Charaktere in der mohammedanischen Zauberei*, Berlin, Leipzig, 1930.
- WORRELL, W. H.,  
- *Coptic manuscripts in the Freer collection*, New York, 1923.
- WÜNSCH, R.,  
- *Sethianische Verfluchungstafeln aus Rom*, Leipzig, 1898.  
- *Antikes Zaubergefäß aus Pergamon*, Berlin, 1905.