

READING MAGICAL DRAWINGS IN THE GREEK MAGICAL POPYRI

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Introduction

Greek Magical Popyri have been studied by a large number of scholars interested in philology, religion, anthropology, ritual power, among other fields. The focus of all these studies has been, for obvious reasons, on the texts written on the popyri, in the edition and elucidation of their significance and magical function. Nevertheless there is an aspect of the popyri which has been largely neglected or not discussed in sufficient depth : the drawings on magical popyri². Drawings on magical popyri are quite common after the third century AD, but scholars in different studies considered them as mere ornaments or as « arcane jumbles », simple trinkets for marketing better the supposed power of the spell, or for making it look more professional. I venture to say that, except for the work by Hopfner, there is no other study which treats magical images³.

In the present contribution, I would like to present and analyze a survey of the different kinds of magical drawings which appear in Greek Magical Popyri (PGM), in order to point out the importance of the integrated study of text and image in magical material. Sometimes only a very fragmentary piece of a magical papyrus has been preserved and, if this part is in fact a drawing or a triangle of vowels, it is difficult to guess what kind of text we are dealing with. Consequently, an accurate study of magical images is important for a better, or more accurate, edition of this kind of texts. I would also like to point out some problems in the edition of the PGM in regards to magical images⁴.

This contribution is organised in four basic blocks, corresponding to the four main categories of the magical drawings, depending on their meaning in relation to the text they accompany :

- a) The magical drawing is an illustrative representation of the instructions given in the text.
- b) The image sets in motion the intention of the magical *praxis*.
- c) A magical word is written in a precise shape.
- d) *Charakteres*.

On the other hand, these four blocks could be organized in two main groups. The first would compress categories a) and b) from a functional point of view : the drawing illustrates the instructions or the effect of these instructions. The second would compress categories c) and d) from a formal point of view of the designs : the drawings have particular designs for particular reasons.

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² I will focus my paper only on the drawings written on popyri, and I will not attend to the magical drawings in gemstones, lead tablets, and other types of materials, although I will keep them in mind for the sake of comparison. The analysis of magical drawings in PGM is the starting point for a more exhaustive study on magical drawings in Greek magic.

³ See Hopfner (1913–1921). There is an interesting approach to Greek magical drawings in Gordon (2002) 97–111. For the study of drawings in popyri, see *e.g.* Weitzman (1970) and Horak (1992).

⁴ See Preisendanz / Henrichs (1974) and Daniel / Maltomini (1990). I also take into account the translations and commentaries in Betz (1992) and Calvo / Sánchez (1987).

The image you have to draw

A very interesting type of drawing appearing in the corpus of the PGM is the magical design as a representation of the instructions given in the text. The drawing, in fact, must be done by the person who performs the spell. Several of these drawings follow the formula reproduced above, saying : « this is the image you have to draw »⁵. Normally, the figures represent exactly what is explained in the spell, but it is nonetheless interesting to look at the uncommon features of these images, which can provide information not represented in the text.

A good example of this is an image that appears in PGM II, a magical handbook including a very complete spell to receive a direct oracular vision⁶. The invocations in the spell are addressed to Apollo ; they can be explained against the Classical background. In line 170, an interesting figure was drawn, along which one finds the following text : « this figure is to be inscribed on a piece of clothing belonging to one who has died violently, and is to be cast into a pure lamp »⁷. The drawing, a sort of human figure, has five heads in the shape of flags or snakes, and it has been identified as Acephalus⁸.

It is important for our study to notice some interesting details in this particular drawing, which are helpful in order to connect the drawing with the *praxis*. First, the schematic branch carried by Acephalus is not a common feature of this demon in other magical images. This was identified by Delatte with the branch of bay alluded to in the two recipes. Such a detail should allow us to carry on with the interpretation. The bay is the plant associated with Apollo, the god of divination, and the spell is a very complex petition for a direct oracular vision, not only addressed to Apollo but also full of references to this bush. The branch carried by Acephalus must be understood, as Delatte did, as a schematic bay branch, and thus, as an « Apollinean » make-up of Acephalus, according to the sense of the magical text⁹. Secondly, we could add the vowels written on the chest of Acephalus, namely, seven times each vowel : again, seven is the Apollinean number *par excellence*¹⁰.

Another remarkable image appears in PGM III¹¹. The papyrus is a handbook collecting several spells for different purposes. The first spell is an evil charm against enemies which includes the drowning of a cat. In line 70, two human figures are drawn with a whip hanging from their right hand¹². There is still another similar figure featuring what seems to be an animal head. The edition by Preisendanz states that the figure is a « Gestalt mit

⁵ E.g. PGM II 170 : τοῦτο δὲ τὸ ζῳδιὸν γράφεται.

⁶ P.Berl. inv. 5026 (IV AD). The papyrus displays many metrical hymns addressed to Apollo. The first one is written in – not always correct – dactylic hexameters and is dedicated to Apollo. The second one probably was composed originally in iambic meter. The third one is a mixture of prose and hexameters, and the following ones are all in hexameters although toward the end of the passage the meter falters. See Betz (1999) 12–18. The hymns are collected by Preisendanz / Henrichs (1974) 244–246 [= *Hymns* 9 and 11].

⁷ Translation by John M. Dillon and Edward N. O’Neil in Betz (1992) 18.

⁸ See Delatte (1914) 216–218 and Preisendanz (1926). According to Delatte 217, the five « heads » should be interpreted as a schematic representation of the blood rising from the cut. An allusion to this drawing appears in lines 12–14 of the papyrus : « Add also the following [spell], which is to be written on laurel leaves, and together with the strip of papyrus on which the Headless One is drawn, it is to be placed beside your head, rolled up. » Lines 60–61 : « Write the prescribed figure as given above, along with the characters and the prescribed spell twice with myrrh ink on hieratic papyrus. » Translation by John M. Dillon and Edward N. O’Neil in Betz (1992).

⁹ Note the similarity of the drawing with the text of the fourth invocation addressed to Apollo in this papyrus : « Laurel, Apollo’s holy plant of presage, whose leaves the sceptre-bearing lord once tasted and sent forth songs himself, Ieios, renowned Paian, who live in Kolophon, give heed to holy song. » Translation by John M. Dillon and Edward N. O’Neil in Betz (1992) 15.

¹⁰ The *praxis* of the papyrus is also full of references to the number seven. Delatte (1914) 217–218 relates the seven vowels to the cult of the seven planets and the Sun.

¹¹ P.Louvre N 2391 (IV AD). Illustration in Eitrem (1923) pl. II and <<http://www.photo.rmn.fr/cf/html/CPicZ.aspx?E=2C6NU0HNNUUG>>.

¹² On the importance of the whip in aggressive and erotic spells, see Faraone (1999) 45–46 and 58–61.

Tier (Esels)kopf » (figure with an animal [donkey] head) and Delatte (1914) 221 states that it is « un personnage à tête d'âne et de très grande taille » (character with a large donkey head). Betz in his English translation does not comment on the drawings, and according to the Spanish translation of the PGM, the god with the zoomorphic head is « Set-Tifón con cabeza de asno » (Seth drawn with a donkey head)¹³.

In my opinion, the drawing identified with Seth must be re-interpreted. Other magical images of Seth with donkey face usually have longer ears and snout than in this drawing, and tend to look to the left in the papyri¹⁴. Furthermore, we must also pay attention to the invocation to Seth in this papyrus, which says : « Perform for me the NN deed (add the usual, as much as you wish), powerful Seth-Typhon, and act lawlessly through your strength and overturn the NN deed in this plac... [in this very hour ?], as *I command your image*, for I conjure you, MASKELLI MASKELLŌ (formula). Perform for me this, the NN deed, *by virtue of your visage, cat-faced spirit* ; perform for me the NN deed (add the usual), and what is written hereafter. »¹⁵ Therefore, it would be possible to assert that in this papyrus Seth had been drawn not in his usual shape of a human body with a donkey head, but as a cat-faced god, in a particular way according to the ritual analogy of the magical text.

On other occasions the drawing seems to serve the purpose of making the charm clearer. PGM VII shows a good example of this¹⁶. Line 300 preserves a charm written around the image of an ibis. The complete image (text and image together) is the exact drawing the practitioner has to draw in his or her left hand in order to carry out the spell. Because of the drawing the practitioner knows how to arrange the text, which « surrounds » the ibis. Ἀκόλουθα could be understood as « following », but the text written as an image in the papyrus makes clear how to write the spell with accuracy¹⁷.

On yet other occasions the text and the drawing display differences, which should be explained. This is the case of the spell written in PGM VII 579–590. The spell is a phylactery against demons, ghosts, and every possible disease. The instructions to make the phylactery are given in the text, and afterwards a drawing appears exemplifying how to perform the magical drawing. But there is a slight difference : the image does not feature the same *voces magicae* as the ones given in the text. Part of the confusion could be explained by applying the rules of textual criticism (*saut du même au même*). When the scribe was writing the magical word, he wrote *Iaeo* but he follows with the *abracadabra* with the rest of the magical vowels after the second *Iaeo*, forgetting the vowels between the first and the second *Iaeo*¹⁸. The formula is not complete in the text written on the drawing, and the *charakteres* do not match those of the text provided earlier. This problem should thus be solved.

¹³ See Martínez-Sánchez (1987) 80, n. 45.

¹⁴ See e.g. PDM xii 62–75 or P.PalauRib. inv. 3 ; also Michailides (1952). There are very few gemstones engraved with Seth; see Mastrocinque (2004) 205.

¹⁵ Translation by J.M. Dillon in Betz (1992) 21.

¹⁶ See P.Lond. I 121 (III/IV AD).

¹⁷ Καχμουοζοζο, ὁ βροντῶν, ὁ σεῖων τὸν οὐρανὸν καὶ τὴν γῆν, ὁ καταπεπωκὸς τὸν ὄφιν καὶ καθ' ὥραν ἐξαίρων τὸν κύκλον τοῦ ἡλίου καὶ τὴν εὐλήνην ἐμπεριλα[μβά]νων Χωνου ορχα ενου ο βιβερουεος. γράφε εἰς τὴν εὐόνυμόν σου χεῖρα διὰ ζυρνομέλανος ἀκόλουθα τοῦ ἴβευο. « SACHMOU OZOZO, you the one who thunders, the one who shakes the heaven and the earth, the one who has swallowed the serpent, hour by hour raising the disk of the sun and *surrounding* the moon, CHŌNSOU OCHCHA ENSOU O BIBEROËSOS. Write on your left hand with myrrh ink these things *surrounding* the ibis. » W.C. Grese in Betz (1992) uses the English translation « surrounding » for two different Greek words : ἐμπεριλα[μβά]νων and ἀκόλουθα. The drawing specifies the meaning of ἀκόλουθα, making clear that the text must be written « surrounding » the Ibis.

¹⁸ The *abracadabra* on the text runs as follows : ΚΜΗΦΙC ΧΦΥΡΙC ΙΑΕΩ ΙΑΩ ΑΕΗ ΙΑΩ ΟΩ ΑΙΩΝ ΙΑΕΩ ΒΑΦΡΕΝΕ | ΜΟΥΝΟΘΙΛΑΡΙΚΡΙΦΙ ΑΕΥ ΕΑΙΦΙΡΚΙΡΑ ΑΙΘΑΝΥΟΜΕΝΕΕΡΦΑΒΩΕΑΙ. The text on the drawing does not feature the vowels underlined.

An accurate analysis of the drawings in magical papyri is also important in order to classify different kinds of magical books. The spells written in PGM VII 222–249 and in PGM VIII 64–110 are good examples of this¹⁹. Both texts contain a petition for a dream oracle addressed to the god Bes²⁰. Reading the two texts in parallel, one can observe that the spell in PGM VIII is more understandable and didactic than in PGM VII, where the different parts of the *praxis* are somewhat confused. Moreover, the drawing in PGM VIII was made neatly, directly below the request for the dream oracle, and not at the beginning of the book, as it was done in the other spell²¹. This detail reveals the intention of the writer to arrange a better manual or, at least, a more didactic one, with spells that are better explained.

PGM VII 222–249²²

Request for a dream oracle from Besas. Take red ocher [and blood] of a white dove, likewise of a crow, also sap of the mulberry, juice of single-stemmed wormwood, cinnabar, and rainwater ; blend all together, put aside and write with it and with black writing ink, and recite the formula to the lamp at evening. Take a black of Isis and put it around your hand. When you are almost awake the god will come and speak to you, and he will not go away unless you wipe off your hand with spikenard or something of roses and smear the picture with the black of Isis. But the strip of cloth put around your neck, so that he will not smite you. Formula to be spoken to the lamp : « I call ... ». **The small figure is drawn at the beginning of the book.**

PGM VIII 64–110

Request for a dream oracle of Besa. On your left hand draw Besa in the way shown to you below. Put around your hand a black cloth of Isis and go to sleep without giving answer to anyone. The remainder of the cloth wrap around your neck.

This is the ink with which you draw : blood of a crow, blood of a white dove, lumps of incense, myrrh, black writing ink, cinnabar, sap of mulberry tree, rainwater, juice of a single-stemmed wormwood and vetch. With this write.

Here is the text of the prayer to the setting sun. HYMN. Go to sleep on a rush mat, having an unbaked brick beside your head.

What you draw is of this sort : a naked man, standing, having a diadem on his head, and in his right hand a sword that by means of a bent [arm] rest on his neck, and in the left hand a wand. If he reveals to you, wipe off your hand with rose perfume. **This is the figure of the rite :**
DRAWING.

The final aim of the spells

Another interesting feature of the drawings in PGM is that sometimes the images set in motion the intention of the magical *praxis*. This kind of drawing appears above all in malign spells, and it is possible to group them in two different types, showing either a demon terrorizing the victim or the victim bound²³.

We can find good examples of the « demon terrorizing victim » motif in the different drawings of divinities or demons holding a human head in their hands in the spells of PGM XXXVI and PGM XXXIX²⁴. All these drawings are located in recipes for evil magic and erotic spells²⁵. We are not completely sure of why these figures are drawn in this kind of

¹⁹ P.Lond. I 122 (IV AD).

²⁰ The invocation in the hymn is addressed to Bes-Acephalus, and is studied in Delatte (1914) 201–209.

²¹ We cannot know what the drawing in PGM VII looked like because it is missing.

²² For both of these texts, translation by William C. Grese in Betz (1992) 122–123.

²³ See Gordon (2002) 103.

²⁴ P.Oslo I, 1 (IV AD) ; photo in Weitzman (1970) pl. XIV. P.Oslo I, 4 (IV AD).

²⁵ It is possible to keep together erotic magic and aggressive magic because both types of magic share the same kind of repressive language and aggressive feelings ; see Faraone (1999) 41–77.

text, but probably a sort of ritual analogy must be understood. The drawings are similar in both papyri : a human body with human or cock face holds a weapon in the right hand and a human figure or a human head in its left hand. All the drawings appear in charms for constraining somebody, most of them with erotic purposes²⁶. I would like to focus my attention on the drawing of PGM XXXVI 161–177, a charm to break spells. The spell consists of the text, a series of *charakteres*, and the drawing of a demon with several animal images on its arms, holding a human head in his left hand²⁷. The translator of the papyrus in Betz's book, Morton Smith, states in a footnote that the figure drawn in the lower part of the papyrus does not correspond to the description given in the text. Indeed, the description has almost nothing to do with the drawing bellow. I think it is possible to solve this problem by looking at the other drawings and spells on PGM XXXVI. The above-mentioned drawing is very similar to the other images of human figures with human heads in their hands, which are drawn for erotic or malign spells. The spell that follows the drawing in PGM XXVI 187–210 is in fact an erotic spell, so it is possible that the image was drawn for this spell and not for the previous one. This is only a hypothesis, of course, but considering the drawing as part of the next spell, all the human images with human heads in their hands in this papyrus would have the same function in this book of magic : a representation of the evil invoked.

Magical shapes

The magical words and series of vowels conforming magical shapes are very frequent types of « drawings » in PGM, and they must be studied as an important part of the spell, integrated with the text, as the drawings mentioned above. Magical triangles or rectangles are the most popular formations but they are not the only ones : there are also rhombi, squares, circular or quadrangular frames. The geometrical disposition of a magical word or series of vowels in a spell is a characteristic feature as common as the use of palindromes²⁸. These features have been studied by several scholars, like Richard Gordon, Attilio Mastrocinque or Christopher Faraone, who is currently working on a volume on spells written in these forms²⁹. For this reason I am not going to treat this subject in depth. I only want to point out the interesting coincidence between magical triangles, in increasing or decreasing formation, and the purpose of the spell where the triangle is drawn.

Most spells in which a word or a series of vowels have been written in the shape of a decreasing triangle, usually called « heart shape », are spells in which the intention is to make something disappear³⁰. This formation is used especially in healing amulets for the disappearance of fever or other diseases. The disposition of the elements, that is to say the letters, in a decreasing formation until their complete disappearance, is expected to cause the disappearance of the disease. Among many examples, we can see a very clear one in PGM VII 218–221³¹. This spell explains how to write the magical names *Iao Sabaoth Adonai Akrammachammarei* in a decreasing formation for curing daily fever.

Sometimes the word written in this manner is related mythically or semantically with the problem to be solved : the magical word and its shape act together. This is also the case

²⁶ PGM XXXVI 69–111, 105–133 and 231–255 ; PGM XXXIX 1–21. The relation between this kind of drawing and the erotic purposes of the spells presumably relies on the aggressive general tone of Greek erotic magic. A good example of the representation of one figure punishing or restraining another through erotic incantations can be found in PGM IV 296–303 : « Make the male in the form of Ares fully armed, holding a sword in his left hand and threatening to plunge it into the right side of her neck. »

²⁷ See Betz (1992) 178. A photo of this papyrus is available at <<http://www.uio.no/om/aktuelt/utstillinger/galleri-sverdrup/2010/bilder/papyrus-200.jpg>>.

²⁸ See Gordon (2000) 86. For the use of the seven vowels in magical shapes, see Frankfurter (1994) 199–205.

²⁹ See Gordon (2000) 85–97 ; Mastrocinque (2009).

³⁰ This shape is called « heart » (καρδία, καρδιακόν ὄνομα, καρδιακῶς) or « grape » (βότρυς).

³¹ P.Lond. I 121 (III/IV AD).

of PGM XVIIIb 1–7, in which the word *Gorgophonas* (the killer of the Gorgon), Perseus, is written in a heart-shape³². The Gorgon has a special symbolism for avoiding the demon of malaria, and the hero who killed the Gorgon will help to « kill » the disease. Another interesting spell appears in PGM CXX, in which the word *ταφυλοτόμος* is also written in the form of a decreasing triangle³³. The word has been translated as « cutting the uvula ». The amulet was commented on by Roy Kotansky, who interprets the expression as a word-play, since these formations were also called « shape of a bunch of grapes », as in PGM III 70³⁴. Mastrocinque also comments on the word engraved on this amulet and thinks it is possible to translate it as « the one who cut the grape », which would refer to Lycurgus and the mythical episode of his pursuit of Dionysus³⁵.

But there are more than healing spells with vowel-triangles. In PGM VII 940–968 the triangles appear in a charm « to restrain anger and to subject » (*θυμοκάτοχον καὶ ὑποτακτικόν*). Once again, a word written in the shape of a decreasing triangle appears in a spell for making something disappear, in this case wrath. The wing formation also appears in erotic magic with basically the same aim : to subject and destroy someone, in this case, the lover.

Then, if decreasing triangles are drawn in spells aimed at destroying or making something disappear or incapacitating someone, not surprisingly increasing triangles appear in spells aimed at making something increase, grow, or appear. There must be a ritual analogy also in this type of formation, as is the case of PGM V 70–95³⁶. This is a spell for finding a thief by drawing an eye on a wall and striking it with a hammer while saying a formula : « I conjure you by the holy names ; hand over the thief who made off with it, CHALCHAK CHALKOUM CHIAM CHARCHROUM ZBAR BĒRI ZBARKOM CHRĒ | KARIÖB PHARIBOU, and by the shudderful names : A EE ĒĒĒ IIII OOOOO YYYYYY ŌŌŌŌŌŌŌ. » DRAWING. « Hand over the thief who stole it. As long as I strike the eye with this hammer, let the eye of the thief be struck, and let it swell up until it | betrays him. »

The ritual analogy between the spell and the drawing of the eye is clear and well expressed by the formula. The vowels arranged in the shape of an increasing triangle probably reinforced the ritual analogy : as the vowels appear, the thief or the stolen property is expected to show up. Another parallel spell is PGM VII 215–218. In this text the popular magical names *Damnameneus* and *Akrammachamarei* appear, forming a growing triangle, and the aim of the spell is obtaining friendship, success and friends.

Charakteres

Finally, attention should be paid to the different magical drawings, which do not seem to have a limited magical function, but are supposed to provide supernatural power in general³⁷. According to Gordon the *charakteres* are among the commonest devices of magical

³² This follows the interpretation of Mastrocinque (2009) 4, against Scarborough, who thinks the *Gorgophonas* is a feminine accusative plural, perhaps referring to Athena, in Betz (1992) 255.

³³ P.Laur. III 57 (III AD).

³⁴ Kotansky in Betz (1992) 316. This is a specific kind of decreasing triangle. The « wing formation » (*πτερυγοειδῶς*) is used for a word that loses the final or the first letter in each succeeding line. Daniel / Maltomini (1989) comment on a magical gemstone on which a bunch of grapes is engraved on one side ; on the other, one finds the word *ταφυλή* « uvula », in the shape of a decreasing triangle. The ritual analogy between the drawing on one side and the engraving of the word is quite clear.

³⁵ The sentence « Lycurgus go out » (*Λεικούργος ἀναχωρῆς*) is written in a decreasing triangle in *Testament of Salomon* 19, 58. See Mastrocinque (2009) 2–3. The mythical episode of Lycurgus against Dionysus is narrated in many ancient sources ; see e.g. Apollod. 3, 5, 1 ; Hyg. *Fab.* 132.

³⁶ P.Lond. I 46 (IV AD).

³⁷ On *charakteres*, see e.g. Frankfurter (1994) 205–211 ; Mastrocinque (1994) 90–98 ; Gordon (2000) 88–90. I have been informed that Kirsten Dzwiwa is currently preparing a doctoral dissertation about the magical

literature everywhere³⁸. They make their appearance in Greek magical papyri around the second to third centuries AD, and their repertory does not seem to have a closed number. The most popular *charakteres* consists of asterisks and different configurations of straight lines with small circles on each end. Sometimes they seem to be Greek letters in which little circles have been applied at the end of all the straight lines, but sometimes they have nothing to do with letters³⁹. Mastrocinque has studied the symbolical value of the most frequent *charakteres* but, as he asserts, their schematic shape and ambiguity make it possible for them to be interpreted in many different ways, besides the fact that their meanings could have changed over time⁴⁰.

It seems possible that a very large number of these *charakteres* were invented *ad hoc*. Following Gordon's words, « the meaning of them is that, irrespective of whether in each case they constitute a code and could therefore have been read back by the practitioner who composed them, they can only be appreciated visually ». David Frankfurter for his part asserts : « The magical *charakteres* used throughout Graeco-Roman, Graeco-Egyptian, and Coptic ritual texts and amulets have enough formal diversity to suppose that they were, like artificial writing, often improvised. But the dominant style of composition – bent or crossed lines with bulbs on the ends – suggests that professionals shared a *purpose*, if not in some areas an actual *system*, in composing magical *charakteres*. »⁴¹

Therefore, the *charakteres* seem to have their own significance in the magical context as visual symbols of power, but also they convey power to the text. In some occasions they appear framing a text in order to reinforce the magical power of the message or surrounding figures, especially in Coptic magical texts. The insertion of a series of *charakteres* in an object seems to empower it and turn it into a magical object. For this reason we can find examples of magical amulets with a large number of *charakteres* and nothing else. It seems that it was not so important to have a legible text, since the power of the *arcana scriptio* or the pretended « divine language » was enough, and its visual appearance prevailed over its underlying meaning.

Conclusion

I have offered a small number of examples chosen from among a large quantity of magical images drawn in the corpus of Greek magical papyri. They reveal to us the importance of closely revising the use of images in these texts in order to achieve a better understanding of Graeco-Egyptian magic. The images inform us about different sorts of magical books, as I tried to explain taking into account PGM VII and VIII. They can also help us in the interpretation of a given spell if the text is not clear. For example, drawings with demons with a human head on their hands are typical of sexual spells. Consequently, if a papyrus contains such an image without a preserved text, we can infer that, probably, it contained a sexual or aggressive spell. Therefore, a complete categorization of magical images in connection with the texts they accompany will help solving different problems we find when editing magical papyri.

function and meaning of the *charakteres*. In my paper, I only mention the *charakteres* as visual symbols in order to connect them with the drawings in the PGM.

³⁸ See Gordon (2000) 88–90.

³⁹ Mastrocinque (2004) 91 notes the importance of the numerical value of the Greek letters and its use by magicians, astrologers and Gnostics. There is also a link between *charakteres* and hieroglyphs ; see Frankfurter (1994) 208 and Mastrocinque (2004) 98.

⁴⁰ See Mastrocinque (2004) 92–98.

⁴¹ See Frankfurter (1994) 207. Mastrocinque (2004) 98 also asserts that the *charakteres* do not seem to articulate a system.

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