The Meaning of *agalma, eidôlon,* and *eikôn* in Ancient Greek Texts: A Quantitative Approach Using Computer-Driven Methods and Tools

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ABSTRACT   This article analyzes the use and meaning of central Greek terms related to images in ancient Greek texts collected in the *Diorisis Ancient Greek Corpus* (Alessandro Vatri and McGillivray 2018). In contrast to the existing literature on the (religious) status of images in Greco-Roman Antiquity, Judaism, and Christianity, this article applies a mixed-methods approach, combining quantitative and computer-driven examinations with a qualitative analysis of selected sentences. The examination of the use and meaning of *agalma, eidôlon,* and *eikôn* considers various religious contexts (Jewish and Christian as well as Greco-Roman polytheistic), thereby embedding this article in the larger framework of comparative religious research on synchronic inter-religious contact.

KEYWORDS   an/iconism, terminology, Ancient Greek Religion, corpus linguistics, digital humanities, Christianity, Judaism

Introduction

The goal of this article is to analyze the use and meaning of central Greek terms related to images[1] in ancient Greek texts. Different from the existing literature on the (religious) use and meaning of images in Greco-Roman Antiquity and Judaism/Christianity,[2] this article applies a mixed-methods approach, combining quantitative and computer-driven examinations with a qualitative analysis of selected sentences.[3]

[2]   The examination of the use and meaning of *agalma, eidôlon,* and *eikôn* considers various re-

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1   In this article, the term 'image' denotes various forms of non-textual material representations and depictions, such as statues, frescoes, and paintings.

2   Among many others, see Bevan (1940); Mylonopoulos (2010); Scheer (2000); Steiner (2001); and for the Christian part Thümmel (1992); Brubaker (2012); Jurczyk (2019); Kitzinger (1954); Lanczkowski et al. (2010). For the terminology, see Bremmer (2008).

3   The application of mixed-methods is an established procedure in the field of digital humanities, although there are new suggestions for more "entangled" approaches as well; see Kleymann (2022).

ligious contexts (Jewish and Christian vs. Greco-Roman polytheism), thereby embedding this article in the larger framework of comparative religious research on synchronic inter-religious contact.[4] In this context, special attention is paid to the "relatedness to matter and media in [the] material aspects [of images]" (see the introduction of this special issue) and the differences (and similarities) between the Greco(-Roman) and the Jewish and Christian relations towards images. These two research foci and the corresponding analyses will hopefully shed new light on the overarching topic of an-iconic, anti-iconic, and iconic attitudes of religions towards images.

The data basis of this inquiry consists of the *Diorisis Ancient Greek Corpus* (Vatri and McGillivray 2018a, 2018b) that includes over 820 Greek texts from the eighth century BCE to late Antiquity (approximately fifth century CE). The texts in the *Diorisis* corpus are analyzed in this article using Python scripts and existing software solutions from the field of corpus linguistics (particularly *LancsBox*, see Brezina, Weill-Tessier, and McEnery 2020; 2018). To account for the comparative interest of this article, the 820 texts in the *Diorisis* corpus are split into two subcorpora according to their religious affiliation (Jewish and Christian texts and Greco-Roman polytheistic texts). [3]

The methods applied during the examination of the distribution, use, and meaning of *agalma, eidôlon,* and *eikôn* in Jewish, Christian, and Greco-Roman polytheistic texts include: [4]

1. The quantitative analysis of the absolute and relative frequencies of the **lemmas**[5] of *agalma, eidôlon,* and *eikôn* in both subcorpora (Jewish and Christian vs. Greco-Roman polytheistic). [5]
2. The quantitative analysis of the absolute and relative frequencies of different **types**[6] of *agalma, eidôlon,* and *eikôn* in both subcorpora. This builds an important addition to the previous analysis of lemmas since it enables the study of the distribution of different cases (for instance, if a specific term is mostly used in the genitive plural, etc.).
3. The collocation analysis of the **lemmas** of *agalma, eidôlon,* and *eikôn* in both subcorpora.
4. The analysis of the word vectors (Word2Vec) of the **lemmas** in both subcorpora.
5. The qualitative analysis of selected sentences from the above-mentioned quantitative analyses.

Before starting with the analysis of the respective terms, I will first provide a short overview of the current research on the use and meaning of *agalma, eidôlon,* and *eikôn*. [6]

The Use and Meaning of *agalma, eidôlon,* and *eikôn* in Current Research

The terms *agalma, eidôlon,* and *eikôn* have been selected among many other potential terms (such as *andrias, stêlê, ksoanon, bretas,* etc.) because they are the ideal candidates for a comparative analysis of the Jewish, Christian, and Greco-Roman polytheistic use of terms related [7]

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4   See the concept paper "Typology" by Volkhard Krech in the "Analytical Concepts" section of *Entangled Religions*: https://static.ceres.rub.de/media/filer_public/c8/8b/c88b2bbf-1977-4fd8-b65e-49e6795fe8a3/er-khk-1_typology_170725.pdf (last accessed 31 March 2023).

5   "(…) lemmas are based on grammatical (morphological) analysis (…). A lemma is a group of all inflectional forms related to one stem that belong to the same word class" (Brezina 2018, 40). For example, "(to) be" is the lemma of different types, such as "was" and "were."

6   "A type is a unique word form in the corpus" (Brezina 2018, 39).

to images. All three terms are not only frequently found in both subcorpora but are also extensively used in inter-religious polemics between Jews, Christians, and pagans (see Said 1987). *Eidôlon* is often pejoratively applied in Christian texts when referring to non-Christian deities and their material representations. *Eikôn* is *the* central Christian term for accepted Christian images, not least during the image struggles in the Byzantine Empire between the eighth and ninth centuries CE (see Brubaker and Haldon 2011). Furthermore, the *eikôn* also has a long (intellectual) history in Greco-Roman Antiquity. *Agalma* is a term often applied in Greco-Roman polytheistic texts to signify (divine) statues of great value in temples and is less frequently used in Jewish and Christian texts, thereby rendering it an interesting example of a more 'exclusive' terminology of images that is later dropped in favor of other expressions.

In the following parts, all three terms will be introduced in more detail.   [8]

eidôlon

The term *eidôlon* is etymologically related to *eid-*, *eidos* (lit. "that what is seen," shape) and   [9]
conveys the notion of visibility (see Said 1987, 310). *Eidôlon* typically denotes a likeness of the surface or of the material form of an object, almost like a ghost or phantom (see Od. 11, 476), but it can also be used more broadly for a statue (see the golden statue of a woman, γυναικὸς εἴδωλον χρύσεον [*gynaikos eidôlon chryseon*], in Herodotus 1, 51[7]). *Eidôlon* and *eikôn* both have a long and rich history in Platonism (and other philosophical traditions) (see Kunz, n.d.; Meyer-Schwelling, n.d.; Donohue, n.d.). In Platonism, an *eidôlon* represents the artificial imitation of the visible appearance of something, thereby pointing to its surface and not its real being (which already conveys a rather negative associative context in the sense of a *trompe-l'œil*, see Said 1987, 326–27; Steiner 2001, 5).

In a Christian context, the delusive character of an *eidôlon* already found in certain Greco-   [10]
Roman polytheistic philosophical traditions is maintained, and the term *eidôlon* becomes the central term to pejoratively denote pagan (divine) images and their worship (*eidô(lo)latria*, see Tertullian, *De idololatria*). This ambiguous or even negative association of an *eidôlon* is perceivable until today, for instance in the English term "idol" or German *Idol* (particularly with worship: 'idolatry').[8]

eikôn

Just like *eidôlon*, the term *eikôn* signifies an appearance/representation resembling something   [11]
else. However, *eikôn* has the connotation of a more general (symbolic) resemblance (see the adjective *eikelos* meaning "like" in a more symbolic or metaphorical sense)[9]. The *eikôn* can also signify a concrete object, such as a statue. However, the term *eikôn* is more sophisticated in the sense of a likeness of something that does not necessarily need to have a visible shape or material form (*eikôn tinos*), for example the Platonic ideas (see again Meyer-Schwelling,

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7   If not mentioned otherwise, all Greek texts cited in this article stem from the digitized editions in the *Diorisis* corpus. For more information about the editions in the *Diorisis* corpus, see Vatri et al. (2018a).

8   A brief inquiry of the contemporary use and meaning of "idol" and "idolatry" in the *English Web 2020* corpus (38 billion words) via Sketch Engine https://www.sketchengine.eu (last accessed: 7 January 2022) underlines this assumption. Besides the use of "icon" in the context of celebrities, there still is a strong religious connotation of "idol" ("idol worship," "idolatry") that is often negatively connotated and related to fields of impurity and destruction ("tearing down the idols," "pollution," etc.).

9   Od. 21, 411: ἡ δ᾽ ὑπὸ καλὸν ἄεισε, χελιδόνι εἰκέλη αὐδήν. / "which sang sweetly beneath his touch, like to a swallow in tone" (transl. A.T. Murray).

n.d.; Horn, Müller, and Söder 2017, 219, 227). The *eikôn*—from a philosophical and particularly Platonic perspective—is thus closer to representing the assumed reality of an object because it is not restricted to imitating its surface, but it refers to what is beyond the material representation (see Said 1987, 326–27; Steiner 2001, 5).

From a religious perspective, the potential to represent or point to invisible and abstract [12] 'objects' makes this term naturally more suitable for the representation of transcendence. Not least due to this (Neo-)Platonic history (for the even more positive use of *eikones* in Plotin's *Enneads*, see Said 1987, 327), the *eikôn* later becomes *the* term for Christian images[10] in contrast to the negatively connotated *eidôlon*.

agalma

> [...] *agalma*, an object that through its high quality and craftsmanship inspires [13] delight in its viewer and should prompt the goddesses' own reciprocal gift of *charis* (CEG 414). (Steiner 2001, 16)

The term *agalma* commonly denotes statues and images (of ancient gods) set up in temples. [14] The term *agalma* underlines the honorable character of these images as a "pleasing gift" (LSJ). Due to its frequent use in Greco-Roman polytheistic Greek texts, for instance in Pausanias, and its sparse use in Jewish and Christian contexts, I have decided to add *agalma* as a complement to the analysis because "unlike the *eidôla* critiqued by later philosophers, these representations do not set out to mask their 'factural' nature, nor do they seek to dupe their audiences by persuading them of the reality of the pictured scene" (Steiner 2001, 20). The *agalmata* thus add an interesting layer to the analysis, namely that of impressive man-made artifacts to honor and to remember the gods in the sense of valuable votive offerings void of discussions about their representative qualities. In addition, they will hopefully help to further examine the material dimension of images in both Greco-Roman polytheistic and Jewish as well as Christian texts.

Data and Methodology

Since large parts of the analysis will be based on quantitative approaches, it is of central [15] importance for this article to rely on a well-structured, digitized, and ideally large data set. Particularly the latter poses a problem when dealing with historical sources that are often scarce and without any realistic potential of being easily expanded. Considering these constraints, the *Diorisis* corpus, its shortcomings notwithstanding[11], builds a promising basis for a quantitative analysis of ancient Greek words because it includes a wide range of texts from several historical periods (see figure 1) in a well-structured and digitized form. In the following parts, I will briefly introduce the *Diorisis* corpus and further elaborate on the methods and tools applied during the analysis.

Diorisis Ancient Greek Corpus

The Diorisis Ancient Greek Corpus is a digital collection of ancient Greek texts [16]

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10   See the term *eikônodoules* for, although sometimes criticized or even persecuted, worshippers of Christian images.

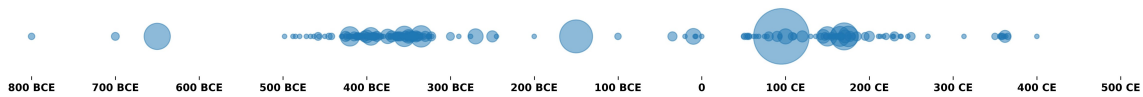11   Such as the scarcity of early Christian texts.

Figure 1   Chronological distribution of the texts in the *Diorisis Ancient Greek Corpus*.

(from Homer to the early fifth century AD) compiled for linguistic analyses, and specifically with the purpose of developing a computational model of semantic change in Ancient Greek. The corpus consists of 820 texts sourced from open access digital libraries. The texts have been automatically enriched with morphological information for each word. (Vatri and McGillivray 2018b)

Besides providing a relatively large and diverse text basis, the rich annotations of the texts in the *Diorisis* corpus are another crucial factor for the examination of *agalma*, *eidôlon*, and *eikôn*. On a word level, these annotations include (among others) lemmas and Part-of-Speech tagging (POS). On a document level, the genre and additional author/date information are provided for each text, which makes it relatively easy to subdivide the corpus during the analysis, for instance, when examining the use and meaning of the three terms in philosophical treatises or religious texts. The annotation of this information in XML format facilitates the processing of the corpus with Python and *LancsBox*. [17]

For this article's comparative focus on the use and meaning of *agalma*, *eidôlon*, and *eikôn* in Greco-Roman polytheistic and Jewish as well as Christian texts, the *Diorisis* corpus has been subdivided into two subcorpora. [18]

1. The first subcorpus includes 91 texts from a primarily Jewish and Christian background. Most of these texts stem from the Greek New Testament and the Septuaginta. Yet, texts from other authors, such as Flavius Josephus, Clement of Alexandria, and Eusebius of Caesarea, are also included. Note that some of the texts have a Jewish background (such as Flavius Josephus and the Septuagint). The relation between early Christianity and Judaism is a complex topic which is beyond the scope of this article (Fialová, Hoblík, and Kitzler 2022; Schäfer and Peterson 2015; Boyarin 2004), not least regarding their views towards images. Consequently, the inclusion of Jewish and Christian texts as part of the same corpus is to some extent problematic. Yet, Jewish texts, their reception in early Christianity, and the "Jewish background" of Christianity (as problematic as this topic is) are still relevant for the shaping of the meaning of the terms in question (the Septuaginta in particular), which is why I have decided to include them in the same corpus. [19]

2. The second subcorpus consists of the remaining 729 texts of the *Diorisis* corpus, which are consequently classified as "Greco-Roman polytheistic" (often abbreviated as GRP in the following diagrams and charts).

The distribution of the texts between the two subcorpora has a considerable bias. Instead of manually adding additional (particularly Jewish and early Christian) texts, I have decided to restrict the analysis to texts in the *Diorisis* corpus to keep the data basis consistent. Adding additional texts, for instance from Greek church fathers, or adding a third subcorpus with Jewish texts only would have meant to preprocess and annotate these texts similarly as the [20]

creators of the *Diorisis* corpus did, which was not possible for me. Thus, adding more (preferably Jewish-Christian) texts to the analysis remains a desideratum.

From the rich annotation of the texts in the *Diorisis* corpus, the analysis in this article [21] considers the following fields. On a word level, the annotated lemmas and the morphological information are added to the data set. On a document level, the information about the text genre and the creation date of the texts are collected.

The collocation analysis and the word vector analysis are based on the lemmatized version [22] of the texts, which I have manually created from the annotation in the XML file with the help of a Python script. The lemmatized texts have also been stripped from stop words (such as articles).[12] Stop words are words that are commonly used in a language but have little meaning on their own. These words are typically filtered out of natural language processing tasks, such as information retrieval and text mining, because they don't contain useful information and can often hinder the performance of the algorithm.

Methods

The mixed-methods approach in this article applies three quantitative and computer-driven [23] methods:

1. Word distributions (lemmas and types). [24]
2. Collocation analysis (lemmas only).
3. Word vectors (lemmas only).

The distribution analysis of the types and the creation of word vectors was done in Python [25] using Jupyter notebooks (and *gensim* for word vectors). The collocation analysis and the analysis of word distributions (lemmas) was conducted with *LancsBox* (Brezina, Weill-Tessier, and McEnery 2020; Brezina 2018).

A qualitative close reading of selected sentences will complement and evaluate the results [26] of the quantitative analysis. In the following parts, each of these methods will be introduced in more detail.

Word Distribution (Frequency Lists)

The analysis of the word distribution is the most straight-forward quantitative approach ap- [27] plied in this article. It consists of the examination of the absolute and relative frequencies of each term in both subcorpora.

To receive a more detailed insight into the distribution among text genres deemed particu- [28] larly important for the examination of the meaning and use of *agalma, eidôlon,* and *eikôn,* the Greco-Roman polytheistic as well as the Jewish and Christian subcorpora are further subdivided into the "full" corpora and two subcorpora including "philosophical" and "religious" texts only (according to the metadata in the *Diorisis* corpus).

Besides the examination of the distribution of the lemmas, this article also considers the [29]

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12   The list of stop words consists of the following terms: ὁ, καί, δέ, αὐτός, εἰμί, οὗτος, ἐν, οὐ, ὅς, μέν, τε, ἐκ, γάρ, ποτέ, ἤ, τις, ἀλλά, μή, ὅστις. This list is far from exhaustive. Some words that could be considered as stop words due to their vast semantic fields are still part of the corpus data, for instance prepositions such as *epi, eis,* as well as terms such as *hôs.* Even though they could potentially be removed from the data, I regard them as valuable for the study of the meaning of the terms in question because they might indicate the presence of spatial (*eis, epi,* etc.) or metaphorical (*hôs*) foci (for the latter, see, for example, the collocation analysis of *eikôn* in this article).

distribution of the morphological variance of each term. Examining the distribution of types helps to discover specific use cases (and thus meanings) of the terms in question. For instance, if one word frequently appears in dative or genitive plural in one subcorpus and in nominative singular in the other corpus, the word could mainly be used for an abstract quantity of objects (that is related to other objects, such as in "the beauty of the statues") in the first case and as an individual 'subject' in the other ("the *eikôn* of Christ caused an uprising among the monks").

Collocation Analysis

> Collocations are combinations of words that habitually co-occur in texts and corpora. (Brezina 2018, 67)

[30]

The collocation analysis attempts to identify which other words (and thus semantic fields) commonly appear in the context of *agalma*, *eikôn*, and *eidôlon*. An association measure is applied to evaluate whether certain words only appear in the context of the search terms due to their high frequency in the full text.[13] The association measure used in this article is *log-likelihood* (LL) (see Brezina 2018, 72). The collocation window in this article is L5-R5, meaning that the five words left and right of the search term are considered.

[31]

This article adopts the "collocation parameters notation" (CPN) proposed by Brezina in the already cited work (Brezina 2018, 75), which looks like in the following example:

[32]

> (6-LL, 3, L3-R4, C5-NC5; stop words removed)

[33]

This notation represents the parameters used in the collocation analysis and displays the following information: a) statistic ID, b) statistic name, c) statistic cut-off value, d) L and R span, e) minimum collocate frequency (C), f) minimum collocation frequency (NC), and g) optional filters, such as "no stop words."

[34]

The CPN above reads as follows: The association measure *log-likelihood* was applied (with the ID 6). The statistic cut-off value was 3.[14] The collocation analysis considered three words left of the search term and four words right of the search term. The collocate needed to appear at least five times in the whole document and five times in the defined collocation window (L3-R4) of the search term to be considered in the analysis. Stop words such as articles were ignored (or not even part of the text, as in the case of this article, where the processed lemmatized texts have already been stripped from stop words).

[35]

Word Vectors (Word2Vec)

Word vectors are representations of words in a text (or corpus) as word vectors of real numbers, created by analyzing the word embeddings of each word. These vectors can be used to compare words with the help of basic algebraic operations. As a result, word vectors that are close to each other (or point into the same direction in the multi-dimensional vector space) represent words with a similar meaning since they have a similar vector representation of

[36]

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13 To give a fictive example, the word "god" might appear frequently in the context of "image" in the New Testament because it generally frequently occurs in these texts. It thus is not necessarily of great value when trying to identify the meaning of "image." On the contrary, the verb to "kneel down" might be if it exclusively appeared in the context of "image."

14 Usually, *LancsBox*'s default cut-off value is kept.

their word embeddings. There are different ways to generate word vectors based on word embeddings, among which one of the most popular methods is Word2Vec.[15]

Besides using Word2Vec to find similar word vectors indicating related semantics in a multi-dimensional vector space, Word2Vec also enables the application of basic semantic calculations. A popular example is that an appropriately trained Word2Vec model is able to deliver the vector of "queen" as a result when subtracting the vector "man" from the vector "king" and adding the vector of "woman." Even though such semantic equations are tempting for the research question of this article, the word vector analysis only applies Word2Vec (Skip-Gram) to get an impression of the closest words to the terms *agalma*, *eikôn*, and *eidôlon* in the *Diorisis* corpus by using the Word2Vec (Skip-Gram) implementation in *gensim*.[16] Overall, the results of the Word2Vec analysis must be treated with caution due to the relatively small size of the text corpus. Still, it delivered interesting insights into the data, which is why I kept it as part of the examination.

[37]

Analysis

The following parts will discuss the results of the quantitative methods introduced above. Each part is complemented with a qualitative close reading of single sentences that relate to the results of the quantitative examination. The analysis will start with an overview of the distribution of the words *agalma*, *eikôn*, and *eidôlon* in the various subcorpora.

[38]

Word Distribution—Overview

The tables and figures in this section display the distribution of *agalma*, *eikôn*, and *eidôlon* in the following subcorpora:

[39]

1. The *full* Greco-Roman polytheistic text corpus (word count: 8,634,297; text count: 729).
2. The Greco-Roman polytheistic text corpus with *philosophical texts only* (word count: 1,292,595; text count: 56).
3. The Greco-Roman polytheistic text corpus with *religious texts only* (word count: 17,022; text count: 41).
4. The Jewish and Christian text corpus (word count: 1,418,531; text count: 91).[17]

[40]

The visualizations in figures 2, 5, and 8 display:

[41]

1. The relative frequency of *agalma*, *eikôn*, and *eidôlon* in each subcorpus per 100,000 words, *including all texts in the subcorpus* (figure 2).
2. The relative frequency of *agalma*, *eikôn*, and *eidôlon* in each subcorpus per 100,000 words, *including only texts in the subcorpus in which the term appeared* (figure 5).

[42]

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15   Word2Vec, a model based on a shallow neural network, was developed by Tomas Mikolov et al. at Google in 2013 (Mikolov et al. 2013; Mikolov and Le 2014).

16   For more information about *gensim* and its implementation of Word2Vec, see the documentation on the official website. Last accessed 21 December 2021. https://radimrehurek.com/gensim/models/word2vec.html.

17   In the case of the Jewish and Christian subcorpus, there is no further subdivision based on the text genre since most texts in this subcorpus belong to the genre "religion." It is important to note the difference in word numbers between the official count of 10,206,421 tokens in the *Diorisis* corpus (2018b) and the 10,052,828 tokens in the lemmatized corpus used in the analysis. The difference results from stripping the lemmatized texts of punctuation.

3. The absolute frequency of *agalma, eikôn,* and *eidôlon* in each subcorpus (figure 8).

This threefold analysis helps to evaluate the relative and absolute frequencies of each term   [43]
in the full text (sub)corpora, while also visualizing the importance of each term in the texts
they appear in. For instance, a high number of one of the terms in the latter distribution could
prove that the term plays a central role in those texts it is mentioned in. The last distribution
including the absolute values provides an overview of the raw distribution of each term in all
four subcorpora.

In addition to the visualizations in the figures, the corresponding numbers are also shown   [44]
in distribution tables in the following parts, where I will discuss the distribution of each term
in more detail.

Word Distribution *agalma*

Table 1   Table word distribution *agalma* in the different subcorpora (GRP = Greco-Roman polythe-
ism).

	full_GRP	philosophy_GRP	religious_GRP	jewish_christian
word_count_exclusive	5,202,792	751,026	16,202	632,269
word_count_full	8,634,297	1,218,487	35,770	1,418,531
texts_including_ἄγαλμα	161	18	5	7
ἄγαλμα_word_count	1,322	64	6	67
frequency/100k_exclusive	25.41	8.52	37.03	10.56
frequency/100k_full	15.31	5.25	16.77	4.72
text_counter	729	56	41	91

The distribution of *agalma* in both the visualizations and the table shows that this term is much   [45]
more important in Greco-Roman polytheistic than in Jewish and Christian texts, although it
appears relatively seldom in the Greco-Roman polytheistic texts as well (~15/100k words).
Agalma is also more present in Greco-Roman polytheistic religious texts than in Greco-Roman
polytheistic philosophical texts, which underlines the assumption in section 2 that *eikôn* and
eidôlon have a rich history in philosophical thought, whereas *agalma* is mostly used as a
descriptive term for votive statues. Yet, the rather high distribution of *agalma* in Greco-Roman
polytheistic religious texts should be treated with caution, since the text basis and thus word
counts of these religious texts are rather low.

The distribution of *agalma* in the subcorpora is also reflected in the following overview of   [46]
the top texts in each subcorpus in which the term most frequently appears (based on relative
frequency per 10k words):

Full (GRP) Pausanias – Description of Greece ('word_count': 215,792; 'ἄγαλμα': 694;   [47]
'rel_frequency/10k': 32.16).

Philosophy (GRP) Plato – Critias ('word_count': 4,942; 'ἄγαλμα': 3; 'rel_frequency/10k':   [48]
6.07).

Religious (GRP) Homeric Hymn to Dionysus ('word_count': 139; 'ἄγαλμα': 1;   [49]
'rel_frequency/10k': 71.94).

Jewish and Christian   Clement of Alexandria – Protrepticus ('word_count': 23,015; 'ἄγαλμα': 54; 'rel_frequency/10k': 23.46).   [50]

The high relative frequency of *agalma* in the *Homeric Hymn to Dionysos* is due to the short character of the text, in which the term only appears once. However, the concrete use of *agalma* in this short hymn underlines what was stated in section 2 about the votive nature of *agalma* and its strong focus on materiality, which is why I have kept it despite the term appearing only once: [51]

> *…* καί οἱ ἀναστήσουσιν ἀγάλματα πόλλ' ἐνὶ νηοῖς   [52]

> … and men will lay up […] many offerings in […] shrines. (*Homeric Hymn to Dionysos*; transl. by Evelyn-White)   [53]

Regarding the Jewish Christian subcorpus, the high frequency of *agalma* in the *Protrepticus* is noteworthy (54), particularly considering the rather low frequency of *agalma* in the rest of the Jewish and Christian corpus (67). This demonstrates that the text by Clement of Alexandria includes a major part of the occurrences of *agalma* (~81%). Consequently, *agalma* is only rarely used in the remaining 90 texts in the Jewish and Christian corpus.   [54]

That *agalmata* are extensively mentioned in Pausanias *Description of Greece* also fits into the overall picture of *agalmata* as precious votive offerings in temples, because large parts of Pausanias' work are dedicated to the description of temples, shrines, sanctuaries, and their interiors. The use of *agalma* in these contexts is almost exclusively applied in the description of the history and material appearance of statues, for example in the following passage: [55]

> θέας δὲ ἄξιον τῶν ἐν Πειραιεῖ μάλιστα Ἀθηνᾶς ἐστι καὶ Διὸς τέμενος: χαλκοῦ μὲν ἀμφότερα τὰ ἀγάλματα, ἔχει δὲ ὁ μὲν σκῆπτρον καὶ Νίκην, ἡ δὲ Ἀθηνᾶ δόρυ.   [56]

> The most noteworthy sight in the Peiraeus is a precinct of Athena and Zeus. Both their images [*agalmata*] are of bronze; Zeus holds a staff and a Victory, Athena a spear. (Pausanias, *Description of Greece* 1.1.3; transl. Jones et al.)   [57]

Type Distribution of *agalma*

The type distribution of *agalma* in the pagan full corpus is shown in figure 3, whereas the distribution in the Jewish and Christian corpus is displayed in figure 4.   [58]

In both the Greco-Roman polytheistic and the Jewish and Christian subcorpora, the term *agalma* is mostly used in the nominative/accusative cases; however, in the Jewish and Christian corpus, the term frequently occurs in the plural form, thereby referring to multiple images, whereas the focus in the Greco-Roman polytheistic corpus lies on individual *agalmata* in the singular form. This can be explained considering the previous examinations and shows that an *agalma* in the Greco-Roman polytheistic corpus often denotes precious individual statues (made by well-known artists such as Praxiteles), whereas the use of *agalma* in the Jewish and Christian subcorpus refers to a more abstract quantity of *agalmata* (pl.) in the (often polemical) sense of "all pagan images."   [59]
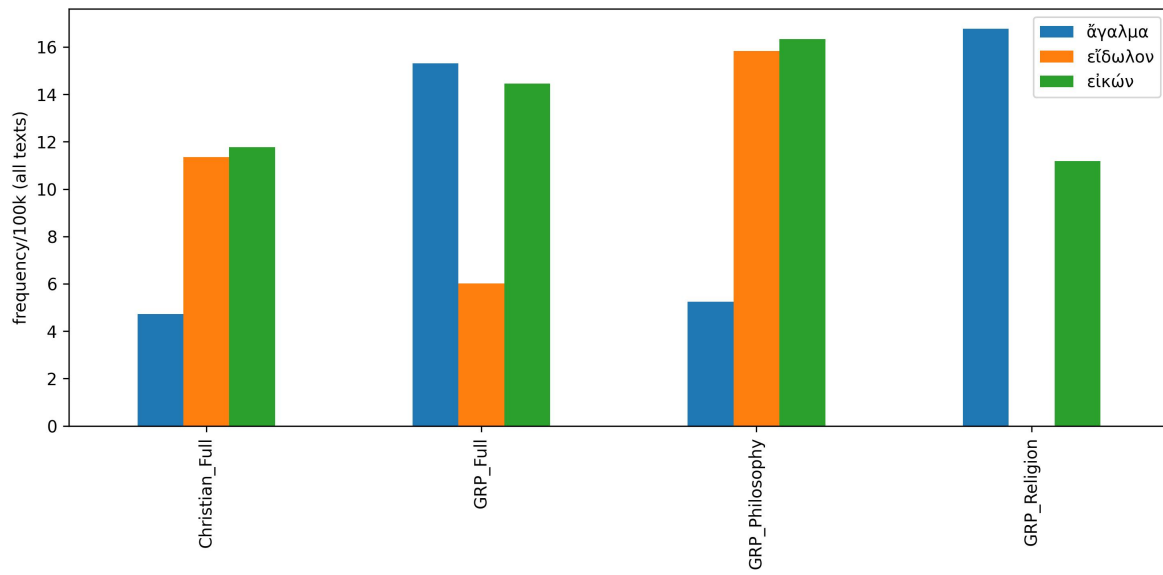
Word Distribution *eidôlon*

Figure 2 Frequency of *agalma, eikôn,* and *eidôlon* in each subcorpus per 100,000 words, *including all texts in the subcorpus.*
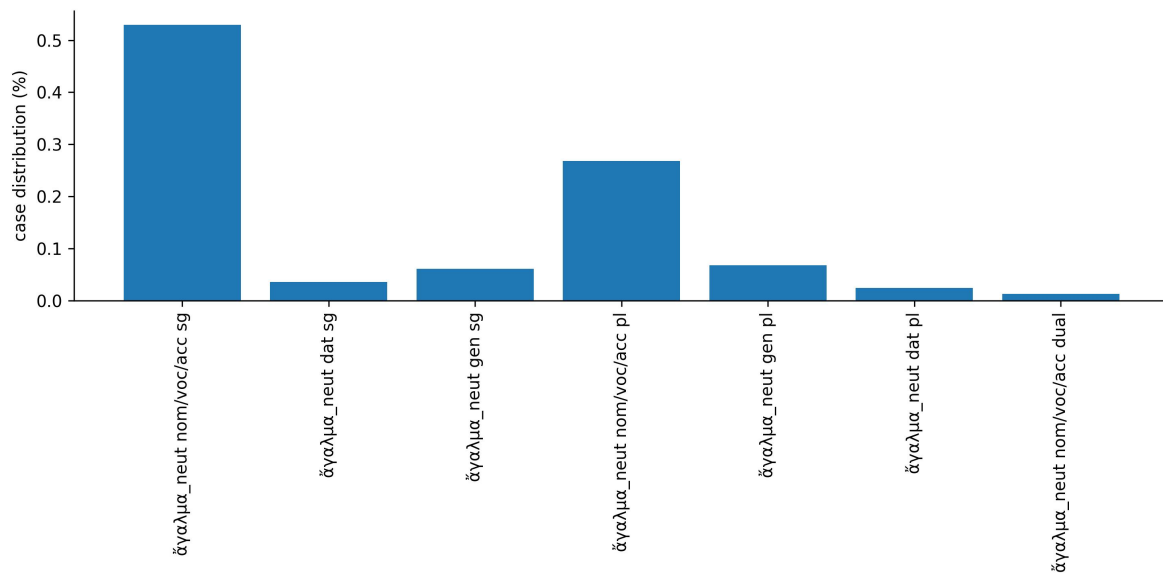

Figure 3 Distribution of *agalma* (types, rel. frequencies) in the full pagan *Diorisis* subcorpus.
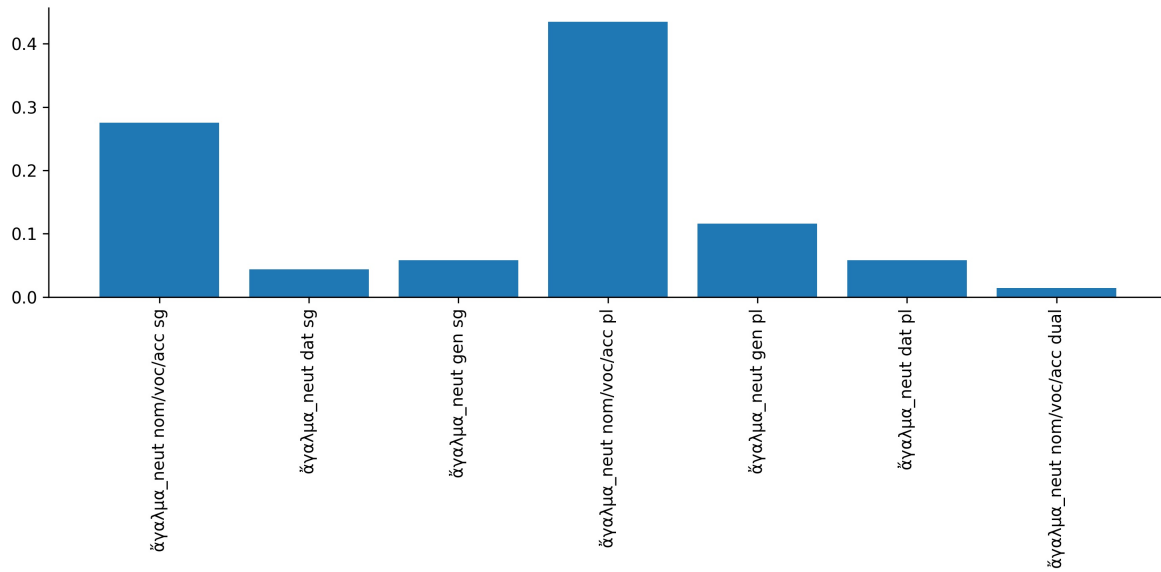
Figure 4 Distribution of *agalma* (types, rel. frequencies) in the Jewish/Christian *Diorisis* subcorpus.

Table 2 Table word distribution *eidôlon* in the different subcorpora.

	full_GRP	philosophy_GRP	religious_GRP	jewish_christian
word_count_exclusive	4,661,689	722,931	0	1,148,192
word_count_full	8,634,297	1,218,487	0	1,418,531
texts_including_εἴδωλον	128	18	0	42
εἴδωλον_word_count	519	193	0	161
frequency/100k_exclusive	11.13	26.70	0	14.02
frequency/100k_full	6.01	15.84	0	11.35
text_counter	729	56	0	91

The distribution of the term *eidôlon* shows significant differences compared to the examination of the distribution of *agalma*. First of all, *eidôlon* does not appear in the Greco-Roman polytheistic religious corpus (which must be interpreted with caution, since there were only few texts annotated as "religious" in the *Diorisis* corpus). Yet, the term has a relatively high presence in few philosophical texts (with an exclusive frequency of ~27 words per 100k) and is also mentioned in almost 50% of the Jewish and Christian texts. Thus, *eidôlon* can be considered to play an important role in some philosophical discussions and to have a relatively widespread use in Jewish and Christian texts. [60]

A closer look at the top texts in each subcorpus supports this assumption: [61]

Full (GRP) Aristotle – De divinatione per somnum ('word_count': 1,199; 'εἴδωλον': 5; 'rel_frequency/10k': 41.70). [62]

Philosophy (GRP) Plato – Sophist ('word_count': 16,018; 'εἴδωλον': 13; 'rel_frequency/10k': 8.12). [63]

Religious (GRP) - [64]

Jewish and Christian Septuaginta – Bel et Draco ('word_count': 840; 'εἴδωλον': 1; 'rel_frequency/10k': 11.91). [65]

The top texts in the full Greco-Roman polytheistic and the philosophical Greco-Roman poly-   [66]
theistic text corpus are philosophical treatises. Of particular interest is the text by Aristotle,
since it deals with a religious topic (divination or "prophetic dreams") from a philosophi-
cal perspective. The following quotes from this text demonstrate that *eidôla*, in this text, are
regarded as ephemeral reflections of an object that cause dreams:

> […] τοιόνδ᾽ ἂν εἴη μᾶλλον ἢ ὥσπερ λέγει Δημόκριτος εἴδωλα καὶ ἀπορροίας   [67]
> αἰτιώμενος.

> […] the following would be a better explanation of it than that proposed by Dem-   [68]
> ocritus, who alleges 'images' [*eidôla*] and 'emanations' as its cause. (transl. by J. I.
> Beare)

> λέγω δὲ τὰς ὁμοιότητας, ὅτι παραπλήσια συμβαίνει τὰ φαντάσματα τοῖς ἐν τοῖς   [69]
> ὕδασιν εἰδώλοις,[…]

> But, speaking of 'resemblances' [*homoiotêtas*], I mean that dream presentations   [70]
> [*phantasmata*] are analogous to the forms [*eidôlois*] reflected in water, […]

The use of *eidôlon* in Plato's Sophist is of a similar kind and mainly designates a (negatively)   [71]
connotated illusion or phantasma (*eidôlon* is often used synonymously with *phantasma* in the
Sophist). Plato's Sophist also includes the important differentiation between "representative
art" (*technê eikastikê*) and "imitating art" (*technê mimêtikê*), which are both important for
Plato's understanding of images. The first (*technê eikastikê*) is positively attributed and con-
cerned with the representation of the archetypes (*paradeigmata*) and attributed to the *eikôn*,
whereas the latter (*technê mimêtikê*) is an imitation of a representation and thus a work of
eidôla.

The top text in the Jewish and Christian subcorpus, which stems from the Septuaginta, is   [72]
another example of a short text in which the term *eidôlon* only appears once, thereby causing
its high relative frequency.

> καὶ ἦν εἴδωλον τοῖς Βαβυλωνίοις, ᾧ ὄνομα Βηλ, καὶ ἐδαπανῶντο εἰς αὐτὸν ἑκάστης   [73]
> ἡμέρας σεμιδάλεως ἀρτάβαι δώδεκα καὶ πρόβατα τεσσαράκοντα καὶ οἴνου μετρηταὶ
> ἕξ. καὶ ὁ βασιλεὺς ἐσέβετο αὐτὸν καὶ ἐπορεύετο καθ᾽ ἑκάστην ἡμέραν προσκυνεῖν
> αὐτῷ· Δανιηλ δὲ προσεκύνει τῷ θεῷ αὐτοῦ.

> Now the Babylons had an idol [*eidôlon*], called Bel, and there were spent upon him   [74]
> every day twelve great measures of fine flour, and forty sheep, and six vessels of
> wine. And the king worshipped it and went daily to adore it: but Daniel worshipped
> his own God. (transl. King James Bible)

The text with the highest absolute number of appearances of *eidôlon* is once more the *Pro-*   [75]
trepticus by Clement of Alexandria (24) followed by Eusebius' *Church History* (20).

Type distribution *eidôlon*

The type distribution of *eidôlon* in the Greco-Roman polytheistic (full) corpus is shown in   [76]
figure 6, whereas the distribution in the Jewish and Christian corpus is displayed in figure 7.

Similarly to the distribution of *agalma*, the *eidôlon* frequently occurs in the nomina-   [77]
tive/accusative singular in the Greco-Roman polytheistic full corpus. Yet, it also appears in
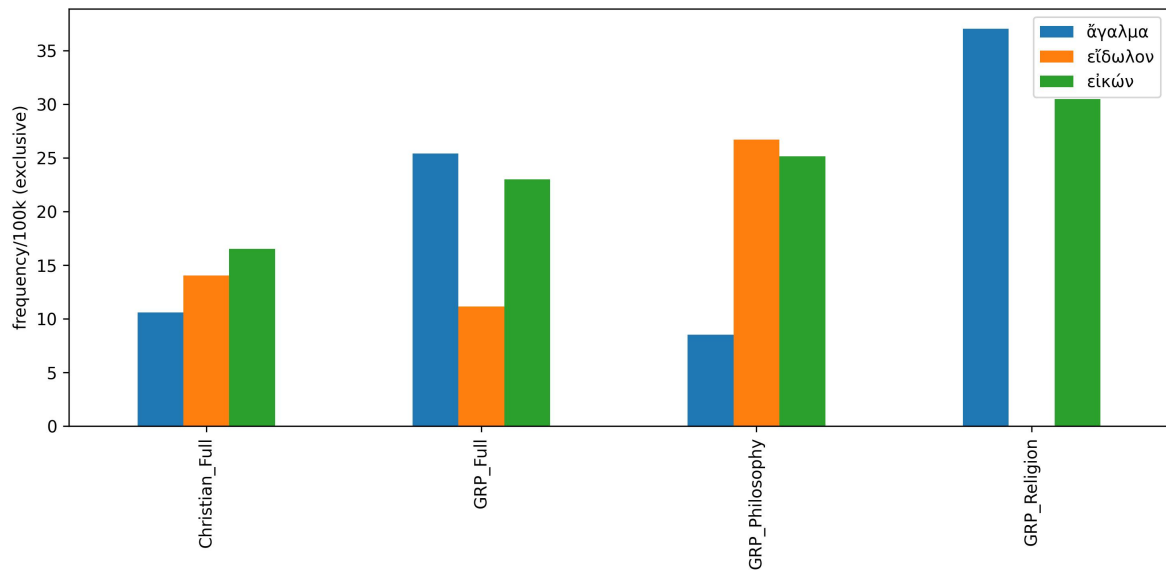
Figure 5 Frequency of *agalma, eikôn,* and *eidôlon* in each subcorpus per 100,000 words, *including only texts in the subcorpus in which the term appeared.*
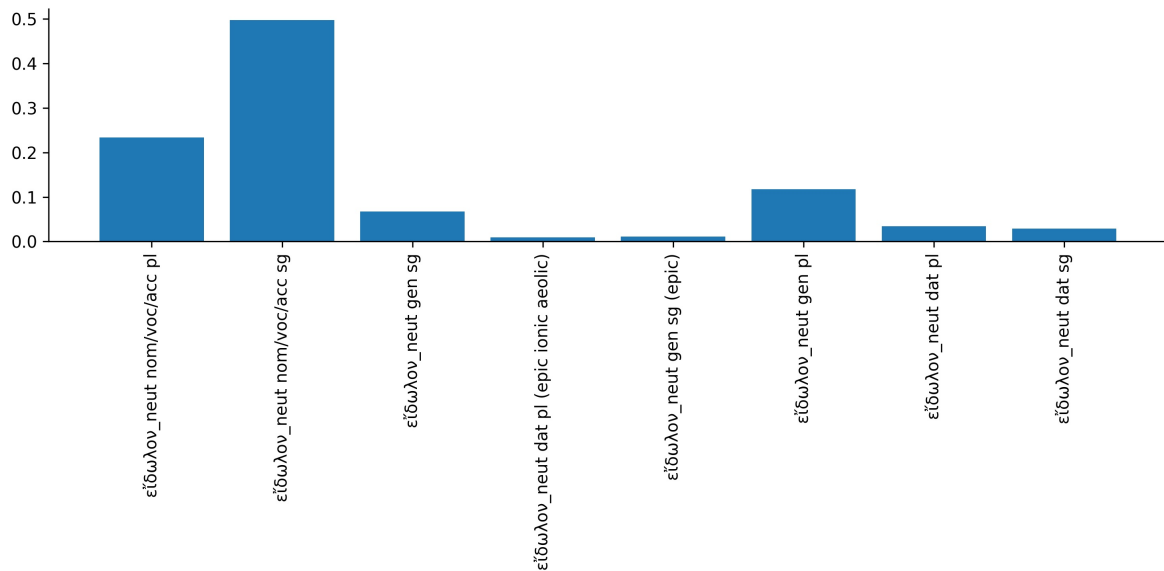

Figure 6 Distribution of *eidôlon* (types, rel. frequency) in the full GRP *Diorisis* subcorpus.
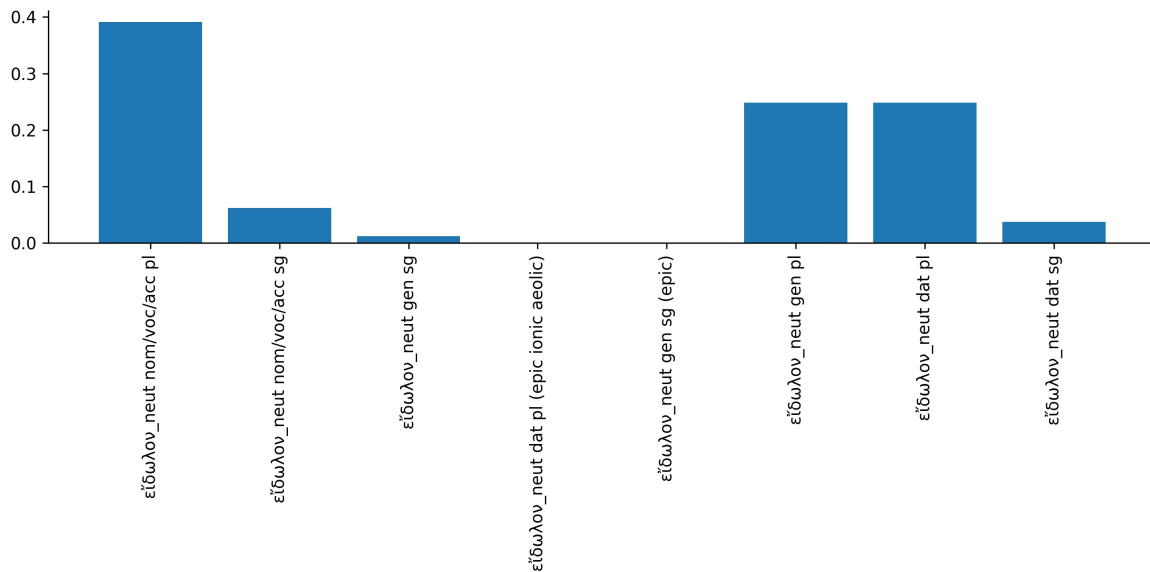
Figure 7 Distribution of types of *eidôlon* (types, rel. frequency) in the Jewish and Christian *Diorisis* subcorpus.

nominative/accusative/genitive plural, although to a lower extent. There is a remarkable difference between the use of *eidôlon* in the Greco-Roman polytheistic and in the Jewish and Christian corpus. In the latter, the term *eidôlon* is mostly used in the plural form, including the dative and genitive cases, whereas its singular form is only seldom found.

This observation demonstrates that the *eidôla* in the Greco-Roman polytheistic corpus, similarly to the *agalmata*, are regarded as individual phenomena. On the contrary, the use and meaning in the Jewish and Christian corpus conveys a more abstract quality of *eidôla* by referring to abstract quantities, which can be interpreted as a more general discussion of images as illusions. [78]

Word Distribution *eikôn*

Table 3 Table word distribution *eikôn* in the different subcorpora.

	full_GRP	philosophy_GRP	religious_GRP	jewish_christian
word_count_exclusive	5,433,035	791,278	13,118	1,012,038
word_count_full	8,634,297	1,218,487	35,770	1,418,531
texts_including εἰκών	216	21	2	29
εἰκών_word_count	1,249	199	4	167
frequency/100k_exclusive	22.99	25.15	30.49	16.50
frequency/100k_full	14.47	16.33	11.18	11.77
text_counter	729	56	41	91

The frequencies of *eikôn* have a similar distribution as those of *eidôlon*. Yet, the *eikôn* appears more often in the Jewish and Christian corpus than *eidôlon*, although in fewer texts (31%). In contrast to the use of *eidôlon*, the *eikôn* also occurs in religious Greco-Roman polytheistic texts. It appears to a similar extent as *eidôlon* in Greco-Roman polytheistic philosophical texts. [79]

The top two texts in each category are: [80]

Full (GRP) Lucian – Imagines ('word_count': 3,183; 'εἰκών': 19; 'rel_frequency/10k': 59.69). [81]

Philosophy (GRP) Plato – Cratylus ('word_count': 17,880; 'εἰκών': 21; 'rel_frequency/10k': 11.75). [82]

Religious (GRP) Julian the Emperor – Hymn to the Mother of the Gods ('word_count': 5,690, 'εἰκών': 3, 'rel_frequency/10k': 5.27). [83]

Jewish and Christian Septuaginta – Daniel ('word_count': 10,507; 'εἰκών': 15; 'rel_frequency/10k': 14.28). [84]

Of particular interest in this list is the reappearance of a Platonic dialog in the category of Greco-Roman polytheistic philosophical texts. Furthermore, the text by Julian the Emperor ("Hymn to the Mother of Gods") is a notable observation since it views a religious cult (that of Cybele and Attis) from a Neo-Platonic perspective and deals with statues and their behavior in various ways. Julian applies several terms to describe the statue of Cybele, among them *ksoanon* and *agalma*. Different from material objects, the statue of the Phrygian mother in Julian's hymn is not lifeless, but her independent behavior demonstrates … [85]

ὡς οὔτε μικροῦ τινος τίμιον ἀπὸ τῆς Φρυγίας ἐπήγοντο φόρτον, ἀλλὰ τοῦ παντὸς ἄξιον, οὔτε ὡς ἀνθρώπινον τοῦτον, ἀλλὰ ὄντως θεῖον, οὔτε ἄψυχον γῆν, ἀλλὰ ἔμπνουν τι χρῆμα καὶ δαιμόνιον. [86]

[…] that the freight they [the Romans] were bringing from Phrygia had no small value, but was priceless, and that this was no work of men's hands but truly divine, not lifeless clay but a thing possessed of life and divine powers. (transl. by Emily Wilmer Cave Wright) [87]

In the passages where Julian discusses statues as concrete objects, terms such as *ksoanon* or *agalma* are applied, whereas the term *eikôn* is used in a more abstract sense as a philosophical likeness or even a "symbol"[18]: [88]

κάθαρσις δὲ ὀρθὴ στραφῆναι πρὸς ἑαυτὸν καὶ κατανοῆσαι, πῶς μὲν ἡ ψυχὴ καὶ ὁ ἔνυλος νοῦς ὥσπερ ἐκμαγεῖόν τι τῶν ἐνύλων εἰδῶν καὶ εἰκών ἐστιν. [89]

And the right kind of purification is to turn our gaze inwards and to observe how the soul and embodied Mind are a sort of mould and likeness [*eikôn*] of the forms that are embodied in matter. [90]

καὶ μὴν καὶ τῶν δένδρων μῆλα μὲν ὡς ἱερὰ καὶ χρυσᾶ καὶ ἀρρήτων ἄθλων καὶ τελεστικῶν εἰκόνας καταφθείρειν οὐκ ἐπέτρεψε καὶ καταναλίσκειν [91]

Moreover in the case of trees it does not allow us to destroy and consume apples, for these are sacred and golden and are the symbols [*eikonas*] of secret and mystical rewards. [92]

In Plato's Cratylus, the term *eikôn* frequently appears in the last third of this treatise that is concerned with the correct naming of objects. Alongside other words for images, such as *zôgraphêma*, the term *eikôn* in its relation to the depicted object is applied as an analogy of the word-object relation: [93]

ἆρ᾿ ἂν δύο πράγματα εἴη τοιάδε, οἷον Κρατύλος καὶ Κρατύλου εἰκών, […]   [94]

If these only were two distinct objects, just like Cratylus and Cratylus' image [*eikôn*], […]   [95]

(Pseudo-)Lucian's dialog *eikones* about the physical and mental beauty of a certain Panthea from Smyrna is another interesting example of the diverse and complex meaning of *eikôn* in the texts in the *Diorisis* corpus. In Lucian's dialog, the term *eikôn* is frequently used as a term for statues whose appearance is compared to that of Panthea, thereby once more revealing the 'referring nature' of the *eikôn*.   [96]

Turning to the Jewish and Christian corpus, the use of *eikôn* in Daniel 2:31-34 denotes a concrete statue. It oscillates between underlining its resemblance to physical attributes and its function as a representation that points to something beyond the material object. It also reflects a more pejorative view on images than in most of the other texts discussed so far: [97]

καὶ σύ, βασιλεῦ, ἑώρακας, καὶ ἰδοὺ εἰκὼν μία, καὶ ἦν ἡ εἰκὼν ἐκείνη μεγάλη σφόδρα, καὶ ἡ πρόσοψις αὐτῆς ὑπερφερὴς ἑστήκει ἐναντίον σου, καὶ ἡ πρόσοψις τῆς εἰκόνος φοβερά· καὶ ἦν ἡ κεφαλὴ αὐτῆς ἀπὸ χρυσίου χρηστοῦ, τὸ στῆθος καὶ οἱ βραχίονες ἀργυροῖ, ἡ κοιλία καὶ οἱ μηροὶ χαλκοῖ, τὰ δὲ σκέλη σιδηρᾶ, οἱ πόδες μέρος μέν τι σιδήρου, μέρος δέ τι ὀστράκινον. ἑώρακας ἕως ὅτου ἐτμήθη λίθος ἐξ ὄρους ἄνευ χειρῶν καὶ ἐπάταξε τὴν εἰκόνα ἐπὶ τοὺς πόδας τοὺς σιδηροῦς καὶ ὀστρακίνους καὶ κατήλεσεν αὐτά.   [98]

(31) You saw, O king, and behold, a great image [*eikôn*]. This image [*eikôn*], mighty and of exceeding brightness, stood before you, and its appearance was frightening. (32) The head of this image was of fine gold, its chest and arms of silver, its middle and thighs of bronze […] (34) As you looked, a stone was cut out by no human hand, and it struck the image on its feet of iron and clay, and broke them in pieces. (transl. English Standard Version)   [99]

This passage from Daniel is of particular interest for the triad of anti-, an-, and iconism mentioned in the introduction of this article. It could be interpreted as an anti-iconic action in which an aniconic object (the mountain) destroys an icon. Even though it might first appear that way, the *eikôn* in Daniel is more than a mere physical presence or decorative object (such as an *agalma*), it is the representation and likeness of the king, which is not evoked through any physical resemblance but through genuine functions such as might and awe. This episode about the statue (*eikôn*) of the king is further elaborated on in Daniel 3, where the Judaeans resist obeying the imperial order to worship the golden image of the king. Overall, this passage demonstrates that the term *eikôn*, although later more positively connotated in Christian thought, still had a rather negative meaning in various Jewish and Christian contexts depending on the object it represented.   [100]

Type distribution *eikôn*

The type distribution of *eikôn* in the Greco-Roman polytheistic (full) corpus is shown in figure 9, whereas the distribution in the Jewish and Christian corpus is displayed in figure 10 .   [101]

Different from the distributions of types of *agalma* and *eidôlon*, the type distribution of   [102]

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18   At least according to the translation cited here. Yet, there is an exception to this rule, namely the mentioning of the "bronze statues in Rome," which are also called *eikôn*.
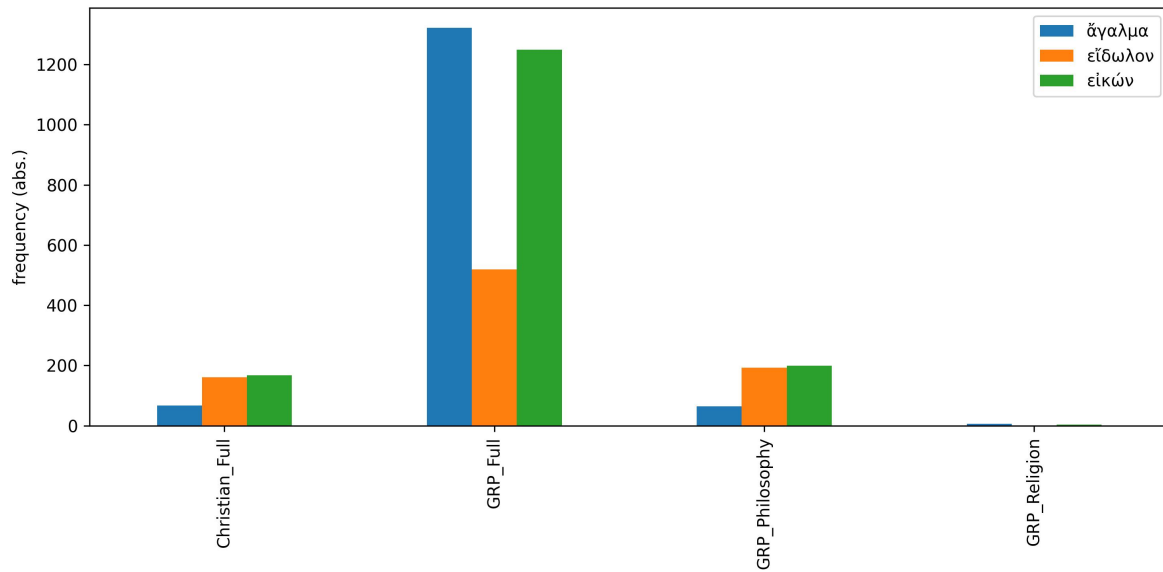
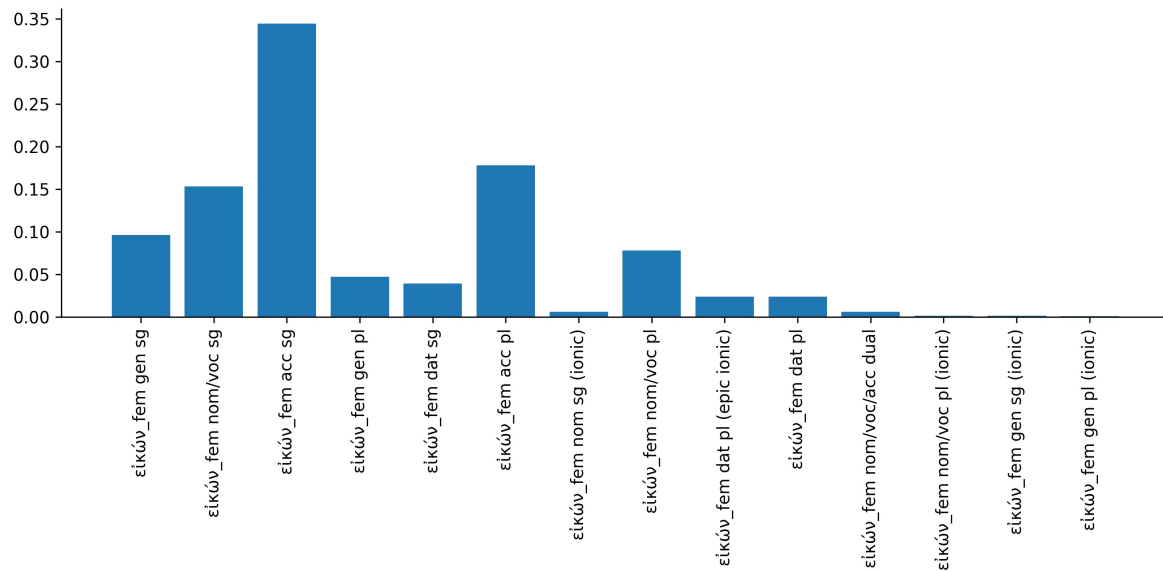**Figure 8** Absolute frequency of *agalma, eikôn,* and *eidôlon* in each subcorpus.

Figure 9 Distribution of *eikôn* (types, rel. frequency) in the full GRP *Diorisis* subcorpus.
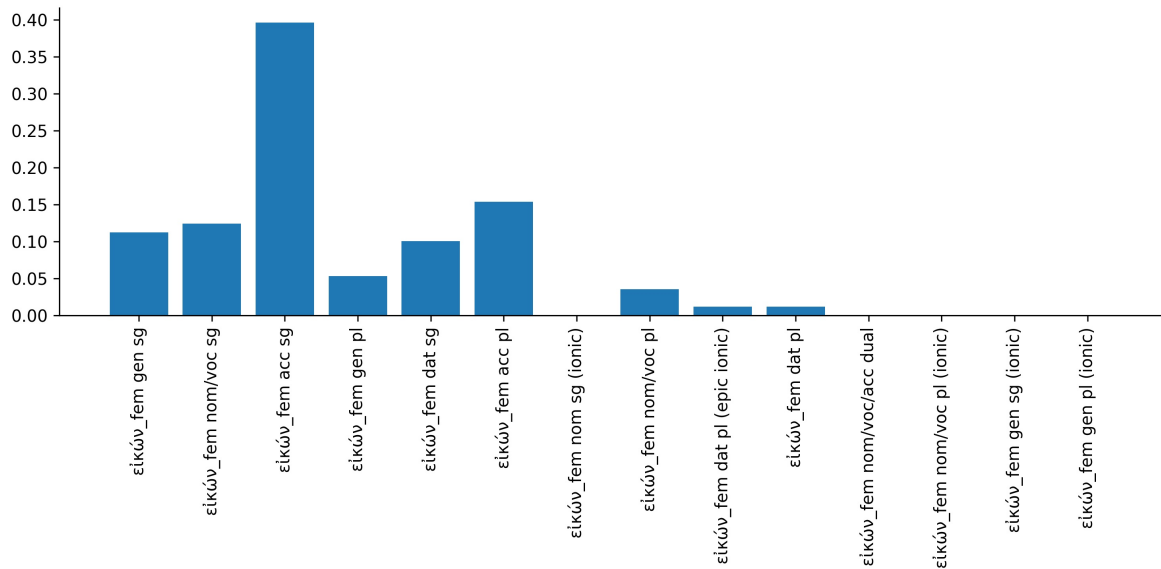
Figure 10 Distribution of *eikôn* (types, rel. frequency) in the Jewish and Christian *Diorisis* subcorpus.

eikôn is very similar in the Greco-Roman polytheistic as well as in the Jewish and Christian subcorpora. The term *eikôn* is mostly used in accusative singular, thereby referring to a single *eikôn*. This could hint at a continuity in the use and meaning of *eikôn* in the Greco-Roman polytheistic as well as the Jewish and Christian subcorpora that will be discussed in more detail in the following sections.

Word Distribution Summary

The distribution of *agalma, eidôlon,* and *eikôn* revealed important differences between the various subcorpora analyzed in this article. *Agalma* only appears to a lesser extent in Jewish, Christian, and Greco-Roman polytheistic philosophical texts. Yet, this term is frequently found in the other Greco-Roman polytheistic texts, and to a large extent in those that focus on the description of the materiality of statues and images, such as in the account by Pausanias. Consequently, the examination of the use and meaning of *agalma* is of central importance for the understanding of the role of materiality in the discussion of images, and its absence in the philosophical as well as most of the Jewish and Christian texts can rightfully be interpreted as a shift from the material to the cognitive dimension in the understanding of images. [103]

Both *eidôlon* and *eikôn* are more frequently found in philosophical as well as Jewish and Christian texts than the term *agalma*. The term *eidôlon* is very present in Greco-Roman polytheistic philosophical works dealing with dreams or illusions, such as Aristotle's *De divinatione per somnum* or Plato's *Sophist*. The term *eikôn* appears to a similar extent in all the subcorpora examined in this article. Its use and meaning covers a wide spectrum, from a more positive (Lucian) to a rather negative perception (Daniel) and from a term that signifies a concrete object (such as the statue of Nebukadnezar in Daniel or Panthea in Lucian's work) to an abstract understanding in the sense of a "likeness" or "symbol." [104]

In summary, the analysis of the word frequency lists and selected examples revealed a rather diverse use and meaning of *agalma, eidôlon,* and *eikôn* both between and within the subcorpora, and particularly in the case of *eikôn* and *eidôlon*. For instance, the assumption of a clear distinction between the negatively connotated *eidôlon* and the *eikôn* as the term for [105]

more accepted images, at least from a Christian perspective, is difficult to maintain since the *eikôn* could have a negative connotation as well. A good example is the book of Daniel and the chapter of "Bel and the Dragon" where both terms are applied with a negative connotation for divine/royal statues.

Collocation Analysis

Greco-Roman polytheism (Full)

The following collocation analysis will further elaborate on the results from the previous frequency analysis by examining the semantic context in which *agalma*, *eidôlon*, and *eikôn* appear in the documents of the various subcorpora. The first part of the collocation analysis examines the collocation of *agalma*, *eikôn*, and *eidôlon* in the full Greco-Roman polytheistic corpus. [106]

The top 10 collocates of *agalma*, *eikôn*, and *eidôlon* in the *Diorisis* Lemmatized Greco-Roman polytheistic Corpus (No Stop Words) are identified using *log-likelihood* as an association measure (06 – LogLik (6.63), L5-R5, C: 3.0-NC: 3.0). [107]

agalma

Table 4 Collocates of the search term *agalma* in the Full *Diorisis* Lemmatized Greco-Roman polytheistic Corpus (No Stop Words).

ID	Position	Collocate	Stat (LogLik)	Freq coll	Freq corpus
1	L	ναός (temple)	1900,795	203	3299
2	L	ἀθήνη (Athena)	1077,964	114	1710
3	R	ποιέω (to make)	1042,756	209	30265
4	R	λίθος (stone)	952,191	104	1798
5	L	ἱερόν (sanctuary)	926,458	105	2136
6	R	ζεύς (Zeus)	841,753	118	5569
7	L	ἄρτεμις (Artemis)	741,120	74	835
8	L	θέα (goddess)	725,237	101	4625
9	L	εἰς (in)	722,413	207	65478
10	R	ἀπόλλων (Apollon)	719,981	83	1801

A closer look at the collocates of *agalma* reveals that most of the associated words refer to: [108]

1. Gods and goddesses [109]
2. Religious places (temples, sanctuaries)

These findings strongly support the initial assumption that the term *agalma* is primarily used as a term to designate concrete man-made (indicated by the verb *poieô*, to make) objects, such as statues, and the context in which they were set up (*naos*, *hieron*, temple/sanctuary). [110]

An illustrative example of this common use of *agalma* as a reference to (a multitude of) statues are the following passages from Herodotus and Pausanias. [111]

δυώδεκά τε θεῶν ἐπωνυμίας ἔλεγον πρώτους Αἰγυπτίους νομίσαι καὶ Ἕλληνας [112]

παρὰ σφέων ἀναλαβεῖν, βωμούς τε καὶ ἀγάλματα καὶ νηοὺς θεοῖσι ἀπονεῖμαι σφέας πρώτους καὶ ζῷα ἐν λίθοισι ἐγγλύψαι.

Furthermore, the Egyptians (they said) first used the names of twelve gods (which [113] the Greeks afterwards borrowed from them); and it was they who first assigned to the several gods their altars and images and temples, and first carved figures on stone. (Herodotus 2.4.2; transl. by Godley)

θέας δὲ ἄξιον τῶν ἐν Πειραιεῖ μάλιστα Ἀθηνᾶς ἐστι καὶ Διὸς τέμενος: χαλκοῦ μὲν [114] ἀμφότερα τὰ ἀγάλματα, ἔχει δὲ ὁ μὲν σκῆπτρον καὶ Νίκην, ἡ δὲ Ἀθηνᾶ δόρυ.

The most noteworthy sight in the Peiraeus is a precinct of Athena and Zeus. Both [115] their images are of bronze; Zeus holds a staff and a Victory, Athena a spear. (Pausanias 1.3; transl. by Jones et al.)

eikôn

Table 5 Collocates of the search term *eikôn* in Full *Diorisis* Lemmatized Greco-Roman polytheistic Corpus (No Stop Words).

ID	Position	Collocate	Stat (LogLik)	Freq coll	Freq corpus
1	R	χάλκεος (of copper)	858,225	83	851
2	L	ποιέω (to make)	548,810	132	30265
3	M	εἰκών (*eikôn*)	509,604	58	1249
4	R	ἵστημι (to set up)	476,273	69	3800
5	L	ὡς (as)	448,833	139	52308
6	L	ἐπί (on)	448,527	140	53429
7	R	ἐκεῖνος (that person)	403,503	101	24903
8	R	εἰς (in)	372,805	135	65478
9	R	ἀνατίθημι (to dedicate)	368,993	42	899
10	L	ἔχω (to have)	360,260	116	46247

The collocates of *eikôn* in the full Greco-Roman polytheistic corpus include: [116]

1. Verbs and prepositions related to the creation or placing of the *eikones* [117]
2. The indication of the materiality of the *eikones* (*chalkeos*)
3. Interestingly, the term *eikôn* seems to regularly appear in the context of other *eikones*.

The term *eikôn* is often used as a general expression to indicate a likeness, which can but [118] does not necessarily have to be represented in the form of a concrete object (although it is certainly used in this sense, as the close relation with "of copper," *chalkeos*, indicates). The application of *eikôn* to denote a concrete object but with the focus on what is represented is demonstrated in the following example taken from Pausanias, where the *eikôn* is used together with *andrias* (another term commonly applied for human statues) to underline the "likeness" of the statue made by Critius:

ἀνδριάντων δὲ ὅσοι μετὰ τὸν ἵππον ἑστήκασιν Ἐπιχαρίνου μὲν ὁπλιτοδρομεῖν [119] ἀσκήσαντος τὴν εἰκόνα ἐποίησε Κριτίας, Οἰνοβίῳ δὲ ἔργον ἐστὶν ἐς Θουκυδίδην τὸν Ὀλόρου χρηστόν:

Of the statues [*andriantôn*] that stand after the horse, the likeness [*eikona*] of Epicharinus who practised the race in armour was made by Critius, while Oenobius performed a kind service for Thucydides the son of Olorus. (Pausanias 1.23.9; transl. by Jones et al.)

[120]

The use of *eikôn* in the presence of another *eikôn* rarely occurs in the sense of an "icon of icons" but mostly due to the dense discussion of (several) *eikones*. An illustrative example of this application of *eikôn* can be found in Aristotle's *Rhetoric*, where *eikones* (in the sense of similes) are discussed in the context of metaphors.

[121]

ἔστιν δὲ καὶ ἡ εἰκὼν μεταφορά: διαφέρει γὰρ μικρόν: [...] καὶ ὡς Ἀντισθένης Κηφισόδοτον τὸν λεπτὸν λιβανωτῷ εἴκασεν, ὅτι ἀπολλύμενος εὐφραίνει. πάσας δὲ ταύτας καὶ ὡς εἰκόνας καὶ ὡς μεταφορὰς ἔξεστι λέγειν, ὥστε ὅσαι ἂν εὐδοκιμῶσιν ὡς μεταφοραὶ λεχθεῖσαι, δῆλον ὅτι αὗται καὶ εἰκόνες ἔσονται, καὶ αἱ εἰκόνες μεταφοραὶ λόγου δεόμεναι.

[122]

The simile [*eikôn*] also is a metaphor [*metaphora*]; for there is very little difference. [...] Antisthenes likened the skinny Cephisodotus to incense, for he also gives pleasure by wasting away. All such expressions may be used as similes [*eikonas*] or metaphors [*metaphoras*], so that all that are approved as metaphors will obviously also serve as similes [*eikones*] which are metaphors without the details. (Aristotle, *Rhetoric* 3.4.2-4; transl. by Freese)

[123]

This passage also illustrates the use of *hôs* ("like," "as") in the context of *eikones*, which is another word frequently appearing in the context of *eikôn* according to the collocation analysis. The use of *eikôn* in Aristotle is a good example of the above-mentioned application of *eikones* in a philosophical context that adds an interesting layer to the concrete and abstract understanding of an *eikôn*, namely that of a rhetorical figure.

[124]

Overall, the collocation analysis of *eikôn* in the full Greco-Roman polytheistic subcorpus shows that an *eikôn* does have a material layer (just like *agalma*). However, it also expresses the "likeness" of an image, meaning that it refers to what is beyond the image and its material representation. This more abstract layer of *eikôn* culminates in the application of *eikôn* in Aristotle's *Rhetoric,* where the *eikôn* is a rhetorical figure, just like a metaphor, denoting a simile.

[125]

eidôlon

Table 6 Collocates of the search term *eidôlon* in Full *Diorisis* Lemmatized GRP Corpus (No Stop Words).

ID	Position	Collocate	Stat (LogLik)	Freq coll	Freq corpus
1	M	εἴδωλον (*eidolon*)	520,086	44	519
2	L	κάτοπτρον (mirror)	291,126	22	131
3	L	ψυχή (psyche)	229,098	36	6276
4	M	σκιά (shadow)	213,722	20	399
5	L	ἄλλος (other)	190,954	53	39077
6	R	ἠέ (ah!)	188,075	56	47191
7	L	ὥσπερ (like)	181,714	36	12278

ID	Position	Collocate	Stat (LogLik)	Freq coll	Freq corpus
8	L	λέγω (to say)	170,071	48	36361
9	R	ὡς (like)	157,270	52	52308
10	R	εἰς (in)	154,420	56	65478

The collocates of *eidôlon* in the full Greco-Roman polytheistic corpus include: [126]

1. Words related to ephemeral phenomena, such as a shadow, psyche, or mirror   [127]
2. Adverbs such as "like" that are used in comparisons

Similar to the observation in the collocation analysis of *eikôn*, *eidôlon* regularly appears in   [128]
the context of other *eidola* as well.

The co-occurrence of *eidôlon* with mirror (*katoptron*) and *psychê* is frequently found in (Neo-   [129]
)Platonic texts, particularly in Plotin's *Enneads*.

Ἦ οὐδὲ εἴδωλον κατόπτρου μὴ ὄντος ἤ τινος τοιούτου.   [130]

Precisely as in the absence of a mirror, or something of similar power, there would   [131]
be no reflection [*eidôlon*]. (Plotin 3.6.14; transl. by MacKenna et al.)

During the discussion of animals and their souls in the first book of the *Enneads*, Plotin uses   [132]
the *eidôlon* of the soul to refer to something that "is there but not there to them [the animals]"
(ἀλλὰ παρὸν οὐ πάρεστιν αὐτοῖς):

Τὰ δὲ θηρία πῶς τὸ ζῷον ἔχει; Ἦ εἰ μὲν ψυχαὶ εἶεν ἐν αὐτοῖς ἀνθρώπειοι, ὥσπερ   [133]
λέγεται, ἁμαρτοῦσαι, οὐ τῶν θηρίων γίνεται τοῦτο, ὅσον χωριστόν, ἀλλὰ παρὸν
οὐ πάρεστιν αὐτοῖς, ἀλλ᾽ ἡ συναίσθησις τὸ τῆς ψυχῆς εἴδωλον μετὰ τοῦ σώματος
ἔχει· σῶμα δὴ τοιόνδε οἷον ποιωθὲν ψυχῆς εἰδώλῳ· εἰ δὲ μὴ ἀνθρώπου ψυχὴ εἰσέδυ,
ἐλλάμψει ἀπὸ τῆς ὅλης τὸ τοιοῦτον ζῷον γενόμενόν ἐστιν.

And the animals, in what way or degree do they possess the Animate? If there be   [134]
in them, as the opinion goes, human Souls that have sinned, then the Animating-
Principle in its separable phase does not enter directly into the brute; it is there
but not there to them; they are aware only of the image of the Soul [*to tês psychês
eidôlon*] [only of the lower Soul] and of that only by being aware of the body
organised and determined by that image. If there be no human Soul in them, the
Animate is constituted for them by a radiation from the All-Soul. (Plotin 1.1.11)

The use of an *eidôlon* as a "shadow" is also frequently found in the Greco-Roman polytheistic   [135]
subcorpus, among others in Plutarch's works and Sophocles' *Philoctet*. Just like the use of
eidôlon in Plotin, its use oftentimes evokes rather negative or imperfect associations, such as
"death" or the "underworld":

[…] κοὐκ οἶδ᾽ ἐναίρων νεκρὸν ἢ καπνοῦ σκιάν, εἴδωλον ἄλλως·   [136]

[…] and does not see that he is cutting down a corpse, the shadow of smoke, a   [137]
mere phantom [*eidôlon*]. (Sophocles, Philoctet, 945-946; transl. by Richard Jebb)

All these passages indicate that the term *eidôlon* is indeed related to a specific realm of representations, namely that of reflections and ephemeral phenomena such as phantoms. This relation does not necessarily include a negative connotation in the Greco-Roman polytheistic texts, but its delusive character is underlined, particularly when compared to other kinds of representations (such as the *eikôn*) or real objects (which the *eidôlon* only superficially represents). [138]

Jewish and Christian Corpus (Full)

Following up on the discussion of the collocation analysis in the Greco-Roman polytheistic full text corpus, I will now continue with the analysis of *agalma*, *eidôlon*, and *eikôn* in the *Diorisis* Lemmatized Jewish and Christian Corpus (No Stop Words). [139]

The top 10 collocates identified using *log-likelihood* (06 – LogLik (6.63), L5-R5, C: 3.0-NC: 3.0) are displayed in the following tables. [140]

agalma

Table 7 Collocates of the search term *agalma* in *Diorisis* Lemmatized Jewish and Christian Corpus (No Stop Words).

ID	Position	Collocate	Stat (LogLik)	Freq coll	Freq corpus
1	L	ὕλη (matter)	79,466	7	126
2	M	ἄγαλμα (*agalma*)	73,956	6	67
3	R	ἀφροδίτη (Aphrodite)	73,313	5	19
4	M	λίθος (stone)	68,680	8	569
5	M	κύπριος (Cyprian)	63,742	4	9
6	M	ξύλον (wood)	51,425	6	423
7	R	ἠέ (ah!)	49,549	9	3046
8	L	θέα (goddess)	48,178	5	206
9	L	αἰσθητός (perceptible)	46,450	3	8
10	L	ἀναισθησία (insensibility)	44,144	3	11

The collocation analysis of the term *agalma* includes words that are related to: [141]

1. Materiality ("matter," "stone," "wood," etc.). [142]
2. (Greco-Roman) deities.
3. Terms related to the senses.

Most of the top terms in the collocation analysis appear exclusively in Clement of Alexandria's *Protrepticus* (in which the term *eidôlon* occurs 54 times), thereby demonstrating how important this text is for the overall use of *agalma* in the Jewish and Christian corpus. Consequently, *agalma* is only seldomly used in the other texts in the Jewish and Christian subcorpus. [143]

The term *hyle* (matter) in connection with *agalma* appears mainly in Book 4 of the *Protrepticus* and can be regarded as representative for the use of the other material terms as well (such as "wood," *ksylon,* or "stone," *lithos*). [144]

Ὡς μὲν οὖν τοὺς λίθους καὶ τὰ ξύλα καὶ συνελόντι φάναι τὴν ὕλην ἀγάλματα [145]

ἀνδρείκελα ἐποιήσαντο, οἷς ἐπιμορφάζετε εὐσέβειαν συκοφαντοῦντες τὴν ἀλήθειαν, ἤδη μὲν αὐτόθεν δῆλον:

It is now, therefore, self-evident that out of stones and blocks of wood, and, in one word, out of matter, men fashioned statues resembling the human form, to which you offer a semblance of piety, calumniating the truth. (Clement of Alexandria, *Protrepticus,* Book 4; transl. by Butterworth)

[146]

ἄλλων ἀνθρώπων οἱ ἔτι παλαιότεροι ξύλα ἱδρύοντο περιφανῆ καὶ κίονας ἵστων ἐκ λίθων: ἃ δὴ καὶ ξόανα προσηγορεύετο διὰ τὸ ἀπεξέσθαι τῆς ὕλης. ἀμέλει ἐν Ἰκάρῳ τῆς Ἀρτέμιδος τὸ ἄγαλμα ξύλον ἦν οὐκ εἰργασμένον, καὶ τῆς Κιθαιρωνίας Ἥρας ἐν Θεσπείᾳ πρέμνον ἐκκεκομμένον:

[147]

Other people still more ancient erected conspicuous wooden poles and set up pillars of stones, to which they gave the name xoana, meaning scraped objects, because the rough surface of the material had been scraped off. Certainly the statue [*agalma*] of Artemis in Icarus was a piece of unwrought timber, and that of Cithaeronian Hera in Thespiae was a felled tree-trunk. (Clement of Alexandria, *Protrepticus,* Book 4)

[148]

These two quotes illustrate the use of the term *agalma* and its close connection with the material quality of an object that, in the case of the Jewish and Christian corpus, is regarded as problematic. The materiality of the statues which was formerly considered as a neutral or even positive part of the description of images (such as in Pausanias *Description of Greece*) turns into one of the central points of critique, namely the delusive worship of "insensible" (*anasthêsia*) material—albeit precious—objects.

[149]

eikôn

Table 8 Collocates of the search term *eikôn* in *Diorisis* Lemmatized Jewish and Christian Corpus (No Stop Words).

ID	Position	Collocate	Stat (LogLik)	Freq coll	Freq corpus
1	M	εἰκών (*eikôn*)	196,386	18	167
2	R	θεός (god)	182,890	39	8514
3	L	ἄνθρωπος (human)	168,304	28	3001
4	L	κατά (downwards)	164,403	35	7508
5	L	προσκυνέω (to worship)	149,580	17	437
6	R	ποιέω (to make)	144,568	30	5945
7	L	θηρίον (animal)	106,630	12	291
8	R	ὁμοίωσις (likeness)	93,542	7	21
9	R	πᾶς (all)	85,806	27	12548
10	R	ἵστημι (to put)	83,535	13	1077

The top terms in the collocation analysis of *eikôn* in the Jewish and Christian subcorpus include:

[150]

1. Verbs partly related to religion ("to worship," "to make," "to put")
2. Nouns and adjectives from diverse domains ("god," "likeness," "animal")

[151]

The terms related to *eikôn* in the collocation analysis stem to a great extent from the *Protrep-* [152]
ticus, but they are also present in other texts, such as the Septuaginta and the New Testament.

The importance of god (*theos*) is of special interest in the collocation analysis of *eikôn* since [153]
theos frequently appears in a very close connection with *eikôn* in the sense of "(after) the
image/likeness of God":

> καὶ ἐποίησεν ὁ θεὸς τὸν ἄνθρωπον, κατ᾽ εἰκόνα θεοῦ ἐποίησεν αὐτόν, ἄρσεν καὶ θῆλυ [154]
> ἐποίησεν αὐτούς.

> So God created man in his own image, in the image [*eikona*] of God he created [155]
> him; male and female he created them. (Gen 1:27)

This quote from the Book of Genesis also demonstrates the typical use of the verb "to make" [156]
in the context of *eikôn* in the Jewish and Christian corpus. The *eikôn* is often applied to express
that something is made *in view of the eikôn*, which is not necessarily an insensible object (as
the frequent appearance of "human being," *anthrôpos*, demonstrates).

Different from the *eikôn* as a "likeness," the verb "to worship" (*proskyneô*) together with [157]
eikôn hints at a concrete material object. This worship of an object is negatively connotated
and the worshiped *eikôn* thus distinguished from the above-mentioned *eikôn* of god, oftentimes
by underlining its material character. Examples are the already-mentioned golden *eikôn* in
Daniel or the animalic *eikôn* in the book of Revelation:

> ὅταν ἀκούσητε τῆς φωνῆς τῆς σάλπιγγος, σύριγγος καὶ κιθάρας, σαμβύκης καὶ [158]
> ψαλτηρίου, συμφωνίας καὶ παντὸς γένους μουσικῶν, πεσόντες προσκυνήσατε τῇ
> εἰκόνι τῇ χρυσῇ, ἣν ἔστησε Ναβουχοδονοσορ βασιλεύς·

> […] that when you hear the asound of the horn, pipe, lyre, trigon, harp, bagpipe, [159]
> and every kind of music, you bare to fall down and worship the golden image [*tê
> eikoni tê xrysê*] that King Nebuchadnezzar has set up. (Daniel 3:5)

> καὶ ἐδόθη αὐτῷ δοῦναι πνεῦμα τῇ εἰκόνι τοῦ θηρίου, ἵνα καὶ λαλήσῃ ἡ εἰκὼν [160]
> τοῦ θηρίου καὶ ποιήσῃ [ἵνα] ὅσοι ἐὰν μὴ προσκυνήσωσιν τῇ εἰκόνι τοῦ θηρίου
> ἀποκτανθῶσιν.

> And it was allowed to give breath to the image of the beast [*tê eikoni tou têriou*], [161]
> so that the image of the beast might even speak and might cause those who would
> not worship the image of the beast to be slain. (Rev 13:15)

Overall, the *eikôn* in the context of the Jewish and Christian corpus denotes two aspects: [162]
Firstly, it is positively connotated not as an individual statue or image but as a likeness or
representation of god that manifests itself in living human beings and not in "dead" images.
Secondly, it is further and explicitly characterized as a "heathen" object of worship by un-
derlining its material form (*golden*, animalic). Similar to the observations in the context of
agalma, it is noteworthy that the former positive or neutral use of material attributes (such
as golden) in the Greco-Roman polytheistic corpus is inverted in the Jewish and Christian
context.

eidôlon

Table 9 Collocates of the search term *eidôlon* in *Diorisis* Lemmatized Jewish and Christian Corpus (No Stop Words).

ID	Position	Collocate	Stat (LogLik)	Freq coll	Freq corpus
1	R	θεός (god)	193,051	40	8514
2	L	πᾶς (all)	150,693	38	12548
3	R	ποιέω (to make)	139,910	29	5945
4	L	σύ (you)	138,947	42	19909
5	L	ἐγώ (I)	113,899	38	21006
6	L	ἐπί (on)	112,954	33	14270
7	R	ἔθνος (heathen)	96,146	16	1716
8	R	θύω (to sacrifice)	73,677	9	317
9	R	δαίμων (demon/deity)	70,540	7	97
10	R	λατρεύω (to worship)	55,201	6	127

The last term examined in the collocation analysis is *eidôlon*. The top words in the Jewish and Christian subcorpus display notable differences compared to the use in the Greco-Roman polytheistic subcorpus. Besides the top word "god," which was also among the top words in the collocation analysis of *eikôn*, there are many words related to religion, such as "demon," "to sacrifice," and "to worship." [163]

In contrast to the use of "god" in the context of *eikôn*, the "god" in the context of *eidôla* does not denote the Christian god but Greco-Roman deities, which is often underlined by additional attributions, such as "demons," or by underlining their material aspects. [164]

πῶς οὖν ἔτι θεοὶ τὰ εἴδωλα καὶ οἱ δαίμονες, βδελυρὰ ὄντως καὶ πνεύματα ἀκάθαρτα, πρὸς πάντων ὁμολογούμενα γήινα καὶ δεισαλέα, κάτω βρίθοντα, ʽπερὶ τοὺς τάφους καὶ τὰ μνημεῖα καλινδούμενα,ʼ περὶ ἃ δὴ καὶ ὑποφαίνονται ἀμυδρῶς ʽσκιοειδῆ φαντάσματαʼ; ταῦθ᾽ ὑμῶν οἱ θεοὶ τὰ εἴδωλα, αἱ σκιαὶ […] [165]

How then can the shadows and daemons any longer be gods, when they are in reality unclean and loathsome spirits, admitted by all to be earthy and foul, weighed down to the ground, and "prowling round graves and tombs" where also they dimly appear as "ghostly apparitions"? These are your gods, these shadows [*eidôla*] and ghosts; […] (Clement of Alexandria, *Protrepticus*, Book 4) [166]

ἐγὼ κύριος ὁ θεὸς ὑμῶν. οὐκ ἐπακολουθήσετε εἰδώλοις καὶ θεοὺς χωνευτοὺς οὐ ποιήσετε ὑμῖν· ἐγὼ κύριος ὁ θεὸς ὑμῶν. [167]

I am the Lord your God. Do not turn to idols [*eidôlois*] or make for yourselves any gods of cast metal: I am the Lord your God. (Lev 19:3-4) [168]

The several verbs related to "worship" point into a similar direction, namely the negatively connotated worship of the Greco-Roman deities (note the interesting term *eidôleion* here): [169]

εἶτα πιστὴν γυναῖκα, Κοΐνταν καλουμένην, ἐπὶ τὸ εἰδωλεῖον ἀγαγόντες, ἠνάγκαζον προσκυνεῖν· [170]

Then they carried to their idol temple [*eidôleion*] a faithful woman, named Quinta, that they might force her to worship. (Eusebius, *Church History*, 6.41.4) [171]

The same negative connotation is found in the Old Testament: [172]

καὶ οὕτως ἐποίησεν πάσαις ταῖς γυναιξὶν αὐτοῦ ταῖς ἀλλοτρίαις, ἐθυμίων καὶ ἔθυον   [173]
τοῖς εἰδώλοις αὐτῶν·

And so he did for all his foreign wives, who made offerings and sacrificed to their   [174]
gods [*eidôlois*]. (1 Kings 11:7)

In summary, the use of *eidôlon* in the Jewish and Christian context demonstrates a clear   [175]
difference compared to its use in the Greco-Roman polytheistic subcorpus. Whereas it was
described as an almost natural, sometimes delusive, phenomenon in the latter, its application
in the Jewish and Christian context evokes a clearly negative associative context, namely that
of material and thus false pagan deities who are the inverse of the Jewish and Christian god.

Collocation Analysis Summary

The collocation analysis of *agalma, eikôn,* and *eidôlon* has revealed both continuities and dif-   [176]
ferences in the use of each term between the Greco-Roman polytheistic and the Jewish and
Christian subcorpora.

The frequent and widespread application of *agalma* in the Greco-Roman polytheistic texts   [177]
disappeared in the Jewish and Christian texts. The term was almost exclusively found in
Clement of Alexandria's *Protrepticus*. The formerly positive attribution of the precious and
artistic character of *agalmata* turned into the opposite: In the Jewish and Christian context,
it was precisely this focus on "dead" materials such as wood or gold that made these statues
worthless or even dangerous.

Even though it was not immediately visible from the two collocation tables, the use and   [178]
meaning of *eikôn* between the Greco-Roman polytheistic as well as the Jewish and Christian
subcorpora was more continuous than in the case of the two other terms. In the Greco-Roman
polytheistic texts, the use of *eikôn* was already twofold: It could denote concrete objects, such
as images or statues; however, its reference to that what was represented in these images
("likeness") or even the abstract use of *eikôn* void of any concrete objects (such as in the con-
text of metaphors in Aristotle) was perceivable as well. This ambiguous meaning oscillating
between the object (*signans*) and that what it refers to (*significatum*) was also visible in the
Jewish and Christian texts. Here, the *eikôn* in the sense of a material object was often nega-
tively connotated, whereas the more abstract use of *eikôn* ("man as a likeness of god") was
positively attributed, for instance via a direct connection to the Christian god.

The application and meaning of *eidôlon* revealed an interesting shift in meaning between   [179]
the two subcorpora. The partly negative connotation of an *eidôlon* in the sense of a superfi-
cial/incomplete representation in the Greco-Roman polytheistic texts was taken up in the Jew-
ish and particularly Christian subcorpus and established as *the* pejorative notion for images no
longer signifying a visual phenomena (such as reflections) but the entirety of Greco-Roman
polytheistic images.

Word Vectors with Word2Vec

The last part of the analysis includes an examination of the closest words to *agalma, eikôn,*   [180]
and *eidôlon* in a word vector comparison via Word2Vec (Skip-Gram). Departing from the

approach in the previous section, I will directly compare the word lists of both the Greco-Roman polytheistic as well as the Jewish and Christian subcorpora for each term in this part of the article.

The similarity between the word vectors in the following tables is expressed as cosine similarity. The cosine similarity can take a value between 0 (both vectors are orthogonal) and 1 (they point into the same direction, thereby indicating a strong semantic relation). [181]

agalma

Table 10 Terms closest to *agalma* in the Greco-Roman polytheistic subcorpus.

Term	
ξόανον (wooden statue)	0.8328
ἀνάθημα (votive)	0.8134
ἀνδριάς (human-like statue)	0.7774
ἀνάκειμαι (to dedicate)	0.7288
τέμενος (temple)	0.7240
βωμός (altar)	0.7224
ἱερόν (sanctuary)	0.7186
εἰκών (*eikôn*)	0.7068
χάλκεος (of copper)	0.6960
ἀνατίθημι (to set up)	0.6776

Table 11 Terms closest to *agalma* in the Jewish and Christian subcorpus.

Term	
ἀναίσθητος (without sense)	0.9838
ἐρεοῦς (woolen)	0.9812
ἀνδριάς (human-like statue)	0.9810
κύβος (cube)	0.9808
στιβαρός (sturdy)	0.9808
ἀνάθεσις (set up)	0.9801
ῥυθμός (measure of symmetry)	0.9790
κάλλιστα (most beautiful)	0.9780
ἄψυχος (lifeless)	0.9776
γυναικεῖος (feminine)	0.9775

The comparison of the two word lists displays significant differences between the closest words to *agalma* according to the word vector analysis. The word list deriving from the Greco-Roman polytheistic corpus mostly includes objects, adjectives related to materiality, and various words related to statues and images, which often have a religious connotation. These words thereby underline the descriptive character of *agalma* already outlined in the previous parts of this article. The closest word is *ksoanon* with a cosine similarity of 0.83, which indicates a close semantic relation between both terms. [182]

The word list from the Jewish and Christian corpus also includes words that stem from the [183]
semantic field of materiality. Yet, there is a more reflected perspective at play, since the mere
materiality is further associated with "lifelessness" and "insensibility." Particularly the term
anaisthêtos is very close with a cosine similarity of almost 1 (0.98). Consequently, the material
character of an *agalma* is also evoked in the Jewish and Christian corpus, but it is interpreted
negatively and with a strong emphasis on the lifeless character of material images. Lastly, it
is noteworthy that only one other term for statues appears in the Jewish and Christian list,
namely *andrias*. This hints at a more differentiated use of terms related to images than it
was the case in the pagan subcorpus, where most of these terms, such as *andrias*, *ksoanon*, or
anathêma were used interchangeably, at least according to the word vector analysis.

eikôn

Table 12   Terms closest to *eikôn* in the Greco-Roman polytheistic subcorpus.

Term	
ἀνδριάς (human-like statue)	0.7655
ἄγαλμα (*agalma*)	0.7068
ἐπιγραφή (inscription)	0.6743
ἐπίγραμμα (inscription)	0.6709
ἀνατίθημι (to set up)	0.6378
ἀνάκειμαι (to dedicate)	0.6363
χάλκεος (of copper)	0.6339
ἀνάθημα (votive)	0.6167
γραφεύς (painter/writer)	0.5934
ξόανον (wooden statue)	0.5907

Table 13   Terms closest to *eikôn* in the Jewish and Christian subcorpus.

Term	
εἴδωλον (*eidôlon*)	0.9275
μίμημα (copy)	0.9244
γλυπτός (carved)	0.9187
θυμία (incense)	0.9146
μεγαλεῖος (big)	0.9110
ὁρισμός (limitation)	0.9094
ὀρθόω (to set upright)	0.9089
λειτουργικός (ministering)	0.9087
ἀναστροφή (conversion)	0.9047
χρυσοχόος (goldsmith)	0.9017

The closest terms to *eikôn* in the full Greco-Roman polytheistic subcorpus are, similarly to [184]
the observations in the case of *agalma*, related to statues and materiality. However, nouns
connected to "to write/draw" (*graphein*), such as writer or inscription, are present as well.
These words did not appear among the top entries of either the collocation analysis or the

word frequency lists. They point to the important interplay between images and writing, for instance on the basis of a statue. A typical example of such an *epigramma* is given in the following quote from Pausanias:

γέγραπται δὲ ἐπὶ τῷ τοίχῳ γράμμασιν Ἀττικοῖς ἔργα εἶναι Πραξιτέλους. τοῦ ναοῦ   [185]
δὲ οὐ πόρρω Ποσειδῶν ἐστιν ἐφ᾽ ἵππου, δόρυ ἀφιεὶς ἐπὶ γίγαντα Πολυβώτην, ἐς ὃν
Κώοις ὁ μῦθος ὁ περὶ τῆς ἄκρας ἔχει τῆς Χελώνης· τὸ δὲ ἐπίγραμμα τὸ ἐφ᾽ ἡμῶν τὴν
εἰκόνα ἄλλῳ δίδωσι καὶ οὐ Ποσειδῶνι.

[Hard by is a temple of Demeter, with images of the goddess herself and of her   [186]
daughter, and of Iacchus holding a torch.] On the wall, in Attic characters [*grammasin Attikois*], is written that they are works of Praxiteles. Not far from the temple
is Poseidon on horseback, hurling a spear against the giant Polybotes, concerning
whom is prevalent among the Coans the story about the promontory of Chelone.
But the inscription [*epigramma*] of our time assigns the statue [*eikona*] to another,
and not to Poseidon. (Pausanias, *Description of Greece* 1.2.4)

Yet, most of the terms listed in the *eikôn* table of the Greco-Roman polytheistic subcorpus   [187]
have a relatively low cosine similarity, at least compared to the cosine similarity in the other
tables. This indicates that there is an observable but relatively vague connection between the
field of writing and images, which differs in its significance from the strong relation between
eidôlon and *eikôn* in Table 13.

The closest terms to *eikôn* in the Jewish and Christian subcorpus are more difficult to in-   [188]
terpret. The appearance of *eidôlon* as the closest term is a good example of the necessity of
complementary qualitative examinations in a mixed-methods approach. Even though the term
eidôlon is indeed used in a close interplay with *eikôn*, particularly in Clement of Alexandria,
both terms have crucial differences in meaning in the Jewish and Christian subcorpus which
are not directly visible when only considering the word vector analysis.

Notably, some other words are also related to the materiality of the objects (such as "gold-   [189]
smith" or "carved"), but most words refer to more abstract concepts, such as *mimêma* ("copy"),
horismos ("limitation"), and *anastrophê* ("conversion"), indicating the complex use and mean-
ing of the terminology in the Jewish and Christian context (which is, particularly in a Christian
context, still based on ancient discussions, since terms such as *mimêma* were already found in
Plato's discussions of *eikôn*).

Interestingly, only few of these terms and subjects were part of the collocation analysis   [190]
or word frequency lists. The word vector analysis thus adds a valuable layer to the overall
examination by revealing relations that were otherwise not visible.

eidôlon

Table 14 Terms closest to *eidôlon* in the Greco-Roman polytheistic subcorpus.

Term	
φάντασμα (phantom)	0.7586
ἀμυδρός (obscure)	0.7220
κάτοπτρον (mirror)	0.7193
μορφή (form)	0.7063

Term	
ὅρασις (seeing)	0.7016
ὁρατός (visible)	0.6840
μίμημα (copy)	0.6745
φαντάζομαι (appear)	0.6715
ἄμορφος (shapeless)	0.6676
χρῶμα (skin/color)	0.6650

Table 15 Terms closest to *eidôlon* in the Jewish and Christian subcorpus.

Term	
βδέλυγμα (abomination)	0.9689
γλυπτός (carved)	0.9447
μίμημα (copy)	0.9321
εἰκών (*eikôn*)	0.9275
θυμία (incense)	0.9267
ὀρθόω (to set upright)	0.9267
ἄφθαρτος (undecaying)	0.9263
ὑπερηφανία (arrogance)	0.9255
ἀνεξιχνίαστος (inscrutable)	0.9249
ἀτιμία (disgrace)	0.9232

The terms in both word lists representing the closest terms to *eidôlon* in both subcorpora resemble the outcome of the collocation analysis. Yet, they also include words that appeared in neither the frequency lists nor the collocation analysis. Similar to the words in Table 12, the words in Table 14 only have relatively low cosine similarity scores, thereby indicating a more distant connection in meaning (at least according to the Word2Vec analysis). [191]

The words closest to *eidôlon* in the Greco-Roman polytheistic full text subcorpus are mainly concerned with different modes of visibility, with a dominating connotation of rather negative phenomena such as "shadow" and "obscure." The words in the list from the Jewish and Christian subcorpus underline the negative character of the *eidôla* in the Jewish and Christian texts, where words such as "abomination" (*bdelygma*) or "disgrace" (*atimia*) are used similarly to *eidôlon*. [192]

Word2Vec Summary

The comparison of the word lists from the word vector analysis revealed interesting additional insights into the use and meaning of *agalma, eikôn,* and *eidôlon.* Most intriguing was the frequent appearance of words related to *graphein* in the context of *eikôn,* thereby pointing out an observable interplay between writing and images. This observation that was not visible in the other examinations fits perfectly to the previous hypothesis that the *eikones* are more concerned with "what is represented" (and thus also referenced through text) than the other terms (such as *agalma*). It also demonstrates that "what is represented" is not always sufficiently visible in the images but might need to be addressed separately (among others, to avoid ambiguous attributions). [193]

The analysis of the word lists from the word vector examination also resulted in additional words absent in the other examinations. These words, however, pointed into a similar direction as the words from the previous examinations (such as materiality), which can rightfully be taken as a proof that the combination of several quantitative (and qualitative) methods delivers the best results since each method helps to complement the shortcomings of the others.

[194]

Conclusion

The results of the quantitative and qualitative analyses of the *Diorisis Ancient Greek Corpus* in this article were able to relate to central points of the ongoing debates on the use and meaning of *agalma, eidôlon*, and *eikôn* (see section 2). Particularly the quantitative analysis highlighted important notions and subjects via a transparent and empirically based methodology, thereby complementing and partially also elaborating on the understanding of the terms in question. In addition, the detailed quantitative and qualitative analyses were also able to shed new light on some details often neglected in the existing overviews of the terminology, for instance, the ambiguous application of *eikôn* in Jewish and Christian texts. Therefore, I hope to have shown that the application of quantitative computer-driven methods is not only useful in the context of new research questions, but that it can also help to rethink and re-evaluate the state-of-the-art of much debated topics.

[195]

Regarding the question of inter-religious contact, the results of the examinations in this article have underlined the complex interrelations of the terminologies between different religious traditions. First and foremost, the Christian traditions did not use or invent a new terminology for images, but they built their evolving taxonomy based on existing word fields. The quantitative and qualitative analyses of the various subcorpora resulted in a detailed tracing of semantic changes between the Greco-Roman polytheistic as well as Jewish and Christian uses and meanings of *agalma, eidôlon*, and *eikôn*. Among others, these changes concerned the topic of materiality and shifts between anti-iconic and iconic modes.

[196]

Firstly, most of the semantic layers of *eidôlon* and *eikôn* in a Greco-Roman polytheistic context were both continued and changed in the Jewish and Christian context. It was particularly the philosophical use and meaning of both terms that was adopted and further elaborated in early Christian texts, whereas the religious meaning with its focus on material objects was either turned into the opposite or entirely dropped. This development was traceable in the semantic change of *eidôlon*, a term that turned from a neutral, partially negative associative context (shadow, phantom, dream) into *the* pejoratively applied term for non-Christian (divine) images in the Christian text of the Jewish and Christian subcorpus. The use and meaning of the term *agalma* with its strong and mostly positive focus on material attributes of images in the Greco-Roman polytheistic texts also fundamentally changed its meaning in the Jewish and Christian corpus. The term *agalma* was either dropped or only applied pejoratively, qualifying the former positively connotated material dimension of images as "lifeless" and "insensible." Overall, the examinations in this article have shown that the material layer of images, which was positively connotated in the Greco-Roman polytheistic texts, was either neglected or polemically used against the Greco-Roman polytheistic adversary in the Jewish and Christian texts, thereby turning the focus in the discussion on images from the material to a more cognitive sphere. Yet, these caveats concerning the materiality of images were also visible in some Greco-Roman polytheistic philosophical texts, for instance in the Platonic di-

[197]

alogs, where the material reference to mere form was also deemed inappropriate. This result is an important contribution to the initially mentioned question of the "relatedness to matter and media in [the] material aspects [of images]," since the issue of the materiality of images plays a crucial role both within and between the texts of the two subcorpora.

Regarding the triad of iconism, aniconism, and anti-iconism, which are also closely related to the overarching topic of media and religion, the examination of the use and meaning of *agalma*, *eikôn*, and *eidôlon* has produced intriguing results as well. In the context of the Greco-Roman polytheistic use of the terminology, both iconic and anti-iconic tendencies were perceivable. The iconic layer was mainly present in the general use of the terminology, since the description and presentation of (religious and non-religious) images was important in many Greco-Roman polytheistic texts across genres, which were concerned with the representational character of these images but could also exclusively focus on their material status. These discussions were often positive or neutral; however, the analysis of philosophical texts also revealed a more critical perspective resulting in a differentiated use of the terminology that was absent in most of the other genres in the Greco-Roman polytheistic corpus (including the few religious texts). [198]

The ambiguous use of *eidôlon* and *eikôn*, that was already present in the Greco-Roman polytheistic texts, continued in the early Christian and Jewish texts. The notion of *eidôlon* turned into *the* central pejorative term for Greco-Roman polytheistic images and their worship, thereby revealing clear anti-iconic tendencies. Yet, the use of *eikôn* kept a more ambiguous character. In the Jewish and Christian corpus, the use of *eikôn* could have anti-iconic tendencies just like *eidôlon* when referring to pagan images and deities. However, due to its more abstract meaning in the sense of a "likeness," it was partly also positively connoted (see the Book of Genesis and Clement of Alexandria's *Protrepticus*). Even though this positive application of *eikôn* was seldom related to statues or images in this early phase, its neutral or even positive abstract associative context (for instance, humans as the *eikones* of god) certainly helped to keep an iconic tendency. Later, this latent iconism might have helped to foster a positive stance towards images during the discussions about the use and worship of actual material Christian *eikones* in late Antiquity and the period of the Byzantine iconoclasm. [199]

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