Note / Nota

GMS – Gammadiae Management System: cataloguing and interpretation project of the so-called *gammadiae* starting from the iconographic evidences in the Roman catacombs

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Abstract

In the Early Christian catacombs of Rome, the use of the so-called *gammadiae* was pretty common. Unfortunately, at the daily state of the art, the comprehension of these symbols is still object of discussion for the international research community. In this paper we present the Gammadiae Management System (GMS), a database developed to study and comprehend the meaning of the so-called *gammadiae* represented on the *pallium* of saint characters in Early Christian catacombs of Rome. The cataloguing process has been useful to understand a particular symbolism used in the Antiquity, since the 1st century A.D. in the Jewish textile evidences, till the Dura Europos synagogue frescoes and, also, in some profane evidences, such as mosaics or precious gems. The so-called *gammadiae* seem to indicate the authority and the moral qualities of the men and, rarely, women who wear the *pallium*. At the moment, the GMS contains 209 forms about the so-called *gammadiae* in the Roman catacombs, realised in various techniques and on different supports.

Keywords

Gammadiae
Clothing
Early Christian Archaeology
Catacombs
Database
Symbolism

GMS – Gammadiae Management System: projecto de catalogação e interpretação dos chamados *gammadiae* a partir das evidências iconográficas nas catacumbas romanas

Resumo

O uso das *gammadiae* era bastante comum nas catacumbas paleocristãs em Roma. Infelizmente, de acordo com o estado da arte atual, a compreensão destes símbolos ainda é objeto de discussão entre a comunidade internacional. Este artigo apresenta o Sistema de Gestão *Gammadiae* (GMS), uma base de dados desenvolvida com vista ao estudo e compreensão do significado das *gammadiae* apresentadas no *pallium* de catacumbas romanas de santos paleocristãos. O sistema de catalogação revelou-se útil para entender o simbolismo específico usado na Antiguidade, desde o século I d. C., em testemunhos têxteis judeus, em frescos da sinagoga Dura Europos e ainda em testemunhos profanos, nomeadamente mosaicos ou pedras preciosas. As *gammadiae* parecem evidenciar autoridade e costumes morais nos homens, e raramente em mulheres, que usavam o *pallium*. Neste momento, o GMS possui 209 entradas acerca das *gammadiae* em catacumbas romanas, realizadas através de várias técnicas e em diferentes suportes.

Palavras-chave

Gammadiae
Vestuário
Arqueologia Paleocristã
Catacumbas
Base de dados
Simbolismo

The so-called *gammadiae* and their interpretative problem

The study of the so-called *gammadiae* has always presented numerous troubles [1]. The discovery of their symbolic meaning and origin has involved many scholars [2] who tried solving questions starting from their personal observations over the course of centuries.

These symbols were improperly called *gammadiae* because of a strong similarity with the Greek letter Γ [3-4], according to the common opinion of the research community; furthermore, they were represented on the hem of the *pallium* worn by Christ, saints and apostles as depicted in Early Christianity (Figure 1) [5]. Indeed, the *gammadiae* – term that, from now, will be conventionally used in this paper – have never been object of a systematic analysis to finally catalogue them and understand their meaning.

Nevertheless these symbols – which changed their shape by the end of the 4th century A.D. becoming real letters, totally different from the square frames which are typical of curtains or table clothes – seem to be important *iconographic appendages* that distinguish the saint characters in particular. Usually ignored in the academic descriptions or superficially mentioned, they were waiting for a deeper study why them emerged since the first appearance on textile in the 1st century A.D. textiles (but this is a research in progress), then on the Jewish frescoes of the Dura Europos synagogue, on the profane evidences and on the more known Early Christian ones.

During the last years, Luca Avellis [6] and Maciej Szymaszek [7-8] proposed relevant insights that bring back the attention on this little known iconographic argument, without forgetting the famous Antonio Quacquarelli's iconological-patristic digression [9-22]. In his recent work, Maciej Szymaszek [23-24] focused his reflections on statistical data taken from iconographic and chemical textile analysis, stating that the *gammadiae* didn't belong to a particular religious meaning and, at the same time, they were present in various artistic evidences spread in the entire ancient world.

Instead, the textile evidences are only a part – although very substantial – of the large universe that involved the *gammadiae*. With no doubt, before the coming of the modern archaeological excavations and the consequent findings, scholars founded their theories on the direct or indirect observations of the frescoes and the basilical mosaics. While first ones were located in the catacombs and a limited number of scholars obtained access to the ancient Christian cemeteries, the second ones were, instead, more reachable because of their location in freely accessible monuments.

The study of the *gammadiae*, based exclusively on the pictures published in the Antonio Bosio's *Roma Sotterranea* [25], has essentially led to inaccuracies and real morpho-

Figure 1. Rome. Catacomb of St. Callixtus, Cubiculum of sheep. Zoom on the *gammadia* on the St. Peter's *pallium* [5, tab. 237,2].

logical mistakes, which have influenced ideas and suppositions about the intrinsic meaning of these symbols during some centuries. The absolute trust in the Maltese scholar's tome, without having carried out checks about the illustrated reliability of the catacomb frescoes, caused the wrong interpretation of some symbols which were seen as merely inexistent letters [2]. This is the case with the *gammadia* X, result of the confusion originated by the partial deterioration of the appendages of a swastika; this is also the case of the *gammadia* T, resulted by the confused interpretation of the *gammadia* ⊥ whose base was deteriorated or differently traced [24, p. 656-657] (Figure 2) [25].

Until the accurate Joseph Wilpert's watercolours [5] and the Antonio Quacquarelli's [9-22] brave studying attempt, who interpreted the *gammadiae* in a more patristic and numerological way than really iconographic, it wasn't possible to define a detailed and complete view of this symbols represented in the Early Christian catacombs.

Gammadiae Management System: a database to catalogue the so-called *gammadiae*

The advent of technology, computers and photographic cataloguing systems made all this possible.

The GMS was born as an auxiliary instrument for the Ph.D. research "Le *gammadiae* nelle catacombe romane: censimento ed ipotesi interpretative" (The *gammadiae* in the Roman catacombs: census and interpretative hypothesis) [26], in which the author focused her attention on the specific analysis of the ancient Roman cemeteries. Thanks to the availability of the Pontifical Commission for Sacred Archaeology, it was possible to inspect catacombs and consult its historical and modern photographic archive. The presence of different *gammadiae* in some cemeterial frescoes has been reported to redact a complete catalogue.

Considering that the *gammadiae* were not yet studied in a systematic way, the need has emerged to create a database, providing a tool to catalogue them. Currently the database is accessible under request to the corresponding author only at the following address: http://gammadiae.000webhostapp.com.

The GMS has been entirely developed in PHP and uses the framework Bootstrap for the graphic interface, to guarantee a better user experience depending on the used device (desktop, smartphone, tablet). It is able to collect the complete file, with the expansion possibility and data modification, so that, through this tool, the various information derived from it can be processed.

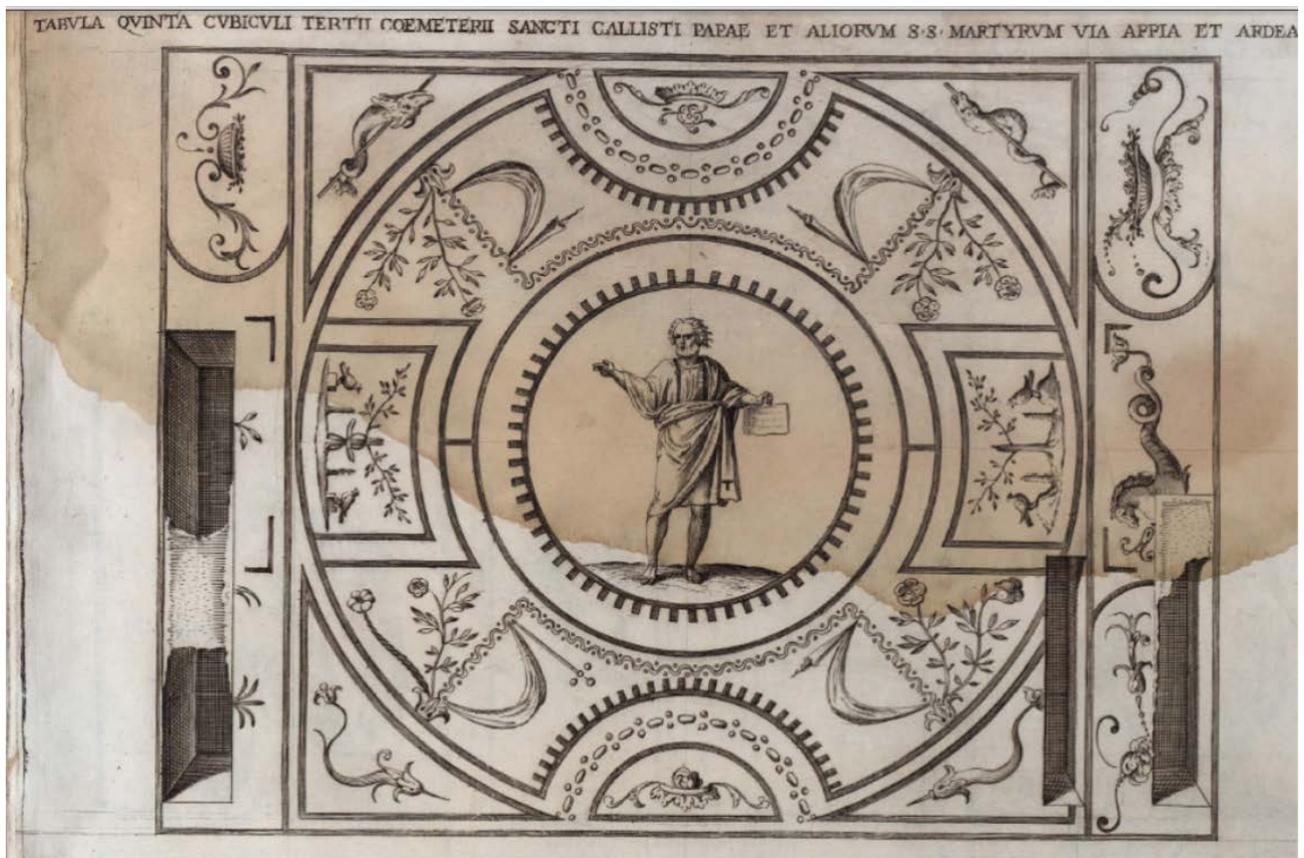Every *gammadia* is represented by a form containing the following information fields (Figures 3-5):

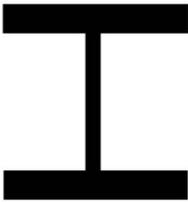**Figure 2.** Rome. Catacomb of Domitilla, Cubiculum of David [24, p. 247].

Figure 3. Form example from database GMS. Sections: monument/document; support/technique/ color; date; count occurrences; location description; map image; location image.
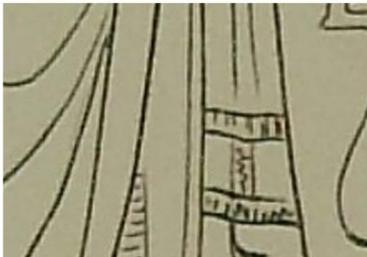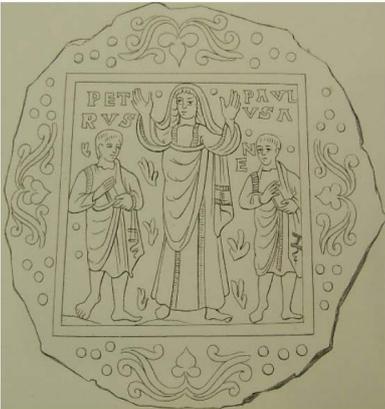

Figure 4. Form example from database GMS. Sections: character; scene; scene context; description; comments; restoration and conservation; consulted bibliographies; photo of a particular.

Figure 5. Form example from database GMS. Sections: photo of context; related *gammadiae*.

- **Numeration:** this field represents the catalogue number (it is worth noting that it is unique because it represents a specific *gammadia*) provided with a dot from the progressive form number;
- **Monument/document:** this represents a cemetery/ monument/ document on which or in which the *gammadia* is reported. This field is functional to the type of object/ place will be investigated (cemeteries, archaeological sites, manuscripts, engraved burial stones, gold glasses, textiles, etc.);
- **Support/technique/ color:** this field contains information about the technique used to create the *gammadia* (fresco, mosaic, stucco, etc.) and its color, because of the chromatic variation depending on the investigated monument/document;
- **Date:** specifying the century or the precise year of the monument/document;
- **Count occurrences:** specifying the number of visible *gammadiae* on the analyzed character's garment;
- **Location description:** indicating the specific position of the fresco in the cemetery (cubicles, arcosolia, loculi, etc.), or the find conservation site. In this same field, the references to pictorial or photographic repertories are included;
- **Map:** if available, the map (of a catacomb or other archaeological sites) is inserted in this field. On the map, the specific location of the analyzed *gammadia* must be indicated;
- **Location image:** in this field the image of the general catalogue edited on

the morphologic changes that the *gammadia* suffered during the centuries will be inserted;

- **Character:** this field represents the character that wears the garment with the *gammadia*. It is required in the case of figurative scenes and could be empty in the case of other materials (i.e.: textile fragments);
- **Scene:** specifying the scene in which the analyzed character is present;
- **Context:** this field is dedicated to the complete description of the scene with references to the Old and New Testament passages, in case it is dealing with a Christian episode, or other narrative features found in different representations (profane or Jewish ones). It contains the description of the archaeological context in the case of textile fragments with *gammadiae*;
- **Description:** including the morphological description of the *gammadia*;
- **Comments:** reporting the eventual scholars' opinions and manually curated comments about the analyzed *gammadia*;
- **Restorations and conservation:** this field is dedicated to the recovery operations and/or the degradation status of the monument/document;
- **Consulted bibliography:** the field will be completed with the principal bibliographic references;
- **Photo of a particular:** this image concerns the details of the *gammadia*;
- **Photo of the context:** this image concerns, instead, the whole scene;
- **Related *gammadiae*:** this field includes a list of related *gammadiae*. They could be directly linked to each other because founded on the same monument/site/find. This is the case of catacomb frescoes representing scenes in which one or more *gammadiae* are depicted.

In order to select useful information and obtain statistical data, the GMS provides a simple but efficient feature to filter out the *gammadiae* with common characteristics (Figure 6):

- Numeration
- Monument/document
- Support/technique/color
- Date
- Count occurrences
- Character
- Scene

This feature could be expanded in the future, implementing automatic search and cataloguing tools that exploit advanced Machine Learning and Computer Vision techniques.

It is worth noting that the values of these 7 out of 18 features are at most key words and numbers making the search operation extremely easy. Conversely, the other 11 features could contain free text. This is essentially the main reason why they were not considered. However, these fields could contribute to extract significant insights, so the search feature will be for sure improved in future.

Roman catacombs are, in fact, only one of the various and numerous realities in which the presence of these particular symbols is documented. The double meaning of some of the previously described entries has been inserted for this reason, so that the GMS can be used to catalogue also frescoes related to other Christian cemeteries, Jewish and profane archaeological sites, or finds as intact or fragmentary textiles, portrait sarcophagi, monumental mosaics, gold glasses, engraved burial stones and gems [27].

The final aim of the GMS project is to become a national and international study tool, to ensure that these symbols do not remain something still *mysterious*, providing the possibility to study and understand them and widely spread their meaning to the international scientific community.

Figure 6. Filter form from database GMS.

For what concerns the Roman catacombs, with the addition of two devotional monuments, such as the so-called Christian Chapel under the St John's Hospital [28-32] and the Pammachio's Oratory under the basilica of the Saints Giovanni and Paolo [33-34], the results were satisfactory to understanding the use of the *gammadiae* in the Early Christian iconographic sector between the second half of the 3rd century A.D. and the end of the 4th-beginnings of the 5th century A.D., with some offshoots related to the 6th-7th centuries A.D. few catacomb frescoes.

The 212 *gammadiae* realized with fresco technique correspond to 184 forms, while the 26 *gammadiae* in golden sheet correspond to 21 forms, although the gold glasses examined are 12.

In fact, sometimes a single character wears a garment with two *gammadiae* not completely identical from a morphological point of view, for which several separate forms have been created.

For what concerns the only one *gammadia* realized in mosaic [35, p. 462; 36-38] there is one correspondence, so one form; the 4 *gammadiae* engraved on burial stones correspond to 3 forms related to 3 engraved burial stones from the *Maius* Cemetery, the catacombs of Giordani and the catacombs of Commodilla [39, vol. 8, 21730a; 40-41; 42, fig. 447, p. 944; 43].

Finally 209 forms were completed in GMS, but the total number of single *gammadiae* is 243.

In order to be able to identify every single evidence, all frescoes of the Early Christian catacombs of Rome and of the hypogea under the protection of the Pontifical Commission for Sacred Archaeology were examined, as well as other monuments, logically not included in the analysis for the lack of evidences useful for the investigation.

The analysed *gammadiae* were identified in the following Early Christian cemeteries, which will be listed following the itinerary called *Notitia Ecclesiarum* [44, p. 67-99]:

Figure 7. Rome. Catacomb of Ciriaca, Arcosolium of Zosimiana [5, tab. 205].

Figure 8. Synagogue of Dura Europos, Moses saved from the river [52, fig. 178].

- Catacombs of St. Ermete;
- Catacombs of Giordani;
- Anonymous catacombs of via Anapo;
- Catacombs of Priscilla;
- *Maius* Cemetery;
- Catacombs of Ciriaca;
- Catacombs of Novaziano [45, p. 221; 46; 47, n. 51, p. 13];
- Catacombs of St. Marcellinus and St. Peter;
- Anonymous hypogeum of via Dino Compagni;
- Catacombs of St. Sebastian;
- Catacombs of ex vigna Chiaraviglio;
- Catacombs of Pretestato;
- Catacombs of St. Callixtus;
- Catacombs of Saints Marc, Marcelliano and Damasus;
- Catacombs of Domitilla;
- Catacombs of Commodilla;
- Catacombs of St. Tecla;
- Catacombs of Generosa;
- Catacombs of Ponziano.

The statistical analysis, from which a morphological reflection was derived, highlighted an important result: the most widespread *gammadia* among all the known symbols is certainly the ⌶ (corresponding to No. 79 of the reference catalogue [25]) which, during its permanence in Roman cemetery painting, assumed a different morphological meaning depending on the skill of the performing artist or the inclination due to the verse of the *pallium* on which it was represented (Figure 7) [5]. It is possible to make this deduction exclusively from the complete observation of every existing evidence and the related comparisons. This same *gammadia*, for example, will be represented inclined, remembering the letter Z – facing left or right – especially in the two cemeteries of Domitilla [48] and Via Anapo [49].

Sometimes, the *gammadia* ⌶ is more similar to the letter I, because the artist usually produced his work with a thinner stroke – without considering the proportion of the letter itself with the style of the involved fresco and with the shortest apices.

Sometimes, it seems that the painters interpreted the *gammadiae* not as simple symbols, but as letters, perhaps to make them more comprehensible. In the 4th century A.D. we have, for example, only two samples of angular *gammadiae*, that take the shape of the letter L in the same cubicle [50, p. 69; 51, p. 99] of the hypogeum of via Dino Compagni, but this is not surprising.

In fact, it will be extremely relevant to make a comparison between the Christian evidences and, specifically, the Jewish ones, considering the various textile evidences and the frescoes of Dura Europos [52, vol. 9, p. 124-174; 53].

It seems that those symbols with *toothed ends*, represented either vertically or horizontally, either represented as a strip or an angle, and thus marked in the 1st-3rd centuries A.D., have arrived within the iconography and Christian symbolism towards the second half of the 3rd century A.D., remaining and taking root in the Christian religion.

These same symbols, which can not be assimilated to letters, always seem to hold the same function both in Jewish antiquity and in the profane ages [27; 54, n. 79, p. 172; 54, p. 221; 55-56], until the Christian era: highlighting the moral importance, the authority, the rightness or the sanctity of the individual characters wearing the *pallium* marked by the *gammadiae*. In the past, Goodenough [52, vol. 12, pp. 164-165] had already guessed that the symbols represented in the Dura Europos synagogue could have been inserted in order to highlight a symbolic force intrinsic to specific characters, dressed in the Greek manner, but further comparisons needed to verify such a hypothesis.

Additionally, in the Christian sector, another peculiarity seems to be inserted. It concerns the rotating swastika towards the left, probably following a functional process that highlights the Christological symbolism and, in some cases, the vision of Christ as *Sol Iustitiae*.

Thus, the GMS can be defined as a data driven tool to extract significant insight. Also, in the case of Christianity: no simple deceased man or woman wears garment marked by any *gammadia*; contrarily, the holy characters (i.e.: Christ, the apostles, the martyrs, following in some way the Jewish trail analyzed to Dura Europos, in which only the righteous, the patriarchs and their retinue, the mother and sister of Moses), wear clothes marked by the *gammadiae* (Figure 8) [52].

In Christianity, essentially all men wear the *pallium* with the *gammadiae*, with the exception of St. Agnes, represented on the gold glass from the catacombs of Novaziano [45-47]. This is an extremely interesting evidence. It means that St. Agnes deserves to be elevated to the level of all the other martyrs, saints and apostles for her purity and morality.

Furthermore, from a topographical point of view, the GMS revealed that a great number of frescoes with the *gammadiae* are mainly concentrated in some specific areas of the catacombs.

In particular, this is evident in the catacombs of Domitilla and the St. Marcellinus and St. Peter [57], suggesting that the people buried in these places could have the same origins, or it could follow a specific cultural flow according to which the *gammadiae* were used as symbols. In fact, not all the frescoes, although representing the same scenes, are affected by these symbols, which presupposes a weighted and not mechanical choice by the costumers and not by the painters [58].

Therefore, it is important to highlight this phenomenon in relation to the totality of the frescoes in the catacombs: despite the fair number of evidences with the *gammadiae*, few of them presents these symbols. A strong concentration is also recorded in the anonymous hypogeum of via Dino Compagni [50-51] in which profane members were supposedly buried, but also Christians with probably Jewish roots.

The use of the GMS has therefore allowed carrying out a hard research, without which, presumably, no equally interesting insights would have been obtained. The way to eventually understand the *gammadiae* is still long, unless a fortunate discovery will finally reveal their meaning and origin.

However, it is still possible to follow the most tortuous and long *road*, but perhaps even more satisfying to reconstruct the symbolic puzzle: the cataloguing of all the pictorial, mosaic, sculptural, textile, etc. evidences marked by the *gammadiae*. Only in this way we will be able to perform a chronological and topographical analysis, until we will reach a final reconstruction of that movement of the people that led to a certain cultural diffusion.

The GMS project – which actually needs funding to continue the international cataloguing – could be the first data driven tool to be used in collaboration with international museums and research organizations to try to reconstruct another piece of our complex history.

Acknowledgements

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