# **Cursed at Saqqara: Multidisciplinary research on Egyptian execration figurines**

by

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#### Abstract

In 1922, more than one hundred clay figurines were discovered in the Saqqara necropolis (northern Egypt) by the British Egyptologists Firth and Gunn. The figurines, dated to the late Middle Kingdom (1850-1700 BC), are symbolic representations of enemies, made of unfired clay and inscribed with texts cursing domestic and foreign enemies. In 1938, a group was purchased by Jean Capart for the Royal Museums of Art and History in Brussels.

Shortly after their arrival in Brussels, a small part of the collection was published, but the majority received little attention. Several figurines were transferred to other museums abroad (Leiden, Tel Aviv). In 2014, the figurines became the subject of a research project focusing on the development of a multispectral imaging system. A decade later, the study of this collection is still ongoing. The focus is no longer on documenting and cataloguing, but has expanded to include archaeological, archival and archaeometric research.

#### Keywords

Egyptology – execration figurines – multispectral imaging – portable XRF – archives

# Titel

De vloek van Saqqara. Multidisciplinair onderzoek naar Egyptische verwensingsbeeldjes

#### Abstract

Ruim 100 jaar geleden werd in de necropool van Saqqara (Egypte) een grote groep beeldjes uit ongebakken klei ontdekt door de Britse Egyptologen Firth en Gunn. De verwensingsbeeldjes uit het late Middenrijk (1850-1700 v. Chr.) zijn symbolische voorstellingen van vijanden, gemaakt uit ongebakken klei en beschreven met hiëratische verwensingsteksten. In 1938 besloot Jean Capart de collectie aan te kopen voor de Koninklijke Musea voor Kunst en Geschiedenis in Brussel.

Kort na hun aankomst in Brussel werd een deel van de collectie reeds gepubliceerd, het merendeel kreeg echter weinig aandacht. Een aantal beeldjes kwam uiteindelijk terecht in buitenlandse collecties (Leiden, Tel Aviv). In 2014 werden de beeldjes het onderwerp van een onderzoeksproject waarbij de focus lag op het ontwikkelen van een multispectrale beeldvormingsstrategie voor het documenteren van dit belangrijk erfgoed. Een decennium later gaat het onderzoek naar deze collectie nog steeds door. De focus ligt niet langer op het zuiver documenteren en inventariseren van de beeldjes, maar heeft zich uitgebreid naar zowel archeologisch, historisch als archeometrisch onderzoek.

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# Trefwoorden (max. 5)

 $Egyptologie-execratie figurines-multispectrale\ beeldvorming-portable\ XRF-archieven$ 

# Paper

#### The road to Brussels

In 1922, a large group of unfired clay figurines was discovered at Saqqara, part of the necropolis of Memphis (Giza Governate, Egypt), by the British Egyptologists Cecil Mallaby Firth (1878-1931) and Battiscombe George Gunn (1883-1950) (Bierbrier, 2012, p. 190-191, 232). Firth had already been excavating for the Service des Antiquités in the area of the Teti Pyramid since 1920. In the vicinity of the cenotaph of Sekwaskhet, several groups of unfired clay figurines were found (Posener, 1940, p. 17; Porter & Moss, 1981, p. 549; Abdalla, 1992). This remarkable collection of execration figurines from the late Middle Kingdom (1850-1700 BC) consisted of symbolic representations of enemies, inscribed with execration texts written in hieratic, an ancient Egyptian cursive writing system.[1] These inscriptions are preserved in varying degrees, with some faded and others no longer visible to the human eye. By listing foreign countries, tribes, rulers and specific places, they are internationally recognised as important sources for ancient onomastica and the political geography of ancient Western Asia (Theis, 2014, p. 82-85). Some figurines were buried in clay coffins. At the time of their discovery, the importance of these figurines was not fully recognized, and after several years in a warehouse, a group was sold on the antiquities market by the Khawam Brothers, a licensed antiquities dealer based in Cairo (Bierbrier, 2012, p. 294). Jean Capart (1877-1947), often regarded as the father of Belgian Egyptology, decided to purchase the collection for the Royal Museums of Art and History (RMAH) in Brussels in 1938.

Shortly after their arrival in Brussels, a small part of the collection was published by the French Egyptologist Georges Posener (1906-1988). Posener focused on the large figurines with the so-called standard execration texts (Posener, 1940). These texts mention the enemies of the Egyptian state, including Libyan, Nubian, Asian leaders and tribes, as well as local Egyptians.

The collection was acquired for a - at the time - large amount of money, and the initial idea was to recover a part of their investment. A representative sample was selected by Jean Capart with the assistance of Marcelle Werbrouck (1889-1959), curator of the Egyptian collection at the RMAH, and kept in the museum. The remaining figurines were divided into five batches (dubbed Lot A – E) with the intention to sell these to other public collections abroad. The museum asked for 10.000 Belgian francs per Lot, or an exchange of objects with a similar value. The Dutch National Museum of Antiquities (Rijksmuseum van Oudheden) in Leiden acquired Lot C, containing twelve figurines, in 1941. Lot D went to the Eretz Israel Museum in Tel Aviv but, although the Lot initially contained twelve figurines, only eight figurines were exchanged for a batch of finds from different sites in Palestine (Van der Perre et al., 2018).

The other groups (Lot A, B and E) remained in Brussels but received little attention. This would change in 2014, when these figurines became the subject of a pioneer research project funded by the Belgian Science Policy Office BELSPO (EES Project, BRAIN-BE Pioneer: BR/121/PI/EES), focusing on the development of a multispectral imaging system suitable for documenting important heritage (Delvaux et al., 2017). The study of this collection is still ongoing. The focus, however, is no longer on purely documenting and cataloguing the figurines, but has expanded to include archaeological, historical and archaeometric research. As unfired clay objects are extremely fragile and the pigments of the inscriptions are fading, handling entails a risk of loss of information. Comprehensive, detailed documentation makes objects more and safely accessible for further research. High quality imaging of the inscriptions will aid the study of the texts, thus contributing to the study of the meaning and use of the objects.

The Egyptian Execration Statuettes (EES) Project (2014-2017) aimed to develop new imaging techniques - using interactive 2D, 3D and multispectral images - to improve the legibility of inscriptions and enhance the decorations on (clay) objects. The Saqqara execration figurines were chosen as a case study, as large sections of the red hieratic inscriptions faded or even became illegible.

The project went beyond its projected core objectives. In addition to the development of the imaging system, and the cataloguing and describing of the figurines, other goals were set... and reached. An integrated approach was developed, consisting of both multispectral imaging, macroscopical observations and chemical characterisation techniques (Table 1).

Table 1 Multidisciplinary approach developed during the EES Project, and applied to the Brussels and Leiden execration figurines.

	Methodology	Outcomes
Archaeology, history	Archival and literature study on find circumstances and context	Complete object biography
Technology	Typology; shaping experiments	Classification and reconstruction of manufacturing process
Material	Non-destructive chemical analysis of clay and pigments (pXRF)	Material characterisation (provenance) and resource procurement
Palaeography	Visualisation of faded inscriptions through multispectral, interactive 3D imaging (MS PLD system with freeware visualisation software)	New reconstructions/readings; documentation (3D models with IR and UV-based texture maps)
Conservation	Analysis of state of preservation under magnifying lamp, trinocular microscope	Documentation; condition assessment forms; conservation categories

#### 1) Multispectral Imaging

The Multispectral Microdome system, developed by KU Leuven, consists of a dome-shaped device that illuminates and records an object from 228 angles with infrared, red, green, blue and ultraviolet LEDs (FIG. 1; Van der Perre et al., 2016). Based on the processed dataset, the 3D and reflective characteristics of all surface features are reconstructed. The results can be inspected via an online and open-source tool, the Pixel+ viewer. [2]

The outcome of the multispectral imaging was twofold: 1) interactive multispectral exploration and visualization of the inscribed surface to allow the full study and dissemination of the hieratic texts; and 2) it provided comprehensive visual artifact documentation, including 3D information that the museum can use for research, conservation and presentation.

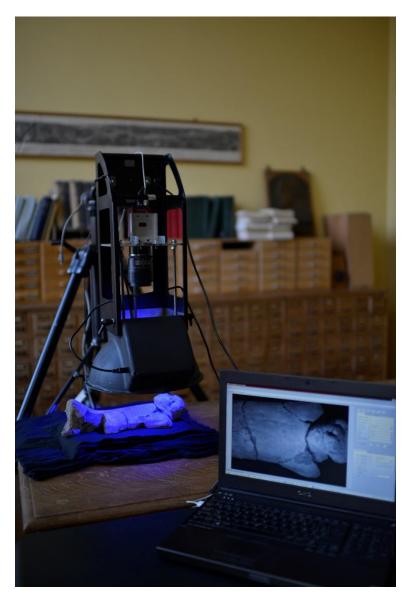


Figure 1: Recording of the Type A Figurine E.07442 at the RMAH, Brussels with the Multispectral Microdome (© EES Project).

## 2) Condition reports

Owing to their fragile condition, a considerable number of the unfired clay figurines have been subjected to conservation treatments, most recently in 1997–1998, but these were scarcely documented. For each of the figurines the current physical condition was assessed and recorded in standardised condition reports, created in collaboration with museum conservation staff. Completed whenever possible with archival documentation on conservation treatments, this macroscopic examination aimed to understand the history of their condition over the course of 100 years. Multi-light reflectance scans furthermore documented the figurines' physical appearance and the preservation and degradation of the surface layers (Delvaux et al., 2017, p. 12-14).

The forms systematically record observations on the state of the surface layer, the inscriptions, the object's interior, and includes collected information on prior conservation measures. The incidence of

deterioration within the interior is relatively limited, generally consisting of cracks and crazing that compromise structural stability. Such issues can frequently be ascribed to the composition of the clay, particularly the size and quantity of inclusions. The inscriptions, by contrast, are mostly damaged by flaking of the wet-finish surface layer. This occurs because the clay's original structure was altered during wetting and smoothing, producing a thin layer that behaves differently during the drying process compared to the rest of the clay body. As a result, it tends to detach easily, especially when salt formation is present. On the basis of these observations, the collection was classified into four conservation categories, determined by the present condition of the surface layer, the state of the interior, and the degree of cohesion between them. Fewer than half of the figurines are currently assessed to be in a stable state, whereas the majority exhibit either marked deterioration or serious preservation concerns.

# 3) Shaping techniques and typology

Visual observations and the experimental production of figurines types by the ceramics conservation lab of the RMAH, conducted by France Ossieur, indicated that the figurines were hand-modelled from a single clay roll or coil, without the use of tools or mould. The figurines have been smoothened with a so-called wet-finish after being modelled in order to facilitate the writing of the inscriptions. The creator dips his hands in water and runs his fingers over the surface in order to smoothen it, thus creating a thin layer on the figurines, often showing traces of (partial) fingerprints.

At first sight, a preliminary division of the Saqqara assemblage in two groups is apparent: a group of fairly large figurines (> 30 cm), and a group containing smaller figurines (c. 10–15 cm). Based on a technical study of the figurines and classification according to physical characteristics, a typology was developed during the EES project (Van der Perre, 2021). The Brussels group was divided into five types, Types A–E, of which E contains two subtypes (E1–E2). The typology can also be applied to the other assemblages from Saqqara (Leiden, Tel Aviv, Cairo).

Table 2 Overview of the typological variations in Brussels, Leiden and Tel Aviv.

Type	Dimensions	RMAH Brussels	RMO Leiden	Eretz Israel, Tel Aviv
Type A	c. 30-35 cm c. 2500 gr.	E.07440, E.07441, E.07442, E.07443, E.07444, E.09060, E.09061, E.09062, E.09063, E.09064, E.09095	F.1941/8.1	
Туре В	c. 10-15 cm 120-200 gr.	E.07445, E.07446, E.07447, E.07448, E.07449, E.07451, E.07472, E.07489, E.07490, E.07491, E.07492, E.07608, E.07611, E.07614,	F.1941/8.2, F.1941/8.3	42, 115

		E.09076, E.09079, E.09090, E.09092, E.09093		
Type C	c. 12-16 cm 180-250 gr.	E.07452, E.07454, E.07463, E.07466, E.07607, E.07610, E.07613, E.09071, E.09082, E.09083, E.09084, E.09085, E.09086, E.09091, E.09094, E.09097, E.09100	F.1941/8.10	92, 102, 113, 119
Type D	Cannot be determined	E.07453, E.07458		
Type E (fragments)		E.07481, E.07482, E.07483, E.07485, E.07486, E.07487, E.07488, E.07609, E.09072, E.09074, E.09087, E.09089, E.09098, E.09099	F.1941/8.4, F.1941/8.6, F.1941/8.7, F.1941/8.8, F.1941/8.11, F.1941/8.12	
Type E1	c. 15-17.5 cm 170-200 gr.	E.07450, E.07456, E.07457, E.07460, E.07461, E.07462, E.07464, E.07465, E.07469, E.07471, E.07473, E.07474, E.07477, E.07478, E.07479, E.07480, E.07484, E.07493a, E.07494a, E.07612, E.09065, E.09066, E.09067, E.09068, E.09069, E.09077, E.09078, E.09080, E.09081, E.09088, E.09096	F.1941/8.5, F.1941/8.9	45, 58
Type E2	c. 15-18 cm 170-200 gr.	E.07455, E.07459, E.07470, E.07475,		

A	E.07476, E.09070, E.09073, E.09075	

Multi-light reflectance and multi-spectral imaging significantly improve the study of shaping techniques, while limiting the physical handling of these fragile objects. The finest details on the figurines are documented on these recordings, for example the traces created on the wet-finish layer, including the direction of traces and the depth of the marks.

# 4) Pigments

Two types of pigments were used for the inscriptions. The large figurines with the standard execration texts, and the majority of the smaller figurines were inscribed with a red pigment. A small sample of the smaller figurines (11 in total) carries inscriptions in black ink, which was identified as black carbon.

Non-destructive chemical analysis of the pigments through X-ray fluorescence spectroscopy allowed identifying the red pigment as red ochre, which was later confirmed by Fiber optics reflectance spectroscopy (FORS) (Van der Perre et al., 2024).

#### 5) Provenance

In the course of the project, additional research questions were formulated on the homogeneity of the group. While discovered in a closed archaeological context, these figurines show a clear typological variation and the paleographic study of the inscriptions suggest different scribal hands. The unfired clay figurines were analyzed with non-destructive portable X-ray Fluorescence spectrometry (pXRF) to examine the chemical homogeneity of the group and define the composition of the raw materials (Braekmans et al., 2019). The variability in Nile and marl clay deposits makes it highly complex to define and classify clay and ancient ceramic provenance groups. Nevertheless, chemical characterization of the figurines allowed studying potential direct use of clays in the vicinity of Saggara. The complete geochemical data of the collections and their analysis in Brussels and Leiden have been published in Braekmans et al. 2019 and Van der Perre et al. 2024. The provenance analysis at Saggara indicated that despite the remaining difficulties of clay and ceramic sourcing in Egypt, some regional patterns seem to occur. However, to substantiate this further more research on various assemblages is needed, such as shown in successful recent research efforts by Emmitt et al. (2018), Mohamed Mohamed and Omar (2023), Quinn et al. (2025) and Page (2024). Especially the integration of these types of studies can generate the necessary critical mass of data to address remaining provenance issues.

Apart from the material studies, the archival records regarding these figurines were also studied. In Belgium, the archives of the RMAH, the Association Egyptologique Reine Elisabeth (AERE) and the State Archives were consulted. Abroad, the archives of the National Museum of Antiquities at Leiden and the Griffith Institute at Oxford (archives of Gunn and Černý) were consulted. These archives are crucial repositories of records and correspondence that allow understanding the decisions and thought process of the involved parties and the movements of the figurines.

It is clear that, even though Capart played a vital role in the acquisition of these figurines for the Museum in Brussels, he thoroughly relied on the opinion of several colleagues, and especially on the expertise of the French Egyptologist Georges Posener. As stated above, Posener had studied the execration figurines shortly after they arrived in Brussels. The correspondence between Posener and Capart was kept in the archives of the Fondation Egyptologique Reine Elisabeth (FERE), the current AERE. It shows the complex situation created by the ambiguity of Capart's position in this purchase. As the director of the RMAH, Capart strongly supported the creation of independent foundations that were closely connected to the different departments at the museum. These foundations were not obliged to follow the same complicated procedures as the museum regarding hiring staff or spending their budget, thus making it easier to actually realize his plans while still benefitting the museum (Mairesse 2000, p. 39-40). In this light, the purchase of the figurines must be regarded. On the one hand, he acted on behalf of the FERE in his role of director, discussing the (historical) importance of the figurines with colleagues and searching for additional funds to sponsor the purchase. This explains why Posener's letters were added to the FERE archives, and did not end up in the "official" museum documentation on the acquisition of the figurines. At the same time, however, Capart was also director of the RMAH, where he was in the position to approve the acquisition of objects for the museum and to decide on which funds were available. He was well-known for his close relationship with state authorities. When he wanted to bring one of his missions successfully, he never ceased to reiterate his requests, without ever losing his faith. The combination of his talent for negotiating and his legal training resulted in finding very clever, often out-of-the-box, ways for retrieving the desired budgets for his plans (Mairesse 2000). Apart from this, he was also very keen in stressing his close connection with the Royal Family, when the occasion asked for it.

The inventory and digitisation of the FERE archives was one of the objectives of another BELSPO-funded research project on the history of Egyptology in Belgium, the EOS Pyramids & Progress project (2018-2021) (De Meyer et al., 2018). During this digitisation process, it became clear that several files from the archives were either missing or incomplete, amongst them also the file containing the Posener correspondence (Lambrichts et al. 2021). Only a few years ago, however, the file was recovered and eventually digitised.

The letters between Capart and Posener reveal new information on the Saqqara figurines. While we lack the letter of Capart informing Posener on the newly arrived figurines in Brussels, we do have Posener's answer dated the 11th of May 1938. Posener states "Je viens de faire une découverte surprenante dans un magasin du Serv[ice] des Antiq[uités] de Saqqarah. J'y ai trouvé un gros lot de fragments du statuettes en terre crue qui portent des Ächtungstexte et doivent ressembler à celles qui vous intéressent."[3]

In 1938, the remaining figurines were still present in the storeroom at Saqqara. It was Posener who asked to transfer them to the Museum in Cairo: "Je n'ai pas encore pu déterminer où et quand ces fragments ont été découverts. Ils viennent sûrement des fouilles du Service à Saqqarah et sont sortis il y a 10-13 ans. Je les ai fait transporter au Musée pour les étudier." So only a few years after Firth's death (in 1931), the provenance of these figurines was already forgotten. The promised publication of the find by Firth and Gunn was never finished, and Firth's excavation reports and notes went missing. Gunn's manuscripts are preserved in the Griffith Institute at Oxford, but his personal archive does not contain any archaeological reports or detailed descriptions relating to the discovery of the figurines.

The notebook he used to study some of the figurines is preserved [4], but also lacks additional information on the find.

#### National Museum of Antiquities (Leiden)

In 1941, the so-called Lot C, a group of 12 figurines, was purchased by the National Museum of Antiquities (Rijksmuseum van Oudheden), now registered as Leiden F.1941/8.1-F.1941/8.12.

In 2022-2023, the Leiden execration figurines were studied in detail for the first time, thanks to a research grant of Leiden University (Museum, Collections and Society grant 2023 of the Leiden University Center of the Arts in Society), "Uniting the separated: a multifocal contextualization of the Saqqara execration figurines" (Braekmans et al., 2024). The objectives of this project were threefold. First of all, the documentation of the figurines as 3D objects and the enhancement of the inscriptions' readability. Secondly, a condition assessment, including a study of the typological characteristics, and evaluation of the environmental conditions. Finally, to acquire better insights into the objects' lives as these were no longer running parallel to the Brussels group. For this, it was necessary to look into the archaeological, technological, typological, palaeographical and material homogeneity of the group. Therefore, the multidisciplinary methodological approach developed under the EES Project was now applied to the Leiden group (Van der Perre et al., 2024).

The condition assessment proved that the Leiden figurines were still in excellent shape, and that the inscriptions were not threatened by fading or problems with the cohesion of the wet-finish layer. Furthermore, the study showed that the Leiden figurines neatly fitted into the Brussels typology (cfr. Table 2). The most remarkable result of this study, however, was the confirmation that the object lives of the figurines did not influence any of the chemical characteristics of the clay, as the results were fully consistent with the Brussels data (Van der Perre et al., 2024, p. 432-437).

#### Eretz Israel Museum (Tel Aviv)

The study of the Tel Aviv collection is still in a preliminary phase. The eight execration figurines of so-called Lot D, were exchanged against Palestine objects, more precisely 22 pieces of ceramics dating to the first millennium BC and a Christian stone ossuary. The initial agreements were made in 1953 between Godefroy Goossens (1912-1963), the curator of the Near Eastern collection in Brussels, and Walter Moses (1892-1955), the founder of the Eretz Israel Museum at Tel Aviv. Neither would actually witness the final exchange, as it only took place in 1964.[5] Initially, based on the division made by Capart and Werbrouck, Lot D contained twelve figurines. As stated above, only eight were shipped to Israel (Nrs 42, 45, 58, 92, 102, 113, 115, 119). Two other figurines (Nrs 4 and 88) were sent on loan in 1953 for the exhibition "From the Land of the Bible" in New York, curated by W. Moses [6], but returned to Brussels instead of being shipped back to Tel Aviv. They were later added to the RMAH inventory. The two remaining figurines, mentioned on Werbrouck's list of Lot D, Nrs. 47 and 100, had already been removed from the Lot before the negotiations started. These were registered in the Brussels inventory in January 1942.

Based on the study of the original photographs made by the RMAH, the Tel Aviv group only contains figurines of Types B, C and E1 (cfr. Table 2).[7] It is remarkable that no Type A figurines - containing the standard execration texts with references to foreign enemies - were exchanged. The Eretz Israel Museum did, however, receive one figurine with the rare black hieratic inscriptions (Nr. 115, Fig. 2).



Figure 2: Execration Figurine Nr. 115 (Type B) with rare black hieratic inscriptions. This figurine is currently stored at the Eretz Israel Museum at Tel Aviv (© RMAH).

Photos of the Tel Aviv figurines were found in the personal files of Jaroslav Černý (1898-1970), the Czech Egyptologist and renowned specialist in hieratic (Bierbrier, 2012, p. 110-112).[8] Even though it is likely that they were studied by him, he never published his results, nor was there any information left in his archive.

No further assumptions on their current conditions can be made. Already in 2015, however, several of the inscriptions were no longer legible due to inadequate preservation.[9]

# Future prospects

As the original assemblage of figurines was dispersed, and with the fragile state of several figurines in mind, the applied techniques can help to digitally reunite this important group of heritage objects. A first step has been taken in Leiden, with the successful application of the approach developed during the EES Project. The continued archival research will allow gaining a complete and more in-depth view of the object lives of these figurines.

One of our future aims is to study the Cairo and Tel Aviv collections by using the methodology developed during the EES project, in order to complete the reunion of the entire group. For the Tel Aviv group, part of the archival research has already been completed. The Cairo group is currently still a blind spot in our data, as the objects are not accessible for research. [10]

The publication of the so-called Standard Execration Texts, written on Type A figurines, was done in 1940 by Posener. A revision of this publication, based on the multispectral images acquired during these projects, however, is still in development. Similarly, the publication of the inscriptions on the

smaller figurines (Types B–E) was said to be under preparation by J. Osing since several years. This, however, could also benefit from the use of the recent multispectral images.

In a later phase, the approach described in this paper can be used to study other groups of execration figurines in order to create a better understanding of this specific type of figurines, their inscriptions, ritual context and especially their materiality.

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#### Notes

- [1] For more information on the execration ritual, see Ritner, 1994, p. 136-142. On the Egyptian execration figurines in general, see Kühne-Wespi, 2023. The specific Middle Kingdom Saqqara execration ritual is discussed in Van der Perre, 2024.
- [2] The pixel+ viewer can be consulted at <a href="https://www.heritage-visualisation.org/viewer/">https://www.heritage-visualisation.org/viewer/</a>.
- [3] Archives Association Égyptologique Reine Élisabeth, BE/380469/2/668, Posener Georges.
- [4] Griffith Institute (Oxford), Archives Gunn, Gunn MSS Notebook 29.
- [5] Royal Museums of Art and History, Brussels Archives, Dossier BE-380469-11-553.
- [6] The exhibition "From the Land of the Bible. An Archaeological Exhibit Presented by the American Fund for Israel Institutions" opened in the Metropolitan Museum of Art in New York (14 June–1 November 1953). Afterwards, it moved to the Natural History Museum, Smithsonian Institute, in Washington, D.C. (10–27 January 1954). It then left the USA, and was shown in the Gemeentemuseum Den Haag, Netherlands (June–September 1954) and the British Museum, London, United Kingdom (26 October–31 December 1954).
- [7] For more detailed information on the different types and their characteristics, see Van der Perre, 2021.
- [8] Griffith Institute (Oxford), Archives Černý, Černý MSS 2.195-213.
- [9] Personal communication with Dr. Irit Ziffer, curator of the Ceramics and Nehushtan (metals) pavilions at the Eretz Israel Museum, 06/10/2015.
- [10] It appears that the Cairo group was never entered into the museum's official inventory (the Journal d'entrée). Drs. Tori Finlayson managed to identify two boxes in the museum inventory with a temporary number (1.6.38.1-2), that contain "terracotta figurines and model coffins". While these might contain the Saqqara figurines, it cannot be confirmed, as the boxes themselves could not be located in the storeroom of the museum.

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