

Making a Cat Mummy. Some Case Studies from Italian Collections*


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Abstract

The mummification of sacred animals surged in the New Kingdom and reached its peak between the Third Intermediate and Roman Periods. Animal mummies are artefacts, which give information about Egyptian cults and funerary practices, especially the mummification process. At the same time, their study offers a unique perspective where one can explore the social and economic impact of the proliferation of sacred animals, as well as the evolution of each individual species and their environment. After a brief overview on cats in Egyptian daily life and material culture, this work will focus on their role as sacred animals, and on different techniques used to make cat mummies, using unpublished samples kept in Italian collections as case studies.

Keywords

Cats, animal cults, craft, mummification, Egyptian religion

From the Predynastic Period, cats are attested in Egypt as proven by cat remains buried in both human and independent graves.¹ According to some scholars, during the Old Kingdom, genets and ichneumons were more common in iconography than cats (Alliot 1951, 21). However, Houlihan (1996) postulated that from the 5th Dynasty the swamp cat (*felis chaus nilotica*) was represented. A cat is depicted with an oryx on a relief-fragment from the Room of the Seasons in the Sun Temple of Nyuserra at Abu Ghurab.² Two hunting scenes, coming from the tomb of Pehenouka at Saqqara, show a feline advancing towards both a porcupine and a gazelle (De Cenival 1999, 76). Moreover, a limestone relief found in the Middle Kingdom pyramid complex of Amenemhat at el-Lisht, but stylistically dated back to the later Old Kingdom (5th-6th Dynasties) bears the epithet “Lord of Cats’ Town”.³ This demonstrates that cats were well-known during this time, but that they were not yet domesticated. In the Middle Kingdom, the sign , which translates to the onomatopoeic word *miw/imy* (Bresciani 2007, 84)⁴ “cat”, is attested for the very first time both in writing and onomastics (Malek 1993, 47-48). The word was also used for an epithet of the cat-headed goddess Pakhet (*Hwt mit*; Alliot 1951, 20), phonetically written

* All photographs are by the author, except those in Figures 2, 3, and 10, which are by L. Meomartino.

¹ See the case of Mostagedda; Estep 1992-93, 74.

² Ägyptisches Museum, Berlin, Inv. no. 14814; von Bissing 1956, 337, pls. IIb, XXId; Edel, Wenig 1974, 28, tf. 20, no. 710.

³ Metropolitan Museum of Art, New York, Inv. no. 15.3.1708; Goedicke 1971. The epithet was still attested in the Ramesside Period (Aufrière 1999).

⁴ Alliot (1951, 20) proposed *ēmīōú*, *ēmōú*; *ēmīē*.

above the image of a cat, painted in the tomb of Baqet III at Beni Hassan.⁵ Also dating to this time period is the earliest-known three-dimensional representation of the feline in Egyptian art.⁶ These sources could suggest that the role of cats was changing within Egyptian daily life. From the New Kingdom onward, the cat is frequently attested in domestic contexts, where it appears as a beloved family pet. Due to its fertility (Plutarco, *DIO*, 63), it was identified as a protector of the family, the home and newborns and was frequently shown under the seat of the mistress of the house, as a symbol of female sensuality (Mekhitarian 1991, 23-30, Malek 1993, 112-122). An example of a deep connection between men and cats is shown by the limestone sarcophagus⁷ that the prince Djhutimose built for his own cat, Ta-myt.⁸ On its sides, is the first evidence we have of a depiction of a cat mummy (Fig. 1).



Fig.1 - CG 5003-Egyptian Museum (Cairo), XVIII Dynasty, Mit Rahina

The mummification of sacred animals first began in the New Kingdom,⁹ and increasingly gained popularity between the Third Intermediate and Roman Periods (Bleiberg 2013; Ikram 2015). The reason for the proliferation of animal cults is still debated.¹⁰ Some scholars (Ikram 2005a, 8) believe that this phenomenon was a religious expression of national identity in order to counteract foreigners who ruled and inhabited Egypt from the Third Intermediate Period onwards. Others (Meeks 1986, 190) speculated that these animals (which according to some texts in the Hor archive were a living manifestation of deities; Ray 1976, 73-80, text 19,5 *recto*, 25,3), “made the gods, on some level, more accessible to the people” (Ikram 2015, 4). Furthermore, the increase in popularity of animal cults was supported by the administrative policy of the pharaohs who during these times, benefited economically from the growth of the sacred animal industry (Malek 1993, 98).¹¹ Breeding was part of this business (Ikram 2015, 9)

⁵ South wall, eastern end of the main chamber of the tomb no. 15 (Newberry 1893, II, pl. VI). At Beni Hassan, the animal is also shown on the west wall of the main chamber of the tomb of Khnumhotep II (Newberry 1893, I, 70, pl. XXXIV). A limestone fragment of a stela from the same period was found by Petrie in the precinct of the temple of Min at Koptos (Petrie Museum of Egyptian Archaeology, London, Inv. no. UC14323). It shows a cat under a woman’s chair. See Malek 1993, 49-51.

⁶ Metropolitan Museum of Art, New York, Inv. no. 1990.59.1. This is a cosmetic vessel in the shape of a cat made of travertine. The animal is shown in a hunting position and has rock-crystal eyes, lined with copper.

⁷ Egyptian Museum, Cairo, Inv. no. CG 5003; el-Sabban 2000.

⁸ This was also the name of a cat goddess attested from the New Kingdom (Yoyotte 2005, 523), as shown by two stelae kept at Museo Egizio in Turin (Inv. no. C. 1591, 1600); Fabretti *et al.* 1882, II, 163-164, 166; Bruyère 1927, 67, fig. 52.

⁹ The first areas of the Apis Bull necropolis in Saqqara were built in this period (Mariette 1882-83). The dog mummy of Amenhotep II (Bleiberg 2013, 79) and a wooden coffin in the shape of a lion-headed goddess containing a cat mummy (British Museum, London, Inv. no. EA11483) also date back to the same time.

¹⁰ For literature about the topic see Ikram 2015, 4.

¹¹ About the importance of animal cults in Ancient Egyptian economy, see Ikram 2015.

and took place in sacred enclosures (De Cenival 1977, 26).¹² Cats were raised in sacred precincts called αλουροταφος¹³ set up near the temples of some Egyptian goddesses such as Bastet (Pubblico 2017a), Mut (te Velde 1982), Pakhet (Roeder 1959, 22 §19c, 92 §26, 188 §48a), Rattai (Lepsius 1849, no. 315), Rayt (*Dendera* II, 210, 6). Due to the strong prolific, prophylactic and motherly nature possessed by these goddesses, the feline was attributed to them as an animal hypostasis. The demotic papyrus of Strasbourg 44 (8; Spiegelberg 1906, 98-101) as well as some legal documents (el-Amir 1959, IX-X) found in Dra Abu el Naga (el-Amir 1959, I, 1-6, 65-68) refer to an area called *cats* both at Gebelein (Otto 1952, 103) and in Thebes.¹⁴ The toponym possibly indicates a breeding area for sacred animals, as also suggested by the donation list on the outer wall of the temple of Edfu. The inscription mentions the “gift of cat” (Brugsh 1883, II, 539, Z. 15-16, 552; Otto 1952, 103) and the “falcon pasture” (Brugsch 1883, 552), two areas possibly devoted to the rearing of cats and raptors at Armant. Thanks to these complexes – also equipped with some special facilities dedicated to mating, caring for newborns, and birth management – a greater quantity of kittens was guaranteed. They were deliberately killed and mummified and then sold as votive offerings to worshippers (Ikram 2005a).

Domesticating and Killing Cats

Whether this should be considered as an early form of cat domestication is still under debate. At the beginning of the 19th century, Ehrenberg’s research dealt with the identification of mummified cat species. He identified two domesticated species: the *felis maniculata* and a hybrid breed of *felis chaus nilotica* and *felis catus*, which he called *felis Bubastis* (Ehrenberg 1833). While some scholars agreed with him (de Blainville 1843), others postulated that *felis chaus nilotica* was still a wild cat, even though it lived close to people (Nehering 1889). A study by Lortet and Gaillard from the early 20th century pinpointed two different domesticated cat species: *felis maniculata* from Tunisia or *felis lybica lybica* (a large, semi-domestic cat that lived close to the Egyptian people but fed on its own) and *felis maniculata domestic variant* (a domesticated cat, which showed some morphological changes, including a decrease in body size; Lortet, Gaillard 1905, 23-31). Rejecting the idea of two variants (domestic and wild) of the same cat species, Morrison-Scott (1952) and Armitage and Clutton-Brock (1981) speculated that most mummified cats belonged to the domesticated species *felis silvestris lybica* or *felis lybica bubastis*. This is confirmed by the cephalic index of mummified cats (length of the skull/volume of brain capacity), which corresponds to the *felis libyca* species (Schauenberg 1972). In 2012, a study on cat bones kept at the Phoebe A. Hearst Museum of Anthropology in Berkeley and at the Brooklyn Museum in New York City showed that specimens belonged to different mitotypes, some related to the Near Eastern cat. This suggests that cats originated from the Near East and were brought to Egypt as already domesticated animals (Kurushima *et al.* 2012). Two species spread throughout Egypt. The *felis chaus nilotica* (jungle cat), a large cat which lived near settlements but was never domesticated in Ancient Egypt. This wild cat was often found in animal necropolises as shown with

¹² Some areas connected to this practice are recorded in the archive of Hor: the birth chapel, for the incubation of eggs and the care of ibis chicks (Ray 1976, 59-60, text 15, *verso* 6,138), the ibis and hawk enclosure (Ray 1976, 81-84, text 21, *verso* 9; 73-80, text 19, *recto* 11; 86-90, text 23, *verso* 11,139) and the ibis feeding house (Ray 1976, 59-60, text 15, *verso* 4; 38-44, text 8, *recto* 18,139).

¹³ Wilcken 1937, 15, 157, 25; 180 a, 41, 8; Wilcken 1957, 393, no. 1486; Otto 1952, 103; Calderini 1966, I, 37; Meeks 1972, 69.

¹⁴ In the Theban area, some other cat mummy graves have been found. For an overview, see Pubblico 2017a, 123-125.

Inv. no. 69, held at the Museo della Società Africana d'Italia. It seems to belong to this species, as it is 50cm long, has a very large skull and long canines, which cover the mandible (Pubblico 2017b, 536; Fig. 2).



Fig.2 - 69-Museo della Società africana d'Italia (Naples), 360-170 BC

Other cat mummies larger than the domestic specimens have been identified: the mummy CGC 29660, held at the Egyptian Museum in Cairo (Gaillard, Daressy 1905, 98; Ikram, Iskander 2002, 10), shows the same features of the aforementioned mummy Inv. no. 69, as well as several mummies found at the Bubasteion in Saqqara (Zivie, Lichtenberg 2005, 118). The other species was the *felis sylvestris libyca sive maniculata* (the African wild cat), possibly originating from the Libyan Desert (Ginsburg 1991, 17), which was imported and domesticated in Egypt around the second millennium BC (Zivie, Ginsburg 1987, 5-11). Osteological and radiological exams on cat mummies also assisted in understanding the age of the animals. In 1980, Armitage and Clutton-Brock (1980; 1981) analyzed a sample of 53 cat mummies kept at the British Museum, which were previously excluded from the Morrison-Scott study (1952). Thanks to the osteological exams, they pinpointed that kittens were slaughtered when they were 1-4 months and/or 9-12 months. A recent study on some cat mummies held at the Museo della Società Africana d'Italia (University L'Orientale of Naples) confirmed this data. CT-scans showed that only one subject (Inv. no. 69; Pubblico 2017b, 534; Pubblico, Oliva 2019, 298) was a sub-adult, being 9-12 months at the time of death, while another specimen was 6-8 months old, as shown by the unfused epiphyses (Inv. no. 65; Pubblico 2017b, 534; Pubblico, Oliva 2019, 294). Two other felines had both cartilaginous patches as well as molars in the eruption stage, which confirm their young age (less than 5 months; Inv. nos. 67, 68; Pubblico 2017b, 534; Pubblico, Oliva 2019, 296-297). According to Armitage and Clutton-Brock (1981, 193), these “two peaks in the death assemblage” corresponded to “two optimum age classes for mummification”. They postulated that the first age range (1-4 months) was chosen because at this age cats had reached a suitable size for mummification, while the second (9-12 months) corresponded to the last period in their life before they became sexually aggressive (Armitage, Clutton-Brock 1981, 193). Lortet and Gaillard (1905, 21) thought that cats were killed when they became threateningly numerous. According to me (Pubblico, Oliva 2019, 299) the reason for the young age of cats used to make the mummies is to be found in the impressive demand for these votive offerings (Wilcken 1927, 43, §22; Ray 1976, 59-60, text 15, verso 4 33,2). In order to meet such a demand, cats were constantly killed, and did not have the opportunity to grow and develop. In light of this, sexual activity was welcomed with the aim of procreation, and controlled in the sacred enclosures where cats were reared. The breeding of sacred animals recorded in the aforementioned epigraphic sources is also confirmed by the pathologies affecting several mummified subjects. Cat mummy EA795351, housed at the British Museum, as well as specimen no. 68, held at the Museo della Società Africana d'Italia, both suffered from secondary nutritional hyperparathyroidism (juvenile osteodystrophy). This is an endocrine disease most commonly seen in young, growing cats fed all-meat diets (Bennett 1976). The most common effects of hyperparathyroidism are anorexia, lethargy, weakness, depression, pathological

fractures (especially vertebral), paralysis and loss of teeth. Therefore, the diet of these sacred animals was lacking in calcium and very unbalanced. Perhaps such a diet was specifically chosen in order to cause these issues, which made it easier to manage the population of sacred felines. However, Armitage and Clutton-Brock (1981, 194) postulated: “the presence of this condition does not mean, however, that the animal was neglected or ill-treated but rather the opposite for the disease is today most commonly associated with domestic animals that are fed only on meat and it is found in the most pampered of household cats”. Although the care and protection of the cats were pursued and whoever kills one of these creatures intentionally were punished with death, as Herodotus (*Historiae* II, 65) and Diodorus Siculus (*The Bibliotheca Historica* I, 83, 8) recall, their slaughtering for ritual purposes was fostered. However, the causes of death are not always evident. Some scholars have often highlighted cervical fractures on cat mummies, which have been deemed as a result of killing by strangulation (Armitage, Clutton-Brock 1980, 187; 1981, 195; Ikram, Iskander 2002, 9-12; Raven, Taconis 2005, 253, 258; Zivie, Lichtenberg 2005, 117-118). Notwithstanding, this assumption cannot be proved, as it is not possible to know whether these traumas were the cause of death or happened *post-mortem* due to the stress afflicted on the body during the unnatural position and pressure of the limbs within the bundles (McKnight 2010, 43). After death, bodies were eviscerated¹⁵ and decerebrated.¹⁶ However, organs were often left within bodies, but they became smaller due to the warmth of some mummification phases (desiccation, anointment, drying; Ikram 2005b, 18-22). Radiological analyses on mummy Inv. no. 65, kept at the Museo della Società Africana d’Italia, show the cat’s tongue still in place as well as its organs, which although invisible to the naked eye, possibly reduced in size, since no cut on the skin compatible with the evisceration process has been pinpointed (Pubblico 2017b, 533; Pubblico, Oliva 2019, 294). Moreover, some dried materials within the skull have been identified as remains of brain material (McKnight 2010, 43; Wade *et al.* 2011). After potential evisceration, cat bodies were dried using natron, and then anointed and wrapped (Ikram 2005b, 19-23). Recent studies carried out by the Conservation Laboratory at the Brooklyn Museum, through X-ray diffraction (XRD) and gas chromatography (GC), have revealed that the materials used to anoint the body of animal mummies were beeswax, coniferous resins, pitch, fat, oil, and triterpenoid resins (possibly mastic, frankincense, or myrrh; Bruno 2013, 108-111, 126-128).¹⁷ According to Ikram (2005b, 28): “certain oils were linked to the revivification rituals that facilitated the animals’ eternal existence, and the oils restored some of the suppleness to the limbs that they had enjoyed in life, permitting the embalmers to arrange the body in an appropriate position”. Cat bodies were arranged within bandages with their heads straight, necks fully extended, forelimbs stretched down along the sides of body, hind limbs pressed against the belly and tails curled up on the abdomen, as shown by the completely unwrapped specimen Inv. no. 18288 held at the Egyptian Museum in Vatican City (Pubblico 2017a, 251). The position of the skeleton gives the bundles their typical cylindrical shape (Raven, Taconis 2005, 251-254, 256-257). Mummies could then be left to dry in the sun, probably near the ground, where inorganic materials adhered to the damp bandages (Ikram 2005b, 22). Some of these materials were found on the outer bandages of the aforementioned mummy no. 65

¹⁵ About this practice, see Wade, Nelson 2013.

¹⁶ About this practice, see Wade *et al.* 2011.

¹⁷ On the argument, see also Ikram 2015, 11.

(Fig. 3), held at the Museo of the Società Africana d'Italia (Pubblico 2017b, 532; Pubblico, Oliva 2019, 294).

These were sampled and analysed by the Mass Spectrometry Laboratory at the Centre for Chemistry for Cultural Heritage in the Department of Chemical Science of the University of Naples "Federico II". Raman and Infrared (IR) spectroscopy and X-ray fluorescence (XRF) techniques showed that the sampled particles are not silica and allowed us to identify traces of calcium carbonate/sulphate, carbon and hematite.

Wrapping cats up

While some aforementioned aspects of animal mummification remain unchanged over time, there were a great variety of wrapping styles, possibly depending on their chronology, origin, cost and symbolic value (Bruno 2013, 136). The bodies were usually enveloped with linen shrouds. These were highlighted by the 3D replica of mummy no. 66, kept at the Museo della Società Africana d'Italia, created through photogrammetry. The monochrome solid model shows the shroud's edges on the back of the animal, an aspect completely invisible to the naked eye (Pubblico, Oliva 2019, 294-295; Fig. 4). Some coarse strips were then placed on these shrouds and kept in place by linen threads, as shown by specimen Inv. no. C. 2350/3, housed at Museo Egizio in Turin and two subjects (Inv. nos. E 0.9.41364 and 2009.01.01) held at the Civic Archaeological Museum in Milan.

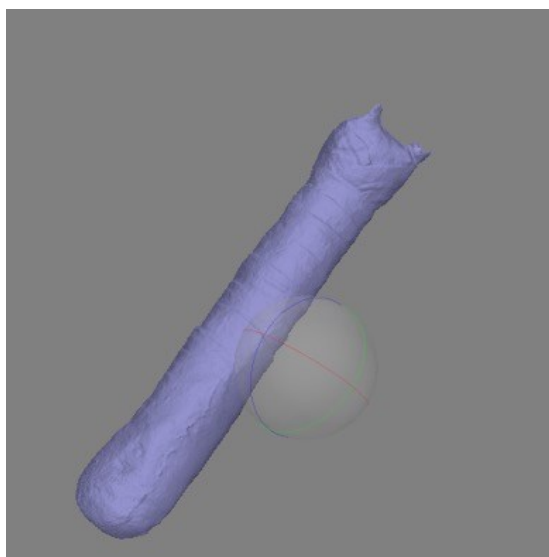


Fig.4 - 3D solid model of mummy 66-Museo della Società africana d'Italia (Naples), 390-340 BC

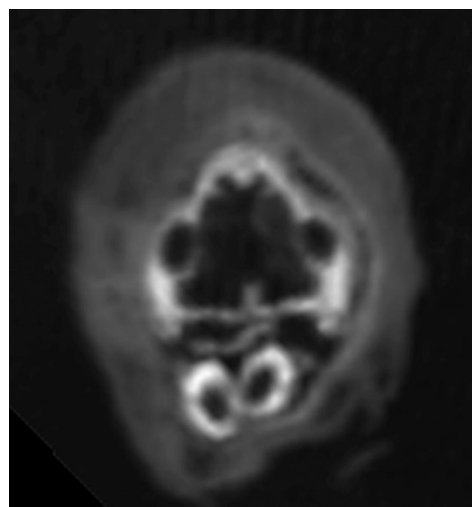


Fig.3 - CT of the skull of mummy 65-Museo della Società africana d'Italia (Naples), 370-180 BC

These layers of textile were fixed by using resin, oil and other glues, which sometimes leaked through the bandages. Within them, some reed mats, papyrus or palm ribs could be inserted (cat mummy Inv. no. C. 2350/7 from Museo Egizio in Turin; Fig. 5), in order to make the bundles more compact and keep them in an upright position, as they may have been displayed frontally. This is also confirmed with the outer bandages: their edges are knotted on the back, where wrapping is usually rough (Dunand *et al.* 2019, 152).

The exterior appearance of cat mummies is varied, since pale bandages were interlaced with strips dyed in bright colours, in order to produce sophisticated patterns. Some mummies were wrapped with bandages spirally arranged around the body. As is the case with four specimens belonging to the collection of the Società Africana d'Italia (Inv. nos. 65, 66, 67, 69), the light brown bandages folded in half are placed on the lower part of the next layer of strips, dyed with a dark brown colour (Pubblico 2017, 523; Pubblico, Oliva 2019, 302). However, often only mere scraps of coloured bandages have survived, since they were mostly broken down by the



Fig.5 - C. 2350/7-Museo Egizio

materials used in the dyeing process (Tamburini *et al.* 2021). More elaborate wrapping systems are lozenge patterns. Cat mummy C. 2349/6, held at Museo Egizio in Turin, shows three square lozenges placed vertically on the front of the body.

The complex design is made even more sophisticated since the lozenges are half light brown and half dark brown in colour (Fig. 6). Bi-colored coffering are also shown on specimen Inv. no. 8681 housed at the Egyptian Museum in Florence. Here, the bandages are progressively intertwined more tightly in a diamond lozenge pattern. This elaborated design is actually very common, as shown in several subjects, such as British Museum specimen EA55614. The bandages could also be arranged in a meander lozenge, as with the case of mummy C. 2349/7, held at Museo Egizio in Turin. The decorative model consists of six lozenges, placed on the front and on the sides of the mummy. The meander is made with dark brown bandages, while the lozenges are created with pale coloured and reddish strips (Fig. 7). Herringbone lozenges are also attested. Cat mummy Inv. no. 68 from the Museo della Società Africana d'Italia is wrapped with light and dark brown bandages arranged in lozenges that start broad on the body and become smaller near the neck (Pubblico 2017b, 533; Pubblico, Oliva 2019, 297). Two other cat mummies have the same decorative pattern, one is held at the Musée Dobrée in Nantes (Inv. no. E 2810) and the other in a private Swedish collection (Johansson *et al.* 2015). The herringbone pattern is also used without lozenges. Mummy C. 2349/4, housed at Museo Egizio in Turin, has alternating light and dark bandages arranged in a herringbone design. Some mummies, such as the specimen 2041 held at the Archaeological Museum of Bologna, are wrapped in a light shroud partially covered by some dark-brown strips placed horizontally on the front. There is also a netting pattern on it made by knotting linen threads. Specimen C. 2349/1, held at Museo Egizio in Turin, is a cat mummy wrapped in pale and dark-brown bandages arranged in a checkerboard pattern (Fig. 8).

Another subject showing the same design is Inv. no. 111503, held at the Field Museum of Natural History in Chicago. The heads are covered with some strips, which are also kept in place by linen threads. As shown by mummy Inv. no. 2040, housed at the Archaeological Museum of Bologna, facial details - such as the cheeks and muzzle - are usually naturalistically modeled, using padding added underneath the wrappings. Eyes were made applying two linen discs with black painted pupils, while whiskers were created using rolled linen threads. Ears could be soft and irregular or made with two conical shaped strips stiffened with stucco and coloured red (Pubblico 2017b, 533; Pubblico, Oliva 2019, 294). Facial details could also be painted. Some mummies, such as Inv. no. 67 housed at the Museo della Società Africana d'Italia, show vertical lines on the heads, which aimed mimic the cat's fur. The



Fig. 6 - C. 2349/6-Museo Egizio (Turin),
Roman Period
© Museo Egizio, Torino



Fig. 7 - C. 2349/7-Museo Egizio (Turin),
Late Period
© Museo Egizio, Torino



Fig. 8 - C. 2349/1-Museo Egizio
(Turin)

forehead is decorated with black and red dots; eye sockets are painted with black lines; and red circles surround the pupils, which are outlined in black. The whiskers are two symmetrical columns of parallel black and red lines (Pubblico 2017b, 533; Pubblico, Oliva 2019, 295-296; Fig. 9). These features possibly reproduce those of the *felis sylvestris libyca sive maniculata*. These details definitely increased the offering price, which *depended on its external appearance* (Armitage, Clutton-Brock 1980, 188) but also on its size. For this reason, Egyptians often made bundles larger than the skeleton held within.

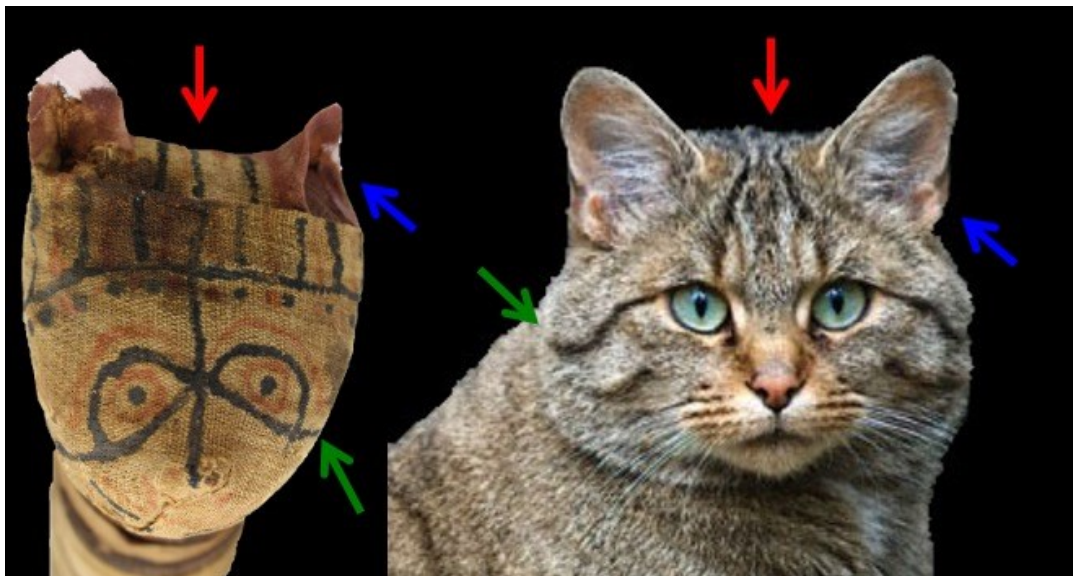


Fig. 9 - 66-Museo della Società africana d'Italia (Naples) and a *felis sylvestris libyca*

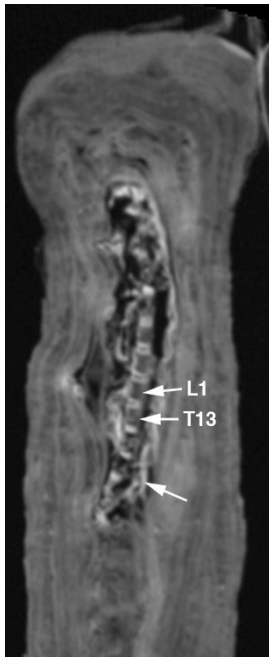


Fig.10 - Radiography of mummy 66-Museo della Società africana d'Italia (Naples), 390-340 BC

Radiological analysis show that mummy Inv. no. 68 of the Società Africana d'Italia in Naples, is 56cm long, whilst it only holds a 26cm long juvenile cat. The remaining 30cm are empty bandages (Pubblico 2017b, 535; Pubblico, Oliva 2019, 297). Many specimens of animal mummies confirm that this is not uncommon: the cat mummy EG-ZM64 held in the Rijksmuseum van Oudheden (Raven, Taconis 2005, 258) and EA37348 held at the British Museum (Filer, Andrews 1999) are both bigger than the animal contained within the bundle. These specimens belonged to the category of *false mummies*, which has often been interpreted as the result of dupes made by priests to the detriment of worshippers (Ray 1976, 142-143; Kessler 1989; Ikram 2005a, 14; Raven, Taconis 2005, 240; McKnight 2010, 81-87) or as the product of a huge request for mummies when there were few animals available (Ikram 2005a, 14; McKnight 2010, 86). They include: empty bundles (Raven, Taconis 2005, 225, 275; McKnight 2010, 81); mummies filled with a different species than originally thought;¹⁸ several different species (Kessler 1989, 56; Ikram 2005a, 13); several subjects of the same species;¹⁹ a part of the animal (fur, feathers or some bones). This is the case with the cat mummy Inv. no. 66, housed at the Museo della Società Africana d'Italia. Radiological exams show that this mummy contains an inverted

part of a cat skeleton, from the fifth lumbar vertebrae to the third thoracic vertebrae, L1-T13 (Pubblico 2017b, 535; Pubblico, Oliva 2019, 296; Fig. 10). In some periods, Egyptians possibly believed that donating part of a sacred animal with the suitable ritual spells became the whole offering (*pars pro toto*; Ikram 2005a, 14; McKnight 2010, 86; Bruno 2013, 123-124). This is the reason why some cat mummies found by Mr. and Mrs. Reiss at Istabl 'Antar contained only the front half of the feline's body (Nehering 1889, 564).

Conclusions

Since time immemorial, cats played a key role in Egyptian economy and society. In human graves dated back to the Predynastic Period, cat remains have been found, possibly showing a special connection between the animal and the deceased. During the Old Kingdom, cats are attested in reliefs and hunting scenes from funerary contexts. This proves that cats were well-known by the Egyptians, even if they were not yet domestic pets. In the Middle Kingdom, the induction in Egyptian vocabulary of the trilateral *miw/imy* shows a changing of the role of cat within Egyptian daily life. It became even more prominent in the New Kingdom, when cat surged as a beloved family pet, and it starts to be looked as a protector of the family, the home and newborns as well as a symbol of female sensuality. Due to these aspects, it became the animal hypostasis of those goddesses who have a strong motherly nature. As avatars of these deities, cats were breeding in sacred enclosures called αἰλουροταφός and deliberately

¹⁸ Brooklyn Museum, New York, Inv. no. 37.1987E; Bruno 2013, 136, fig. 117.

¹⁹ Penn Museum, Philadelphia, Inv. no. E17631.

killed during religious festivals in order to be sold as mummies to worshippers. Through the mummification process these animals, who were not sacred in themselves, become the *ba* of the gods with which they were associated. Similar to human souls, the souls of the mummified animals might move through Earth and Afterlife, acting as messengers through which believers might easily address their concerns to the gods. A key moment in the mummification process was wrapping the animal corpses, which was performed by Hri-sStA and Xri-Hb (Vos 1992; Riggs 2014, 79) in special embalming houses (*wab n wt*; Ikram, Dodson 1998). After being donated to the deities as votive offerings, cat mummies were buried in sacred necropoleis throughout Egypt. During the 19th and 20th centuries, these sites – as many other animal necropolises – were subjected to large-scale illegal excavations that aimed to collect and then ship cat mummies to Europe where they were auctioned off as ballast, fuel, medicine, paint, and fertilizer (Cooke 2015, 50-51). At the beginning of 1890, two cargo ships (*SS Pharos* and *SS Thebes*) arrived at Liverpool's port, carrying unwrapped cat mummies from the necropolis of Istabl 'Antar.²⁰ This unprocessed fertilizer was put to auction by the auction house *Leventon and Co* an occurrence that greatly attracted public interest as shown by two cartoons published by the *Daily Graphic* on 12 February 1890 and the *Punch* on 15 February 1890 (Cooke 2015). Due to these vicissitudes, most of the information about these artefacts has been lost. However, the autoptic approach applied to this study has highlighted a great variety of wrapping styles, possibly depending on when and where cat mummies were produced. As a matter of fact, the mass production of votive animal mummies promoted a certain degree of craft specialization and changes at both a chronological and geographical level, especially in terms of wrapping techniques and styles. Therefore, a study focuses on the votive animal mummies' aesthetic appearance would help in reconstructing their story, which still waits to be investigated.

REFERENCES

- Alliot, M. (1951) Les auxiliaires de chasse du tueur d'oiseaux au bâton de jet. *Bulletin de la Société française d'égyptologie* 6, pp. 17-26.
- el-Amir, M. (1959) *A Family Archive from Thebes*. Cairo.
- Armitage, P.L., J. Clutton-Brock (1980) An Investigation of the Mummified Cats Held by the British Museum (Natural History). *MASCA Journal* 1, pp. 185-189.
- Armitage, P.L., J. Clutton-Brock (1981) A Radiological and Histological Investigation into the Mummification of Cats from Ancient Egypt. *Journal of Archaeological Science* 8, pp. 185-196.
- Aufrère, S.H. (1999) Notes et remarques au sujet du chat. *Discussion in Egyptology* 44, pp. 10-15.
- Bennett, D. (1976) Nutrition and Bone Disease in the Dog and Cat. *Veterinary record* 98, pp. 313-321.
- de Blainville, H.M.D. (1843) *Ostéographie 2 (Felis)*. Paris.
- Bleiberg, E. (2013) Animal Mummies: the Souls of the Gods, in E. Bleiberg, Y. Barbash, L. Bruno (eds), *Soulful Creatures. Animal Mummies in Ancient Egypt*, pp. 64-105. New York.
- von Bissing, F.W.F. (1956) La Chambre des trois saisons du Sanctuaire Solaire du Roi Rathourès (V^e Dynastie) à Abousir. *Annales du service des antiquités de l'Égypte* 53, pp. 319-338.

²⁰ For an overview on the excavation at the necropolis of Istabl 'Antar, see Pubblico 2017b, 131-132.

- Bresciani, E. (2007) Il percorso di una dea Bastet da leonessa a gatta d'amore, in E. D'Amicone, E. Fontanella (eds), *Nefer. La donna nell'Antico Egitto. Catalogo della mostra (Milano, 27 gennaio-9 aprile 2007)*. Milano.
- Bruno, L. (2013) The Scientific Examination of Animal Mummies, in E. Bleiberg, Y. Barbash, L. Bruno (eds), *Soulful Creatures. Animal Mummies in Ancient Egypt*, pp. 107-128. New York.
- Brugsch, H. (1883) *Thesaurus inscriptionum Aegyptiacarum: altaegyptische Inschriften (Band 2): Kalendarische Inschriften altaegyptischer Denkmäler II*. Leipzig.
- Bruyère, B. (1927) *Rapport sur les fouilles de Deir el-Médineh* (FIFA IV/3). Le Caire.
- Calderini, A. (1966) *Dizionario dei nomi geografici e topografici dell'Egitto greco-romano I-II*. Madrid.
- Cooke, A. (2015) Auctions and Air Raids: Liverpool's Animal Mummy Collection, in L. McKnight, S. Atherton-Woolham (eds), *Gifts for the Gods. Ancient Egyptian Animal Mummies and the British*, pp. 48-53. Liverpool.
- De Cenival, F. (1977) Deux papyrus inédits de Lille avec une révision du P. dém. Lille 31. *Enchoria* 7, pp. 1-49.
- De Cenival, F. (1999) Lycolynx et chacal-singe dans le mythe de l'œil du soleil. *Bulletin de l'Institut français d'archéologie orientale* 99, pp. 73-83.
- Dunand, F., R. Lichtenberg, C. Callou, F. Letellier-Willemin (2019) Des chiens et des bandelettes, in S. Porcier, S. Ikram, S. Pasquali (eds), *Creatures of Earth, Water, and Sky, Essays on Animals in Ancient Egypt and Nubia*, pp. 145-153. Leiden.
- Edel, E., S. Wenig (1974) *Die Jahreszeitenreliefs aus dem Sonnenheiligtum des Königs Ne-user-re*. Berlin.
- Ehrenberg, C.G. (1833) *Symbolae physicae, seu, Icones et descriptiones corporum naturalium novorum aut minus cognitorum I. Mammalium*, Berlin.
- Estep, N.S. (1992-93) Feline Embodiments of Divinity: a Wooden Statue of a Cat and a Cat Sarcophagus in the Kelsey Museum. *Bulletin of the University of Michigan and Museum of art and archaeology* 10, pp. 67-90.
- Fabretti, A., A. Rossi, R.V. Lanzone (1882) *Regio Museo di Torino. Antichità Egizie*. Torino.
- Filer, J., C. Andrews (1999) Secrets of a Cat Mummy. *Egyptian Archaeology* 15, pp. 11-12.
- Gaillard, C., G. Daressy (1905) *La faune momifiée de l'Ancienne Egypte*. Cairo.
- Ginsburg, L. (1991) La domestication du chat, in L. Delvaux, E. Warmenbol (eds), *Les divins chats d'Egypte: un air subtil, un dangereux parfum*, pp. 17-21. Leuven.
- Goedicke, H. (1971) *Re-used Blocks from the Pyramid of Amenemhet I at Lisht*. New York.
- Houlihan, P.F. (1996) *The Animal World of the Pharaohs*. London.
- Ikram, S. (2005a) Divine Creatures. Animal Mummies, in S. Ikram (ed), *Divine Creatures. Animal Mummies in Ancient Egypt*, pp. 1-15. Cairo.
- Ikram, S. (2005b) Manufacturing Divinity. The Technology of Mummification., in S. Ikram (ed), *Divine Creatures. Animal Mummies in Ancient Egypt*, pp. 16-43. Cairo.
- Ikram, S. (2015) Speculations on the Role of Animal Cults in the Economy of Ancient Egypt, in M. Massiera, B. Mathieu, F. Rouffet (eds), *Apprivoiser le sauvage*, pp. 211-228. Montpellier.
- Ikram, S., A. Dodson (1998) *Mummy in Ancient Egypt: Equipping the Dead for Eternity*. London.
- Ikram, S., N. Iskander (2002) *Non-Human mummies*. Cairo.
- Johansson, C., G. Metz, M. Uhlhorn (2015) Feline Descendant of the Red or the Black Land: A Multidisciplinary Investigation of an Unusually Large Ancient Egyptian Cat Mummy, in S. Ikram, J. Kaiser, R. Walker (eds), *Egyptian Bioarchaeology: Humans, Animals, and the Environment*, pp. 177-200. Leiden.
- Kessler, D. (1989) *Die Heiligen Tiere und Der König I*. Wiesbaden.
- Kurushima, J.D., S. Ikram, J. Knudsen, E. Bleiberg, R.A. Grahn, L.A. Lyons (2012) Cats of the Pharaohs: Genetic Comparison of Egyptian Cat Mummies to their Feline Contemporaries. *Journal of Archaeological Science* 39, pp. 3217-3223.

- Lepsius, K. (1849) *Denkmaler aus Ägypten Und Äthiopien: Nach Den Zeichnungen Der Von Seiner Majestät Dem Könige Von Preußen Friedrich Wilhelm IV.* Wien.
- Lortet, D., M.C. Gaillard (1905) *La faune momifiée de l'Ancienne Egypte*. Lyon.
- McKnight, L. (2010) *Imaging Applied to Animal Mummification in Ancient Egypt*. London.
- Malek, J. (1993) *The Cat in Ancient Egypt*. Philadelphia.
- Mariette, A. (1882-83) *Le Serapeum de Memphis*. Paris.
- Meeks, D. (1986) Zoomorphie et image des dieux dans l'Égypte ancienne, in C. Malamoud, J.-P. Vernant (eds), *Le temps de la réflexion* VII, pp. 171-191. Paris.
- Meeks, D. (1972) *Le grand texte des donations au temple d'Edfou*. Le Caire.
- Mekhitarian, A. (1991) Le chat dans les tombes thébaines privées, in L. Delvaux, E. Warmenbol (eds), *Les divins chats d'Egypte: un air subtil, un dangereux parfum*, pp. 23-30. Leuven.
- Morrison-Scott, T.C.S. (1952) The mummified cats of Ancient Egypt. *Proceedings of the Zoological Society of London* 121/4, pp. 861-867.
- Nehering, H. (1889) Über altägyptische Katzen von Bubastis, Beni-Hassan und Siut, *Zeitschrift für Ethnologie* 21, pp. 558-572.
- Newberry, P. (1893) *Beni Hasan: 1-2 with plans and measurements of the tombs*. London.
- Otto, E. (1952) *Topographie des thebanischen Gaues*. Berlin.
- Pubblico, M.D. (2017a) *Il culto di Bastet in Epoca Tarda e Greco-Romana attraverso la documentazione archeologica e testuale* [Unpublished PhD Thesis]. Naples.
- Pubblico, M.D. (2017b) The Cat Mummies of Società Africana d'Italia: an Archaeological, Cultural and Religious Perspective, in G. Rosati, M.C. Guidotti (eds), *Proceeding of the XI International Congress of Egyptologists*, 23-30 August 2015, pp. 532-537. Oxford.
- Pubblico, M.D., C. Oliva (2019) Les cinq momies de chat de la Società africana d'Italia (Naples): nouvelles recherches, nouvelles découvertes, in S. Porcier, S. Ikram, S. Pasquali (eds), *Creatures of Earth, Water, and Sky, Essays on Animals in Ancient Egypt and Nubia*, pp. 293-304. Leiden.
- Raven, M.J., W.K. Taconis (2005) *Egyptian Mummies. Radiological Atlas of the Collections in the National Museum of Antiquities at Leiden*. Turnhout.
- Ray, J.D. (1976) Animal Cults, in D.B. Redford (ed.), *The Oxford Encyclopedia of Ancient Egypt*, pp. 345-348. New York.
- Riggs, C. (2014) *Unwrapping Ancient Egypt*. London.
- Roeder, G. (1959) *Hermopolis 1929-1939*. Hildesheim.
- el-Sabban, S. (2000) The Cat's Coffin of Djehutymes in the Cairo Museum. *Discussions in Egyptology* 46, pp. 65-78.
- Schauenberg, P. (1972) *L'indice crânien des Félidés*. [Unpublished PhD thesis]. Paris.
- Spiegelberg, W. (1906) *Catalogue général des antiquités égyptiennes du Musée du Caire. Die Demotischen Denkmaler 30601-31270; 50001-50022 II. Die Demotischen papyrus Tafeln*. Cairo.
- Tamburini, D., J. Dyer, M. Vandenbeusch, M. Borla, D. Angelici, M. Aceto, C. Oliva, F. Facchetti, S. Aicardi, P. Davit, M. Gulmini (2021) A Multi-scalar Investigation of the Colouring Materials Used in Textile Wrappings of Egyptian Votive Animal Mummies. *Heritage Science* 9, pp. 106-132.
- te Velde, H. (1982) The Cat as Sacred Animal of the Goddess Mut, in M.H. van Voss, D.J. Hoens, G. Mussies, D. van der Plas, H. te Velde (eds), *Studies in Egyptian Religion dedicated to Professor Jan Zandee*, pp. 127-137. Leiden.
- Vos, R.L. (1992) *The Apis Embalming Ritual: P. Vindob. 3873*. Leiden.
- Yoyotte, J. (2005) Chat, in P. Vernus, J. Yoyotte (eds), *Bestiaire des pharaons*, pp. 513-534. Paris.

- Wade, A.D., A.J. Nelson (2013) Radiological Evaluation of the Evisceration Tradition in Ancient Egyptian Mummies. *Homo-Journal of comparative human biology* 64, pp. 1-28.
- Wade, A.D., A.J. Nelson, G.J. Garvin (2011) A Synthetic Radiological Study of Brain Treatment in Ancient Egyptian Mummies. *Homo-Journal of Comparative Human Biology* 62, pp. 248-269.
- Wilcken, U. (1937) *Urkunden der Ptolemäerzeit* (ältere Funde). Band 2: Papyri aus Oberägypten, (2. Lief.). Berlin
- Wilcken, U. (1957) *Urkunden der Ptolemäerzeit* (ältere Funde). Band 2: Papyri aus Oberägypten, (3. Lief.). Berlin
- Zivie, A., L. Ginsburg (1987) La nécropole des chats de Saqqarah en Egypte: recherches, récentes. *Ethnozootechnie* 40, pp. 5-11
- Zivie, A., R. Lichtenberg (2005) The Cats of the Goddess Bastet, in S. Ikram (ed.), *Divine Creatures. Animal Mummies in Ancient Egypt*, pp. 106-119. Cairo.