Egyptian Mummies at the Museu Nacional de Arqueologia, Lisbon: A Proposed Programme of Study

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Introduction
This project is a multidisciplinary study of mummified remains held in the Museu Nacional de Arqueologia in Lisbon, Portugal. The project will employ a range of bioarchaeological methodologies (Larsen 1997) in order to derive the maximum possible information from the remains, including age, sex and stature determination, dietary reconstruction, biological affinity, pathology and childhood health. The cultural context of human and animal mummification will also be addressed. The Lisbon Mummy Project (LMP) is headed by an international team of specialists from the Museu Nacional de Arqueologia, ERA Arqueologia, the Instituto Português de Arqueologia (Lisbon), the Institute of Archaeology (UCL), The British Museum and The American University in Cairo. The project aims to study the mummified remains using non-destructive and selected invasive analytical methods, including visual observation, conventional radiography, Computed Axial Tomography (CAT) scanning, endoscopy, histology and genetic analyses.

History and Description of the Materials
The Museu Nacional houses a collection of Egyptian artefacts collected during the 19th and early 20th centuries. Most of the specimens were originally in private hands and later found their way into the museum through donation and bequest (Araújo 1987; Guedes 1993-4). The collection currently comprises around 560 highly diverse objects, ranging in date from the prehistoric to the Coptic periods. In 1909, museum director Professor Leite de Vasconcelos travelled to Cairo to the World Archaeology Congress and returned with various Egyptian prehistoric stone tools and Alexandrine ceramics. These were the foundation of the collection, which reflected de Vasconcelos’ interest in prehistory. Some years later it was greatly enlarged by the private collection of the King and Queen of Portugal, who were given the artefacts by Khedive Abbas Hilmi II when Queen Amelia visited Cairo in 1903. When Portugal was declared a Republic in October 1910, ownership of this collection fell to the state, and the artefacts were later placed in the Museu Nacional de Arqueologia. Gifts from private individuals, notably the last Duke of Palmela, added further to the museum’s collection of Egyptian antiquities.

The LMP will examine two human and six animal mummies, as well as the organic contents of a limestone canopic jar (National Museum Catalogue no. 221). One of the human mummies, that of an individual named Irtierw (cat. 217), is encased in a beautifully decorated cartonnage coffin and has been dated to the Late Period (712-332BC). Stylistically, however, the cartonnage seems to indicate a date in the early
Third Intermediate Period (1070-712BC), and may have originated in Deir el-Bahri. The other human mummy (cat. 215) is dated to the Ptolemaic period (304-30BC), and bears the cartonnage mask of an unnamed individual. The animal specimens comprise four subadult crocodile mummies, one partially wrapped (cat. 231) and three unwrapped (cat. 232-4). An as-yet unopened pottery bird coffin (cat. 235) resembles others found at Tuna el-Gebel, and may contain an ibis mummy. The final specimen is a partially unwrapped falcon mummy (cat. 230).

The Human Mummies
Both human mummies need preliminary conservation work. At some point, the cartonnage of Irtierw was cut along both sides and across its back in an attempt to gain access to the body. There is some damage to the Ptolemaic specimen’s linen wrappings in the areas of the feet and the right shoulder. All damage will be fully assessed and stabilised before work commences. As little is currently known about the mummy bundles and their contents, the preliminary onus of the work is exploratory and investigative. The outer wrappings, soft tissue, hard tissue and stoma will be examined using both conventional radiography and CAT scans. These techniques will provide biological information on age, sex and health, as well as socio-cultural information inferred from mummification techniques and artefact associations.

Anatomy and Pathology
Both individuals will be sexed on the basis of pelvic and cranial morphology (Buikstra and Ubelaker 1994) and postcranial robusticity. Anatomical sexing is preferable to assumed-gender cultural associations, as the sex of the individual does not always correspond to coffin decoration or wrappings. This can be an indication that a mummy was re-wrapped at a later date, although in some cases even the embalmers were apparently unsure of the sex – providing one individual with “both gold nipple covers and an artificial phallus” (Tapp 1979a: 86). X-rays will allow specimens to be aged using developmental standards for bone fusion, dental formation and dental eruption (Leek 1986). Stature will be estimated using bone measurements derived from X-rays and CAT scans, which will also allow osteological (genetic and developmental) abnormalities to be identified. Radiographic approaches also permit the study of life-history variables (i.e. indicators of lifestyle rather than ancestry) such as dental pathology (Hillson 2001), osteological trauma (fractures) and developmental stress (Harris lines).

Certain conditions, such as tuberculosis and leprosy, leave pathological markers on skeletal remains, and have been noted in other studies of Egyptian material (e.g. Sandison and Tapp 1998). The resolution of modern X-ray and CAT images allows these and other pathologies such as tumours (Sandison and Tapp 1998) to be identified without recourse to unwrapping mummified remains. As the majority of diseases do not affect the bones, however, radiographic approaches are ideally accompanied by endoscopy (Tapp and Wildsmith 1986) and soft-tissue histology (Tapp 1995). The interior of a mummified body may be examined visually by an endoscope introduced into the body cavity through natural orifices (e.g. the mouth) or holes resulting from mumification (such as embalmer’s incisions) or taphonomic processes. Endoscopy also permits the exploration of any space between the external wrappings and the body, thus enabling dermatological and palaeoethnotrichologi-
Identification of most non-skeletal disease requires histological examination of soft tissue samples. Mummified tissue can be stained in order to show cellular characteristics and anomalies by both light microscopy and Scanning Electron Microscopy (SEM), and it is also possible to identify the remains of parasites such as *Schistosoma* and *Strongyloides* (Curry *et al.* 1979; Ruffer 1910; Sandison and Tapp 1998). The presence of pathogens and cellular mutation (such as the case of pleurisy noted in the lung tissue of Nekht-Ankh by Tapp (1979b)) can also be identified histologically. This approach will be adopted in the case of the damaged mummy, the contents of the canopic jar and any organ packages, substantiating histological results with genetic analyses where appropriate.

**Cultural Factors**

As mummification techniques in ancient Egypt typically reflected the deceased’s social status or wealth, it is important to carefully analyse mummy structure. The presence or absence of embalmers’ incisions, stuffing materials or organ packages can convey valuable social information about the mummified individual, as can the nature and quantity of funerary artefacts concealed within the wrappings. Mummification methods, and the variety and quality of materials employed, vary with time and with social factors (e.g. Peck 1998), so assessment of the embalming techniques used in the Lisbon mummies will help confirm the periods to which they belong.

The preservation of internal organs was traditionally achieved by their removal and desiccation; they were subsequently carefully wrapped and replaced inside the body, which was embalmed separately. However, later and less costly mummification processes did not use such careful techniques, and the least elaborate procedures did not involve evisceration. As preservation is usually poorer when the body was not desiccated by natron, the use of this procedure can therefore be suggested should radiography indicate the absence of any incision, and by the natural positions of the internal organs. CAT scan images will be seriated and combined in order to provide detailed maps of the mummies, providing precise 3-dimensional information on the nature of – and the spatial relationships between – the cartonnage, wrappings, artefacts, organs and skeleton.

**The Animal Mummies**

Relatively little work has been done on animal mummies to date, and this project therefore provides an excellent opportunity to add new knowledge to this relatively unexplored field. As with the human mummies, the animals will be studied radiographically and histologically in order to establish taxon, age, pathologies and (if possible) cause of death. While the religious and cultural significance of human mummification is well understood, that of animal mummification is not. For example, some animal mummies are not what they appear externally to be, but another animal altogether, parts of the animal, eggs or even dummies made of wood or linen. It is hoped that, using the same investigative methods as for the human mummies, this project will help to provide a better understanding of the techniques and circumstances surrounding the practice. Investigation of animal age structure, pathology and other factors may help to determine whether the animals were wild or domestic, whether they were hunted, or if they were kept expressly for their eventual mummification. In the case of animal mummies of the Ptolemaic and Roman periods, for
example, it is possible that animals were sometimes raised, killed and embalmed specifically for sale to the pilgrims during seasonal temple festivals, and we intend to explore whether this was the case for the mummified animals in the Museu Nacional. It is hoped that this study will add to extant understanding of mummified animals’ significance in ancient Egyptian society.

The investigators are anxious that the LMP’s results are made available to both the academic community and non-professional audiences. In addition to publishing the results as conference papers, all stages in the analysis of the remains will be visually recorded through photography and film documentary. This will form the basis of an exhibition that is intended to present the fascinating world of Egyptian funerary archaeology to the general public.

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References


