Wood identification of the headrests from the collection of the Egyptian Museum in Florence

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ABSTRACT

This paper deals with the identification of wood samples from the collection of headrests held in the Egyptian Museum of Florence. Headrests were basic artefacts of the normal Egyptian life and, consequently, of ritual use in ancient tombs. They are largely present in several Museum collections, nevertheless very little information is available concerning the timber used to make headrests in ancient Egypt. To address this gap in our knowledge we undertook this analytic work.

After an outline of the collection of headrests and a description of their role in ancient Egypt, the paper describes the analysis, starting from the sampling methodology that was organised to reduce the number and dimensions of the samples used to perform the subsequent micro-morphological analysis, through macroscopic and portable microscope observation.

Due to the reduced dimensions of the samples, wood anatomical characteristics were collected through scanning electron microscope (SEM) observation.

Thirteen species or group of species (generally speaking, *taxa*) were identified; more than one half of samples pertained to two *genera*: *Acacia* and *Tamarix*, that are among the most common timbers found in Egyptian, confirming that, the shortage of timber in ancient Egypt forced the use of the few available timbers for any purpose.

Wood identification permitted identification of wood from external sources, e.g. cedar of Lebanon, confirming trading of wood in ancient Egypt. Moreover, the presence of samples of less recorded species, such as walnut and African mahogany is probably in relations with recent restorations or fixing.

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1. Introduction

There are a wide-range of examples of the use of wood in ancient Egypt. Not only sarcophagi, but also furniture, personal and household items as well as ritual objects that accompanied the deceased in the grave. The arid climate of Egypt well preserved then wood and wooden artefacts during the millennia.

Historians and wood technologists (Aldred, 1961; Lucas and Harris, 1962; Gale et al., 2000) indicate the use of local trees such as tamarisk, acacia, sycamore fig and "Spina Christi" (*Zisiphus spina Christi* Willd.). The small dimensions of these tree species, and the hard and fibrous characteristics of their timber led the Egyptians to import large logs. Cedar, cypress, pine and the aromatic wood of juniper were imported by sea trade routes from around the Mediterranean and the Near East. Other precious timbers were imported from Africa, such as ebony as tribute from the protected region of Punt (probably located between Eritrea and Somalia) and from the current Sudan area.

A large quantity of artefacts of many kinds of wood have survived to the present day. These artefacts have been studied by archaeologists for their historical value and because of their importance from a technological point of view; mainly to understand wood uses and processing.

Although many of the names of different timbers are mentioned in ancient testimonies, not all these names have been translated, and very often, the identity of these woods is still doubtful.

Therefore, wood identification by scientific methods is needed to highlight the high capacity achieved by the Egyptian ancient artisans in woodworking and the ancient trade routes.

These types of studies are sporadic (Botti, 1951; Lucas and Harris, 1962; Nisbet, 1982; Gale et al., 2000; Gale et al., 2000; Beneš, 2011) due to the low availability of wood for sampling and analyzing. A large amount of Egyptian wooden artefacts are preserved in museums such as the Egyptian Museum in Cairo, the Metropolitan Museum in New

York, the Louvre Museum in Paris, and, in Italy, the Egyptian Museums in Turin and Florence.

We aim to address for a critical need to more scientific data on wood of ancient Egypt: the authors decided to start from the collection of the Egyptian Museum in Florence.

The collection of the Egyptian Museum in Florence is the second most important collection in Italy, and includes several artefacts made entirely or partially of wood. Among them are 20 headrests that are almost all still not described in scientific publications. The dates of the headrests ranges from the Old Kingdom to the Late Period, but the majority originate in the New Kingdom.

The analytical investigations that have been designed for this type of wood objects represents the first step in the characterisation of all the wood Egyptian artefacts that belong to the Archaeological Museum of Florence.

Only few papers or museum recording forms (see Metropolitan Museum, for example) report the identification of wood used for this typology of artefact (Nicholson and Shaw, 2000). Generally, only "wood" or its inlays are described. In this context, the Soprintendenza Archeologia della Toscana and IVALSA – CNR of Florence aimed to characterise the specific materials constituting the artefacts starting from wood (or woods) used in their assembly. Then analyses will be extended in another scientific contribution to surface finishing, painting and glue, or stucco applied to seal joints when assembling different components.

The aim of the paper is to expand the collection of data relating to the exploitation of plant resources by humans in the Mediterranean area in the antiquity, to implement the database concerning the utilisation of different timber species in archaeology and finally, to give new information about ancient technology. This first contribution is devoted to the wood identifications in headrests.

2. The headrests of the Egyptian Museum of Florence

Egyptians used headrests for sleeping to ensure the correct sleeping position for the body to benefit the spine. Two typologies of headrests are recorded (Costa, 1988): that with base stem (even multiple) and arch (acting as pillow) and the one made of a single block (Fig. 1). This latter typology is in the same time the oldest, recorded in the Ancient Kingdom, and the most recent.

Evidence from the First Intermediate Period indicate that in the Ancient Egypt the headrest had also a symbolic meaning to protect living and dead while sleeping.

The hieroglyphic name of the headrest come from the verb *wres*, that means "to spend the time staying awake", protecting the sleeper. Often, therefore, the headrests are adorned with apotropaic figures, as images of Bes and Toeris, demons responsible for protection of sleeping and family intimacy. In confirmation of this function are also two fragments of the headrest of the block type, from the Late Period, presenting a rare decoration with the image of the goddess Neith depicted in the act of throwing arrows of "good sleep" (Daressy, 1910).

With magical and protective value of the head of the deceased, from the eighteenth dynasty also appeared headrest shaped amulets, but the type with base, stem and pillow, usually in faience or black stone. Before

the Third Intermediate Period headrest shaped amulets appear only in the royal tombs, but since the saitic period they become very common, manufactured almost exclusively in hematite or another very dark stone, such as basalt, obsidian or diorite. Indeed, the black colour of the stone brought the meaning of regeneration that takes on this colour, characteristic of the rich land of fertile silt after the flooding of the Nile. The function of the amulet was therefore to hold the head of the deceased at the time of the resurrection, but also, as stated in chapter CLXVI of the "Book of the Dead," to make sure that the head of the dead did not come loose from his/her body.

The collection of the Egyptian Museum in Florence includes several wood artefacts. Among them are twenty headrests that cover a large time-span, ranging from the Old Kingdom to the New Kingdom. Analysis of the material in these headrests would address a critical uncertainty in the materials used in Ancient Egypt. Thanks to an agreement between the Museum and IVALSA-CNR, a first analysis was carried out on these objects, with the aim to identify the used types of wood.

The complete list of the artefacts, with indication of the inventory data, is given in Table 1.

3. Materials and method

The Italian technical standard UNI 11118 (2004) (Cultural heritage - Wooden artefacts - Criteria for the identification of the wood species) describes criteria and limits for wood species identification on artefacts and findings of historic, artistic and archaeological interest. An important section of the standard is devoted to the description of the identification and sampling methodology. The first approach must always be a macroscopic (autoptic) observation aimed at finding the construction characteristics of the artefact and the specific macroscopic features of timber. If there are insufficient numbers of anatomical features to ensure the macroscopic identification of the *taxon*, or when the *taxon* determined is not satisfactory for the specific needs of the identification, it will be necessary to proceed to microscopic identification. If this cannot be done directly on the artefact, its execution must be subject to the evaluation of the eligibility of the drawing of a sample.

To accomplish the standard a preliminary macroscopic observation was carried out to describe the various constructional characteristics of the artefacts. Then it followed observations at microscopic level, at different magnifications, with the collection and comparison of data useful for the identification of the botanical taxon of the examined timber. Based on the criteria of minimum invasiveness of diagnostic steps, the first detailed approach was made through the collection of images with a portable video-microscope (Dino-Lite Digital Microscope Pro, from 20 X to 200 X). In this way it was possible to make a first differentiation between the timbers used for the different parts of the headrest (where it is not a single block) or, in special cases and with the help of appropriate comparisons, it was already possible to achieve the needed level of identification (Fig. 2).

Following this sampling methodology it was possible to take wood fragments only where strictly necessary. The sampling was through manual cutting of wood with razor blades, mostly in correspondence of hidden areas between the connections of different parts of the

Fig. 1. At left, a headrest made of single base and arch, in the centre a multiple stem typology and on the right a single block type (inv. no. 2345, 6893 and 6994 of Egyptian Museum of Florence).