5 Wood Identification

Taxonomic identification of the wood from which ancient Egyptian spindles and spindle whorls are composed has been achieved, so far, for a small number of objects deriving from the sites of Kahun and Tell el-Amarna, with quite unexpected results. Samples of seventeen spindle whorls and a heddle jack from Middle Kingdom Kahun have been analysed as well as one spindle whorl dating to the New Kingdom from Thebes. Fourteen of these objects were produced using a non-local wood of the *Pinaceae* family, probably the *Abies* genus, but it has not been possible to identify the precise species, due to the absence of specific anatomical features within the wood sample. The *Abies* species is not native to Egypt, normally localised to central European forests, but also occurring in Greece and Turkey.

Its fine texture, straight grain and a low tendency towards warping make this wood suitable for several carpentry and building purposes; it is quite remarkable that this kind of wood has been chosen for the production of small spindle whorls (Cartwright et al. 1998, 96). Four other samples have been recognised as *Ficus sycomorus*,[1] of the *Moraceae* family, a local wood commonly used in Ancient Egypt, for example in the manufacture of coffins. It is a light and soft timber, but it does not bear pressure, crushing or bending (Cartwright et al. 1998, 96). These characteristics do not prohibit its use for the making of spinning tools, especially spindle whorls, which are not subjected to excessive stress. For these reasons (i.e. lightness, local availability and probably cost-effectiveness), this wood would be a more obvious choice for spindle whorls but the archaeological data from Kahun are against this assumption.

Spindle whorls from Tell el-Amarna were analysed by Rainer Gerisch in 2000 (Kemp, Vogelsang-Eastwood 2001, 267-8). In almost all of the 37 examined samples, the orientation of the wood elements follows the cross-section of the spindle whorls, except in one case, which has been cut in a longitudinal direction from the structure of the wood. Most of the spindle whorls show evidence of growth rings typical of coniferous wood and, more specifically, the wide bands of fibres alternating with parenchyma bands, which are characteristic of *Ficus sycomorus* wood. The majority of the samples examined were obtained from sycomore wood but several

1 Not to be confused with sycamore wood.

were made of cedar wood (*Cedrus libani*). In all, 17 spindle whorls are recognised as being made of sycomore, 9 are made of cedar and the exact identity of 6 remain unknown, but these are known to belong to the class *Dicotyledonis* (to which *Ficus Sycomorus* belongs as well as a thousand other species) (Kemp, Vogelsang-Eastwood 2001, tab. 8.2).

Prof. Mauro Rottoli examined on two occasions some of the spinning tools, which are stored at the Museo Egizio and took some samples in order to determine the wood composition, the results of which are shown in Table 2. The majority of the museum objects were covered by a thick layer of encrustation or by a patina, which has prevented their investigation. On some items, however, the wood was completely exposed and some remarks have been possible. In almost all the cases under examination, the wood has been cut following the cross section, as was the case of the Amarna spindle whorls. In ten examples, the whorl surface was completely exposed and growth rings were easily visible: most of these whorls were cut from the central portion of a branch or a small trunk (e.g. S. 07526/012, S. 07526/060), from half of a log (e.g. S. 07526/047, S. 07527/03) and in four examples from a trunk of larger dimensions (S. 07526/009, S. 07526/109, S. 07526/090, 07526/095). Only two items were obtained by cutting the wood in a longitudinal direction (S. 07526/007, S. 07528/038). On one object traces left from its manufacture were very clear because it was not polished.

Most of the spindle whorls have been examined by eye and seem to have the same anatomical characteristics: the cross section exhibits inter-vessel pits very often with coalescent apertures, which are disposed in a radial pattern (e.g. S. 07526/009, S. 07526/097, S. 07526/100, S. 07526/103, S. 07528/025). It is highly probable that they were obtained from the same wood species as the whorl samples, i.e. *Ficus sycomorus*. Only two examples appear completely different from the others: S. 07528/044, which is quite heavy and of a dark colour, and S. 07528/109 which has been extracted from a sturdier wood.

It was not possible to arrive at a correct determination of spindle wood by eye and even observation by microscope occasionally left some doubt, due to the impossibility of observing a sufficiently wide cross-section. Four out of the six samples of spindles have proven to be cedar wood, one of the others was made of yew and one of a non-identified species of the class *Dicotyledonis*.

It is a very remarkable fact that in all the examples examined, from Kahun, Amarna and Deir el-Medina, local woods were used alongside foreign and consequently more expensive woods. Wooden spindles and spindle whorls have the advantage of being able to resist breakage through dropping better than other materials, especially pottery; as well, wood provides the opportunity to create large, but at the same time light, spindle whorls. However, a too-soft wood could easily warp, especially around its hole, and several wedges would then be required to attach it to the spindle, as has

frequently been seen in the case of the Deir el-Medina materials. Spindles had to be strong enough to resist the constant friction with hands and tight of the spinner and the stress involved during the process of spinning that could lead to the breaking of the object. It is not surprising, therefore, that a more resistant wood would have been preferred, even if it was more expensive. The data obtained from Deir el-Medina clearly shows that the best wood was used to make spindle shafts and softer wood was employed for most of the spindle whorls. If this wood was manufactured into spindles and spindle whorls at the village (which seems more likely) or if they were acquired already fabricated from somewhere else is a very interesting question, which will hopefully find an answer by their comparison with other tools found at the Worker's Village.

Table 2: Wood identification of spindles and spindle whorls of Museo Egizio, in Turin, made by M. Rottoli

S.07526/027	Spindle	Partially charred wood	Taxales: Taxaceae	(conifer)	*Taxus baccata*	yew
S. 07526/48	Spindle	Wood	Coniferales: Pinaceae	(conifer)	*Cedrus libani*	Cedar*
S. 07526/093	Spindle	Wood	Coniferales: Pinaceae	(conifer)	*Cedrus libani*	Cedar
S .07526/106	Spindle	Wood	Coniferales: Pinaceae	(conifer)	*Cedrus libani*	Cedar
S. 07526/109	Spindle	Wood	Coniferales: Pinaceae	(conifer)	*Cedrus libani*	Cedar*
S. 07528/020	Spindle whorl	Wood	Dicotyledones: Moraceae	(angiosperm)	*Ficus sycomorus*	Sycomore
S. 07528/033	Spindle whorl	Wood	Dicotyledones: Moraceae	(angiosperm)	*Ficus sycomorus*	Sycomore
S. 09978/5	Spindle	Wood	Dicotyledones	(angiosperm)	??	??**

* The identification of these two samples retains a slight degree of uncertainty. It is certainly from some type of conifer, but not all typical characteristics of cedar wood are clearly visible. It might be possible, although extremely unlikely, that it is fir (*Abies* sp.).

** Sample S.09978/5 belongs to a broad-leaf tree (angiosperm). The impossibility of observing a cross-cut section makes the identification very difficult even as regards the family classification.

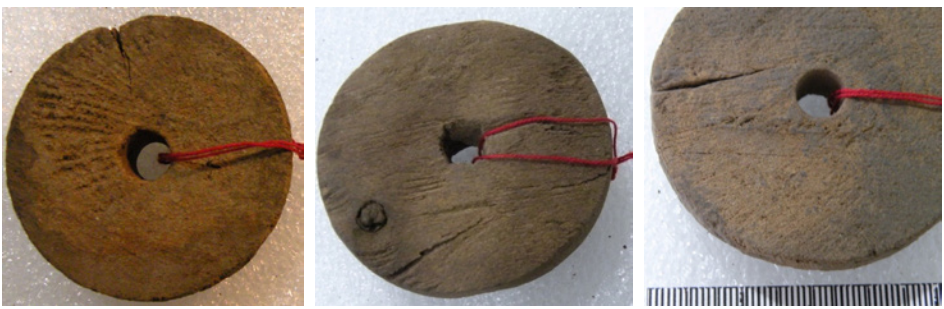

Figure 1. Three examples of wooden spindle whorls from Museo Egizio (S. 0728/025, 38, 39)