4 Textile Tools at the Museo Egizio in Turin

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4.1 Origins and Chronology of the Collection

The so-called 'Mensa Isiaca' – a bronze altar panel decorated in silver, copper and niello – is the first Egyptian, or better, Egyptianizing, piece of great interest that came to Turin around 1626 as part of the Savoia Collection. In 1723, Vittorio Amedeo II donated his private collection to the University of Turin. In 1759, Carlo Emanuele III commissioned Vitaliano Donati to travel to Egypt and the Levant in order to collect antiquities, curiosities and other rare items as well as local plants for the creation of a botanical garden and a Museum of Natural Sciences. Furthermore, Donati was bade to collect any object that could be used to study the 'Mensa Isiaca', which was later discovered to be a creation of the first century AD, probably made in Rome.

In Turin in 1832, three large statues and three hundred smaller objects were added to the original collection. The official birth of the museum dates to 23rd January 1824 with the purchase of the Egyptian artefacts collected by Bernardino Drovetti (Donadoni Roveri 1987, 10). These were stored at the Academy of Sciences where they were partially catalogued, the collection then totalling 5,268 pieces. Drovetti's collection was not the result of excavation work, but of randomly selecting the best-preserved objects one could find. Most of the artefacts date to the New Kingdom or to the following periods, and any secure indication of their origins is completely missing. During the following years, the collection in Turin increased with new objects donated by private citizens and by some exchanges with the civic museum.

In 1894 the Kircher Collection was donated to the museum. In this year, Ernesto Schiaparelli became the director of the museum. Wishing to enrich the collection, he first decided to buy some pieces and then, from 1903 onwards, he commissioned several excavations in Heliopolis, Giza, Bahnasa, Ashmunein, Assiut, Hammamia, Qau el-Kebir, Valley of the Queens, Deir

el-Medina, Gebelein and Aswan (Moiso 2015, 29). After Schiaparelli, the excavations at Gebelein were carried out by Giulio Farina (his work at the Prehistoric necropolis is especially notable) and by Carlo Anti at Tebtynis (Moiso 2015, 34). Aside from excavations, the museum kept increasing its collection due to donations and purchases.

The museum inventory allows easy identification of which collection individual objects belong to: the acronym 'Cat.' relates to Drovetti's collection (and a few objects acquired before the publication of the catalogue of Fabretti et al.), mainly composed of objects whose origins and dates are unknown. 'S.' (Supplement) relates to the Schiaparelli Manuscript Inventory, in which all the objects he found are recorded. A group of objects is also present, whose individual origins are unknown, as it is not possible to connect them to any one of the previous collections; for this reason these objects have been labelled 'Provv.' (Provisional).

The materials related to textile production kept in the Museo Egizio are numerous and well preserved and allow us to acquire much information from them. There are, however, some limitations on our knowledge due to the way the collections were assembled, during a historical moment where excavation methodology and its data collection practices were only beginning. The first and most important issue is that all the objects of this study are missing any precise indication of their origin. We actually know that most of these objects were recovered by Schiaparelli during the Deir el-Medina excavations conducted between 1905 and 1909,[1] but the only information present given in the Manuscript Inventory is "one spindle case".[2]

Some more information, however, can be found in the Manuscript Inventory left by Schiaparelli wherein he recorded that the origin of the spindle case was the kôm, a kind of rubbish and debris hill at the outskirts of the village where Schiaparelli worked in 1906 (Del Vesco, Poole, forthcoming). The only spindles that came from nearby (ancient) houses are the ones from batch S. 9978, found by Schiaparelli in 1909, that is when he continued the excavation of the village. This distribution of finds is confirmed by the reports and diaries of Bruyère's excavation of the same site; he recovered most of the objects related to textile production from a large well, and only in lesser quantities from within the village. It is worth not-

1 The discovery of the Deir el-Medina village and the first excavations there from 1905 to 1909 were carried out by the Italian Ernesto Schiaparelli, while the definitive excavations from 1922 to 1951 were carried out by the French expedition directed by Bernard Bruyère, assisted by the Czechoslovakian Egyptologist Jaroslav Cerny.

2 In Schiaparelli's Manuscript Inventory related to the Deir-el Medina excavations, the number 07526 corresponds to a case of spindles with fragmentary rods, number 07527 to a spindle case with incised marks and the number 07528 to a spindle case with no marks and with small whorls. In the 1909 Inventory, number 9978 corresponds to nine fragmentary spindles.

ing that spinning bowls are totally missing from Schiaparelli's excavation finds from Deir-el Medina while various examples were found in Bruyère's excavations.

A second constraint on our knowledge is the lack of certifiable dates. The Deir el-Medina Worker's Village was built during the New Kingdom under Pharaohs Amenhotep I or Thutmose I, the same period in which the Kings Valley and the Queens Valley began to be used. The village was exploited throughout the New Kingdom until it was abandoned during the 20th Dynasty and once again inhabited during the Ptolemaic age, when Ptolemy IV built a temple there. During the Coptic Period a monastery took root in the disused temple of Hathor. Therefore, it could have been possible that most of the materials surveyed in this catalogue belong to the New Kingdom or to the Ptolemaic Period or even to a later period. It has been suggested that most of this material could belong to the New Kingdom due to its similarity with the materials coming from Amarna, although the persistence of the same artefact types through the centuries does not itself allow for the creation of a reliable typological series. For this reason it has been decided to sample three objects, spindles and spindle whorls, coming from different seasons of Schiaparelli excavations at Deir el-Medina, in order to arrive at a more certain date for these objects, in relation to the material discussed in this monograph. The results of this study date the samples to between the New Kingdom and the beginning of the Third Intermediate Period (give numerical dates c. 1400-1150 BC as well) confirming the initial theory.

Sample numbers	Calibrated results (2σ confidence level)
S7528/20	1195BC (9.0%) 1141BC 1133BC (86.4%) 920BC
S7528/33	1389BC (9.8%) 1337BC 1320BC (85.6%) 1071BC
S9978/5	1452BC (93.5%) 1256BC 1249BC (1.9%) 1231BC

4.2 Hanks of Flax and Balls of Yarn

The storage rooms of the Museo Egizio houses many hanks of flax and many yarn samples, including rough fibres wrapped in bundles and some already-spun threads, which makes it possible to examine all the different preparation stages of thread. The first hank (no. 263) is a bundle of flax fibres, not yet retted, which means not ready for spinning but already with the seed-case removed. Fibres appear woody and hard because the outer bark is still present. It is not certain that these fibres would have been used for spinning and weaving: they could also have been used for

the production of basketry and matting. The second hank (no. 264) is from a more advanced stage of production. It consists of a set of flax fibres wrapped around and tied back on itself. These fibres have already been scutched and retted, although it is possible to find small bark fragments, rather thin and brown-gold coloured. There are balls of yarn already spun, and in some cases it has been possible to recognise traces of splicing in these; it is likely, however, that all the threads under examination were produced with this technique. It can also be noticed that, in many cases, the balls of yarn preserved are not made of only one thread but of several different threads. These hanks were probably not freshly produced but partially re-used for many different activities.

In most of these cases the thread, single or plied, is s-twisted, but in one hank a thick thread has been found, maybe not originally belonging to that hank, which shows a close z-twist that tends to coil in on itself. The threads range in diameter from 0.03 cm at their thinnest and 0.11 cm for the thickest (the z-wist thread just described). The twist angle, when preserved, has an average of 45°. A similar situation can be found for the balls of yarn, which are all well preserved, but of very different and varied constitution. First, it must be noticed that there is only one real ball of yarn (no. 269) according to our modern standard, and it is still perfectly preserved. It is not possible to distinguish the material over which it was wrapped because of the great amount of thread. The thread is strictly z-twisted and splicing is evident. Some big knots are also present at the end of the thread, as well as some other knots inside the ball of yarn. The thread diameter is about 0.04 cm and its twist between 35° and 40°. It is highly uniform and homogeneous and it might be considered as a final product, even if it was only a medium quality thread, certainly not used for weaving fine clothes. The z-twist might indicate that it would not have been used for weaving, but more probably for sewing, darning other textiles, or producing nets.

An interesting ball of yarn (no. 270) is a small object with a tow core on which a small number of different threads have been wrapped. The threads are all s-twisted and the ply is rather evident (S, 2s[3]). Some threads have a very close twist, but in others it is difficult to see it at all, probably because of the state of preservation. The other balls of yarn in the Museum's collection present similar situations, with different threads wrapped around an object and seem to be, unlike the first two yarn balls discussed, a kind of makeshift solution, but one that nevertheless is frequently used. The threads are, as a matter of fact, wrapped around a ceramic rim fragment (no. 272), under which some rough fibres are positioned to avoid the thread becoming ruined by rubbing against the core, or around some stones (no. 271, no. 273). In all of these last three cases, the thread is z-

3 Two S-twisted yarns plied in s-direction.

twisted, with two or four cables: in one case it is possible to distinguish the z-ply and an s-twist and in at least another one case it is possible to distinguish the splicing point.

Lastly, a set of yarns have been wrapped around a circular stone (no. 274), which was likely previously used as a stopper. The threads look different from each other, with two or three plies, with single s-twist yarns and z-ply. Their diameter varies from 0.03 to 0.06 cm with small oscillations inside the same yarn, which can be followed only for small segments. The twist angle is varied and depends on the thread preservation conditions; it is attested between 35° and 40,° but also reaches 50° in this example, which is a very wide twist.

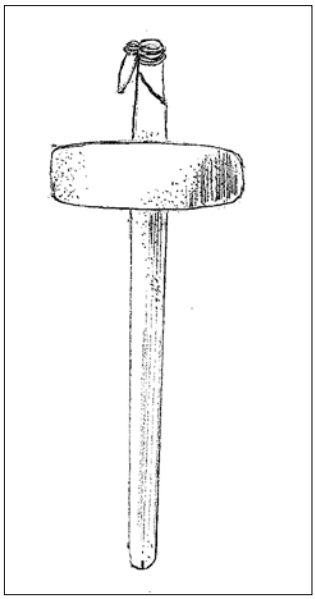
4.3 Spindles

The spindles housed in the Museo Egizio are 153 in number, of which 151 still have their spindle whorls attached. They all came from Schiaparelli's excavations at Deir el-Medina and some of them have been sampled for radiocarbon dating and archaeobotanical analysis. The examples preserved intact are very few, only five out of the total (nos. 073, 106, 140, 145, 146) with two nearly intact (nos. 026 and 046). Most of the spindles have one or both ends broken, and there are some spindles of which only one small fragment is preserved inside the spindle whorl hole. These spindles are simple rods, all of them made of wood, of an average length between 20 and 30 cm, but occasionally they reached 40 cm. The average rod diameter is 0.9 cm; many of these objects have diameters ranging between 0.8 and 1 cm.[4] The rod is not strictly cylindrical, but tapers towards the lower end, and certain spindle whorls have hole diameters wider at their tops and smaller at their bottoms to accommodate this (e.g. no. 008 with a upper hole diameter of 0.9 cm and a lower diameter of 0.8 cm). In most cases the rod is wider at its central part and, in these cases, spindle whorls show a reversed ratio between the diameter of their holes at the top and bottom edges (e.g. no. 001 with upper diameter of 0.9 cm and lower hole diameter of 1 cm).

Here are the measurements of the five fully-intact examples of spindles from Deir el-Medina.

- No. 073: l. 22 cm, diam. 1 cm, weight (spindle + spindle whorl) 18 g;
- no. 106: l. 21.1 cm, diam. 1.1 cm, weight (spindle + spindle whorl) 19 g.;
- no. 140: l. 35.8 cm, diam. 1.2 cm, weight (spindle + spindle whorl) 27 g.;

4 Rare cases are 0.7 cm in diameter and much more rare are those measuring around 0.5 and 1.2 cm.



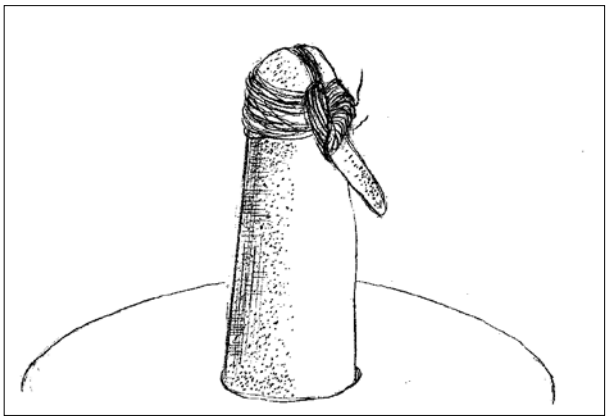


Figure 9. (left) Spindle with a thread attached on the upper part

Figure 10. (up) Thread attached to a spindle through the insertion of a peg

- no. 145: l. 32.4 cm, diam. 1.1, weight (spindle + double spindle whorl) 37 g.;
- no. 146 l. 37.2 cm, diam. 1.1 cm, weight (spindle + double spindle whorl) 31 g.

As shown by this data (which are also confirmed by other semi-intact objects, such as no. 004) two types of spindles must have existed, a very long one which measured between 30 and 40 cm long and a shorter one which measured between 20 and 25 cm long. The weight[5] and the length difference probably signified their use for the spinning of different qualities of thread. As for the spindle whorls relating to these spindles, the amount sampled is too limited to be statistically valid. One can notice, however, that the largest and thickest spindle whorls were associated with the shorter type of spindles, while the longest spindles were related to smaller and thinner spindle whorls. For example, no. 140 has a spindle whorl diameter of 4.6 cm and a thickness of 1.4 cm, which is definitely smaller than the average. In all other cases, the difference is not so evident and it does not seem to be useful to establish a connection between short spindles and big spindle whorls, or long spindles and small spindle whorls.

5 Examples with double spindle whorls must subtract the weight of the second spindle whorl. Double spindle whorls are thought to have been attached in modern times: there are three wholly intact spindles with double-whorls and four almost-intact examples in this corpus.

The upper tip of the spindle rod can be flat or rounded, and just under the tip starts an incision that helps to fasten the thread. In most cases this incision has a spiral shape which aids the s-twist of the yarn (one of the best examples is on no. 073), but it can also be just a simple deep groove (e.g. no. 096). The other end of the rod is tapered, perhaps to aid in the process of spinning with a suspended spindle. In only one case does the lower part of a spindle get larger and ends with a rounded tip (no. 023).

In all examples preserved with the spindle whorl still attached, the whorl is placed right under the groove, showing that spinning always occurred with the spindle whorl at the top of the spindle, as is supported by the iconographical evidence. Only two examples (nos. 137 and 150) have a spindle whorl in the middle of the rod, and neither of these is of exactly the same type. One group of spindles has spindle whorls placed on the central or lower part of the rods, which are particularly tapered, but as not one of these examples is intact, it is not possible to be certain that this was the original position of the spindle whorls (nos. 002, 003, 007, 008, 009, 013, 023, 075, 137).

Spindles with fibres still present are quite numerous, but it is possible to distinguish individual threads in only some cases, while on others only traces of fibres or their imprints are visible, which do not allow us to recognise their different types of manufacture.[6] When the thread is preserved, some remarks can be made.

- No. 001: at least two different threads preserved, one s-twisted and the other z-twisted;
- no. 026: one thread preserved in the spindle whorl hole; it is s-plied;
- no. 031: the spun yarn is preserved under the spindle whorl wrapped around the spindle shaft, it is splied, while the single twist is not visible. There are also some unspun fibres;
- no. 032: on the upper part of the shaft a thread that attaches a wooden rod is preserved; the threads present are probably plied but this is not certain. It has a final z-twist and its single twist is not visible;
- no. 033: on the upper part of the shaft, under the spindle whorl, a doubled thread with an s-twist is preserved; the single twist is not visible;
- no. 034: the upper edge of the spindle is broken and this was likely also in ancient times because the fibres are wrapped around the broken part; a thread that attaches a wooden rod is preserved. The fibres are characterised by a s-plied yarn but the single twist is not visible. The thread itself is rather encrusted and is partially inserted into the spindle whorl hole;

6 Spindles bearing traces of threads are: nos. 015, 016, 018, 020, 022, 025, 027, 031, 032, 033, 034, 038, 081, 084, 098, 104, 106, 135, 148, 149.

- no. 038: a couple coils of yarn are preserved under the spindle whorl, but the fibres do not appear to have been twisted or spun;
- no. 098: threads inserted into the spindle whorl hole and preserved on the spindle shaft. The thread appears s-plied;
- no. 135: s-plied threads are attached under the wedge rod which fixes the spindle whorl;
- no. 148: coils of vegetal fibres with no sign of twist or spinning appear in the spindle groove. The knots fixing them to the spindle are clearly visible;
- no. 149: coils of vegetal fibres, hooked with several rotations onto a wooden peg, appear in the groove of the spindle. The fibres on the rod are not twisted, but one part of the thread which is visible has a z-twist.

In most cases, it is difficult to distinguish whether the thread has one or more plied yarns. In some cases, it is clearly evident that the thread is doubled and s-twisted, but in at least two cases a final z-twist can be seen.

4.4 Spindle Whorls

Spindle whorls housed at the Museo Egizio are extremely homogenous as to their materials, their shapes and their dimensions. Firstly, all of the spindle whorls in the collection coming from Deir el-Medina are made of wood. This is in contrast to other contexts in Egypt and the Levant, in which ceramic or stone spindle whorls are represented. Unfortunately, it is not possible to ascertain whether this material exclusivity is due to the actual tradition of spinning at Deir el-Medina or to the chance recovery of archaeological materials by the excavators.

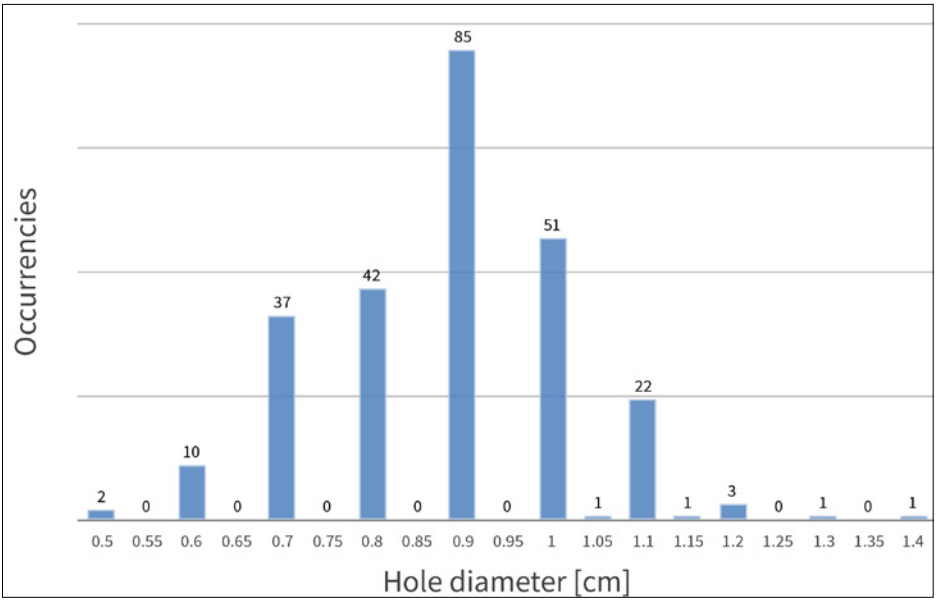
Although wooden spindle whorl production is widely attested at many other Egyptian sites, the use at Deir el-Medina of wood for the tools of daily life instead of the easily available and cheaper clay is striking, especially in a country without an overabundance of wood. This choice could have been guided by technical reasons: spinning vegetal fibres requires large, but not necessarily heavy, spindle whorls.[7] The widespread decision to use wood instead of pottery could have satisfied both of these needs at the same time. The morphology of spindle whorls from this site is also rather homogenous; of the 263 examples held in the Museo Egizio,[8] only three take a truncated conical shape (cat. nos. 148, 149, 258), one a lenticular

7 pers. Com. Andersson Strand.

8 Of those considered in this work of thesis. Ptolemaic and Roman spindle whorls have been excluded; they have a flattened dome shaped.

shape (cat. no. 150) and one is dome-shaped (cat. no. 261). All the others are cylindrical in form. Three of these spindle whorls are without information relating to their origin while all the other spindle whorls here studied, as well as the spindles, come from Deir el-Medina, and were produced during the New Kingdom or at the beginning of the Third Intermediate Period.

The external diameters of these spindle whorls are all rather wide and can vary from a minimum of 3.9 cm to a maximum of 6.1 cm, with the majority between 4.9 cm and 5.6 cm in size.

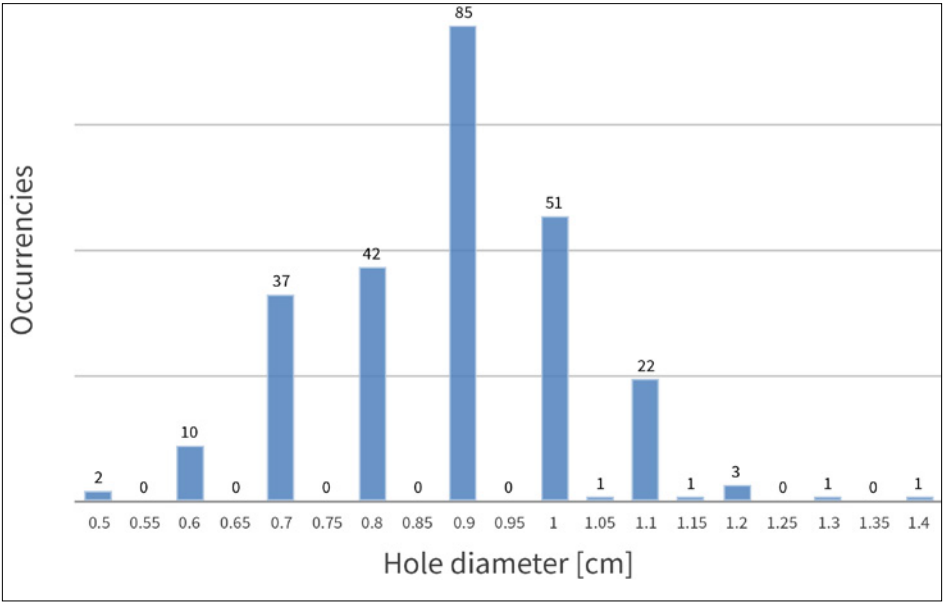


Graph 8. External diameters of spindle whorls

Their hole diameters vary between 0.3 cm and 1.4 cm, with the majority of the diameters ranging between 0.8 and 0.9 cm, as seen in the diagram. As previously noted, some spindle whorls have a slightly conical hole, which allows them to fasten more securely upon the spindle shaft. This expedient does not seem to have been enough to ensure a tight fit; however, as in certain examples vegetable fibres and small pegs have been used as wedges.

On certain spindle whorls some repairs and ancient restoration activities have been executed, as on no. 161, in which a small wooden rod has been inserted to fill a lateral hole. One spindle whorl (no. 228) was never completed and is without a central hole. Its surface has been polished however, and some signs of preparation for the hole are visible.

Some spindle whorls show traces of simple decorations (no. 107), painted or incised, other marks and even hieroglyphic signs are recognisable



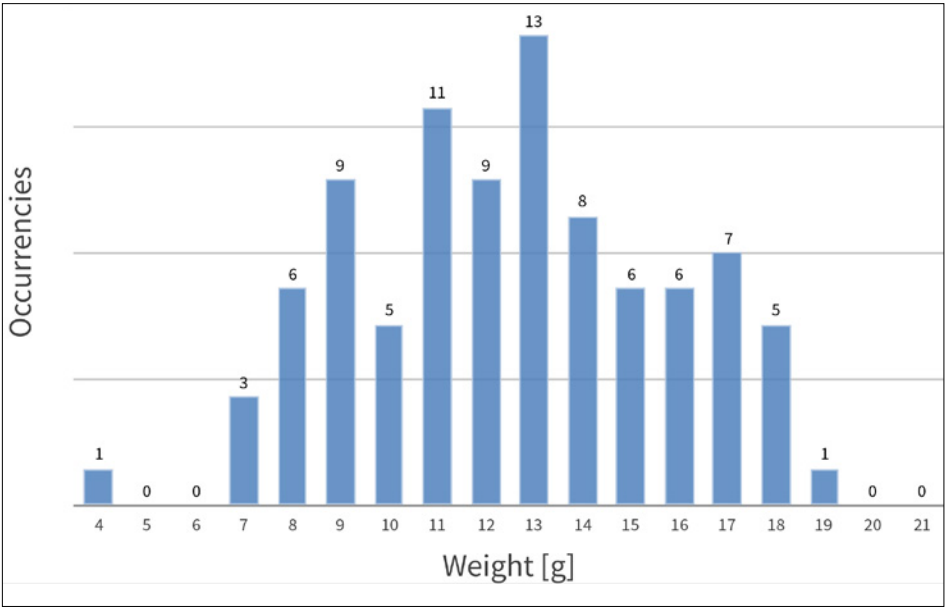
Graph 2. Spindle whorls hole diameters

(e.g. nos. 108, 109, 110). It is generally believed that these signs or marks, incised on several types of Egyptian tools of everyday use (Vogelsang-Eastwood 2000, 285), were connected with the tools' owners or with the workshops of their production, but it is difficult to connect these symbols to precise persons or other categories, especially the abstract and geometric signs (see fig. 10).

The weight of individual spindle whorls must be cautiously considered as the wood is desiccated and likely lighter than it was originally. In this work, only the weight of complete spindle whorls is included, without the spindle shaft, although a weight is provided in the catalogue for all objects. Weights vary between 4g and 19g for intact spindle whorls, with the average range between 11g and 14 g.

The painted decorations consist of simple radial designs and are usually seen on one side or on the edge of the spindle whorl. It is perhaps notable that these decorations, carved or painted, are not placed on the upper side of the spindle whorl, where they would have been visible to the spinner, but are placed on the lower side where the thread is wrapped. Whatever their functions were, it seems that aesthetic value one was not one of the main concerns.

Another interesting element is the existence of a thick layer of encrustation on spindle whorls, which is not present on the other objects coming



Graph 3. Weight of complete spindle whorls without shaft insert in their hole

from Deir el-Medina. The encrustation generally extends from the upper part of the spindle rod onto the superior face of the spindle whorl, leaving the other face clean or covered with only a slight patina. In some cases, upon this encrustation a very thin layer of a whitish substance is present, which does not seem to be paint or plaster. Occasionally on the shaft of a spindle it is possible to find a thin layer of a brown substance, which seems to be clay. As the nature of the sediments of the area within which the finds were made is unknown, it is difficult to say whether this thin clay film is a result of depositional context or part of spindle technology; its presence could perhaps have helped the fibres to adhere to the spindle. It seems probable that the clay film is related to the archaeological context of the find, as clay or mud on a spindle could ruin the thread just produced. Certain spindle whorls from Kahun (David 1986, 234), however, have plastered surfaces which are sometimes decorated, which means that it is not impossible that certain spindles now residing at the Museo Egizio were once given a surface treatment, the purpose of which is now unknown.

In one case, a fabric fragment was still attached to the side of a spindle whorl (no. 106), perhaps due to the long contact between the two items in the archaeological stratum. The fragment measures 1.72 cm × 1.91 cm and is a tabby weave with a sett of 13 × 10 threads per cm^2, with the thread S-twisted in both warp and weft?

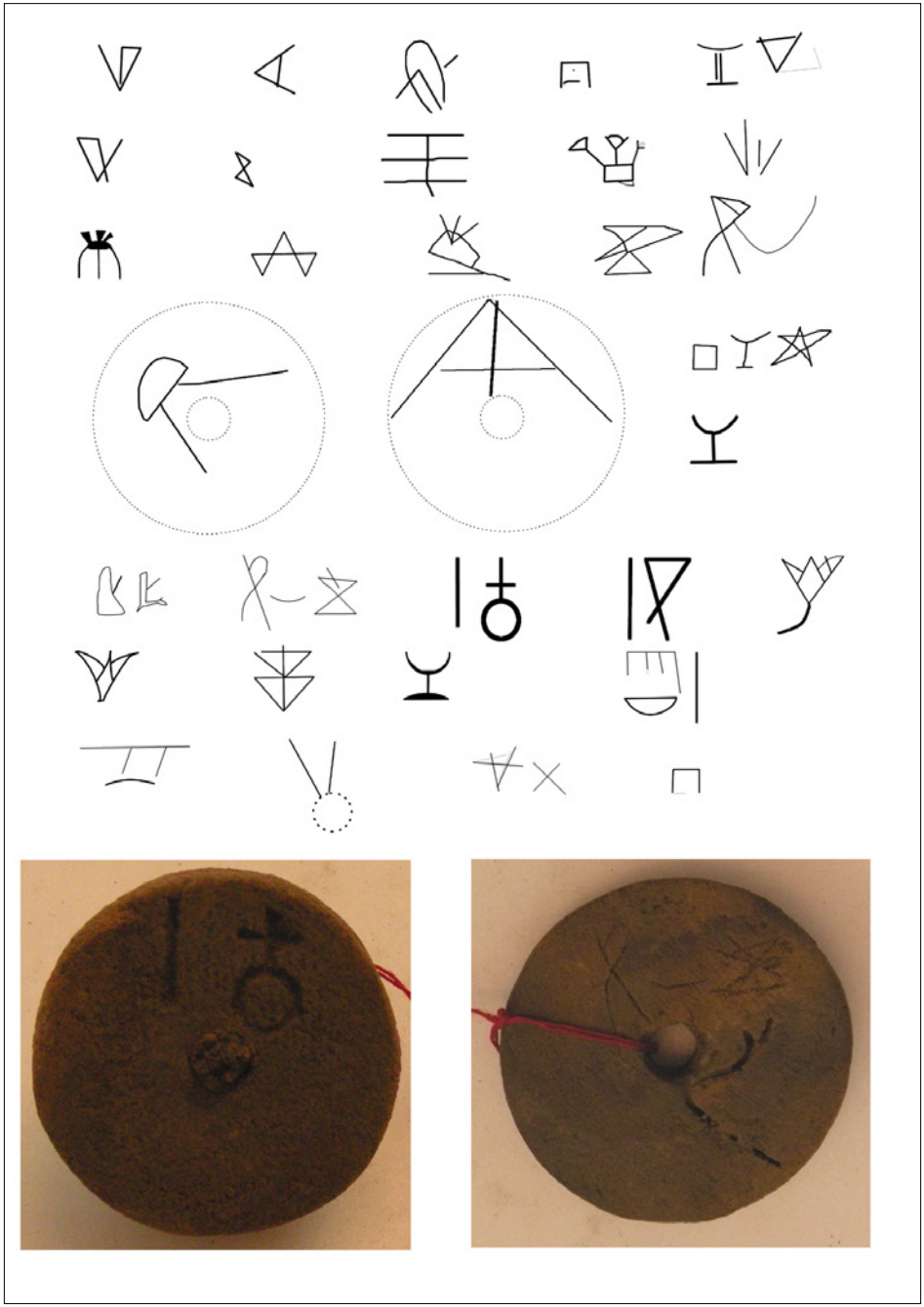


Figure 4. Marks of spindles and spindle whorls from Deir el-Medina

As seen above in the chart, three examples of spindles have undergone radiocarbon dating and their results confirm a New Kingdom date for the sample which comes from the village (S. 9978 of Schiaparelli's Inventory). A slightly later date was provided for the two other samples from the kôm (S. 07528 of Schiaparelli's Inventory). These two contexts were certainly not contemporary, as the results do not show any possible overlap. This means that the spinning activities in evidence at Deir el-Medina were spread over most of the period of the exploitation of the site. However, the number of spindles and spindle whorls recovered, 263, is astonishing even considering the length of time during which they were produced. In addition to the spinning tools here discussed, it should be borne in mind that Bruyère also found a large amount of spinning tools at this site, both from houses and from the great pit. It seems from this data that spinning was a prevalent activity in the village; such a large number of spinning tools is usually expected from workshops or other areas devoted to thread production, rather than villages.

If the textual evidence from Deir el-Medina is taken into account, it can be seen that workers received textiles and cloths (but not raw fibres) as a form of payment and therefore did not need to produce their required textiles themselves. These considerations raise a lot of questions, such as who actually used the spinning tools that have been recovered; are we seeing domestic production on the level of individual households or were certain persons textile production specialists? We do not know how many people were engaged in textile production nor how it was organised. The archaeological documentation shows spinning tools coming from houses or from dumps, and not from any other type of buildings that could be identified as workshops or attached to temples. This evidence points to a domestic-level production, probably organised by the female members of a house,[9] but it is not known whether this production was meant for internal consumption or could have been exchanged for other goods. It may be that this is the normal number of spinning tools to be expected from one single site, (in ideal circumstances wherein organic materials are not affected by decay), and that Deir el-Medina was not exceptional at all.

9 As Papyrus Salt 124 on Paneb forcing the wives of other workmen to weave for him let understand (Černý 1929, 246; Allam 1973, 283).

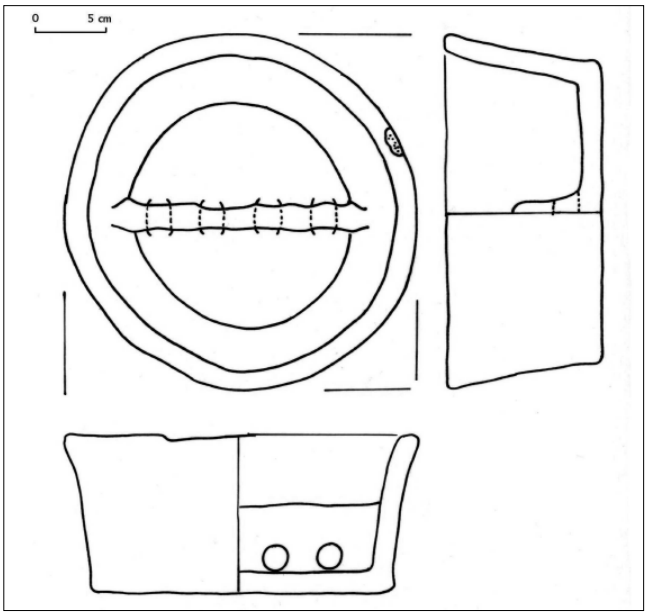


Figure 5. Spinning bowl from Tell el-Farkha (Maczinska 2012, fig. 6)

4.5 Spinning Bowls

In the Museo Egizio, there are two bowls with inner loops that can be classed as spinning bowls and both come from Heliopolis but are quite different from each other. The first one (no. 333) takes the classic form of a spinning bowl with two loops joining each other in the centre. It is fragmentary and only the bottom with the two loops and a small part of the wall are preserved. Marks from the potter's wheel can be seen on the outside of the bowl; the loops have been formed separately and added before the bowl was fired. Under the loops, clear traces of wear from the fibres passing through them can be seen.

The second spinning bowl from Heliopolis (no. 332) is missing its rim, but the bottom and most of the walls are preserved, and it is not very deep but quite heavy. The clay from which it was made is dark and contains a large amount of vegetable elements. Its shape is not completely regular; the bottom is flat and the walls are straight, but it shows traces of hand-forming and other small bumps; there are no traces of potter's wheel lines. The external surface was not treated and is rather rough, while the inner surface is carefully polished, especially on one side. Inside, this second bowl is rather peculiar because it is transversally cut by a wide diaphragm, made of the same clay as the bowl, and fixed to the walls and bottom with carefully polished junction points. The central diaphragm has

four holes passing through it. These holes are not identical to each other nor regularly arranged: the two in the centre are close together and set higher, while the lateral holes are lower and further apart.[10]

Compared to the spinning bowls attested in Egypt or in the Southern Levant that have previously been discussed, the second object from Heliopolis presents significant differences. None of the other bowls from the Levant or elsewhere in Egypt possess a central diaphragm; but rather they have a number of loops attached to the bottom of their interiors (as no. 333) or occasionally to their interior walls. The loops found inside these spinning bowls were sometimes joined together, but overall their shape and method of attachment to the bowl are very different to this object. It seems, however, that this second bowl could indeed have functioned as a spinning bowl, as the holes that perforate the 'diaphragm', even if they have no grooves inside them, would have been able to keep the fibres moisturised in water and under sufficient tension while spinning/plying took place. Nevertheless, the difference of manufacture is definitely evident and there might be an alternative explanation for this form.

A perfect match to this bowl comes from Tell el-Farkha, a site in the eastern Nile delta composed of three kôm and spanning a period of occupation from the Predynastic Period to the 4th Dynasty, with the settlement reaching its peak during the Protodynastic Period. Tell el-Farkha has brought forth several fragments of bowls with pierced diaphragms and, starting from the year 2002, even some complete examples with inner holes varying from two to four in number (Mączyńska 2012, 66). All these examples date to the initial phase of Naqada III and come from different trenches within the three kôm. Some fragments have grooves or signs of rubbing inside the holes, as in the more traditionally-shaped spinning bowls (Mączyńska 2012, 67, figs. 6, 10). As for the bowl residing at the Museo Egizio (no. 332), by consulting the Schiaparelli's Inventory[11] it can be noticed that it belongs to a batch composed of pottery coming from what excavator defined as the "Prehistoric Village", which means that the bowl here analysed could actually belong to the Predynastic Period as do the Farkha examples. Also the other example (no. 333) comes from the same batch of materials, unfortunately the New Kingdom and Predynastic levels at this site were directly overlain, which makes the Schiaparelli's

10 These holes have one side with a regular opening while the other has an irregular opening; their insides are perfectly polished with no trace of groove.

11 S. 4086. In a part of the inventory it is possible to read "Excavations of the year 1905 under the area of the late period temple. From 5 to 6 m under the *kôm*. Set aside the terracotta objects from the Prehistoric Village". Next to the bowl number a note says: "4077-4098 all material found in the last layer, that is that of the flint, in and over the water. In the same trenches, under the temple area, in the space between the columns, from which the aforementioned objects came, numbers 4047, 4068, 4070, 4074".

"stratigraphy" of this site quite unreliable. An early date could also be the reason for the peculiarly-shaped bowls of Tell el-Farkha and Heliopolis, which appear changed in the later periods. There is no certain evidence that bowls with interior diaphragm were used for spinning already in the Predynastic Period, but their shape and other features make it highly likely that this was their purpose.

The first Egyptian spinning bowls are identified with certainty only for the Middle Kingdom, both in the archeological record and from the iconographic evidence, which raises a question regarding the continuous use of spinning bowls from the Predynastic into the Dynastic period. It is likely that many fragmentary spinning bowls have not been recognized as such by excavators, this could hold true also for the early periods. This was, after all, the case at Tell el-Farkha, where until 2002 fragments of bowls containing diaphragms went unrecognised as objects related to the textile sphere. It is possible that a review of similar materials from other Egyptian sites could offer remarkable surprises as pertains to the chronological continuity of these bowls. Whether or not these objects are to be identified definitively as spinning bowls, the bowls from Tell el-Farkha and the one from Heliopolis kept in the Museo Egizio (no. 332) seem to create a unique category, as they share very similar characteristics.

4.6 Needles

At the Museo Egizio 26 bone, bronze and iron needles are stored, most of them with dates and origin unknown. Needles suitable for sewing, with thin diameters and eyes (nos. 324 and 323), as well as the large type of needles or bodkins (no. 311), are attested in the museum's collection. In the museum are also kept certain objects that could have been used for net production, such as nos. 327 and 326, which are curved in shape. A large wooden needle (no. 325) still holds a very thick thread s-cabled in its eye. From the tomb of Kha and Merit at Deir el-Medina two needle cases (nos. 319-20) were recovered, one made of papyrus rods held together with a small rope contained two bronze needles and a small blade, the other case made of papyrus stem had four bronze needles inside it. One of the needles of the first needle case still has some thread inserted through its eye.

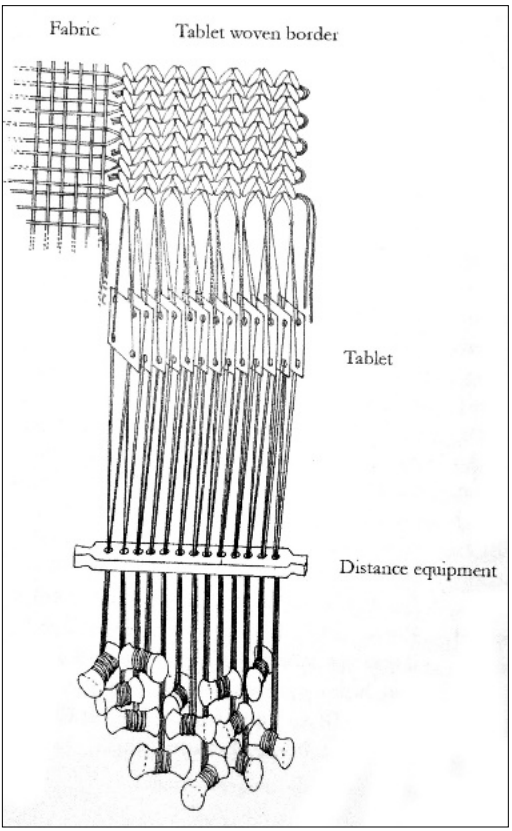


Figure 6. Gleba 2008, fig. 98

4.7 Spatulae and Other Tools

35 bone spatulae are stored in the Museo Egizio and can be related to the type already discussed for the Levant and elsewhere in Egypt. The origins of these spatulae are unknown, as Schiaparelli bought them in Egypt, except for one special spatula (no. 275) that probably does not belong to this category. It is actually an ivory object with straight sides, one thin and rounded end and the other end terminating with a fine-toothed comb. This object comes from a tomb context of the First Intermediate Period and is likely to be related with personal care rather than textile production. One of the purchased bone spatulae (no. 277) has very thin edges, one flat face while the other is concave. It shows signs of wear on both faces, especially on the flat surface and on its sides. An intact bone spatula (no. 276) has smoothed surfaces and is of a remarkable size; it is 18.7 cm long. It has one

rounded end and another triangularly-shaped end. It shows many traces of wear, especially on one of its two surfaces and on one side.

Several spatulae of different shapes, dimensions and materials are present in a group of 32 spatulae (Provv. 6465), for which no information of origin is available. One of these is made of wood (no. 291) and is broken at one edge while the other has a triangularly-shaped point. This is one of the largest from this group and measures 17.3 cm of length. Its surface is smooth and shows traces of wear. The other spatulae are all made of bone and, when preserved, show at least one triangularly-shaped point or a pen-nib point like those from Tell el-Amarna. In some cases the other end is round (no. 296), in others one end is flat (no. 286), and in many cases both ends were actually worked to a point, one end into a triangular shape and the other into the 'pen-nib' shape (nos. 297 and 298). Some objects belonging to this group are not really spatulae, but thin and sharp *pin beaters* such as (no. 285), even if their function was probably related to textile production too. The surfaces are extremely smooth on both faces and in many cases the cancellous bone is clearly visible.[12] Not all spatulae show signs of wear but, when they appear, they are especially visible on one side. In no. 295 wear marks are visible on one side as thin parallel lines, which suggest that the tool was always used in the same direction.

4.8 Parts of Loom

A wooden warp spacer (no. 329) coming from the Schiaparelli excavations in the Valley of the Queens is generally dated to the time between the New Kingdom and the Late Period. It is broken at the ends and shows 23 deep incisions and 6 half-incisions, which means that only on some teeth, four of them consecutive, these half-incision are created. It seems that these incisions were created by thread rubbing repeatedly on certain areas, due to the threads not being inserted into the pre-made incisions. The warp spacer has a triangular section with well-smoothed sides, while its lower part is not polished. One of the two sides is smoother than the other. On half of the preserved length (near the broken end) there are superficial incisions, while on the other side the incisions are deeper with irregular sides and traces of wear, likely from constant use. None of the warp spacers coming from other sites exhibit this type of wear.

Two wooden slats of unknown origin (nos. 330 and 331) are rather well-preserved (they both measure 1.5 cm wide and 0.9 cm thick); one is 22.2 cm long and the other is 22.5 cm long with 12 small holes passing through it and placed at different distances from each other and not strict-

12 In one case the trabeculae are not visible (no. 295).

ly in a row across the surface.[13] On both slats, the ends are concave and on one there is a mortise joint and on the other a broken tenon (preserved only on one of the two rods), which means that further elements were once added. The surface of both objects is smooth, but the concavity of the ends and the differences between their sizes and those of the holes do not allow us to consider that these two elements were once joined together.

It is difficult to define the use of these objects, and it is not certain at all that their use must be sought in textile production. At first sight they remind one of a mat separator (*hasira*) like the one discovered at Kahun, although they are much smaller than that example; as well, their holes are too small to suit the types of fibres used in the manufacturing of mats. A similar kind of spacer, but of smaller dimensions, was used to manufacture hems woven with weaving tablets in Prehistoric Italy (Gleba 2008, 152-3). As the dating of these Egyptian objects is unknown, it is possible that these objects do not belong to the Pharaonic Period, but to the Coptic or Medieval Periods, when the use of weaving tablets was widespread in Egypt. Objects similar to these slats could also have had other functions, such as embroidery frames, but in this case they would also date later than the Pharaonic Period. If these slats do not in fact relate to textile production, they may have had fibres fastened to them for use as parts of stools or beds.

4.9 Weights

The objects kept in the Museo Egizio that might be ascribed to the weight/loom weight category are few in number. For most, indications of their date or origin are missing.

- A flat bell-shaped ceramic weight with two holes (no. 338).
- A truncated pyramid-shaped ceramic weight with one through-hole and a small circular carving on the upper edge (no. 339).
- A pear-shaped weight made of stone (no. 340).
- A dome-shaped weight with a large knot of twine (no. 349). The weight is 4 cm in diameter, 2.2 cm in height and with a hole diameter of 1 cm. If the twine was not preserved, it would have been inserted into the spindle whorls category, to which it probably belonged even if it was used for different activities. Its total weight is of 23 g, twine included, so it would have been a relatively light spindle whorl.
- A group of 7 small limestone weights came from a tomb at Gebelein (nos. 342-8), all of globular shape with slightly flat sides. The surfaces

13 The two holes closest to the ends are set closer to each other; the average distance between the holes is around 2 cm, meanwhile those at the ends of both rods are only 1.5 cm and 1 cm apart.

are well-polished and chalky. Their dimensions are rather between 3.0-3.9 cm in height with diameters ranging from 4.0 to 4.4 cm. Their weight as well is quite homogeneous, between 46 g and 62 g. Whatever their function originally was, careful attention was paid to their manufacture and standardisation. Based on comparisons with the Levant materials, these could be considered as stone spindle whorls, but the fact that a quantity of them was found together leads us to think that they were used at the same time. No traces of wear due to the rubbing of thread or from insertion on a spindle shaft are visible. Furthermore, textile tools are never placed in Egyptian tombs during the Pharaonic Period, suggesting that their purpose should be sought outside the textile sphere.