

TEXTILE TOOLS FROM MIDEA

A total number 213 objects, of which 49 tools are from the Greek excavation and 164 are from the Swedish excavation, were recorded in the database (figure 1). The 49 objects from the Greek excavation are from excellent and closed contexts, rooms in a building complex at the West gate¹ and these objects will thus be discussed separately. These objects are all dated to LH IIIB2 late while the majority of the objects from the Swedish excavation is dated to LH and come from other contexts e.g. trenches and different layers² (figure 1).

Object date	Context		SpW	LW	Needle	Pin beater	Spindle	Wool comb tooth	In all
LH	citadel	other	115		2	4	7	1	129
LH IIIB late	citadel	store room-workshop	48		1				49
Unknown	citadel	other	4	1		9			14
In all			167	1	3	13	7	1	192

Figure 1. Chronological distribution of all the recorded objects from Midea.

SPINNING AND SPINDLE WHORLS

A total number of 166 objects have been recorded in the database as spinning tools, 118 whorls from the Swedish excavation and 48 spindle whorls from the Greek excavation. In this analysis, 2 whorls (MID-0212 and MID-0103) have been excluded (see comments in dB).

Material and shape

As can be seen in figure 2, the majority of the spindle whorls dated to both LH and LH IIIB2 late are made of stone and have a conical shape.

	Clay		Stone	
	LH	LH IIIB2 late	LH	LH IIIB2 late
biconical	7		3	1
concave conical	1		25	5
conical	6	4	67	38
convex	2			
spherical	3		1	
In all	19	4	96	44

Figure 2. Chronological distribution of spindle whorls according to type and material.

Spindle whorls with estimated or complete weight

A comparison between the complete spindle whorls (69 objects) and the spindle whorls with estimated weight (72 objects) demonstrates that they all fall within the same weight

¹ K. Demakopoulou and N. Divari-Valakou, Excavations in Midea 1995-1996. A. Excavation in the Area of the West gate, Opuscula Atheniensia 22-23, 1997-1998, 56-68; K. Demakopolou and I. Fappas, List of contexts provided artefacts for the Database (2007).

² G. Walberg 1998, Excavations on the Acropolis of Midea, ActaAth 4.
L. Klinteberg, List of contexts provided artefacts for the Database (2007).

range. We have estimated that the margin of error in the calculation of weight of whorls with small fragments missing is less than 10% (1g for a spindle whorl weighing ≤ 10 g, 2g for a spindle whorl weighing ≤ 20 g etc.). This variation of 10% would not have affected the finished product of the spindle whorls and we have therefore decided to include the spindle whorls with small fragments missing in this study (figure 3).



Figure 3. Weight and diameter of complete spindle whorls and whorls with an estimated weight.

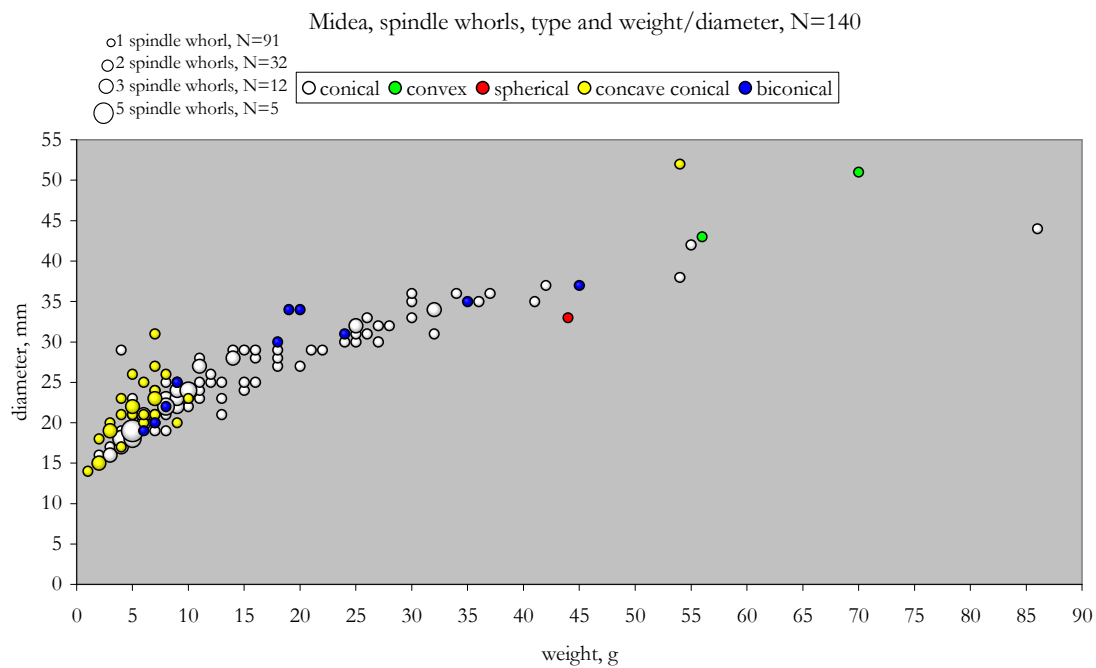


Figure 4. The relationship between type and weight/diameter.

The conical spindle whorls have a large variety of weights and diameters and no clear pattern of distribution is discernable (figure 4). The same is valid for the whorls with a biconical shape. The whorls with a concave conical shape, however, tend to be very light, < 10g.

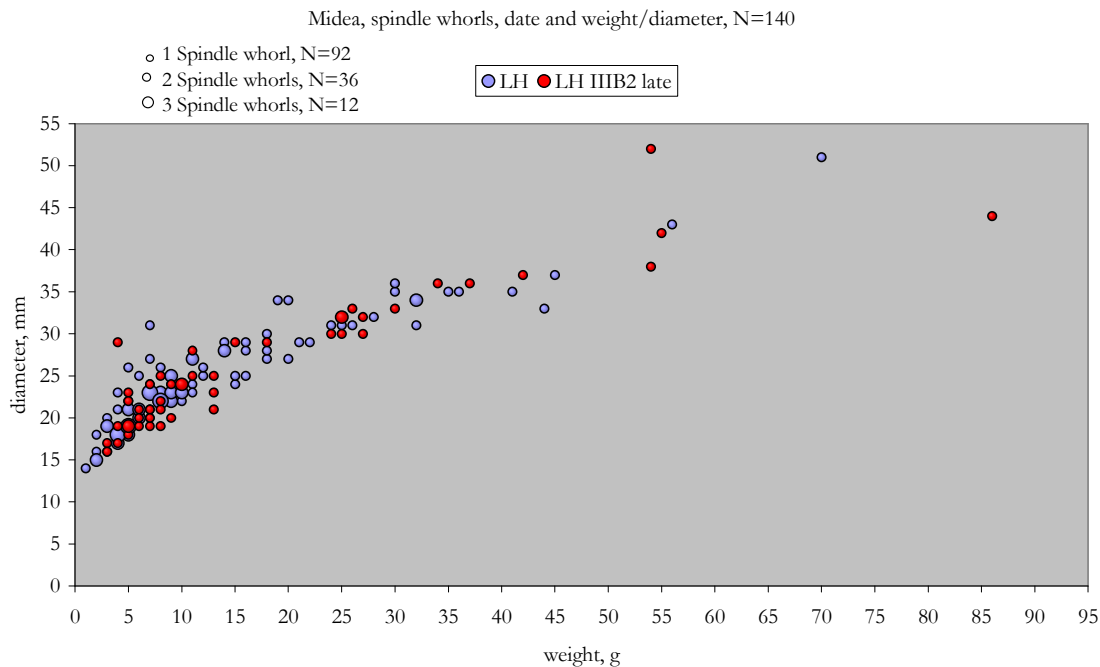


Figure 5. The date and weight/diameter of the spindle whorls.

Weight and diameter

As can be seen in figure 5, there is no difference in the weight and diameter of the spindle whorls from the entire LH period and the whorls from LH IIIB2 late. In general, the whorls display a wide variation: the weight varies from 1g to 86g and the diameter varies from 14 mm to 43 mm. This distribution pattern indicates a production of many types of yarn from very thin to very thick. However, the majority of the spindle whorls have a weight below 15g suggesting an emphasis on the production of thin and very thin spun yarn.

STOREROOMS/WORKSHOPS IN LH IIIB2 LATE

48 spindle whorls are from storerooms/workshops. 25 spindle whorls are from Room VI, of which 12 were found in a pot. 15 spindle whorls are from Room VII and finally 8 whorls are from Room VIII.

Room VI(a+b)

The majority of the spindle whorls from Room VI(a+b) are made of stone; 2 have a concave conical shape and 23 whorls are conical in shape. Only 2 whorls are made of clay and they also have a conical shape. The 12 whorls from the pot are all made of stone.

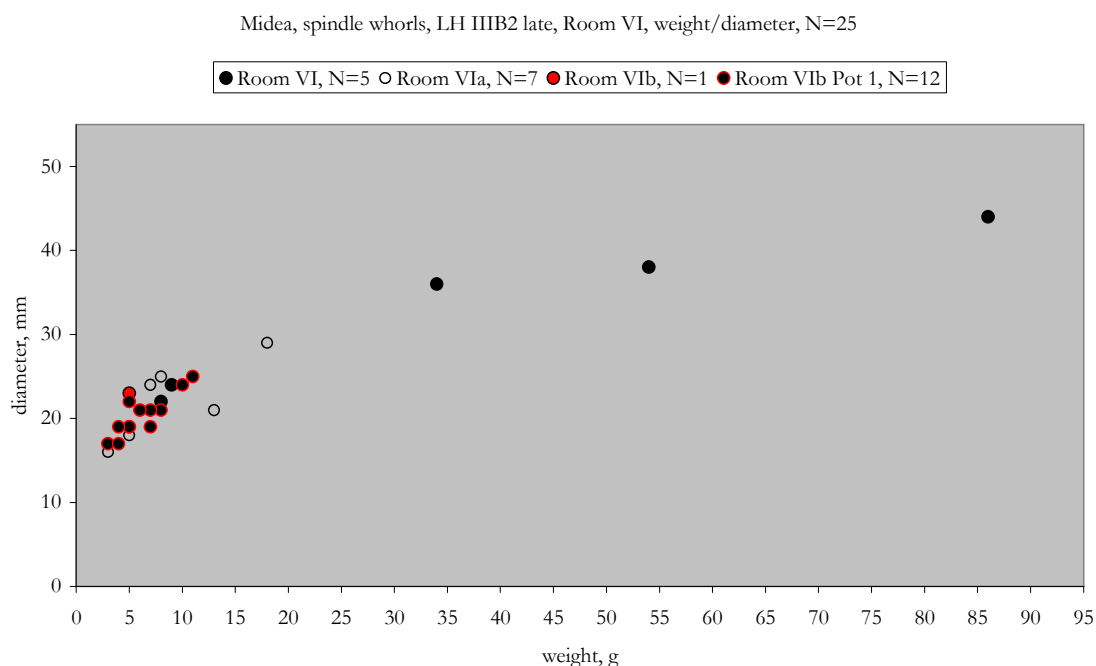


Figure 6. Spindle whorls from Room VI.

The spindle whorls from Room VI(a+b) are all complete or with small fragments missing and have been included in the analysis. As can be seen in figure 6, the whorls display a wide variation in weight and diameter indicating a production of many types of yarn from very thin to very thick. The majority of these whorls are weighing less than 13g, indicating a larger production of very fine spun yarn. The spindle whorls found in the same pot are all light, <12g. The CTR experiments, however, have demonstrated that there is a visible difference in quality and diameter between a thread spun with a 4g spindle and a thread spun with an 8g spindle (see introduction p. 7-10). To spin the yarn with the lightest spindle whorls would have been time consuming and demanded specialist knowledge. It would also require wool of a high quality that had been sorted in different groups of fibres and only the finest fibres would have been preferable. Finally, the wool had to be very well prepared.

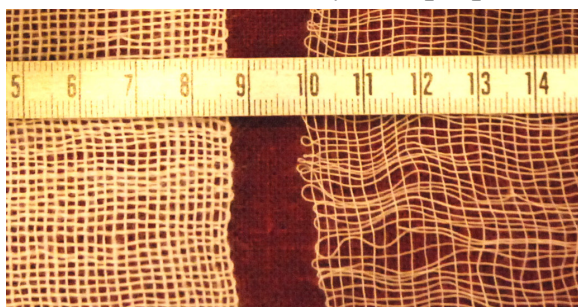


Figure 7. Left, a fabric with threads comparable to the yarn spun with the 8g spindle. Right, a fabric with threads comparable to the yarn spun with the 4g spindle.

Room VII

The majority of the 15 spindle whorls found in Room VII are made of stone and have a conical shape. 2 whorls are made of clay and also have a conical shape. Finally, 1 whorl

has a biconical shape and 1 whorl has a concave conical shape. 14 spindle whorls are complete or with small fragments missing and have been included in the analysis.

As can be seen in figure 8, the spindle whorls from Room VII display a wide variation in weight and diameter which indicates a production of many types of yarn from thin to thick. However, the majority of these whorls are weighing over 20g which indicates an emphasis on the production of relatively thick yarn.

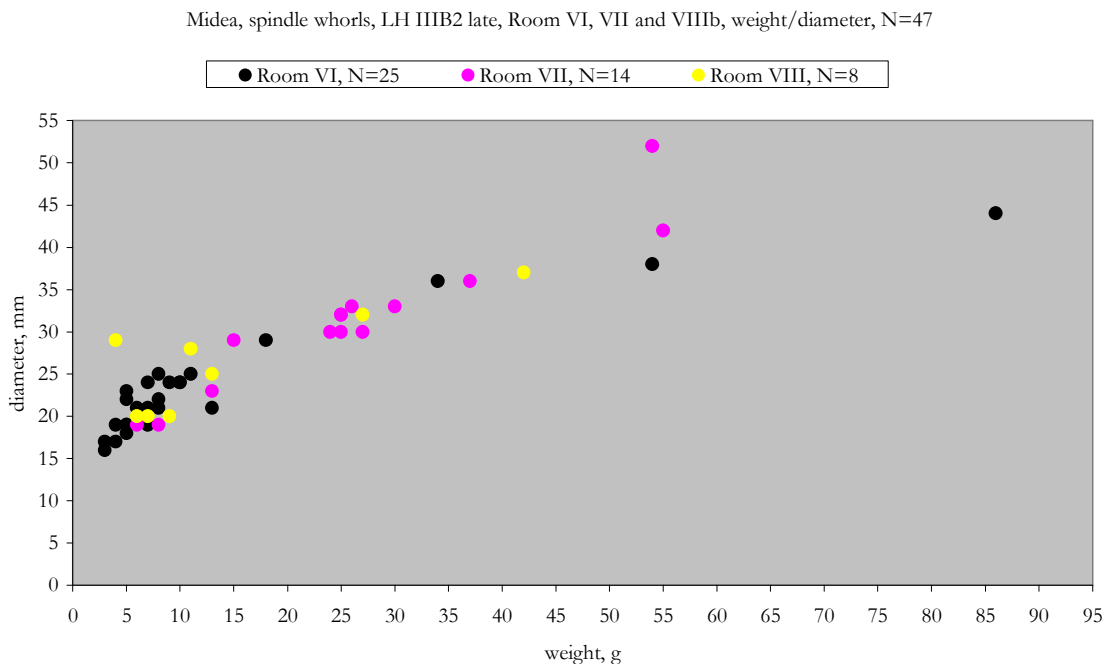


Figure 8. Spindle whorls from LH IIIB2 late.

Room VIIIb

The majority of the 8 spindle whorls found in Room VIIIb are made of stone and have a conical (6 objects) or a concave conical shape (2 objects). These spindle whorls are all complete or with small fragments missing and have been included in the analysis. As can be seen in figure 8, the whorls display a wide variation in weight and diameter which indicates a production of many types of yarn from very thin to thick. 5 whorls are weighing below 14g indicating a production of thin to very thin thread.

CONTEXTS DATED TO LH

The spindle whorls from the Swedish excavation are from many different contexts. The spindle whorls are dated to LH which is of course a much wider period than LH IIIB2 late. Some of these objects are from the same contexts (figure 9). As can be seen in figure 9, the recordings demonstrate a variation in weight and diameter which indicates a production of yarn from very thin to thin.

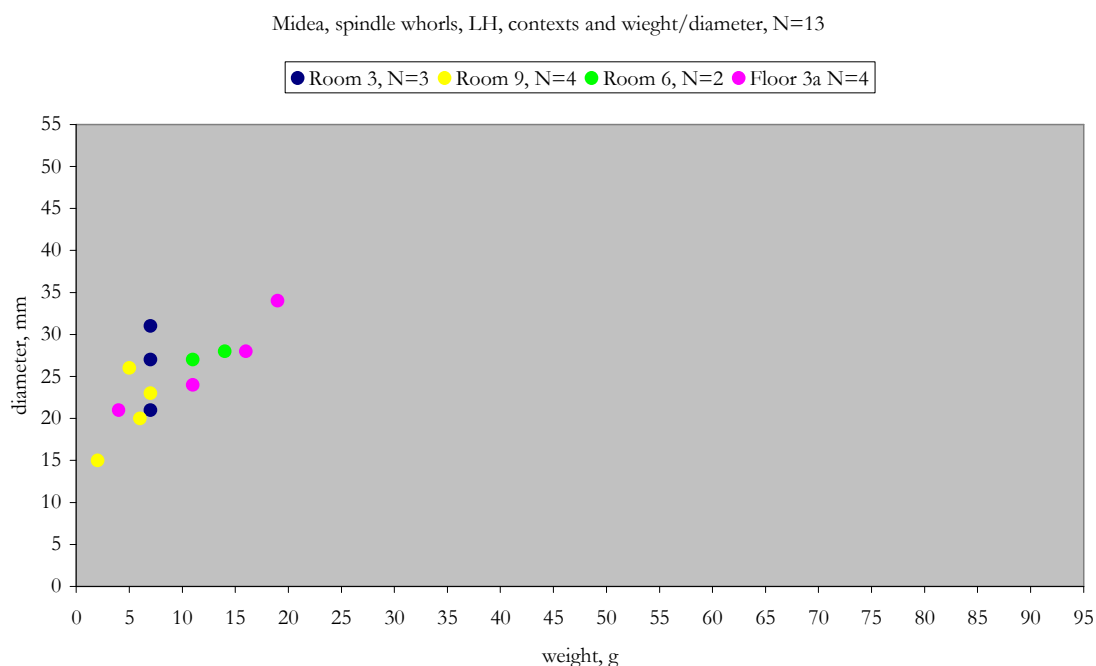


Figure 9. Spindle whorls from different contexts in LH.

Summary

The spindle whorls from Midea indicate a varied production of many different types of yarn. However, the majority of the spindle whorls are smaller and lighter indicating an emphasis on the production of very fine spun yarn.

OTHER TEXTILE TOOLS

41 'other textile tools' and 3 needles are recorded in the database. Tools without any object date or tools that can not be interpreted as textile tools are excluded. Only 11 other textile tools and 3 needles are thereby included in analysis.

4 objects could have had a function as so-called 'pin beaters'. A pin beater is a multifunctional weaving tool. It was thrust up between the warp threads at regular intervals in order to drive the weft home, and it was also used for pushing up the weft after changing the shed (Hoffmann 1964, 135).

Very interesting is also 7 objects that could have had a function as spindles. The objects are all made of bone and are rounded in shape. They are all fragmentary or partly preserved. However, they have probably been around 10-12 cm long which is a perfect length for a spindle if one wants to spin with a small and light spindle whorl. The maximum diameter varies from 3-6 mm and the minimum diameter varies from 1-5. Since the hole diameter of the spindle whorls varies from 2-9 mm (figure 10) they would function well together with these spindles. These objects could also function as pin beaters.

Number of SpW	weight	max hole diameter
16	1-5g	2-4 mm
38	6-19g	5 mm
11	24-37g	6 mm
3	44-55g	7 mm
1	86g	9 mm
In all: 69		

Figure 10. The table is based on all complete spindle whorls weight/maximum hole diameter. Please note that only complete spindle whorls are included.

Finally, 3 needles have been found in Midea, of which 2 are dated to LH. These two needles are made of bone and have a maximum diameter of 5 mm. None of these needles are completely preserved but they can be estimated to have been at least 100 mm in length. These two needles could have functioned well as sewing needles for a range of fabrics.

The third needle is from Room VIIIa and is dated to LH IIIB2 late. It is made of bronze. According to the object description this room (VIIIa) is not the same room where the spindle whorls were found (VIIIb). The length of the needle is 190 mm and the maximum thickness is 2 mm. The object is too long to function optimally as a sewing needle. It can, however, have been used for sewing but probably for a specific type of fabric or when producing a special type of textile.

TEXTILE PRODUCTION IN MIDEA

The analysis of the spindle whorls demonstrates a varied production of many different types of yarn. No difference can be seen between the spindle whorls dated to LH and the spindle whorls dated more precisely to LH IIIB2 late. The majority of the spindle whorls are small and light indicating an emphasis on the production of very thin or thin spun yarn. Spinning with the lightest spindle whorls would have been time consuming and demanded specialist knowledge. It would also require wool of a high quality that had been sorted in different groups of fibres and only the finest fibres would have been preferable. Finally, the wool had to be very well prepared.

The lack of loom weights indicates that other loom types than the vertical warp weighted loom have been in use in Midea and on the basis of archaeological evidence alone it is almost impossible to give an evaluation of the type of fabrics produced there. It can, of course, not be excluded that weaving took place at another location. The pin beaters, however, do suggest that people have been weaving in Midea. The results gained on the basis of the spindle whorls indicate a production of fabrics in many different qualities, from fine fabrics woven with thin threads to very coarse fabrics woven with thick threads.

The analyses of the spindle whorls deriving from the same contexts are interesting. If these rooms were workshops the results indicate that the Midean spinners have been producing slightly different types of yarn in the different rooms.

The majority of the spindle whorls are considered to have been made in an excellent or good production quality indicating that the tools themselves were produced by specialized crafts people.