



Textile production at Mycenae, mainland, Greece

Tournavitou, Iphiyenia; Andersson Strand, Eva; Nosch, Marie Louise Bech; Cutler, Joanne

Published in:

Tools, Textiles and Contexts: Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age

Publication date:

2015

Document version

Publisher's PDF, also known as Version of record

Citation for published version (APA):

Tournavitou, I., Andersson Strand, E., Nosch, M. L. B., & Cutler, J. (2015). Textile production at Mycenae, mainland, Greece. In E. Andersson Strand, & M-L. Nosch (Eds.), *Tools, Textiles and Contexts: Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age* (pp. 253-266). Oxbow Books. ancient textiles series, Vol.. 21

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TOOLS, TEXTILES AND CONTEXTS

*We dedicate this book to Betchen Barber,
the pioneer of the study of Aegean Bronze Age textiles.*

AN OFFPRINT FROM
ANCIENT TEXTILES SERIES VOL. 21

TOOLS, TEXTILES AND CONTEXTS

Investigating Textile Production in the Aegean
and Eastern Mediterranean Bronze Age

Hardcover Edition: ISBN 978-1-84217-472-2
Digital Edition: ISBN 978-1-78297-051-4

edited by

Eva Andersson Strand and Marie-Louise Nosch
with the editorial and analytical assistance of Joanne Cutler



© Oxbow Books 2015
Oxford & Philadelphia
www.oxbowbooks.com

Published in the United Kingdom in 2015 by
OXBOW BOOKS
10 Hythe Bridge Street, Oxford OX1 2EW

and in the United States by
OXBOW BOOKS
908 Darby Road, Havertown, PA 19083

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Hardcover Edition: ISBN 978-1-84217-472-2
Digital Edition: ISBN 978-1-78297-051-4

A CIP record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Tools, textiles and contexts : textile production in the Aegean and Eastern Mediterranean Bronze Age / edited by Eva Andersson Strand and Marie-Louise Nosch.

pages cm. -- (Ancient textiles series; vol. 21)

Includes bibliographical references.

ISBN 978-1-84217-472-2 (hardback)

1. Bronze age--Middle East. 2. Textile fabrics, Prehistoric--Middle East. 3. Neolithic period--Middle East. 4. Bronze age--Aegean Islands (Greece and Turkey) 5. Neolithic period--Aegean Islands (Greece and Turkey) 6. Middle East--Antiquities. 7. Aegean Islands (Greece and Turkey)--Antiquities. I. Strand, Eva B. Andersson, editor. II. Nosch, Marie-Louise, editor.

GN778.32.N4T66 2015

939.4--dc23

2015027222

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Front cover: clockwise: MM II Quartier Mu, Malia, Crete, map (after Poursat 1996, pl. 81), spindle whorls from Phaistos, Crete (courtesy of P. Militello), Khania, Crete, Late Bronze Age ribbon, reconstructed loom weights in TTTC experiments.

Back cover: Splicing (drawing: Annika Jeppsson)

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CHAPTER 6.8

Textile production at Mycenae, mainland Greece

*Iphiyenia Tournavitou, Eva Andersson Strand, Marie-Louise
Nosch and Joanne Cutler*

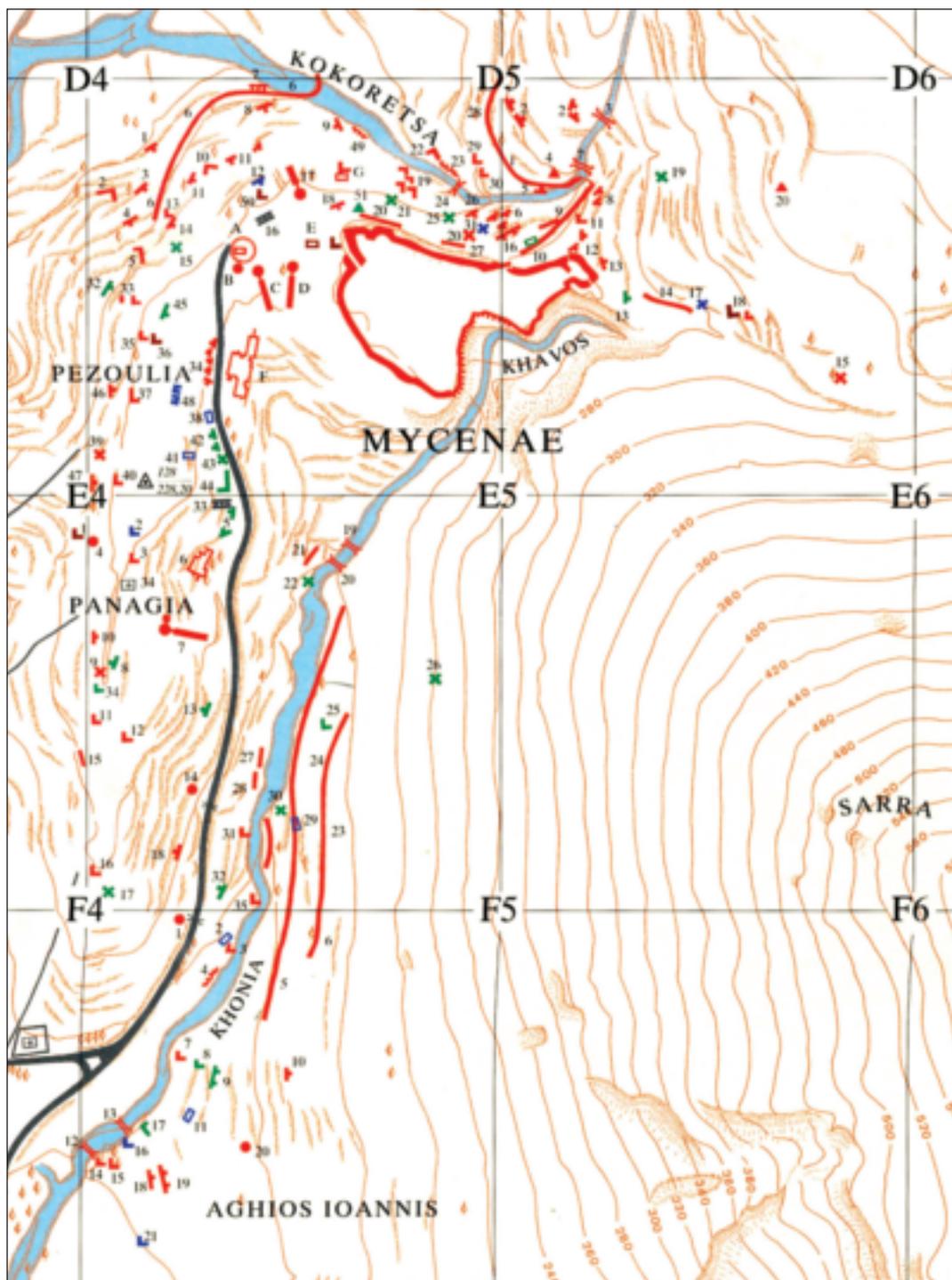
The acropolis of Mycenae, which commands a spectacular view to the southwest, down the plain towards Argos, occupies a naturally defensive hill, dominating the surrounding area and possibly part of the Argive plain. To the east, two mountains, Prophet Elias and Mt. Zarra, form a natural barrier, leaving only a narrow pass that leads to and from the Berbatti-Limnes plain, while on the north and south the citadel is protected by two ravines, the Kokoretsa and the Chavos ravines, respectively (Fig. 6.8.1). The main entrance to the citadel, the Lion Gate, lies on the west, the only naturally accessible side.

The Mycenae acropolis was a fortified citadel, with the palatial complex at the top of the hill. Inside the fortification walls, a considerable number of other buildings served as residential quarters, storage areas, workshop installations and as cult facilities (Fig. 6.8.2).¹ The so-called Lower Town, outside the fortification walls, occupied an area of 32 hectares to the north, west and southwest of the citadel (Fig. 6.8.1), while what has been termed the Greater Mycenae area, *i.e.* a single directly administered district, covered an area of *c.* 350 hectares, including chamber tomb cemeteries and natural resources (clay beds, stone quarries: French and Iakovidis 2003, 22).

The first concrete remains of a fortification circuit and of a palatial complex at the top of the hill, date from the second half of the 14th century BC (LH IIIA2). Individual buildings or groups of buildings, both residential and more specialised, were erected on the slopes to the north and the west of the citadel,² forming what we now call the Lower Town of Mycenae. The end of this period is marked by fire destructions both inside and outside the walls.

The vast majority of the extant buildings, including the Cult Centre within the citadel, date from the next century (13th century BC). During the first half, part of the palace bureaucracy spread outside the walls into the Lower Town (the “Ivory” Houses: Tournavitou 1995; 2006, 217–267; Fig. 6.8.1, D4.F), which grows in size (the Panagia Houses: Mylonas-Shear 1987; Fig. 6.8.1, E4.06, the House of the Tripod Tomb: Onasoglou 1995; Fig. 6.8.1, D4.G). The end of this period is marked by a major destruction, again evidenced both inside and outside the walls, which results in the abandonment of some of the establishments in the Lower Town (the “Ivory” Houses: Tournavitou 1995; 2006, 217–267; Fig. 6.8.1, D4.F). The second stage of the fortifications dates to the

Fig. 6.8.1. Map of the citadel and surrounding area (map: French and Iakovidis 2003).



middle of the 13th century BC, following this extensive destruction horizon. It was part of the most ambitious building programme ever attempted at Mycenae. It involved the extension of the fortified area of the acropolis to enclose

the entire west slope, including the remodelled Grave Circle A and the Cult Centre to its south, as well as the erection of the Lion Gate. A processional way led from the Cult Centre to the newly rebuilt palace at the top.

Textile production at the site: tools and contexts

The study of the relevant material from the citadel and the Lower Town of Mycenae is fraught with unsolved questions and grey areas. One of the most problematic aspects involves the original function of the extant buildings (residential, private or official, specialised, *etc.*), an issue severely handicapped in this case by a) the unpublished state of the vast majority of the buildings inside the citadel and the Lower Town, a factor unavoidably affecting the availability of information concerning both their original function and details on textile related material and b) the state of preservation of the buildings.

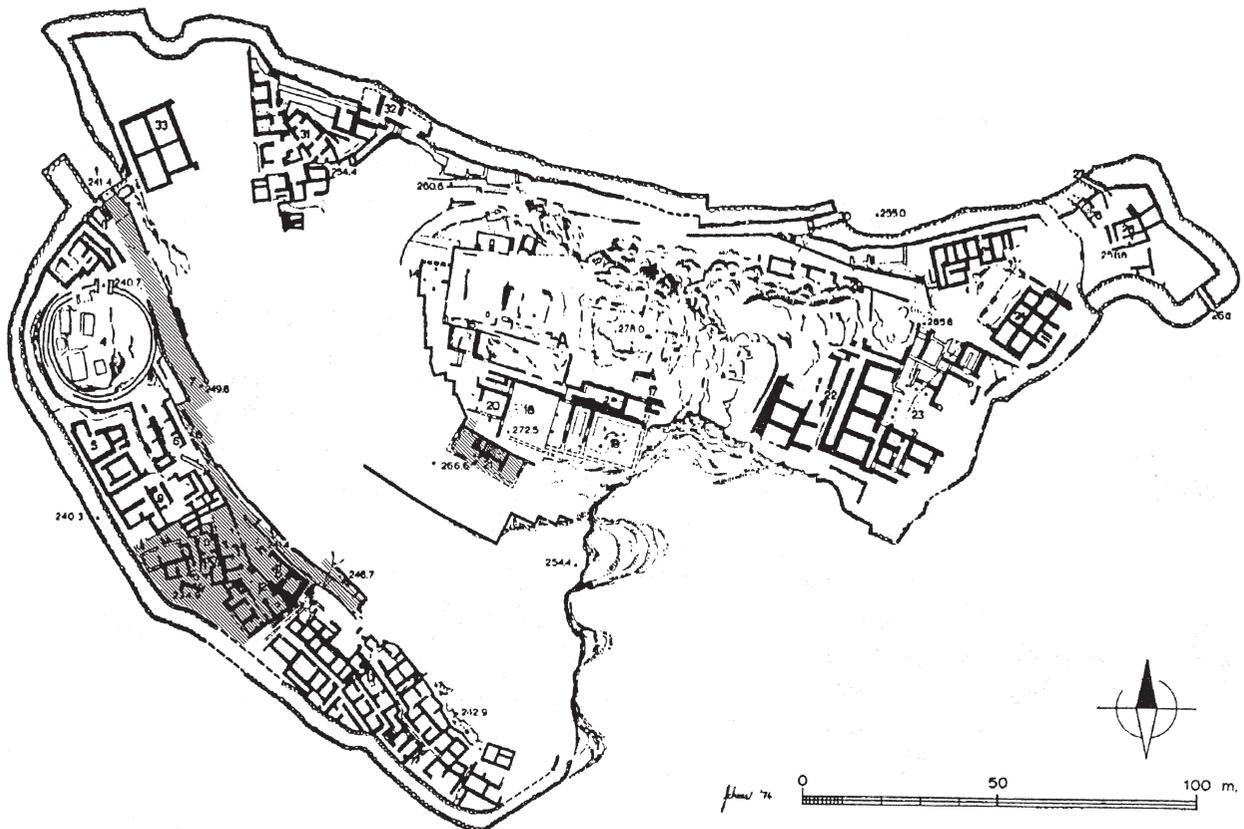
Out of a total of 40 extant buildings, 28 were excavated within the citadel and 12 in the Lower Town, outside the fortification walls. Eleven of these buildings are preserved at ground floor level, three have both ground floors and basements, while the rest survive only at basement level and the existence of upper floors can only be inferred on an architectural and/or stratigraphical basis. In many of these buildings, especially inside the

citadel, the stratigraphy is seriously disturbed by later overbuilding activities and cannot afford a clear picture of the original state of affairs.³ Inside the citadel, only a few of the residential non-specialist buildings are published beyond the preliminary excavation reports (The Northwest Quarter, Iakovidis 2006; The Southwest Quarter, Iakovidis 2013). The same applies to the buildings with a more specialised function, the only exception being the British excavations at the Cult Centre.⁴

Outside the walls, function and status are more clearly indicated.⁵ Four of the fully published buildings/clusters of buildings, the Panagia group Houses I, II, III (Mylonas-Shear 1987) the “Ivory” Houses (Tournavitou 1995: West House, House of Shields, House of the Oil Merchant, House of Sphinxes), the House of the Tripod Tomb (Onasoglou 1995) and the “Workshop” (Daniilidou 2008), will comprise the main body of this study and the CTR database,⁶ a rather limited sample and perhaps not entirely representative of the site.

The so-called “Ivory” Houses, on the slope facing the west fortification wall (Fig. 6.8.1,

Fig. 6.8.2. The citadel of Mycenae (plan: Albers 1994, taf. 2).



D4.F; 9), stand apart as multifunctional complexes, combining domestic and residential aspects with a range of industrial activities and official administrative interests (Tournavitou 1995, 285–299; 2006). The Panagia House group (Mylonas-Shear 1987, 150–154) to the north of the Treasury of Atreus (Fig. 6.8.1, E4.6; 10) and the House of the Tripod Tomb to the north of the citadel (Fig. 6.8.1, D4.G; 11), were exclusively or chiefly residential, although some kind of workshop activity has been ascertained in the latter.⁷

In addition to the question of the general availability of material for study,⁸ the nature of the museum classification systems has resulted in a discrepancy between the published material and the extant specimens, unavoidably affecting the number of items finally studied and entered in the CTR database.⁹

In an attempt to maximise the credibility of the contextual assessment concerning the textile related material from the site, the discussion in this section will include all the extant data, *i.e.* both the relevant entries from the CTR database and the items appearing only in the final publications of individual buildings or clusters of buildings. The material from the British excavations in the Citadel House area, including the Cult Centre, which has not been

incorporated into the CTR database, will be only briefly discussed here.¹⁰

Four hundred and eighty objects are recorded in the CTR database, of which 331 (68.95%) are dated to the LH III period (Fig. 6.8.3).¹¹ The vast majority of the recorded items, 383 (79.79%), were associated with funerary or unspecified contexts, which automatically exclude them from the final assessment of the site. Of the remaining 97 items from stratified settlement contexts (20.20%), three (0.62%) were found in closed contexts of a later date and should also be excluded from the final assessment.¹²

The true number of textile tools discovered at the site,¹³ including items which were not available for detailed study, or items located in museum storerooms, but not published and thus not included in the CTR database due to lack of context, is a total of 1,585 finds.¹⁴ Only 839 objects (52.93% of the total) were available for study.¹⁵ The textile tools recorded in stratified residential quarters in the Lower Town do not exceed 7.5%–8% of the total (120–127 objects).¹⁶ The remaining material, coming from funerary or unspecified contexts inside the acropolis, *i.e.* 1,465 objects (92.4%), was excluded from the overall contextual assessment of the site.¹⁷ Based on these calculations, the 480 objects recorded in the CTR database constitute only 30.28% of the total number of textile tools recorded at Mycenae.

The vast majority of the objects registered in the database, and of the extant textile related material in general, with the exception of the material from the Citadel House area, are spindle whorls, mostly of stone, in both settlement and funerary contexts (Fig. 6.8.4).¹⁸ Most of the spindle whorls recorded in the CTR database (315 whorls, or 78.55%), and as many as 1,393 of 1,493 spindle whorls discovered at the site (93.3%), were found in funerary or unspecified contexts, which automatically excludes them from this contextual assessment. The remaining spindle whorls, 86 of 401 whorls recorded in the database or 96 of 1,493 spindle whorls in total, which were discovered in domestic/residential contexts, do not amount to more than 22.44% and 6.43% of the total respectively.

The true number of spindle whorls discovered in the three buildings or clusters of buildings in the Lower Town of Mycenae exceeds the total recorded in the CTR database

Fig. 6.8.3. Textile tools recorded in the CTR database, by type.

	Number of objects
Spindle whorls	401
Loom weights	12
Needles	21
Spindles	1
Buttons	45
Total	480

Fig. 6.8.4. Spindle whorls: type and material.

	Clay	Stone	Bone	Glass	Total
Spherical	4				4
Convex	3				3
Discord		1		1	2
Lenticular	2	1			3
Conical	41	138	1	1	181
Biconical	29	4			33
Cylindrical	5				5
Concave conical	3	18			21
Various shapes with hollow tops	3	7			10
Other		139			139
Total	90	308	1	2	401

by 14.¹⁹ With the exception of the 343 conuli recorded in the Citadel House area inside the acropolis, which have also not been incorporated into the CTR database, the vast majority of the extant spindle whorls were attested in the “Ivory” Houses (46 examples)²⁰ and in the Panagia group of houses (39 examples),²¹ while a smaller number (15 examples) were recorded in the House of the Tripod Tomb.

The “Ivory” Houses

House of Sphinxes

In the first cluster of buildings, the greatest concentration of spindle whorls is attested in the basement of the House of Sphinxes (19 whorls),²² and more specifically in Room 2 (eight whorls), one of the two northernmost rooms of the house (Tournavitou 1995, 47–51, 231–232; spindle whorls: 53–105, 53–107, 53–109, 54–101, 54–106, 54–207, 54–551, 55–315 and a loom weight, 54–552). This room, which at basement level was apparently empty at the time of the destruction, contained the debris from the collapsed ground floor of the house, which, apart from the eight spindle whorls and a single stone spool weighing 52 g, possibly used as a loom weight (Tournavitou 1995, 47–51, 231–232, no. 54–552), included a considerable amount of worked ivory, wood, stone and other workshop type materials. Although none of the finds can be definitely assigned to the basement room, the upper floor was apparently associated with secondary workshop activities related to the working of ivory, wood and possibly stone, as well as with the temporary storage of materials and objects (Tournavitou 1995, 48–49, 291). The same applies to the three whorls recorded in Room 4 (Tournavitou 1995, 51–54, 231–232, nos. 53–56, 53–57, 54–254), to the south of Room 2, which contained a similar range of finds, but fewer in number than the upper floor which could have served as the principal work area of the house (Tournavitou 1995, 51–52, 291). The single glass paste whorl from Room 1 (Tournavitou 1995, 44–47, no. 53–304) had also fallen, with the collapsed workshop debris, from the ground floor. The single terracotta whorl (Tournavitou 1995, 54–56, no. 55–309) was found in the burnt debris that collapsed from the room above Room 6, which was probably used as an archive (Tournavitou

1995, 292). Four of the remaining whorls, two of which are from the south part of the basement corridor (Tournavitou 1995, 58–59, nos. 54–554, 54–558), were also part of the contents of the upper floor, as were the two whorls in Room 3 (Tournavitou 1995, 59–61, nos. 53–610, 54–107), an open air space along the east side of the house, associated with domestic activities requiring the use of water (Tournavitou 1995, 292). Finally, the two spindle whorls recorded outside the main part of the house, in the area south of Room 10 (Tournavitou 1995, 64–65, no. 55–210) and in the so-called “Box” (Tournavitou 1995, 64–65, no. 55–104), representing the remains of a wooden chest to the south of the Vestibule, were also originally part of the contents of the upper floor, but out of context.

Although the two whorls discovered in the area south of the Vestibule as well as the whorls from Room 3 and the corridor, all from the upper floor of the house, cannot be assigned to a specific and meaningful context, the distribution of the majority of the finds from the building, mostly in specialised storerooms and work areas of the upper floor (13 of 19 whorls), which are all unrelated to textile production, suggests a non-functional role for these specimens, *i.e.* that they were not actually used as textile tools.²³

House of the Oil Merchant

Of the 20 spindle whorls discovered in the House of the Oil Merchant, only 14 were recorded in the CTR database, including one example of Protogeometric date, which should therefore be excluded from the overall assessment of the house, and three examples out of context, in the West Terrace fill (Tournavitou 1995, 39–40, nos. 54–143, 54–238, 59–29). The 16 remaining whorls were all found inside the burnt debris from the collapsed upper floor of the house.²⁴ The greatest concentrations were attested in Room 5 (four whorls) (Tournavitou 1995, 37–38, nos. 52–216: two whorls, 52–312, 52–313) in the same layer as two bronze tools, a stone axe head and two whetstones (Tournavitou 1995, 37–38), all part of the contents of the upper floor, which possibly served as a general purpose work area and storage area, and in Room 2 further north (four whorls) (Tournavitou 1995, 33–35, nos. 52–66, 52–67, 52–68, 52–163). It is worth pointing out that

the four whorls recorded in the burnt fill of Room 2 were associated with the only set of Linear B tablets (a total of 29 tablets) at Mycenae dealing with wool (Oe) (Bennett 1958; Chadwick 1962; Tournavitou 1995, 259–261; Shelmerdine 1997). All the finds belonged to the upper floor of the house, which apparently served as a local archive, the basement room possibly serving as a storeroom for raw wool.²⁵ The spindle whorls in the archive room on the upper floor, dealing mostly with wool, could have been associated with occasional spinning activities.

The three spindle whorls in the south half of the basement corridor (Tournavitou 1995, 30–32, no. 50–203: three whorls) were also part of the contents of the upper floor, as were the two examples from Room 8 (Tournavitou 1995, 39, no. 53–55: two whorls), a cupboard under a staircase leading to the ground floor of the house, and the isolated whorls in Rooms 1, 3 and 4 (Tournavitou 1995, 32–33, 35–36, nos. 52–12, 52–61, 52–164). The whorl from Room 4 was found just above the basement floor, along with a lead strip and a winged axe mould, which suggests that the room above was probably used as a general storage or work area (Tournavitou 1995, 35–36). The wide distribution of the extant spindle whorls all over the east wing of the house on the ground floor, as well as the non-specialised function of most of the rooms, with the exception of Room 2, suggests that the surviving specimens were apparently used for casual domestic spinning activities, not restricted to one room or area of the upper floor.

House of Shields

Only five of the seven spindle whorls recorded as coming from the House of Shields were actually found inside the building, the majority (three whorls) in the West Room (Tournavitou 1995, 18–23, nos. 53–170, 53–479, 54–64). They were attested at various levels inside the burnt debris, which included a wide range of finds, and which represented either the remains of the superstructure of the ground floor room or the remains of an upper floor.²⁶ Of the two whorls in the North Room (Tournavitou 1995, 25–27, nos. 55–12, 55–66), another ground floor room to the north, one was found at the top of the burnt debris and one near the floor of the room (Tournavitou 1995, 25–27). The two remaining whorls were

out of context, outside the southwest corner of the house and west of the west wall of the North Room, respectively, probably part of fill/house debris thrown outside the house during the Hellenistic period (Tournavitou 1995, 28, nos. 53–167, 55–120). Although all the whorls belonged to the contents of the house, the ground or upper floors, the specialised, non-domestic character of the building as a whole, as suggested both by its layout and by the type of finds recorded therein (Tournavitou 1995, 16–28, 287–289), does not suggest a functional role for these items. This conclusion is reinforced by the small number of extant spindle whorls and the lack of concentrations in their distribution.

The Panagia group of houses

The next big group of spindle whorls (39 whorls) was discovered in the Panagia group of houses (House I, II and III) (Fig. 6.8.1, E4.6; 10). To House I, a ground floor house, can be assigned the smallest number of whorls, three examples, only one of which was discovered inside the building, in the main room with the hearth (Room 5) (Mylonas-Shear 1987, 17, 134, no. 239), indicating casual domestic spinning on a very limited scale. The other two examples were recorded among the pottery deposit inside the drain running along the north face of the house (Mylonas-Shear 1987, 49, 135, nos. 267, 268), along with three fragmentary bronze needles or pins (Mylonas-Shear 1987, 49, 121, nos. 186, 190, 191), not recorded in the database, which could have once been part of the contents of the building. The remaining two whorls in the courtyard are Geometric in date and come from a funerary context (Mylonas-Shear 1987, 16, 134, nos. 249, 250).

In House III, there are no marked concentrations of spindle whorls. Single whorls were recorded in five of the ground floor rooms of the building and more specifically in two storage areas (Rooms 29 and 33) (Mylonas-Shear 1987, 58, 135, nos. 257, 265), in a work area (Room 28) (Mylonas-Shear 1987, 58, 135, no. 260) and in two small compartments (Rooms 34 and 36). The latter originally formed larger areas and were subsequently subdivided after the earthquake, for reasons related to the stability of the building, and the related finds could therefore belong to the earlier phase (Mylonas-Shear 1987, 58–59, 135,

nos. 261, 266). None of the extant whorls can be associated with other finds or any textile related tools. In the best case scenario they were used for casual domestic spinning on a limited scale.

The largest number of whorls (16, or 41.02% of the total), were discovered in House II, mostly in the storerooms to the north, *i.e.* Rooms 15–18, 21 (12 whorls). No spindle whorls were discovered in the main room of the house with the hearth (Room 9), and the isolated examples in Room 10, a backroom, serving as sleeping quarters in the first, pre-earthquake phase, and in Room 8, a vestibule to the main room, are rather obscure with regards to context. In the first case, the single example could represent wash from higher up the slope (Mylonas-Shear 1987, 31–32, 135, no. 256) and the single whorl from Room 8 could possibly belong to the first, pre-earthquake phase of the house (Mylonas-Shear 1987, 27–28, 134, no. 251). Nine of the 13 whorls in the storerooms of the house could be excluded for the same contextual reason. The same could be said for an isolated example from a Mycenaean grave inside Room 21 (Mylonas-Shear 1987, 27–47, 134, no. 244). Only three whorls, two in Room 15 and one in Room 17, can be safely assigned to the last phase of the building, all part of the contents of the upper floor (Mylonas-Shear 1987, 37, 40–41, 134, nos. 241, 242, 246).

Six more whorls were recorded to the west of the Panagia group of houses, where remains of other Mycenaean buildings were apparently located. Two whorls in Room 26, an open area between the houses, probably represent wash from higher up. Three whorls derive from Room 23, which is part of a floor deposit of the LH IIIC period, and one whorl is from Room 25, probably from a floor deposit (Mylonas-Shear 1987, 64–66, 133–136, nos. 254, 255, 259, 269, 270, 271). Finally, seven whorls were discovered out of context, in test trenches around the houses (Mylonas-Shear 1987, 64–66, 133–136).

House of the Tripod Tomb

Fifteen whorls were recovered from the House of the Tripod Tomb (Fig. 6.8.1, D4.G; 11), only seven of which were recorded in the final publication of the house (Onasoglou 1995, 16–74, 74–82, 86–93, 98–100, 120–121, 123–124). Of the latter, one was out of

context in a mixed Protogeometric-LH IIIB2 deposit lying above the floor deposit of Room 19 (Onasoglou 1995, 123–124), while of the remaining six whorls, one example in Area 10 was found high up in the fill (Onasoglou 1995, 120–121). In addition, one example in Area 11 was lying in the fill below a LH IIIB floor (B) (Onasoglou 1995, 98–100) and four examples were part of distinct floor deposits of different dates (LH IIIB, LH IIIB2/C), in Area 16 (two examples), Area 17 (one example) and Area 5 (one example) (Onasoglou 1995, 16–74, 74–82, 86–93). Only Area 5 has been assigned a specific function, tentatively labelled a workshop area, domestic or otherwise (Onasoglou 1995, 86–89). The remaining eight whorls were not published, but were apparently registered in the Mycenae museum as coming from the building, but without a context. Judging by the available evidence, only casual domestic spinning of a limited scale can be hazarded as a suggestion for this building.

Citadel House area

The material from the Citadel House area, currently under study by S. Diamant, comprises 343 steatite spindle whorls, also known as conuli, of which only 157 are securely stratified.²⁷ The most notable concentrations were apparently attested in the Shrine with the Frescoes (Room 32) and in Area 36. The latter was an open air area between the South House, the Temple and the Shrine, serving as a repository and/or distribution point for a variety of everyday tools and objects for the manufacture of luxury artefacts and containing what appears to be one of the most extensive closed deposits of conuli in the Mycenaean world (55 examples). The conuli in the inner room of Room 32 were part of a votive deposit and therefore not functional in this context.

Loom weights are represented by a surprisingly small number of items (only 12 possible examples), eight of which come from a Middle Helladic domestic context and are considered too light to be used in a warp-weighted loom (the complete examples weighing 10–12 g). Of the four remaining objects that have been recorded as loom weights, only one comes from a non funerary, contextually meaningful context: a stone spool-shaped weight from the House of Sphinxes (Room 2).²⁸

The only other types of textile tool attested at Mycenae are sewing needles and spindles. Unfortunately, all the extant needles recorded in the database are associated with funerary or unspecified contexts inside the acropolis and are therefore automatically excluded from the overall discussion.²⁹ Even so, six of these were possibly used as awls, spindles or pin-beaters. A further 16 fragmentary examples of needles and/or pins discovered in the Lower Town of Mycenae,³⁰ and not recorded in the CTR database, do not really alter the emerging picture of low scale domestic activities involving textile and/or garment manufacture. The range of textile tools at Mycenae is completed by a single example of a bone spindle, apparently fully functional, which is nevertheless excluded by virtue of its funerary context (Grave E, in Grave Circle B; Mylonas 1973, 101, E512α).

On the whole, the extant evidence from the Lower Town of Mycenae is limited. Only 64 tools were discovered in meaningful contexts, 56 of which (87.5%) are spindle whorls.³¹

Organisation of the textile production at the site

The only Linear B documents referring to textile manufacture at Mycenae were discovered in the “Ivory” Houses (Bennett 1958; Chadwick 1962; Tournavitou 1995; Shelmerdine 1995, 1997, 1999). Of the 56 Linear B tablets recorded in the buildings, originally part of the contents of the upper or ground floors, only 29 were related to the textile industry.³² They belong to a specific sector of the industry, the wool series (Oe), and were all recorded in Room 2 of the House of the Oil Merchant (Tournavitou 1995, 33–35, 259). The series includes records of disbursements of wool to named individuals or groups, inventories of wool and payment in wool in return for the manufacture of different kinds of textiles. Similar scribal activities are also attested at Knossos (Od) and Thebes (Of) (Tournavitou 1995, 259; Shelmerdine 1997, 390–394; Nosch 2007). The fact that the other two classes of documents in the building, *i.e.* personnel management and oil disbursement, were represented by only two documents (Au 102, Fo 101), and that the five scribes responsible for the wool series were not employed for any other class of document in any of the other houses, suggests that this house

not only employed its own group of scribes, but that activities involving wool were among the top priorities, if not the top priority, of its occupants (Tournavitou 1995, 259). No other tablet of the Oe series was recorded at Mycenae, inside or outside the citadel.

The total amount of wool recorded in the Oe series, has been estimated as *c.* 457 units, *i.e.* 1,371 kg wool (Shelmerdine 1997, 390; *contra* Tournavitou 1995, 259: 177 units, *i.e.* 561 kg of wool). The largest group of 22 tablets involves disbursements of wool to named individuals, both men and women. Among the women, only two were probably occupied in the textile industry (*i-ti-we-ri-di*, *a-ke-ti-ri-ja*) (Tournavitou 1995, 259). The male recipients received a slightly smaller amount than the women (126 kg as opposed to 156 kg) (Tournavitou 1995, 259–260). Only two of the five occupational terms recorded were related to the textile industry (*ka-na-pe-we*, *pe-re-ke-we*), the others being *a-to-po-go* (bakers), *ka-ke-wi* (bronze smiths) and *ke-ra-me-wi* (potters). A *ka-na-pe-we*, a fuller, receiving 12 kg of wool, is also attested at Pylos and in two of the Citadel House tablets (Oi 701, Oi 704) (Tournavitou 1995, 260; Palaima 1997, 410). Although the occupation *pe-re-ke-we*, translated as weaver, is also attested at Pylos, it should be pointed out that the translation is doubtful, since men were mostly associated with finishing and fulling and seldomly with weaving (Killen 1979, 167–168; Tournavitou 1995, 260). The amounts assigned to the other three specialists were so small that they were probably intended for personal use of house or palace dependents. The term *ta-ra-si-ja* attested in one of the tablets (Oe 110), interpreted as an allocation of raw material by the central authority to fully or semi-dependent workers, also implies an obligation of the worker to deliver a finished product. The implied meaning of the term and the relatively large amounts of wool recorded suggest a possibly industrial use of the wool in this case (Tournavitou 1995, 260; on *ta-ra-si-ja* see: Duhoux 1976, 132; Killen 1985, 273–275; 2001).

Four tablets in the group recorded a payment in wool in return for the manufacture of different types of textiles, which is confirmed by the presence of the word *o-no* in one of the tablets (Tournavitou 1995, 261; on *o-no* and the *ta-ra-si-ja* system see Duhoux 1976, 132; Killen 1985, 273–275; 2001). The word *e-we-pe-se-so-me-na* (boiled or requiring finishing) in another

tablet (Oe 127) implies that 60 kg of wool, a substantial amount, was issued for cloth to be boiled or finished, and possibly treated with perfumed oil (Shelmerdine 1995, 103). Finally, a single tablet including the heading: “this year’s and last year’s *o-u-ka*”, followed by large amounts of wool, probably referred to disbursements of wool required for the manufacture of textile (Tournavitou 1995, 261).

The only other document from the houses clearly related to textiles is a single tablet (X 508) in the House of Shields, the only one in this particular building. It is a record of *pu-ka-ta-ri-ja* cloth, a folded garment of double thickness at Knossos (L-series), which was going to be sent or had been sent to Thebes, thus providing a unique example of a transaction involving another Mycenaean kingdom (Killen 1985, 268–269; Tournavitou 1995, 261–262; Rougemont 2009, 206). The personal name on this tablet, *ma-ri-ne-u*, received spices and honey (As, Ga) at Knossos, whilst at Thebes he was a recipient of wool (Tournavitou 1995, 261–262; for Knossos and Thebes see Chadwick and Spyropoulos 1975, 93; Killen 1979, 179).

The single Fo tablet, from Room 1 of the House of the Oil Merchant, records the distribution of plain oil to various individuals, apparently organised in four groups, supervised by overseers, some recorded by name, and some by occupation (Tournavitou 1995, 266–267; for a more in depth analysis see Killen 1981, 40–41; Shelmerdine 1997, 391; Fappas 2010, 119). The recipients or recipient groups include two female occupational terms traditionally associated with the textile industry (*a-ke-ti-ri-ja-i*, *e-ro-pa-ke-ja*), who were assigned exceptional quantities of oil, possibly for textile manufacture (Killen 1981, 39; 2001, 180; Tournavitou 1995, 266–267; Shelmerdine 1997, 389–391; 1999, 572; Fappas 2010, 118, 260). The type of oil featuring in this tablet (OIL and WE), is a product of the perfume industry and is attested at other major palatial centres in connection with the treatment of woven textiles (Shelmerdine 1995, 103–104; 1997, 390–391; 1999, 572; Fappas 2010, 118, 260). It has also been suggested that some of the named individuals on this tablet, also attested in Au 102 from Room 2 of the House of the Oil Merchant and V 659 from Room 5 in the West House, might be textile workers working

in the vicinity of the houses and therefore in need of rations and local accommodation (Shelmerdine 1997, 391–392; 1999, 572). The scribe who wrote this tablet was not associated with any other document in the houses, which not only suggests specialisation of personnel, but also the possibility of more tablets dealing with oil that have not survived the destruction of the house (Tournavitou 1995, 267).

Judging by the overall character of this group of buildings, including the House of the Oil Merchant, it seems that they functioned as repositories and clearing houses, amongst other things. The House of the Oil Merchant in particular, was obviously used as a depot and as a clearing house for oil and wool, to be distributed to different groups or individuals, probably for industrial purposes (Tournavitou 1995, 267; Shelmerdine 1997, 394; Varias Garcia 1999, 596).

Conclusion

The evidence from the study of the available textile related material at the palatial centre of Mycenae, although not entirely representative of the site, seems to refute the testimony of the Linear B documents in the House of the Oil Merchant and the single document from the House of Shields. It weighs heavily in favour of occasional spinning activities of domestic scale and does not seem to encourage speculation on the existence of a large, centrally organised textile production at the site.

In spite of the absence or the scarcity of direct evidence of actual weaving activities (a phenomenon that is also attested in other mainland sites during the Bronze Age), and although the textile tools in the CTR database do not constitute a truly representative sample, the spindle whorls from Mycenae indicate that several types of yarn were being spun at the site, ranging from very thin to very thick. These would have been suitable for making many different types and qualities of textiles, although there appears to have been an emphasis on the production of thinner thread types.

There is no difference in weight and diameter between the spindle whorls from funerary and “other”, non funerary contexts. Although it is likely that both finer and coarser fabrics were produced at Mycenae, this coarser production is invisible in the data. The existence of looms is suggested only by the existence of the ten

possible pin-beaters. It is possible that loom types, other than the warp-weighted loom, were in use, but, if this was indeed the case, it is impossible to reach any definite conclusions on the weaving technology at the site. The possibility that textiles were woven at another location inside or outside Mycenae cannot be excluded.

Considering the extant Linear B documents in the House of the Oil Merchant and the House of Shields, however limited these may be, it appears likely that the central authority was directly involved in transactions concerning the disbursement of raw material, the manufacture of textiles and transactions in textiles with other palatial centres. This suggests that textile production was strictly monitored at Mycenae, as at the other major palatial centres of Knossos, Pylos and Thebes (Shelmerdine 1999, 564). Most of the administration took place in the ground floor rooms of the “Ivory” Houses, which housed only partly linked, but related departments (Shelmerdine 1999, 573).

The apparent discrepancy between the archaeological and the textual evidence, however unwelcome and awkward, may not in fact be a discrepancy, considering that the recorded finds represent only a fraction of the excavated material from the site. The scarcity of loom weights, on the other hand, may have to remain an enigma for many of the Bronze Age sites on the mainland.

Notes

- 1 Mycenae is the only palatial centre to include an actual cult centre, i.e. a distinct area with various buildings and installations devoted to cult.
- 2 Petsas House, a commercial, possibly official establishment, involved in the production, distribution and exchange of pottery (Papadimitriou and Petsas 1950, 203–233; 1951, 192–196; Iakovidis 2000, 63–66; 2001, 49–55; 2002, 18–19; 2003, 21–24; 2004, 24–26; 2005, 28–32; 2006b, 26–29; Shelton 2002–2003, 387–396; 2004, 181–182; see Fig. 6.8.1, D4.10), the Cyclopean Terrace Building and the House of the Wine Merchant – residential establishments, the latter with a possibly commercial aspect (Wace 1952, 15–17; 1953, 267–291; 1956, 81–87), buildings in the area of the “Ivory” Houses (Tournavitou 1995, 31, 293; Fig. 6.8.1, D4.F), the House of Lead (Wace 1955, 119–122; Fig. 6.8.1, E4.11).
- 3 Some, like the House of Columns on the east slope, House M on the north slope, the Granary,

the Ramp House, House of the Warrior Vase and the South House in the vicinity of Grave Circle A on the west slope, Tsoundas House in the Cult Centre and various buildings in the Northwest and Southwest Quarters, have been labelled residential, on the basis of the architectural evidence and their contents. Others, like the House of the Artisans on the east slope, have been assigned a primarily workshop function, while the North Storerooms, and the remaining buildings within the Cult Centre, are labelled storerooms and cult buildings respectively. Many buildings preserved only at basement level, like Houses A, B, Γ, Δ, could possibly be described as residential, but their interpretation is still tentative.

- 4 See Taylour 1981; Evely and Runnels 1992; Moore and Taylour 1999; French and Taylour 2007 and Krzyszkowska 2007. The recently published sectors inside the citadel including the cluster of buildings in the Northwest and Southwest Quarters of the acropolis, by Professor Spyr. Iakovidis, on behalf of the Archaeological Society at Athens (Iakovidis 2006a); 2013, were unfortunately published too late to be incorporated into the CTR database. Other groups of buildings like Houses Γ, Δ, House M, the Granary, the House of Columns and the House of the Artisans are currently under study, which renders the material from these buildings unavailable for inclusion in this study.
- 5 The “Ivory” Houses, to the south of Grave Circle B (Fig. 6.8.1, D4.F), the Panagia Houses, to the north of the Treasury of Atreus (Fig. 6.8.1, E4.6), the House of the Tripod Tomb and the so-called Workshop, in the vicinity of the new museum (Fig. 6.8.1, D4.G), to the north of the acropolis, have already been published (Tournavitou 1995, 2006; Mylonas-Shear 1987; Onasoglou 1995; Daniilidou 2008). The Petsas House, originally excavated in the early 1950s was re-excavated by Professor Spyr. Iakovidis and Kim Shelton (see note 2). The House at Plakes (Mylonas 1975, 153–161; Fig. 6.8.1, D4.29), was recently published by Prof. Spyr. Iakovidis (2013b), and the East House has been included in a new research and excavation project, under Professor Spyr. Iakovidis and Iphiyenia Tournavitou.
- 6 The so-called Workshop was unfortunately published too late to be incorporated in the CTR database (Daniilidou 2008).
- 7 The House of Lead on the ridge to the southwest of the Atreus tholos (Wace 1955, 119–122; Fig. 6.8.1, E4.11), and the House at Plakes to the northwest of the citadel (Mylonas 1975, 153–161; Fig. 6.8.1, D4.29), were probably residential. Petsas House and the House of the Wine Merchant (Wace 1952, 15–17; 1956, 81–87; Fig. 6.8.1, D4.13), to the northwest of the citadel,

- seem to have had commercial and possibly artisanal aspects, the former with close ties to the central authority.
- 8 Material not recorded in the CTR database includes the textile related tools from the British excavations in the Citadel House area, which are currently under study for publication by S. Diamant, the material from the other British excavations at Mycenae and the textile related tools from the excavations of the Archaeological Society at Athens, which are also currently under study for publication. Three of the complexes excavated under the auspices of the Archaeological Society at Athens, the Northwest and the Southwest Quarters inside the acropolis and the so-called Workshop and the House at Plakes to the north of the citadel, had not been published at the time that the CTR database was created, and are therefore not included in the final study (Iakovidis 2006a; 2013a; 2013b; Daniilidou 2008).
 - 9 A certain number of textile related tools from some locations (House of the Oil Merchant, House of Sphinxes, House II of the Panagia group, House of the Tripod Tomb), as well as a number of examples from funerary contexts, have not been available for detailed study, while the relevant material from the House of the Tripod Tomb, for example, was apparently only selectively published and therefore most of the objects available for study were not included in the final publication of the building and were thus not included in the overall assessment.
 - 10 The contextual information available at this moment is only very general.
 - 11 Eight of the recorded objects (1.66%) are Middle Helladic; two (0.41%) are from LH I contexts; 18 (3.75%) date to LH II; three (0.62%) date to LH II-IIIb; 331 (68.95%) date to LH III; 118 (24.58%) are of unknown date.
 - 12 Protogeometric or Geometric tombs: House of the Oil Merchant, one example, no. 52–53; Panagia House I, two examples (Mylonas-Shear 1987, 134, nos. 249, 250). A spindle whorl from Panagia House II, found in a grave under the floor of Room 21 (Mylonas-Shear 1987, 134, no. 244), should also be excluded from the assessment of textile related activities in the building, alongside a number of other spindle whorls that did not belong to the original contents of the buildings (see section on Panagia Houses).
 - 13 By “true number” is meant the total sum of textile related material recovered from the sample of contexts available for study (House of the Tripod Tomb, the “Ivory” Houses, the Panagia Houses, the MH building near Grave Circle B, the chamber tombs, Grave Circle B and unspecified contexts from Schliemann’s excavations inside the acropolis), and not the total of textile related material excavated at the entire site of Mycenae, which remains unfortunately unknown.
 - 14 This total does not include the 343 stone conuli from the Citadel House area. A further seven objects from the House of the Oil Merchant (Tournavitou 1995, 37, no. 52–215: three examples, no. 52–311, fragmentary bone pins/needles, in Room 5) and the House of Sphinxes (Tournavitou 1995, 44–56, nos. 53–154, 55–316, 54–828, bronze pins/needles, in Rooms 1, 2 and 6), some of which were too fragmentary to be securely identified and therefore not included in the study sample, were probably used as needles and should be perhaps added to the total, which would then amount to 1,592 objects.
 - 15 760 spindle whorls, 12 loom weights, 21 needles, one spindle and 45 objects classified as buttons.
 - 16 100 spindle whorls (97 from Bronze Age contexts), 10 loom weights, nine needles (plus seven additional examples) and one object classified as a button.
 - 17 1,393 spindle whorls, two loom weights, 25 needles, one spindle and 44 objects classified as buttons.
 - 18 401 examples, *i.e.* 83.54% of the 480 objects recorded in the CTR database; 1,493 of 1,585 examples, *i.e.* 94.19%, of the true number of items discovered at the site. The material from the Cult Centre, being studied by Steve Diamant, is not incorporated in the present database and will be discussed separately.
 - 19 According to the new total, the spindle whorls in these buildings amount to *c.* 83% of the textile related material.
 - 20 Seven from the House of Shields, 20 from the House of the Oil Merchant and 19 from the House of Sphinxes.
 - 21 Five from House I, 16 from House II, five from House III and 13 from outlying areas.
 - 22 One terracotta whorl from Room 6 and one glass paste whorl from Room 1 have not been included in the study sample and were therefore not entered into the CTR database corpus.
 - 23 The remaining seven whorls (from Rooms 3, 6, corridor, Area south of Room 10), could have been used for domestic spinning activities, but this would be pure conjecture on our part. The three fragmentary bronze pins from the doorway of Rooms 1, 2 and 6 (Tournavitou 1995, 247–248, nos. 53–154, 55–316, 54–828), have not been positively identified as textile tools (sewing needles) and were mostly found in areas unrelated to textile production.
 - 24 Including a terracotta whorl from Room 1 (nos. 52–12), four stone whorls from Room 2 (nos. 52–66, 52–67, 52–68, 52–163), one stone whorl

- from Room 3 (nos. 52–61), one terracotta whorl from Room 4 (nos. 52–164), four stone whorls from Room 5 (nos. 52–216: two examples, 52–312, 52–313), two stone whorls from Room 8 (nos. 53–55: two examples) and three stone whorls from the corridor (nos. 50–302: three examples). The four whorls from Room 2 and the single examples from Rooms 1 and 4 were not included in the study sample and were thus not entered into the CTR database.
- 25 Tournavitou (1995, 33–34, 289) and Shelmerdine (1997, 390), having calculated the total amount of wool recorded in the tablets, are of the opinion that the quantity of wool involved is more than the room could hold.
- 26 Including a large number of worked ivory pieces, wood, stone, faience, *etc.* (Tournavitou 1995, 18–23).
- 27 Since the material from the Citadel House is being published elsewhere, only a summary is given here.
- 28 (Tournavitou 1995, 47–51, 231–232, nos. 54–552). It was found in a secondary context, inside the debris that had collapsed from the ground floor. Of the other three, one was found in the street between the House of the Oil Merchant and the West House, in a dubious context, one in an unspecified context from Schliemann's excavations in the acropolis, and one in a funerary context (Grave O, in Grave Circle B; Mylonas 1973, 207, 0.526.9).
- 29 The majority of the sewing needles in the CTR database come from unspecified contexts, from Schliemann's excavations inside the acropolis (15 examples), while the remaining six examples belong to funerary contexts, mostly chamber tombs.
- 30 House of the Oil Merchant: four bone pins/needles, three of which were in a fragmentary state, were recorded in the burnt fill of Room 5 (Tournavitou 1995, 37–38, nos. 52–215: three examples, 52–311). In the House of Sphinxes: three fragmentary bronze pins were found in Rooms 1, 2 and 6 (Tournavitou 1995, 247–248, nos. 53–154, 54–828, 55–316). From the Panagia Houses, nine bronze pins/needles have not been included in this study (Mylonas-Shear 1987, 121–122, nos. 176, 184–191). All the examples from the "Ivory" Houses are in context (LH IIIB1), but are too fragmentary for precise identification. Of the nine Panagia examples, only one (no. 176) is in a meaningful context (House II, Room 21, floor deposit; Mylonas-Shear 1987, 43, 119, 121). The remaining bronze examples (nos. 184–191), are not *in situ* (Mylonas-Shear 1987, 49, 66, 121).
- 31 House of Shields: five spindle whorls; House of the Oil Merchant: 16 spindle whorls and four bone pins/needles; House of Sphinxes:

- 19 spindle whorls, one loom weight and three bronze pins/needles; Panagia House I: one spindle whorl; Panagia House II: three spindle whorls; Panagia House III: three spindle whorls and four spindle whorls from other houses to the west, as well as eight bronze pins/needles and one bone pin/needle, five of which were not in a primary context (see section on needles); House of the Tripod Tomb: five spindle whorls.
- 32 With the exception of Fo 101 from Room 1 of the House of the Oil Merchant and perhaps of Ui 709 from Room 4 of the House of Sphinxes (Tournavitou 1995, 33–35, 51–53, 266).

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