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THE EARLY AND MIDDLE BRONZE AGE TEXTILE TOOLS FROM THE AEOLIAN ISLANDS (ITALY)

Abstract: The Aeolian ceramic textile tools dated to the advanced Early and Middle Bronze Age (c. 1600-1250 BC) comprise the only evidence for textile manufacture and are a unique source of information about the technology of textile production used in the Early-Middle Bronze Age (EBA-MBA) in the Aeolian Archipelago (province of Messina, Italy). A recent re-examination of 76 out of over 140 of these tools has shown that heavier spindle whorls (71-153 g) dominate in the more numerous MBA material. The high weight values of the Aeolian spindle whorls, uncommon in the area and epoch, could point to the prevalent use of long staple animal fibres, e.g. wool, which requires heavier implements in order to be spun, in yarn manufacture in the archipelago. A group of very heavy tools (165-199/222 g), difficult to classify, has been identified in the MBA material as well. It is suggested that these particular implements were potential heavy spindle whorls used primarily for spinning long hard plant fibres, such as flax, and plying yarns or producing twines.

Keywords: textile tools, typology, spinning, Aeolian Archipelago, Bronze Age

Introduction

Excavation campaigns conducted across the Aeolian Archipelago in the second half of the 20th century and at the beginning of the 21st century brought to light many prehistoric settlements rich in architectural remains and objects of everyday use, among which were a considerable number of ceramic textile tools. These tools comprise the unique evidence for textile production and source of information about the prehistoric Aeolian technology of textile manufacture, yet they have never been studied thoroughly. A re-examination of a great portion of those finds conducted within the project "Sicilian textile tools from the Bronze Age: Examination of Finds and Comparative Studies on Their Functionality"[1] allowed the collection of missing data crucial for the understanding of their functions. This paper presents the results of the research which concerned the archaeological material related to textile manufacture coming from four advanced Early Bronze Age [EBA] and Middle Bronze Age [MBA] (c. 1600-1250 BC) sites located on four islands within the archipelago: Montagnola di Capo Graziano in Filicudi, the Acropolis of Lipari, Punta Milazzese in Panarea, and Portella in Salina. After a brief introduction to the chrono-geographical and archaeological context of the finds, as well as the methodological framework of the study, an overview of the analysed material is provided. This is followed by the interpretation of the potential functions and productional possibilities of the advanced EBA-MBA tools based on the analysis of the functional parameters and the spatial distribution of the finds.

The context of the finds

The Aeolian Archipelago is located in the lower Tyrrhenian region, off the north-eastern Sicilian coast (Fig. 1:a). It consists of seven small volcanic islands, out of which two are active volcanos (Vulcano and Stromboli). Except from Vulcano, all the islets were inhabited for at least some period of time in prehistory between the Middle Neolithic and the Final Bronze Age, but mainly in the Bronze Age (c. 2200-900 BC). Due to the archipelago's specific position, local communities were involved in the cultural and transmarine

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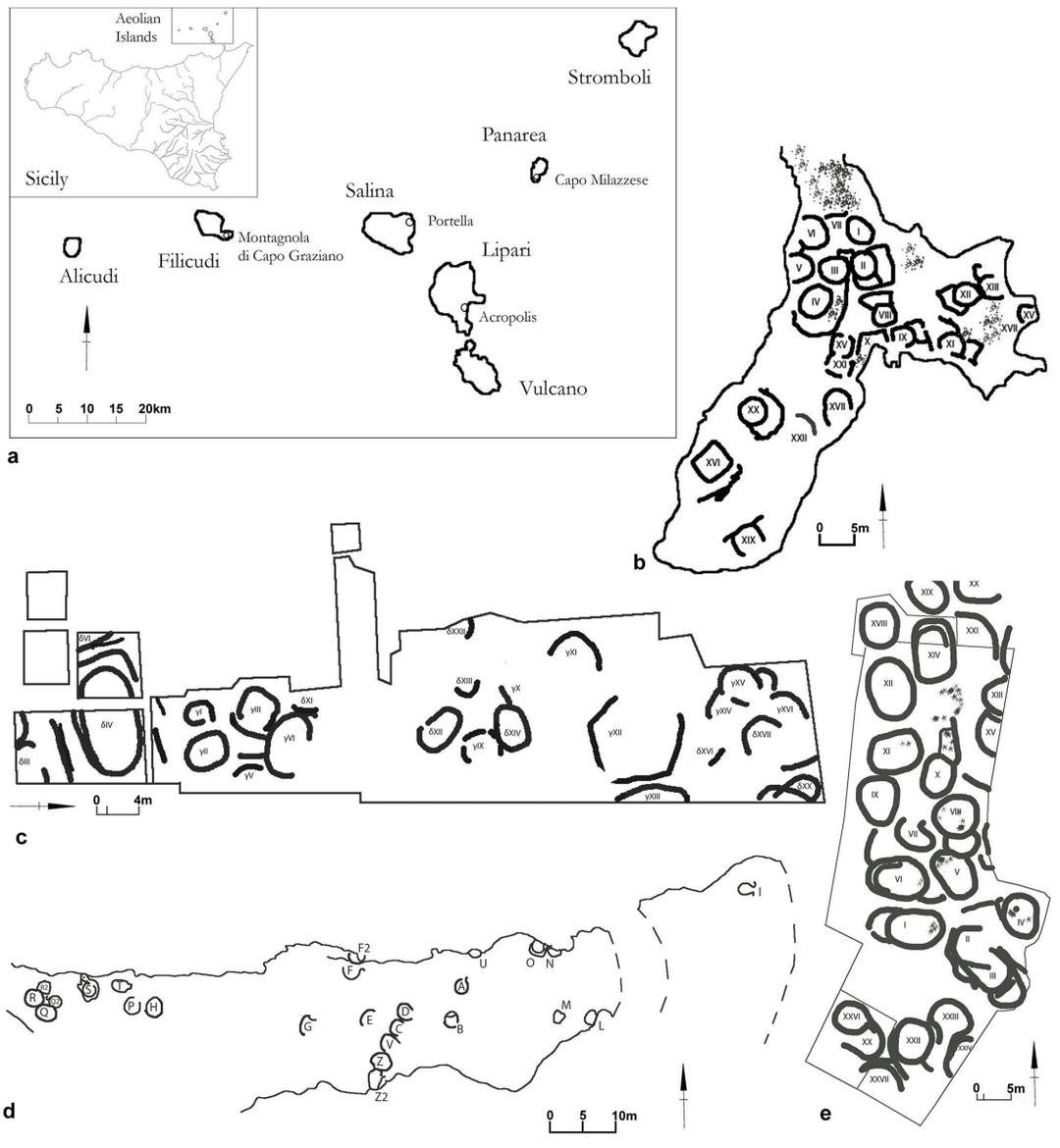

Fig. 1. Aeolian Archipelago: a – location of sites mentioned in the text; b – general plans of the settlements unearthed at Punta Milazzese in Panarea; c – Acropolis of Lipari; d – Portella in Salina; e – Montagnola di Capo Graziano in Filicudi. After Bernabò Brea and Cavalier 1968, Figs. 16a-b; Bernabò Brea and Cavalier 1980; Bernabò Brea and Cavalier 1991, Fig. 1; Martinelli 2010, 217, Fig. 113.

exchange with neighbouring Sicilian and Apennine populations, as well as Helladic and Mycenaean agents.[2]

A residential area inhabited over a long period of time has been unearthed in two main excavation areas at the Acropolis of Lipari in the island of Lipari.[3] Bronze Age layers containing material characteristic for the *facies* of Capo Graziano II (c. 1600-1400 BC), roughly coherent with the advanced stage of the Sicilian Early Bronze Age, and the *facies* of Milazzese (c. 1400-1250 BC), corresponding to the Sicilian Middle Bronze Age phase,[4] have been found superposed and covered with a stratum of Late Bronze Age and Final Bronze Age material.[5] Although the EBA-MBA layers have been disturbed by later occupation, a grouping of huts (i.e. γ I-III, Fig. 1:c) used for diverse non-residential tasks, such as cooking, storing, working (spinning included), has been identified in the southern part of the MBA settlement.[6]

An advanced EBA and MBA settlement was also discovered on one of the natural terraces covering the slopes of Montagnola di Capo Graziano, a hillock located in south-eastern Filicudi.[7] The village consisted of 27 oval huts, although the

[2] E.g. Bietti Sestieri 1980-1981; Voza 1986; Bietti Sestieri 1988.

[3] Bernabò Brea and Cavalier 1980, Fig. 1:c.

[4] Alberti 2011, 2, Table 1.

[5] LBA and FBA textile tools from Lipari belong to an exogenous cultural horizon (the *facies* of Ausonio I-II) and will not be discussed in this paper.

[6] Alberti 2017, 325.

[7] Bernabò Brea and Cavalier 1991, 71-182.

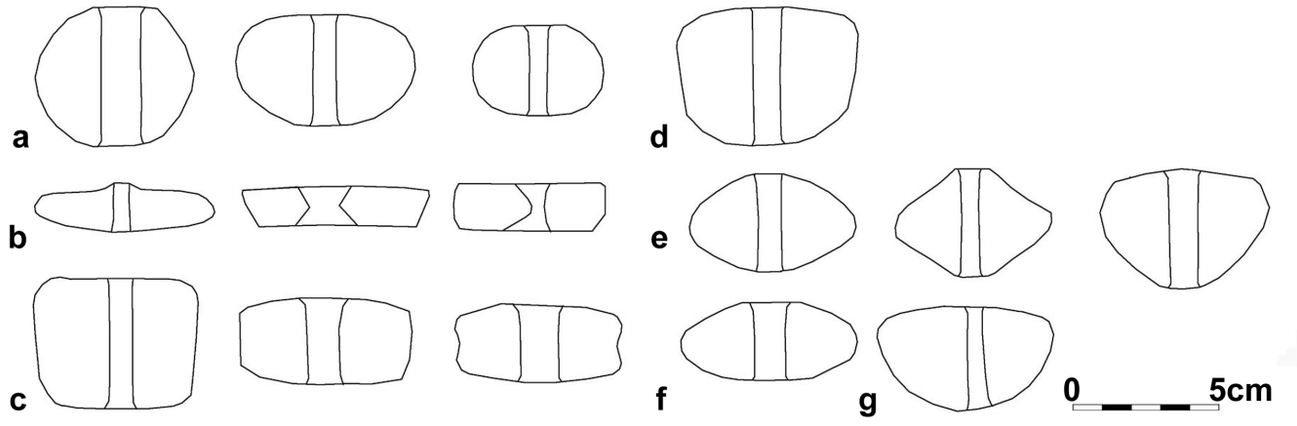

Fig. 2. EBA-MBA Aeolian spindle whorl types: a – spherical, b – discoidal, c – cylindrical, d – conical, e – biconical, f – lenticular, g – convex.

erosion of the slope might have slightly changed its original layout (Fig. 1:e). The use of some late EBA structures continued into the MBA when a few new buildings were also erected. Artefactual evidence and the dimensions of the available living spaces suggest that only two huts (i.e. VI and XII) had the function of actual habitations, while the remaining ones were of purely utilitarian character.[8] Some remains of residential structures belonging to the previous Capo Graziano I phase (c. 2200-1700 BC, early EBA) were discovered at Filo Braccio, in the lowlands west of the hillock.[9]

At Punta Milazzese in south-western Panarea, a MBA settlement consisting of at least 22 huts was discovered in a naturally defensive, small, flat tripartite peninsula with steep edges especially prone to marine erosion (Fig. 1:b).[10] At this site, each structure of residential character, which were the minority (seven huts at most: III, IV, X, XI, XIII, XVI, XVIII), seems to have been linked to at least one neighbouring hut of utilitarian function.[11]

The site of Portella located in north-eastern Salina extends along a narrow rocky ridge sloping towards the shore. Excavations conducted on the volcanic crest brought to light the remains of 25 prehistoric huts dated to the MBA Milazzese Culture (Fig. 1:d).[12] These structures were probably used exclusively for non-residential purposes connected with working and processing of raw materials, as well as cooking and storing food.[13]

By the mid-13th century BC, all four Milazzese settlements were destroyed in a sudden event.[14] Only the Acropolis of Lipari became inhabited again, taken over by the incomers from the Apennine Peninsula whose material culture had typical Subapennine character.[15]

The re-examination of tools

Seventy-six out of over 140 tools have been re-examined within the project. They were measured, observed under a digital microscope, and graphically and photographically documented. The weights of 73 ceramic artefacts and one item made of pumice have been recorded for the first time. The collected data was then inserted into a database. Tools made of semi-levigated fired clay were generally well preserved, while many poorly-fired items made from coarser fabric were partially crumbled (mass loss estimated for less than 10%). Very few tools were slipped, their surfaces were either only roughly smoothed or burnished to obtain a shiny to lustrous effect. In the overview of the material the classification of tools provided by the excavators is maintained in order to avoid unnecessary confusion. The interpretation of the finds – distinction between spinning tools (i.e. spindle whorls, which are centrally pierced, usually symmetrical objects) and weaving tools (loom weights, which can be identified through use-wear marks),[16] is discussed afterwards. The typology of shapes has been revised as well. As a consequence, seven main types (spherical, discoidal, cylindrical, conical, biconical, lenticular, convex, with subvariants) have been distinguished within the analysed material (Fig. 2).

A small portion of the implements had marks incised on their surfaces before firing (Fig. 3). Crosses appear exclusively on flattened spherical artefacts from the advanced EBA (one item) and MBA (three), while multiple dots or incised lines can be seen on short MBA cylinders (three and two, respectively). Crosses are present on a number of locally made vessels found throughout the Archipelago,[17]

[8] Alberti 2017, 325.
[9] Bernabò Brea and Cavalier 1991, 21-54; Martinelli et al. 2010.
[10] Bernabò Brea and Cavalier 1968, 50-132, Fig. 1:b.
[11] Alberti 2017, 321.
[12] Bernabò Brea and Cavalier 1968, 144-178; Martinelli 2005; Martinelli 2010, Fig. 1:d.
[13] Cazzella and Recchia 2009, 78-79; Alberti 2012, 219.
[14] Castellana 2002, 149.
[15] Leighton 1999, 188.
[16] Frankel and Webb 1996, 198.
[17] Bernabò Brea and Cavalier 1968, 234-279.

Fig. 3. Types of marks incised on Aeolian tools: a – cross; b-c – dots, d – linear composition.

in which case they are interpreted as the manufacturer's marks related to the organisation of pottery production,[18] as identification marks distinguishing ownership,[19] or signs containing numerical significance.[20] Similarly, dots and linear compositions could have been introduced to facilitate the distinction of proper tools manufactured individually, but probably fired in a shared kiln.[21]

Overview of the material

Early Bronze Age

Textile tools dated to the earlier phase of the EBA are rare. They were found in the settlement discovered at Filo Braccio in the island of Filicudi (one biconical and three spherical spindle whorls),[22] and at Piano Quartara in Panarea (one conical spindle whorl).[23]

Textile implements used in textile manufacture during the advanced stage of the EBA have been found in the prehistoric villages unearthed at the Acropolis of Lipari and at Montagnola di Capo Graziano in Filicudi.

Advanced EBA textile tools from the Acropolis of Lipari

Fifteen spindle whorls were scattered in the main excavation sectors at the Acropolis (single pieces in Huts δ VII and δ VIII, outside δ II, between δ XVI and δ XVII, and between δ XVIII and δ XIX, two finds in δ VI, three in δ XII, four in δ VIII) and Trench M (one object) located west of it. One item was found broken into two pieces, other tools were fully preserved. Except for one implement of undefined shape,[24] all remaining EBA tools have been examined.

Seven tools are of spherical shape, among which two are regular spheres with almost equal width and height, while the remaining five are flattened spheres with width exceeding the height. Four are biconical with rounded edges and the widest circumference located either in the central part of the body or at two-thirds of the whorl's height, below the flattened upper face. Three objects belong to the discoidal type: one made of fired clay and burnished, another one obtained from a recycled sherd of a pottery vessel, the third carved from a piece of pumice (Fig. 2:b). Due to the technique of their manufacture, the latter two have double-cone shaped perforations. Plain perforation diameters vary from 5 to 16 millimetres, regardless of spindle whorl's shapes. Their weights range from 30 up to 111 g, with 79% of the whorls falling between 55 and 83 g (Fig. 4). The tools present a great variety of sizes characterised by generally large diameters (45-57, up to even 64 millimetres for the discoid type) and various heights (26-41 and 13-17 millimetres for the discs). No standardised model can be distinguished.

Advanced EBA textile tools from Montagnola di Capo Graziano in Filicudi

A "misshapen" spherical spindle whorl with incised cross sign has been unearthed in one of sixteen rocky crannies of presumably sepulchral function located on the western slope of Montagnola.[25]

Twenty-nine whole or partially preserved ceramic textile tools were collected at the settlement placed on the same hillock. Among them were mainly spherical (19 pieces), but also cylindrical (1) and biconical (2) spindle whorls, as well as two cylindrical loom weights. Most of these tools come from the central part of the village where almost every structure contained a spherical spindle whorl. The tools were found in quantities varying from one to two, three or even as many as seven per hut. The largest concentration of spinning tools was detected in Hut I (three spherical, four fragmentarily preserved). Possible evidence of weaving was found in two different huts (VII and XIV).

The two pieces that were re-examined in the project are a slightly flattened spherical spindle whorl with a perforation placed off its central axis and a potential elongated cylindrical loom weight. The tools weigh 83 and 202 g, respectively. Marks in the form of narrow indentations, similar to those

[18] Bernabò Brea and Cavalier 1968, 229.
[19] Bietti Sestieri 1988, 42; Marazzi 1997, 471.
[20] Tusa 2000, 22.
[21] Alberti 2017, 323.
[22] Bernabò Brea and Cavalier 1991, 41, 49, 54, Figs. 13:e, 20:l, Pl. XXI:11, 13, 14.
[23] Bernabò Brea and Cavalier 1968, 44, Pl. VII:6e.
[24] Bernabò Brea and Cavalier 1980, 177.
[25] Bernabò Brea and Cavalier 1991, 66, Fig. 24:g.

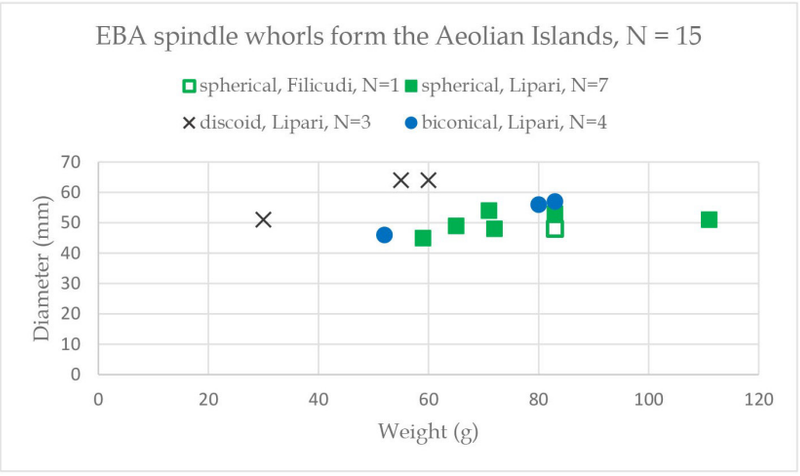

Fig. 4. The weights and diameters of the advanced EBA spindle whorls from Lipari and Filicudi.

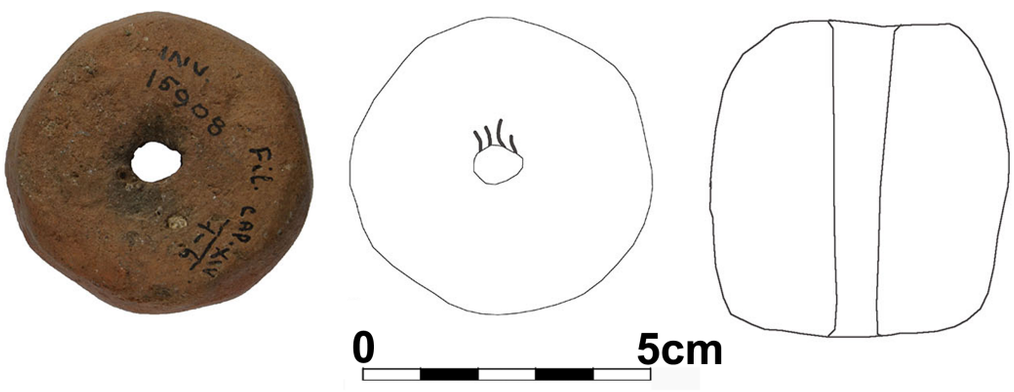

Fig. 5. Use-wear on the loom weight from Filicudi.

usually produced by threads or cord passing through the perforation of a loom weight, are visible on the heavier cylindrical implement (Fig. 5).

Middle Bronze Age

Textile tools dated to the MBA have been found in the Milazzese layers at Lipari and Filicudi, as well as scattered around the villages unearthed at Punta Milazzese in Panarea and at Portella in Salina. The quantity of spinning tools differs from 11 to 16, and up to over 50 items per site. No loom weights were detected in this phase of occupation.

MBA textile tools from the Acropolis of Lipari

Sixteen textile tools have been recovered from the remains of the MBA phase: one in Huts γ III, γ VI , γ VIII, and outside γ II, two in Hut γ I and between Huts γ IX and γ X, six in Hut γ XVI, and two more in Trench F in the north-western corner of the Acropolis. The tools were generally fully preserved or had some minor fragments of surface missing, and one implement was half-preserved. It was possible to re-examine eleven of those spindle whorls and record the weights of nine of them.

In terms of shapes and sizes, the most un-uniform group is the spherical one containing tools presenting three variations of the type: globular, flattened spherical, and almost ellipsoidal in section. The three cylindrical whorls of similar dimensions have incisions on one of the faces. The two pieces found together in Hut γ I have concave side walls, contrarily to the example found in γ VIII. The latter has a mark composed of straight lines, the other two either a row of dots or a similar linear mark incised near the outer edge of the tool. Three of four lenticular tools found together in Hut γ XVI look very similar to each other and have the height to diameter ratio of 1:2.4, suggesting that they might have been modelled by the same person. Apart from those, also biconical and truncated conical spindle whorls were in use.[26]

[26] Bernabò Brea and Cavalier 1980, 176, 198.

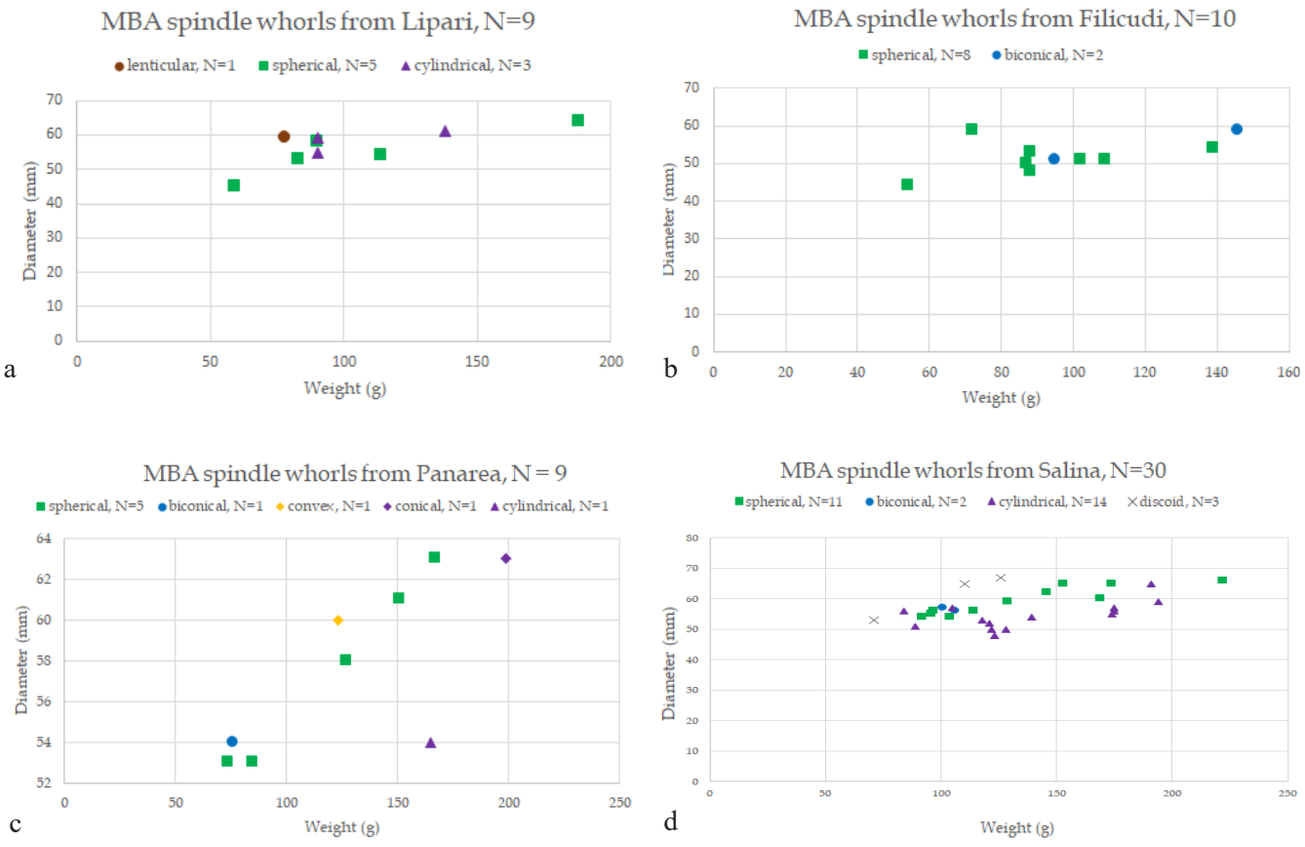

Fig. 6. The weights and diameters of the MBA spindle whorls from: a – Lipari; b – Filicudi; c – Panarea; d – Salina.

Spherical tools weigh from 59 to 188 g (Fig. 6:a). The two cylinders with concave walls have similar weights of approximately 90 g, the third is almost 140 g. The weight of only one lenticular spindle whorl is known, but considering their similar sizes and fabric, it can be assumed that also the remaining ones weighed around 80 g.

MBA textile tools from Montagnola di Capo Graziano in Filicudi

The Milazzese layer of the settlement yielded scarce evidence for spinning in comparison to the previous phase, additionally characterised by a great variety of forms within the same shape type. The finds were limited to Hut IV from where five spherical and two large biconical spindle whorls weighing from 54 to 146 g were recovered, and Hut VI from which three spherical whorls weighing between 87 and 109 g come (Fig. 6:b). All biconical spindle whorls have the largest circumference placed in the central part of the tool's body, while the spherical ones present several variants – regular globular or flattened to a different degree.

MBA textile tools from the settlement at Punta Milazzese in Panarea

Sixteen spindle whorls belonging to five different shape categories come from the MBA settlement in Panarea. They are biconical (1 item), convex (1 item), cylindrical (3 items), spherical (10 items, flattened to various degrees), and a peculiarly shaped truncated conical one with a slightly curved lower face. One flattened spherical whorl has a cross incised on its surface.

The nine implements re-examined within the project are rather heavy – for the conical items – weighing from 74 to 199 g (Fig. 6:c). Other very heavy tools are spherical (151 and 167 g) and cylindrical (165 g). The tools were collected from prehistoric structures in the northern part of the village or from the spaces between them. The largest concentration of spindle whorls was noted in Hut X. It consisted of a lighter biconical tool (76 g), two medium heavy spherical spindle whorls (127 and 151 g), and one cylindrical one of unknown weight.

MBA textile tools from the settlement at Portella in Salina

Fifty-four textile tools have been identified within the prehistoric material from Portella. The tools were found in 14 out of the 25 excavated structures in quantities from one to nine implements per hut, concentrated especially in a few central (A-C) and western (P, S) buildings. Nineteen tools unearthed recently (buildings L-V, Z) were frequently found near the hut entrances,[27] while the precise location of 35 spindle whorls discovered in the mid-20th century within

[27] Martinelli 2010, 135.

the Huts A-I is unknown. Cylindrical (21 items) and spherical (16) shapes are the most common, as well as the most diversified groups in terms of size and form variations. Biconical (1), discoid (3), and convex (1) spindle whorls appear less frequently. The weights of 30 examined tools range from 71 to 222 g (Fig. 6:d). The heaviest tools are the cylindrical and spherical forms that were dispersed unevenly across the site. Some cylinders weighed under 100 g (2), more often their weight was between 118 and 128 g (5), or over 150 g – circa 174 (3) or 190 (2) g. Some of the tools of similar weight were found in the same locations (Huts B, C, E), however never in quantities larger than three. Two cylindrical tools were marked with dots incised either on the two faces or all surfaces of the whorls, two spherical ones had a cross cut on the curved edge of the implement. They were unearthed in different huts (B-C and A-C).

Interpretation of the material

The weight ranges of tools identified by Bernabò Brea and Cavalier as spindle whorls are 30-111 g for the EBA material and 54-222 g for the MBA finds. Lighter tools weighing between 55 and 83 g (63%) prevail in the advanced stage of the EBA when the shapes are limited to three main types: spherical, biconical, discoidal. Six weight categories were distinguished for the MBA material: very light (54-59 g), light (71-97 g), medium heavy (101-153 g), heavy (165-175 g), very heavy (191-199 g), and extremely heavy (222 g). New shapes are introduced to the repertoire of forms: lenticular, cylindrical, convex, truncated conical. Heavy, very heavy, and extremely heavy objects are exclusively cylindrically (6), spherically (5), and conically (1) shaped. The diameters maintain similar sizes: 44-68 millimetres in the MBA compared to 45-65 millimetres in the advanced EBA.

High weight values of the heaviest MBA Aeolian tools (165-199/222 g, 21% of the material) could suggest their use as loom weights since they exceed the weight range traditionally accepted for spindle whorls to be effective. Spinning wool and flax fibres, the most common raw materials, requires the use of spinning tools weighing between c. 10 to 150 g or more. A whorl weighing c. 30 g is suitable for spinning medium to heavy wool, but long staple wool requires tools no lighter than 100-150 g, and even heavier spindle whorls are needed for spinning full-length flax or for plying, i.e. twisting yarns together.[28] It is generally believed that smaller and lighter spindle whorls would be preferred for producing finer and thinner yarns, heavier and bigger ones to obtain stronger, coarser and thicker yarns or threads and twines.[29]

On the other hand, diverse experiments have shown that the final product of spinning is influenced by several factors. Apart from the morphological features of the tool, such as weight, height and diameter,[30] and the type and quality of worked raw materials, the spinning process is also affected by the spinner's skills and personal preferences in the choice of the tool.[31] It has been demonstrated that heavy spindle whorls (over 100 g) can be quite versatile tools, applied successfully in both spinning and plying to obtain a differentiated final product, regardless of used raw material.[32]

It is also difficult to prove the function of a pierced object in weaving, especially if it was not found *in situ* in quantity[33] reflecting its setup on a warp-weighted loom. Such item may have been used for an array of other purposes, e.g. as fishing net weights, thatched roofs weights, counter-weights, etc.[34] The artefact from Filicudi dated to the advanced EBA could be interpreted as a loom weight, taking into consideration its cylindrical shape, mass sufficient to tauten the warp threads of a woven textile, and the presence of attrition matching use-wear observed on weaving implements. Traces of functional wear characteristic for spinning tools (abrasive wear, e.g. rounding and levelling of protruding parts, surface attrition, and sometimes fatigue wear in the form of spall detachment),[35] however, have been observed on only 40% of the analysed objects. Also the shapes of the heaviest tools complicate their classification. The spherical form, for instance, absent among the Italian BA weaving tools,[36] is more related to spinning. Although it could act as a flywheel, it cannot be excluded that the unconventional truncated conical object was not used in textile manufacture at all. Only the cylindrical form is attested in Italy both among spinning and weaving implements.

The heaviest tools cannot be unambiguously classified as spindle whorls or loom weights, as they could have functioned as both. However, since in this specific context their use as spinning tools is more probable, they will be considered the potential heavy spindle whorls.

Discussion

Spinning

In Salina the activity was carried out in separate spaces dedicated strictly to utilitarian purposes, where lithic production, storage of goods, food processing, etc., took place. In the remaining islands the evidence of yarn manufacture, understood as the last step of its *chaîne opératoir*e which includes the procurement and preparation of raw materials, and finally spinning, was not limited to neither type of space, although

[28] Barber 1991, 52; Gleba and Mannering 2012, 10.

[29] Liu 1978, 90; Barber 1991, 53; Smith 2007, 230; Olofsson et al. 2015, 87.

[30] Grömer 2005; Mårtensson et al. 2006; Chmielewski and Gardyński 2010; Verhecken 2010; Grabundžija and Russo 2016.

[31] Kania 2013, 24-27; Laurito et al. 2014; Ciccarelli and Perilli 2017, 160.

[32] Grömer 2005, 111, Fig. 6; Żebrowska, forthcoming.

[33] Usually 6 to 30 items of approximate weight (Gleba 2008, 133).

[34] For more possible functions and bibliographical references see Mazăre 2014, 22.

[35] Crewe 1998, 61-62; Forte and Lemorini 2017.

[36] Gleba 2008, 129, Fig. 93.

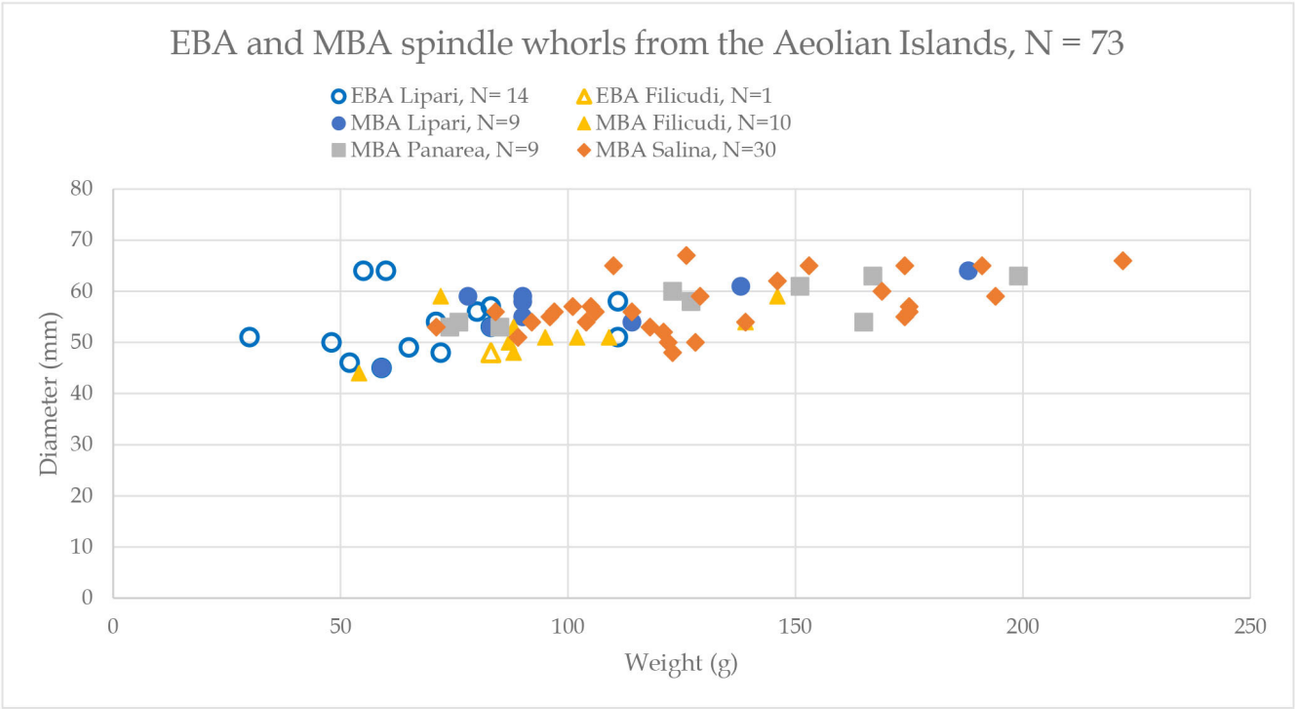

Fig. 7. Functional parameters of the EBA-MBA Aeolian spindle whorls and potential spindle whorls.

it prevailed quantitatively in the habitations. Even though the evidence is residual, its distributive pattern reflects the level of intensity of production. Spatial distribution shows that the activity was executed on a small-scale household level, whereas in Salina it could have been performed in a semi-organised manner imposed by the industrial character of the site.[37]

The Aeolian spindle whorls vary significantly in weight on both the intra-site and intra-island levels (Fig. 7). The frequency of appearance of particular weight clusters shows that yarn and possibly other products were manufactured mainly with the use of medium heavy and light spindle whorls, to a lesser extent with the use of heavy and very heavy tools, although these proportions change from island to island. Spindle whorls used in Lipari and Filicudi were generally light to medium heavy (78% and 90% of the repertoire, respectively). The situation in Panarea was similar (67%), although some heavier spindle whorls also appeared on this island (34%). The richest and most diversified evidence for spinning comes from Salina, where mostly medium heavy whorls were used (53%), less frequently heavy (17%), very heavy (7%), and light (20%). The rare very heavy tools appear across the Archipelago, except on the island of Filicudi. The heaviest tools were more common in Salina (7%) where the extremely heavy implement was found as well.

During the Bronze Age animal fibres such as sheep wool gradually replaced plant fibres, including the most commonly used flax, as the raw material preferred in textile manufacture. This shift is reflected e.g. in the decrease of spindle whorl weights.[38] The Aeolian spinning tools, however, constitute a local phenomenon characterised by an increase of weight values. Most of coastal southern Sicilian EBA spindle whorls weighs between 21 and 75 g, out of which almost 70% are less than 40 g, regardless of shape.[39] In inland Sicily, the tools do not exceed 50 g and a similar trend can be noticed in the central part of the island,[40] as well as in the lower Hyblaean region in south-eastern Sicily.[41] In the latter area, 30-50 g spindle whorls prevailed in the transitional EBA/MBA period.[42] The lack of MBA Sicilian[43] and well-published southern Apennine textile tools impedes further comparative studies in the region. The same tendency is observed in a wider context: the EBA-MBA northern Italian, contemporary eastern Mediterranean, Cretan, and Helladic spinning tools may vary considerably in weight, but would rarely exceed the 50 grammes mark.[44]

[37] Costin 1991; Andersson 2003.

[38] Rast-Eicher 2005, 128.

[39] Only five implements from Baffo Superiore (AG) weigh between 102 and 114 g (in the course of study).

[40] Material from Serra Orlando (EN) and the province of Catania (in the course of study).

[41] Biazzo 2016.

[42] Material from Calicantone (RG) (in the course of study).

[43] Eastern Sicilian settlement of Thapsos (SR) excavated in the 1970s-1980s, eponymous for the local MBA Culture, still awaits proper publication.

[44] Crewe 1998, 5; Bazzanella et al. 2003, 152-155; Bernabò Brea et al. 2003, 111; respective chapters in Andersson-Strand and Nosch 2015.

The predominance of heavy tools may be related to the insular character of the Aeolian sites and the sea-oriented economy of their subsistence, as well as local tradition. Wool fibres require heavier tools in order to be spun and then plied together. Both sailing and fishing require the use of twines, which can be produced by plying or twisting together previously spun yarns and threads. Flax fibres become even stronger when wet[45] and would be especially suitable for this purpose.

Weaving

The concept of weaving on a warp-weighted loom should be treated with caution, since direct evidence for this practice is at the most scarce.

The function of a loom weight can be defined on the basis of its weight and thickness,[46] which are 202 g and 54 millimetres in case of the Aeolian find interpreted as such. When used on a warp-weighted loom, thick but relatively light loom weights are suitable for producing dense weft-faced (i.e. having more weft than warp threads per centimetre) fabrics from thin threads or more balanced (i.e. having even amounts of warp and weft threads per centimetre) fabrics with thicker threads.[47] In northern Italy, where the warp-weighted looms were introduced from Central Europe,[48] warp-faced tabby weaves were woven with the use of heavier and narrower loom weights (290-1300 g, 14-25 millimetres).[49] On the southern Sicilian coast, the EBA truncated conical loom weights were also heavy (430-600 g), while spools weighed around 200 g.

Concluding remarks

The re-examination of the advanced Early and Middle Bronze Age ceramic textile tools found in the Aeolian Archipelago has shown that the repertoire of textile implements used in the islands comprises primarily heavy spindle whorls, uncommon in the region and epoch. The generally heavy spinning tools (71-153 g) that prevail in the material may be associated primarily with the spinning of long staple wool, although the processing of plant fibres should not be excluded. The heaviest tools (165-199/222 g), which could alternatively work as loom weights, are considered the potential heavy spindle whorls as well. They might have been used specially for spinning long, hard plant fibres, such as full-length flax, and for plying to obtain coarser and stronger threads or twines. Yarn, plied yarn, and heavier products were manufactured on the household level, although in many cases the activity took place in separate huts-workshops of non-residential character. Scarce evidence of possible weaving tools may suggest that weaving in the Aeolian Islands, if practised, was conducted mainly on the types of looms that do not leave traces in the archaeological material.

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[45] Harris 2010, 107.

[46] Mårtensson et al. 2009, 378.

[47] Mårtensson et al. 2009, 389.

[48] Barber 1991, 113.

[49] Bazzanella et al. 2003, 156-158; Gleba 2008, 84, Table 2a.

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Streszczenie

Narzędzia włókiennicze z Wysp Liparyjskich (Włochy) z wczesnej i środkowej epoki brązu

Liparyjskie narzędzia włókiennicze z wczesnej i środkowej epoki brązu (ok. 1600-1250 r. p.n.e.) stanowią jedyne świadectwo technologii produkcji włókienniczej społeczności zamieszkujących osady położone na czterech wyspach w archipelagu Wysp Liparyjskich we Włoszech (Filicudi, Lipari, Panarea, Salina). Ponowne przebadanie 76 z ponad 140 glinianych narzędzi odkrytych w drugiej połowie XX w. wykazało, że w materiale datowanym na środkową epokę brązu przeważają ciężkie przęśliki (71-153 gramów). Ich waga, znacznie wyższa od wagi współczesnych im przęślików używanych w regionie, może mieć związek z surowcem, którego używano do produkcji przędzy i nici – być może były to przede wszystkim długie włókna wełniane. Do ich uprzędzenia potrzebne są cięższe narzędzia ważące między 100 a 150 gramów. Z kolei dla narzędzi, których waga zawiera się w przedziale od 165 do 199/222 gramów, trudne jest ustalenie konkretnego ich przeznaczenia. Zakłada się, że narzędzia te również pełniły funkcję przęślików, które mogły być używane do przędzenia pełnej długości włókien roślinnych, np. lnianych, do skręcania nici, jak i w powroźnictwie.