Weaving Society in Late Chalcolithic Anatolia: Textile Production and Social Strategies in the 4th Millennium BC

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Abstract: The nature and development of textile production in prehistoric Anatolia has received very little systematic attention so far. This paper attempts to show that it is at the end of the 5th millennium BC when we first see a great increase of effort being invested into this field, a development which may be linked to the introduction of wool-producing caprids into the region. The social and economic implications of this development are investigated through a review of the evidence for flax-cultivation, pastoral strategies and the distribution of tools used in textile manufacture. The paper questions views that woven textiles were produced for their use-value and that they served the generation of cumulative wealth in this initial configuration. Alternative explanations are sought to understand better why the production and consumption of textiles suddenly became of central interest to Anatolian societies during the Late Chalcolithic and following times.

Keywords: Turkey, Anatolia, Late Chalcolithic, textile production, flax/linen, wool, pastoral economy, social complexity

The publication of E. Barber's[2] seminal book on prehistoric textiles has given rise to a renewed interest in early Near Eastern and Mediterranean textile production.[3] The significance of textile production in the development of complex social and economic structures has been emphasised in a number of models describing this process. Very little comparable interest can be seen in the study of prehistoric Anatolia, despite the rich 'textile history' of the country – a fact very obvious to Barber herself. The present essay thus addresses two related issues, 1. it attempts to develop some clearer ideas about the nature of society in Late Chalcolithic Anatolia.[4] Following some earlier expressed doubt[5] whether metal can be seen as the primary motor of social change at this early stage (a discussion not repeated here), 2. the possible connection between textile production and the emergence of social complexity in prehistoric Anatolia will be investigated. I acknowledge the important contribution of a very stimulating paper by B. Arbuckle[6] which greatly helped to bring my own mulling over this issue to a preliminary conclusion – although it must be admitted that the interpretations presented here deviate both from Arbuckle's opinion and my own initial expectations.

Approaches to Social Evolution in Late Chalcolithic Anatolia

Our general understanding of the development of society in Anatolia has remained limited. This is especially true for the Chalcolithic period which has been marred with chronological problems.

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[2] Barber 1991.

[3] E.g. Nosch – Gillis 2007; Breniquet 2008; Völling 2008; Burke 2010; Michel – Nosch 2010; Good 2012; Nosch – Laffineur 2012.

[4] In the context of the present paper, Anatolia is seen as the part of modern Turkey which is delimited by the Aegean seaboard and the Bosporus in the west and the Taurus Mountains in the east, including those of the eastern Aegean islands (now part of modern Greece), which were connected to the mainland in the past.

[5] Schoop 2011a.

[6] Arbuckle 2012a.

This, together with the limited number of sites which have been excavated and published, has made the development of abstract concepts difficult. It is therefore not surprising that the few attempts which have been made at shedding light on this issue have remained rather generic and necessarily limited by the amount of actual evidence. Eslick[7] made a noteworthy attempt to systematically apply a neo-evolutionary framework to the Anatolian situation. She saw early indications of social differentiation in the Late Chalcolithic, classifying the social model of this period as a low-level chiefdom. The argument was based on the presence of buildings (slightly) more substantial than neighbouring structures at Kuruçay and Bağbaşı, indications of specialised activity such as metalworking, and the existence of storage facilities. Elsewhere, the presence of complex social structures has been postulated for individual sites, often based on the existence of 'special' buildings and boundary walls. At early 5th millennium Güvercinkayası, these features are seen as an indication for an early urbanisation process while at Çadır Höyük the presence of a central authority is claimed.[8] Other scholars have taken a more sceptical stance on such architecture-based reconstructions and pointed out the possibility for alternative explanations in all these cases.[9]

It is probably fair to say that there is little unequivocal evidence for social differentiation during any stage of the Chalcolithic period so far – social elites, if existent, have remained tantalisingly elusive. On the other hand, there has been little coherent discussion concerning the specific nature of *any* kind of social organisation present in Anatolia between the 6th and the 4th millennia BC. An important factor to note is that societies west of the Taurus were on a very different societal trajectory during this period, as well as the following Early Bronze Age, when compared to contemporary developments in northern Syria and upper Mesopotamia.[10]

One crucial aspect has remained particularly underdeveloped in this discussion: the question of the economic basis underlying the possible emergence of complex social structures. One of the few voices addressing this matter notes the absence of economic changes necessary for such a development: "Indicators that point to the presence of a controlled surplus economy are totally absent. The settlements ... are small, being on the scale of villages, with no remains suggesting the presence of a ruling class that is in control of the economy. Nowhere to the west of the Taurus range, there are temples, monumental public buildings, communal storage facilities or socially differentiated buildings. ... This does not imply that there was not a ruling social group; but is seems evident that this ruling social body, whatever its social structure may be, ... was not interested either in the accumulation or in the distribution of commodities".[11] This statement contrasts dramatically with a recent analysis by B. Arbuckle[12] who investigated pastoral strategies followed at a number of central Anatolian sites. Arbuckle suggests the presence of a 'managerial elite', systematic surplus production and complex economic relationships for the Late Chalcolithic. He postulates the existence of stable social hierarchies, which were supported through an economy based on wool production. It appears attractive, therefore, to re-visit the evidence available for Chalcolithic economies in Anatolia as a whole and to inspect it for concurrent changes with developments in the social arena.

Approaches to Chalcolithic Economies: The 'Secondary Products Revolution' Model

One of the most influential scholars to produce a theoretical model for post-Neolithic societal development that was not primarily focussed on metallurgy was the late A. Sherratt. His concept

7 Eslick 1988.
8 Gülçur 2003; Steadman et al. 2007; Steadman 2011.
9 Schachner 1999, 62; Düring 2011a.
10 Özdoğan 2002; Çevik 2007; Özdoğan 2007.
11 Özdoğan 2002, 67–68.
12 Arbuckle 2012a.

of a 'Secondary Products Revolution' can be seen as the Chalcolithic paradigm *par excellence*.[13] Sherratt proposed the convergence of a collection of intensifying practices in animal husbandry which collectively transformed human societies in the Old World in fundamental ways. At the base of this development was an economic shift from an exclusively post-mortem use of domestic animals towards a permanent exploitation of the regenerative products of the living animals. These new techniques consisted of the extraction of caprine and bovine milk as sources of protein, the exploitation of animal muscle power for traction (transport and plough-assisted agriculture), and the use of sheep and goat as a source for textile fibre, replacing flax with wool. These innovations, although primarily economic in nature, affected the adopting societies in their entirety; they triggered changes in an interconnected web of aspects reaching from the economy and technology to social structure and ideology. The increasing significance of livestock made agriculturally marginal land accessible which in turn contributed to the rise of mobile pastoralism. Plough-assisted agriculture increased yield but also led to male domination of this sector (in contrast to earlier female-dominated hoe agriculture). The relegation of women to the domestic sphere simultaneously led to a decline of female status and to their availability as domestic manufacturers of value-added goods (such as textiles). Increased production, easier transport and the creation of a domestic labour force strongly supported the development of trade/exchange.[14]

Sherratt's model has been criticised on the basis of evidence pointing to an earlier existence of some of the components of the Secondary Products 'package'. In particular, the use of milk has now been shown to have extended far into the Neolithic. However, as Greenfield rightly points out, "in the Secondary Products Revolution model, the issue has never been when the innovations were first invented or introduced to a new area, but *when the scale of exploitation changed*".[15] Sherratt saw this development as a cumulative process which unfurled its 'revolutionary' power only with all components in place.[16] In his original view, this process was ultimately linked to the first steps toward urbanisation in Uruk Mesopotamia from the middle of the 4th millennium BC onward. From here, it spread through most of the Old World, affecting the adopting societies in similar ways but with differing results that were dependent on local conditions. The link to Uruk Mesopotamia and the use of the term 'revolution' explicitly refer back to V. G. Childe's concept of the global significance of the Urban Revolution.[17]

The 'Secondary Products Revolution' model thus places one of the most significant steps in the formation of Old World economies into a usually disregarded time period. It offers a coherent explanation for a large number of interrelated changes which can be observed during this time and most of its supporting arguments can be tested on multiple levels. Finally, the model has proved flexible enough to accommodate a number of changes in its premises that have been necessitated by progress in archaeological research since its original formulation.

Turning to our specific topic of interest, Sherratt's time-line for the changes in the textile industry has remained surprisingly intact, although the exact circumstances of the emergence of woolly breeds of sheep are still unclear.[18] One notes, however, that Sherratt seems to have been much less interested in the topic of wool-production than in the other two 'families' of secondary products, milking and traction. For Sherratt, wool was essentially a product of agriculturally marginal areas and mainly produced for exchange. The rise of a wool-processing work-force appears more a consequence than a moving factor within the general framework of changes caused by the Secondary Products Revolution: "One factor which favoured the expansion of textile production was the

13 Sherratt 1981; Sherratt 1983. For recent discussion of the concept and the integrity of the model, see Greenfield 2010; Halstead – Isaakidou 2011; Marciniak 2011.
14 Sherratt 1981, 285–299.
15 Greenfield 2010, 43 (emphasis in the original).
16 Sherratt 1997, 237.
17 Sherratt 1997, 498.
18 Greenfield 2010, 35–37.

change to a predominant male role in agriculture, leaving women free to spin and weave".[19] While Sherratt went to great lengths to integrate wool *production* into his general model, he paid very little systematic attention to the question of where the sudden general *demand* for woollen textiles originated from – which would seem a rather crucial aspect of this part of the model.

Caprine Wool in Mesopotamia – 'The Fibre Revolution'

Following the formulation of the Sherratt's model, the socio-economic impact of early textile production has seen relatively little attention. An important exception is an influential paper published by J. McCorriston in 1997. Its title, 'The Fibre Revolution', already shows that the angle from which the paper has been written is equally 'Childean' in character. Without specific reference to the 'Secondary Products Revolution', McCorriston attempted to model the adoption of wool production in southern Mesopotamia. Based on the appearance of a larger and more robust breed of sheep in Late Uruk contexts (possibly introduced from the Iranian plateau), the introduction of wool fibre is dated to the middle of the 4th millennium BC when it largely replaced the earlier production of flax fibre. This development triggered a number of changes in economic and social relations which are intimately connected with the emergence of the state at this junction.

McCorriston suggests that the herding of wool-bearing sheep on agriculturally marginal land would have created new opportunities for surplus production. The cultivation of flax required the allocation of prime agricultural land and considerably more labour input in nearly all steps of fibre production than wool. The transition to animal fibre allowed the re-allocation of highly productive agricultural land to cereal crops; labour formerly dedicated to flax cultivation could now be partly re-invested within the household: "Within households relying on marginal agricultural land, labour freed from producing fibre might have been diverted to producing surplus textiles for exchange. Such a strategy would have triggered specialization in textile craftsmanship".[20] Later conditions suggest that these domestic specialists were female.

This process was accompanied by a general transition from corporate, lineage-based possession of resources to individual property rights which resulted in a part of the population losing access to land. The last stage of this process and the great interest in wool production by palace institutions are relatively well-documented in the earliest Mesopotamian records: wool-based textile production became subject to temple and palace control, and these institutions employed a labour force of low-paid and low-status female textile workers (mirroring a generally declining position of women in society). Thus, textile production and its appropriation by state institutions played a critical role in the emergence of urban society – there is a direct link between a (wool-based) textile industry and social complexity.

Similar to Sherratt, McCorriston argues that the introduction of animal-based textile fibres had drastic social and economic implications which led to agricultural intensification, increased significance of the pastoral sector and growing pressure on land rights. Both models hold that the intensification of textile production had a strongly detrimental effect on female status in society. We note that McCorriston also regards textiles as products with evident use-value, seeing no need to investigate the increased demand for this commodity. Ignoring the disagreements relating to certain aspects of Sherratt's and McCorriston's arguments,[21] we need to ask ourselves how far this discussion may inform us about social processes in Chalcolithic Anatolia.

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19 Sherratt 1981, 283.

20 McCorriston 1997, 525.

21 On Sherratt see Halstead – Isaakidou 2011, and earlier discussion from Bökönyi 1994. On McCorriston, see the comments following her paper: McCorriston 1997, 535–544.

Anatolian Chronology and the Beginning of the Late Chalcolithic Period

Our picture of the chronological sequence in Anatolia has changed quite dramatically over the last decade.[22] This concerns, firstly, the extension of the period which has turned out to be significant longer than initially anticipated, and secondly, the relative position of many of the known sites to each other which has become much clearer than before. It has also become apparent that the current terminology is not extremely well suited to describe the major historical trends. The concept of an Anatolian 'Chalcolithic' is a particularly problematic one since it has never been properly defined and its transitional dates have been established at different times and were based on differing criteria.[23] Thus, it would be wrong to see the Anatolian Chalcolithic as a unified period with a specific character. The Early Chalcolithic is essentially a continuation of Neolithic traditions without a major break. At the transition into the Middle Chalcolithic period, sometime in the second half of the 6th millennium, we see a partial disturbance of this post-Neolithic world whose most obvious result is the establishment of stronger links with the southern Balkans, especially apparent in pottery shapes and decoration. It is at present still difficult to understand the causes and implications of this phenomenon which clearly included an ideological component. At the same time, many earlier local features survived these changes. Thus, the 5th millennium exhibits both idiosyncratic characteristics and indications for continuity. A better understanding of this pivotal period will certainly be one of the major challenges for future research.

The end of this phase in the last centuries of the 5th millennium BC is a fundamental turning-point in Anatolian prehistory. It is at this junction, marking the beginning of the Late Chalcolithic, when most of the trajectories that had their origins in the Neolithic were discontinued and replaced by the establishment of new, long-term structures which continued into the Early Bronze Age without a major disruption. Besides a clear typological break in material culture, many sites are now found in new locations, often at the base of mounds that continued to be inhabited into the Bronze Age.[24] New social practices emerge such as commensal drinking and a more bellicose ideology. There are also important developments in the field of metal technology. However, one of the most significant changes occurs in the field of textile use.

Textile Remains in Prehistoric Anatolia

Among the oldest textile finds in the Near East, only a few have proven to be made from animal fibre. These early woollen remains all date to the 4th and the transition to the 3rd millennium BC and include the finds from the Cave of the Treasure in Nahal Mishmar, the fragments from the 'Royal Tomb' at Arslantepe VIB in the Malatya plain and the Novosvobodnaya Kurgan 2 in the northern Caucasus.[25] Only at the Late Neolithic site of Sabi Abyad in northern Syria has a case for earlier wool use been made, although this is based on indirect evidence.[26]

Very little has been written on prehistoric Anatolian textile production thus far and the small body of available literature is mainly concerned with the 3rd millennium BC.[27] Actual textile remains from pre-Bronze Age contexts have remained scarce. The oldest known examples derive from Çatalhöyük where a large number of textile fragments have been found. These were identi-

22 For more detail on chronological issues, see Schoop 2005; and contributions by different authors in Steadman – McMahon 2011.
23 Schoop 2005, 14–17; Schoop 2011b, 150–152.
24 Cf. Özdoğan 1996; Özdoğan 2002.
25 Bar-Adon 1980; Shishlina et al. 2003; Frangipane et al. 2009.
26 Rooijakkers 2012.
27 Balfanz 1995; Baykal-Seeher – Obladen-Kauder 1996, 214–245; Richmond 2006; Firth 2012.

fied as linen[28] and Burnham[29] comments on the remarkable quality of the fabric. All of the fragments were associated with burials of the mid-7th millennium BC; many pieces belonged to cloth used to wrap individual bones in collective graves.[30] One 'ball of fine cloth' was used to stuff the interior of a human skull.[31] Dating to the end of the 7th millennium BC are minute mineralised textile remains adhering to the shoulder of a terracotta figurine found at Ulucak Vb. These were probably remnants of the fabric used to wrap the figurine.[32] The nature of the fibres is not indicated. At Late Chalcolithic Kuruçay Höyük, the bones of an infant in a grave vessel appear to have been wrapped in woven cloth. More grave vessels contained the dissolved remnants of similar fabrics.[33] The final example is from the grave of a young child in Alişar Höyük Level 13 (4th millennium BC) which contained the remains of woven fabric.[34] While the identification of these remains as linen was only tentative and not based on strong evidence, the textile experts consulted by H. H. von der Osten were surprised by the fine quality of the fabric and the complex weaving technique employed.[35]

Flax in Early Anatolian Agriculture

Looking at the available 'raw materials' exploited for Anatolian textile production, we may turn to plant-based fibre supply first. The number of archaeobotanical investigations available for prehistoric Anatolia is not extensive. In Çatalhöyük East, flax represents only a very minor part of the assemblage,[36] despite the fact that linen textiles have been found at the site. Apart from this, evidence for flax cultivation is conspicuously absent from all investigated Neolithic and Early Chalcolithic sites around the central Anatolian plain and in the Lake District.[37]

In the Marmara region, flax has been recognised in Ilıpınar IX and VIII, i.e. in contexts belonging to the Fikirtepe Culture.[38] Flax continued to be important during the following phases, and toward the middle of the 6th millennium BC, "flax ... seems to belong to the staple crops of Ilıpınar. ... Both the sample frequencies and the number of recovered flax seeds indicate that this crop was most probably cultivated on a reasonable scale during Phases VI–VB".[39] Based on the small size of the seeds, Cappers argued that they belonged to a strain cultivated for its fibres rather than the oil.[40]

In the Troad, flax is present in the earlier 5th and the later 4th millennia BC. At both Middle Chalcolithic Kumtepe A and Late Chalcolithic Kumtepe B, *linum* seeds are present in small amounts.[41] Flax seeds also appear in the 'Chalcolithic levels' of the site Çukuriçi Höyük near Ephesus.[42] In Late Chalcolithic Kuruçay, there is evidence for intensive (or at least long-established) use of

28 Ryder 1965.
29 Burnham 1965, 171.
30 Helbaek 1963; Mellaart 1967, 205, 211, 219.
31 Mellaart 1967, 204.
32 Çilingiroğlu 2009, 15–17, fig. 7.
33 Duru 1996, 24, pl. 51.1.
34 Von der Osten 1937, 48, 50, 51, figs. 58, 60.
35 Fogelberg – Kendall 1937.
36 Fairbairn et al. 2002, 47; Fairbairn 2005, 199.
37 Cf. Nesbitt – Martinoli 2003, 32, tab. 4.
38 Van Zeist – Waterbolk-van Rooijen 1995, 161, 164–165.
39 Cappers 2008, 128.
40 Cappers 2008, 125.
41 Riehl 1999a, 104, 150; Riehl 1999b, 399, fig. 35.
42 Thanheiser in Horejs 2008, 103.

flax as it was accompanied here with substantial numbers of specialised flax weeds.[43] Flax is also mentioned in passing as part of the botanical assemblage in prehistoric Aphrodisias-Pekmez.[44]

In the northern part of the Anatolian plateau, flax seeds have been found at the Late Chalcolithic sites of Çadır Höyük and Çamlıbel Tarlası.[45] At İkiztepe, near the Black Sea coast, flax appears regularly from the beginning of settlement in the Middle Chalcolithic onward.[46]

Despite the restricted scope of the archaeobotanical data, current evidence indicates that flax cultivation was practiced on a limited scale in most Anatolian regions throughout the Chalcolithic period. The lack of evidence for flax cultivation in the preceding periods is of interest as this appears to correspond to an absence of fibre-processing tools (see below).

Pastoral Strategies in the Anatolian Chalcolithic

The question of Chalcolithic pastoral strategies specifically aimed at wool production has so far only been raised by Arbuckle.[47] Based on a comparative analysis of three faunal assemblages from central Anatolia, Arbuckle describes a number of important developments within a generally increasing significance of sheep. At mid-6th millennium BC Köşk Höyük, sheep and goats were apparently kept predominantly for the production of meat and therefore slaughtered at a young age – hardly any male sheep reached adult age. This pattern changed in the Middle Chalcolithic (early 5th millennium BC) when the proportion of caprids in the faunal spectrum rises to over 80%. At this time there is an overall increase in the survival rate of sheep into adult age, with a certain bias toward ewes. This has been interpreted as representing a strategy aimed at a mixture of primary and secondary products, especially milk. A very similar pattern was also noted at the contemporary site of Güvercinkayası.

While Köşk Höyük and Güvercinkayası are situated in Cappadocia, the third site lies in a different environmental zone further to the north. At mid-4th millennium BC (Late Chalcolithic) Çadır Höyük, caprids account for c. 48% of the faunal spectrum and almost all sheep reached adult age. The demographic profile for sheep shows a pronounced survivorship of large adult males who are the principal producers of wool: "Because large numbers of rams and wethers are not needed for herd reproduction and because these animals compete with reproductive females for grazing and fodder resources, this strategy indicates that LC herders were willing and able to invest significant resources in the production of wool as a surplus commodity".[48] Arbuckle is convinced that the scale of wool production exceeded local needs: "... sheep management practices at Çadır suggest considerable investment in the intensive production of wool, likely as a commodity rather than for local household production".[49] The information from Çadır Höyük is so far the best prehistoric faunal assemblage indicative of a sheep-rearing strategy aimed at wool production. Unfortunately, the broad chronological gap between Late Chalcolithic Çadır Höyük and Middle Chalcolithic Güvercinkayası/Köşk Höyük makes it difficult to estimate the timing of this transition.

We lack comparable clarity for the rest of Anatolia, though there are several other faunal assemblages that can be assessed. A small faunal assemblage from mid-6th millennium Boğazköy-Büyükkaya shows a high percentage of caprids (68%), among which sheep are slightly in the majority. Adult animals are well represented and most of these are female.[50] The 4th millennium

43 Nesbitt 1996.
44 Joukowsky 1986, 31.
45 Smith 2007, 182; Papadopoulou – Bogaard 2012, 127–128.
46 Van Zeist 2003, 551, 574.
47 Arbuckle et al. 2009; Arbuckle 2012a.
48 Arbuckle 2009, 187.
49 Arbuckle 2012a, 309.
50 Von den Driesch – Pöllath 2004, 3–4.

BC hamlets Çamlıbel Tarlası and Yarıkkaya deviate from the pattern established for Çadır Höyük and show a pastoral economy mainly based on cattle and pig. Among the Çamlıbel Tarlası caprids (around 20%) sheep clearly predominate. More sheep than goats survived into adult age, indicating that secondary products were clearly important.[51] On the western limit of the plateau in Orman Fidanlığı, sheep played a key role in the first part of the sequence (6th millennium BC) and were apparently raised for their meat. Uerpmann comments on the exceptional size of the sheep at Orman Fidanlığı. At this time goats were in the minority and likely used for milking. Later, in the 4th millennium BC, the hunting of wild equids became the dominating feature of the economy.[52]

In the Anatolian southwest, at Aphrodisias-Pekmez (late 5th/early 4th millennium BC), caprids represent a third of the assemblage while hunted red deer account for another 31%. About half of the caprids reached adulthood and goats outnumber sheep by about 2:1.[53] In 4th millennium BC Bağbaşı, caprids represent about one third of the small faunal assemblage. Sheep are better represented than goats and show signs of use for secondary products.[54]

On the Aegean coast, the late 7th/early 6th millennium BC levels at Ulucak revealed an overwhelming focus on caprids in the faunal assemblage (c. 80%), within which sheep dominate with a factor of 3:1. According to Çakırlar,[55] the age profile suggests slaughtering for meat for the older part of the sequence. Towards the middle of the 6th millennium this changes to a pattern indicative of milk production. At Çukuriçi Höyük near Ephesus, on the other hand, caprids increase in numbers from the end of the Early Chalcolithic onward, reaching their maximum population in the Early Bronze Age.[56] In the northern Aegean, at Kumtepe, there is a pronounced shift in the pastoral economy between the early 5th and the late 4th millennia BC. However, we do not see an increase in the significance of sheep or goats. Instead, a predominance of cattle in Kumtepe A (which was also noted in roughly contemporary contexts at Beşik-Sivritepe) is replaced by an increased use of pig in Kumtepe B. A faunal pattern with an emphasis on sheep-rearing does not appear in this area before the onset of the 3rd millennium BC.[57]

In the Marmara region, some of the early 6th millennium BC sites such as Upper Menteşe and Ilıpınar X show a very strong reliance upon caprids in combination with a herding strategy aimed at the exploitation of milk.[58] At early 4th millennium Barcın Höyük, caprids also played an important but by no means dominating role. While cattle were obviously kept for secondary products, the age profile of caprids is much closer to a herding strategy aimed at the exploitation of meat with a smaller portion kept for secondary products. As in the Troad, a distinguishing factor is the increasing significance of pig keeping.[59]

Obviously, environmental diversity and chronological distance make it difficult to discern clear trends in the small number of analysed assemblages although some general observations may still be made. Caprids were an important component at all settlements throughout the period; only Ulucak produces high caprid percentages comparable to the central Anatolian assemblages, and only Çukuriçi appears to display a linear quantitative increase of caprids over time. With few exceptions (Aphrodisias-Pekmez), sheep are better represented than goats and almost all reports mention clear signs for strategies aimed at the exploitation of sheep for secondary products. There was considerable regional and chronological diversity in the pastoral strategies employed during the period in question. Many sites of the early 6th millennium BC appear to rely strongly on small-stock raised for meat and milk (e.g. Ulucak, Ilıpınar, Menteşe, Orman Fidanlığı, Büyük-

51 Boessneck – Wiedemann 1977; Bartosiewicz – Gillis 2011.
52 Uerpmann 2001.
53 Crabtree – Monge 1986.
54 Hesse – Perkins 1974.
55 Çakırlar 2012, 13–18.
56 Galik in Horejs 2008, 101–102; Horejs et al. 2011, 54–59.
57 Boessneck 1986, 330–331; Uerpmann 2003, 253–254.
58 Thissen et al. 2010.
59 A. Galik in Gerritsen et al. 2010, 209–210.

kaya). While this was often followed by inventories with balanced proportions of the important domesticates, some communities concentrated on cattle for secondary products and pig for meat (e.g. Kumtepe, Barcın, Çamlıbel Tarlası, Yarıkkaya). In northwest Anatolia, in particular, there appears to have been a noteworthy disinterest in caprids during the 5th and 4th millennia BC. Throughout the Chalcolithic, certain communities specialised in the harvest of locally plentiful natural resources – marine (Beşik-Sivritepe, Fikirtepe)[60] or terrestrial (red deer in Pekmez, equids at all sites surrounding the central Anatolian plain) – in addition to livestock-breeding.

There may be a general trend of increasing survivorship of adult sheep through time; this trend continues into the Bronze Age and is noted at all sites where Bronze Age layers follow such of the Chalcolithic period. Since crucial information on the sex ratios within the ovicaprid populations is almost entirely lacking, it is very difficult to relate any of this evidence to the existence or inception of pastoral strategies based on wool exploitation. Certainly, the situation is not incompatible with Arbuckle's general conclusion of the appearance of a wool-based economy in the Late Chalcolithic. There is, however, little indication for a drastic increase in the *scale* of caprine pastoralism which would seem a precondition for the existence of tribute-collecting 'managerial elites' or even systematic production for external markets at this stage.[61] Wool-production (if such there was) could have been only one of many pastoral strategies concurrently followed by Late Chalcolithic communities in Anatolia.

An important factor, long noted in the discussion surrounding the Secondary Products Revolution, is that sheep and goats are not naturally suited as producers of wool. The fleece of these animals had to be improved by selective breeding, a long and complex process which went through several distinctive stages. Fully improved breeds of fleece-bearing sheep were probably not in existence before the Iron Age.[62] It is still difficult to trace the spatial and chronological development of this artificial process based on the physical remains of the animals themselves or more indirect evidence. It is mostly assumed that the initial improvement of fleece-bearing sheep took place on the Iranian plateau or in the southern Caucasus, possibly in the 5th/4th millennia BC, and that these breeds spread from there.[63] The appearance of a distinctively new breed of sheep has not been claimed at any Chalcolithic site in Anatolia so far. A remarkable change in body size has been noted at several central Anatolian sites at the beginning of the 2nd millennium BC. Von den Driesch and Pöllath[64] suggest that this points to a very late introduction of woolly sheep into Anatolia. It appears more likely, however, that the phenomenon (observed at several of the major Middle Bronze Age centres) was caused by the more systematic approach which the emerging state institutions took toward wool production (see below). Exotic breeds of sheep in prehistoric Anatolia, if present, seem morphologically less conspicuous than elsewhere. The first woolly sheep which arrived in Anatolia must have been still relatively primitive and probably had not yet entirely lost their coarse overcoat, the kemp. The wool was harvested by plucking or combing during the spring moulting period, and the yield per animal must have been considerably lower than at later times.[65]

Textile Tools – Spindle Whorls and Loom Weights

Intensification of a technically complex practice such as textile production should find a reflection in material culture. Like in many similar cases, the processing of animal or plant fibres is possible with relatively simple tools which leave little or no trace in the archaeological record. The ques-

60 Boessneck – von den Driesch 1979.
61 Cf. Arbuckle 2012a, 310.
62 Ryder 2005.
63 E.g. Benecke 1994, 136–142, 231–234; von den Driesch – Pöllath 2004, 22.
64 Von den Driesch – Pöllath 2004, 21–23.
65 Ryder 2005.

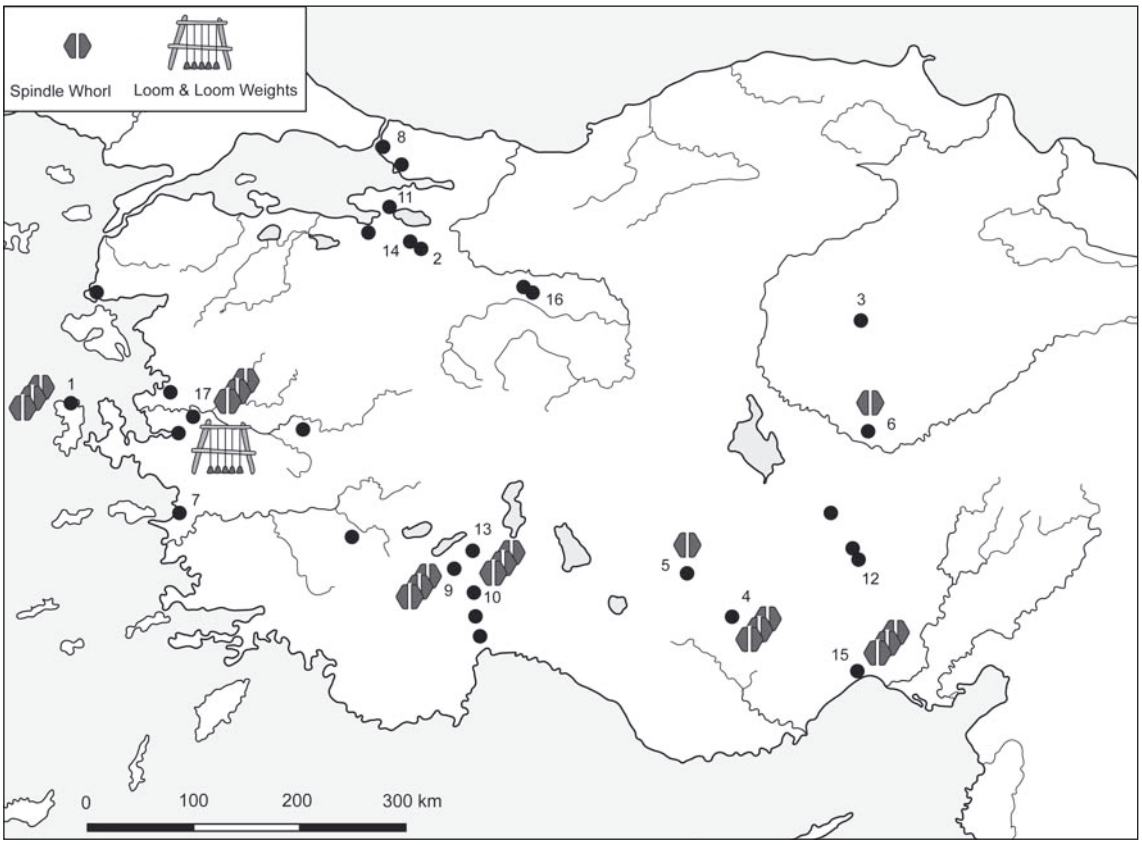

Fig. 1 Distribution of textile tools and sites mentioned in the text until c. 5500 BC. 1. Ayio Gala; 2. Barcın Höyük; 3. Büyükkaya; 4. Canhasan; 5. Çatalhöyük; 6. Civelek; 7. Çukuriçi Höyük; 8. Fikirtepe; 9. Hacılar; 10. Höyücek; 11. Ilıpınar; 12. Köşk Höyük; 13. Kuruçay; 14. Menteşe; 15. Mersin-Yumuktepe; 16. Orman Fidanlığı; 17. Ulucak (map: U. Schoop).

tion of beginnings is therefore always difficult to answer, especially when the finished products are of perishable nature. Since we are not so much interested in the *beginnings* of fibre production, however, it may be argued that only the *regular* execution of certain activities requires the use of formalised equipment. The warp-weighted loom, in particular, is a complex apparatus which requires considerable effort, knowledge and skill to construct and to operate. We may therefore reasonably expect a change in the scale of textile production to be marked by a noticeable increase in the frequency and quantity of formal tools associated with this industry, notably spindle whorls and loom weights.

Hardly any artefacts relating to textile production are known from the early Neolithic phases despite the fact that some production must have taken place at this time. A single spindle whorl is reported from Çatalhöyük.[66] It is not until the Late Neolithic (the end of the 7th millennium BC) that the first such tools make a somewhat more regular appearance, albeit in very low frequency (Fig. 1).[67] The evidence appears to be mainly restricted to the Lake District and the southern part of the Aegean coast. A number of clay spindle whorls were discovered in Hacılar VI and in Ulucak Vb.[68] Isolated finds are known from Kuruçay 12–7 and the caves of Ayio Gala.[69] From the re-

66 Mellaart 1967, 211.

67 The 'Early Neolithic' spindle whorls from Suberde cited by: Barber 1991, 51 no. 8 are from a mixed surface context and most likely considerably younger. See Bordaz 1969, 51.

68 Mellaart 1970, 164; Çilingiroğlu 2009.

69 Hood 1981, 64, 66, 72; Duru 1994, 67.

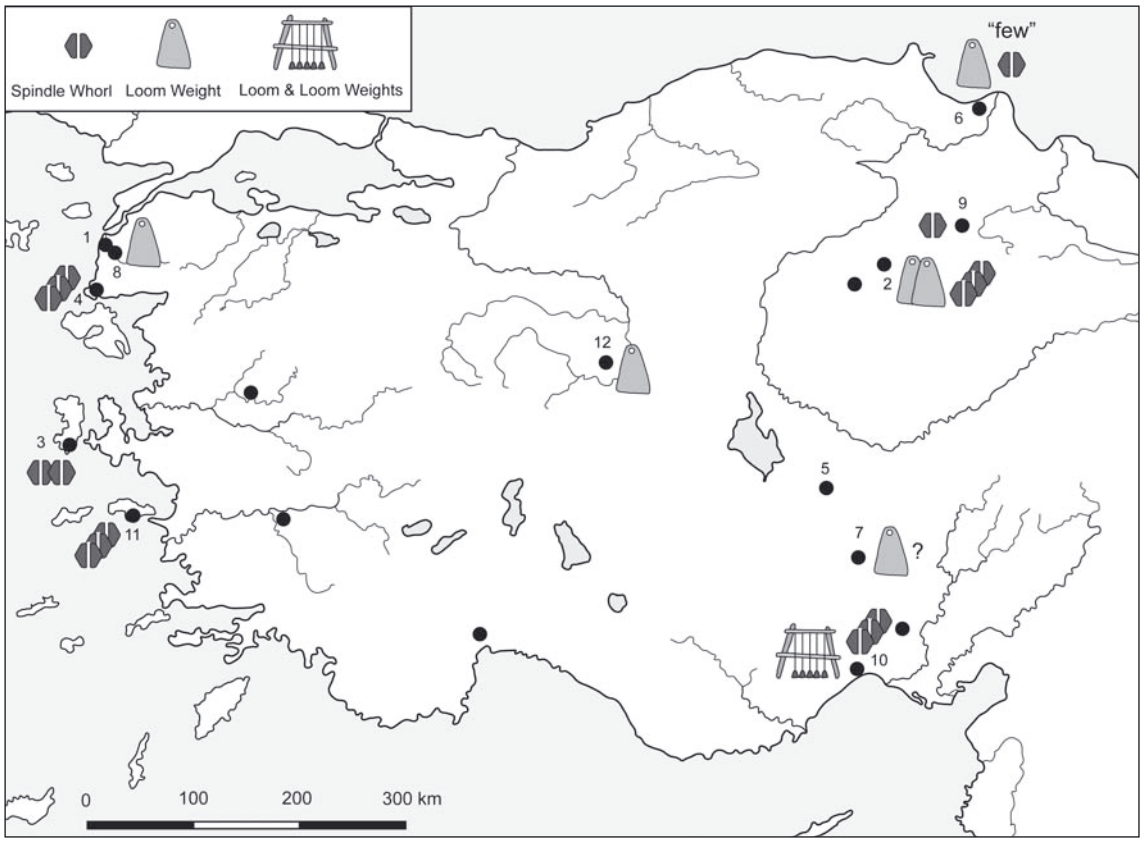

Fig. 2 Distribution of Middle Chalcolithic textile tools and sites mentioned in the text (c. 5500–4250 BC). 1. Beşik-Sivritepe; 2. Büyük Güllücek; 3. Emporio; 4. Gülpınar-Chryse; 5. Güvercinkayası; 6. İkiztepe; 7. Köşk Höyük; 8. Kumtepe; 9. Kuşsaray; 10. Mersin-Yumuktepe; 11. Tigani; 12. Yazır Höyük (map: U. Schoop).

gions surrounding the central plain, we have a few spindle whorls from Canhasan 2B and 2A and a single piece from the Civelek Cave, all dating around the middle of the 6th millennium BC.[70] In Mersin-Yumuktepe, spindle whorls do not occur before layer XXIV with a similar absolute date of the mid-6th millennium BC.[71] Ulucak (Layer IVb, dated 5900–5800 BC) is the only site with loom weights; and their concentration within a single building may indicate the placement of a loom.[72] The peculiar 'donut' shape of the Ulucak weights is unique to this site.

During the Middle Chalcolithic, objects related to textile production still mainly occur as isolated finds (Fig. 2). Two important developments can be observed at this time: such tools now make their appearance in the Anatolian north, and loom weights are somewhat more frequent. The latter show the typical conical to drop-like shape with a single horizontal perforation at the narrow end which remains the standard for the next two millennia (cf. Fig. 4). Most of these finds post-date 5000 BC, including a number of spindle whorls from Emporio IX/VIII and from Tigani II/III.[73] In the Troad, four spindle whorls were found at Gülpınar-Chryse while a single fragmentary loom weight was found at Kumtepe A.[74] Another loom weight from the lower levels at Yazır Höyük[75] demonstrates weaving on the western plateau. Further examples were found in the Çorum

70 Schachner et al. 1997; French 2010, 43, 123, 126.
71 Garstang 1953.
72 Çilingiroğlu 2009, 14, 15, fig. 5.
73 Hood 1981, 637, 674; Felsch 1988, 133.
74 Sperling 1976, 326; Takaoğlu 2006, 307.
75 Temizer 1960, 157, pl. 45.6.

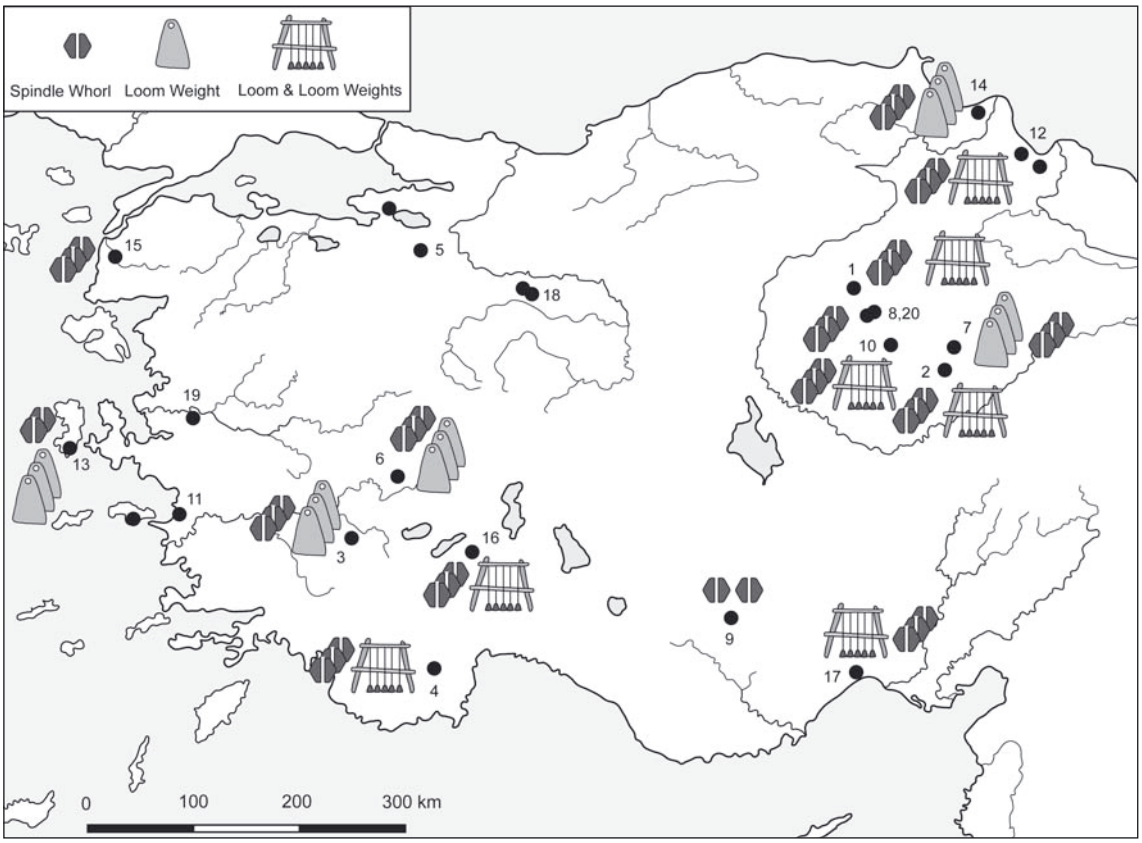

Fig. 3 Distribution of Late Chalcolithic textile tools and sites mentioned in the text (c. 4250–3000 BC). 1. Alaca Höyük; 2. Alişar Hüyük; 3. Aphrodisias-Pekmez; 4. Bağbaşı; 5. Barcın Höyük; 6. Beycesultan; 7. Çadır Höyük; 8. Çamlıbel Tarlası; 9. Canhasan; 10. Çengeltepe; 11. Çukuriçi Höyük; 12. Dündartepe; 13 Emporio; 14. İkiztepe; 15. Kumtepe; 16. Kuruçay; 17. Mersin-Yumuktepe; 18. Orman Fidanlığı; 19. Ulucak; 20. Yarıkkaya (map: U. Schoop).

Province: four spindle whorls and two loom weights are recorded at Büyük Güllücek with one additional stone whorl recorded at Kuşsaray.[76] Only a small number of spindle whorls and loom weights are reported from the earlier phases at İkiztepe. While such artefacts are not yet mentioned in the preliminary reports from Güvercinkayası, an unknown number of loom weights are mentioned for Köşk Höyük.[77] Loom weights occur in Mersin-Yumuktepe from level XVII onward. An accumulation in the corner of a collapsed house belonging to the following layer XVI (which has central Anatolian connections) is the only indication for a loom placement from this period.[78]

With the onset of the Late Chalcolithic during the last centuries of the 5th millennium BC this picture changes dramatically (Fig. 3). Almost all sites belonging to the Late Chalcolithic have produced objects relating to textile production, most of them in large quantities. Nearly every site has loom weights in addition to spindle whorls, and a fair number of sites have produced contextual evidence for the existence of actual looms. Already the oldest contexts from Aphrodisias-Pekmez and Beycesultan exhibit a rich assemblage of spindle whorls and loom weights.[79] At İkiztepe on the Black Sea, these artefact classes increase abruptly in the Late Chalcolithic.[80]

76 Koşay – Akok 1957, 42; Koşay 1968, 92.
77 Silistreli 1989, 462.
78 Garstang 1953, 139.
79 Lloyd – Mellaart 1962, 269, 275; Joukowsky 1986.
80 The increase is said to occur in the 'EBA II' layers of the site. See Alkım et al. 2003, 56, 148. For the probable absolute dating of the İkiztepe 'EBA II' to the 4th millennium BC, see Thissen 1993; Schoop 2005, 320, 331–332.

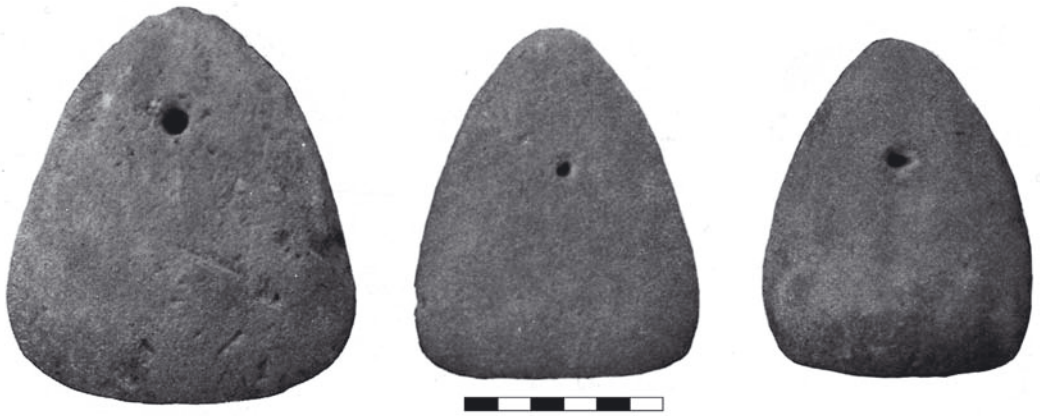

Fig. 4 Loom weights from Late Chalcolithic Alişar Hüyük (after von der Osten 1937, fig. 99; by permission of the Oriental Institute, University of Chicago).

Most of the evidence for looms originates from a later stage of the 4th millennium. Concentrations of loom weights in the interior of houses are accepted here as such evidence.[81] From the Late Chalcolithic layers at Alişar 'several nests' of conical to drop-shaped loom weights are reported (cf. Fig. 4). One group of nine such weights were found together on the floor, at the foot of a wall within a room in Level 13.[82] At Alaca Höyük, in a context containing Alişar-type Late Chalcolithic pottery and, therefore, probably dating to the later 4th millennium BC, a group of 27 drop-shaped loom weights was found together.[83] Many more loom weights of the same type are catalogued as individual finds. At Çengeltepe, another site in the Yozgat Province, a group of 13 loom weights together with spindle whorls and a number of perforated sherds were found on the floor of a burnt house.[84] At Dündartepe (Summit), near Samsun at the Black Sea coast, a group of 45 loom weights were found together in the ruins of another burnt building and spindle whorls made from clay and bone are said to be very common.[85] The associated material culture from this site corresponds to the Late Chalcolithic ('EB II') phase at İkiztepe.[86]

In the southwest Anatolian Lake District, Eslick reports a probable loom emplacement in the interior of one of the few houses at Bağbaşı.[87] Several drop-shaped loom weights were found in this area and were accompanied by more than a dozen spindle whorls. In Late Chalcolithic Kuruçay, more than 100 loom weights were found in the debris of two buildings, indicating loom placements at the time of their destruction.[88] Spindle whorls made from clay and bone are very numerous at Kuruçay – frequent use left many of these with glossy surfaces.[89] In Mersin-Yumuktepe XIIB, Garstang found a group of loom weights and spindle whorls associated with a low platform in the corner of a room. He regarded this arrangement as the remains of a 'weaver's workshop'.[90]

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81 Çilingiroğlu 2009, 14, referring to Barber 1991, 101–102, correctly points out that concentrations of weights do not necessarily represent remains of the collapsed looms themselves but that such weights could equally well have been stored belonging to inactive or even dismantled looms. The Anatolian cases are generally not documented in sufficient detail to distinguish between these alternatives. For our present purpose, however, it does not really matter whether a particular loom was active or not at the time when the weights entered the archaeological record.

82 Von der Osten 1937, 39, 42, 93, 96, figs. 44, 99.

83 Koşay – Akok 1966, 216.

84 Ünal 1966.

85 Kökten et al. 1947, 374.

86 Thissen 1993.

87 Eslick 1992, 35–36, 47.

88 Duru 1983, 24, pl. 18.2.

89 Duru 1996, 53, 55.

90 Garstang 1953, 172–173, fig. 110.

Thus, the distribution of the Late Chalcolithic finds heavily clusters in the mountain zones in southwest and north-central Anatolia. Hardly any tools related to textile production are known from the region around the Sea of Marmara; neither spindle whorls nor loom weights are reported from the early 4th millennium BC layers at Barcın Höyük near Bursa.[91] From Canhasan Layer 1 on the southern margin of the central Anatolian plain, only two questionable spindle whorls are known.[92]

On the basis of the artefactual evidence, we can state with some confidence that there was indeed a massive surge in textile-related activity during the 4th millennium which coincides with the major re-adjustments in material culture that mark the beginning of the Late Chalcolithic period. This indicates a fundamental change in textile production which penetrated Anatolian society down to the single-site level – possibly even to the single-household level. This 'revolutionary' development was preceded by a formative phase in the 5th millennium during which its spatial and technological foundations were laid. Reversely, it can be concluded that woven fabrics, despite existent, did not play a major role in Anatolian society prior to the end of the 5th millennium BC.

The archaeozoological evidence from Çadır Höyük and the 4th millennium wool finds from neighbouring regions strongly support the assumption that this strategy was based on animal rather than plant fibres. It is therefore quite likely that this shift signifies the beginning of a wool-based textile industry. At the same time, the low-level signal of flax in the botanical assemblages typical for the earlier periods continues unchanged into the 4th millennium and shows that the production of plant fibres was not abandoned. Finally, the negative archaeozoological and artefactual data from Barcın and Orman Fidanlığı may indicate that the new strategy was not picked up in all Anatolian regions simultaneously.

Social and Economic Implications

But what actually occurred during this crucial juncture? The developmental sequence of the woollen textile industry comprises a number of contradictions. One of the most interesting questions is where the sudden demand for large quantities of woven fabrics came from. Implicit in the previously described models is the self-explanatory, factual need for woven garments. It is quite difficult to see in our case where such a need arose from. The infilling of the Anatolian landscape was already completed in the 6th millennium BC, including the more climatically challenging highland areas on the plateau – woollen underwear was apparently not a necessary prerequisite. As shown by the mid-4th millennium BC Alpine Iceman 'Ötzi', complex clothing efficient in cold environments is perfectly possible without the use of woven fibre.[93] We may even ask whether the early history of woven fabric was about costume at all – certainly none of the admittedly small number of early textile finds originate from ancient garments.

If woollen clothing was not a necessary ingredient of Late Chalcolithic life, why did people invest so much effort into the production of woven fabric? A linen-based textile industry was already in place for considerable time, and it appears – most significantly – to continue unchanged into the Late Chalcolithic. Despite this, we observe the entry of a new source of fibre, implying an overall increase in the scale of textile production above previous levels. This increase is accompanied by a specialised tool-kit which is now in general (rather than sporadic) use. Since we see here an investment into a practice without an obvious adaptive benefit, it is likely that this new practice belongs to the sphere of social relations.

What, then, are the social and economic implications of such behaviour? This is an especially pertinent question when taking into account the apparent absence of an elite layer in Late Chal-

[91] Gerritsen et al. 2010.
[92] French 2010, 123–124.
[93] Goedecker-Ciolek in Egg – Spindler 1992, 100–113; cf. Winiger 1995.

colithic society who would have been eager to encourage systematic surplus production. The production of animal fibre requires the presence of a number of animals kept outside subsistence requirements; since rams and wethers are the primary producers of wool the potential for multiple-use strategies is relatively limited. This implies an over-all increase of animal numbers. Upkeep and feeding of these animals must have required extra labour (as low-level flax production continued) and the availability of extra land, marginal or not.

Wool obviously represented a surplus product with the potential for accumulation (which is somewhat limited by its perishable nature). There is, therefore, also a certain potential for tribute extortion and redistribution practices. It would have been quite difficult, however, to control the production and distribution of the output of such a strictly domestic industry which did not require specialisation above the levels required in a domestic setting. It is quite significant that no *relative* increase in sheep numbers in proportion to the remaining domestic species is observable at this time. This means that although overall numbers of livestock may have somewhat increased, there was no systematic attempt at surplus maximisation such as can be observed in later periods. Essentially, we seem to be confronted with a strategy that was not primarily aimed at the establishment and preservation of vertical social structures.

West African Textile Economies

Such behaviour is not without parallels elsewhere. For example, the significance of textiles has been documented in considerable detail for West African societies in later pre-colonial and colonial times. A famous study by the social anthropologist M. Douglas[94] investigates such a textile economy among the Lele in the Kasia River region in what was, at the time of the study, the Belgian colony of Congo. The Lele lived in self-sufficient villages without noteworthy surplus production. Lele textile manufacture was based upon the fibres of the raffia palm, and its products constituted a central aspect in Lele social life. In west-central African societies, raffia palms were usually owned by the corporate group whose male members were responsible for their planting and tending. The labour-intensive extraction and preparation of the fibres and the production of textiles are distinctively male tasks. All men and boys weave, and raffia-related matters are typical topics of male conversation.[95]

Although raffia could also be worn as a garment, this was not the principal objective of its production and acquisition. Raffia cloth was needed (and sometimes consumed) in the rituals marking the important transitions in the life of an individual: child birth, marriage and death/burial. Raffia textiles were quantified and used as the primary means of payment for goods or services in different social situations. Examples are fees for the entry into religious societies, marriage dues, fines, blood-compensations or the acquisition of slaves. As Douglas points out, however, raffia cannot be seen as a true currency in Lele society since it is not freely convertible. Raffia cloth could not be acquired in situations outside of its social context; Douglas found it very difficult to obtain raffia as the Lele were not prepared to sell it to her for money.[96]

The demands on an individual's stock of raffia were typically larger than what he could produce himself, and he therefore had to draw upon the cooperation of family members and the corporate group, leading to a lifelong mesh of mutual obligations. The creation of such a network of obligations was in fact the ultimate aim of raffia transactions. The larger such a network became, the more prestige it brought to the individual at its centre. Within this context, raffia was rarely accumulated. In M. Douglas' words, "Since it is desired, not as purchasing power, present or future, but for the sake of the prestige gained by parting with it, there is no point in hoarding raffia. ... The

94 Douglas 1958.
95 Douglas 1958, 111; Martin 1986, 1–2.
96 Douglas 1958, 115–117.

Lele would agree with the millionaire industrialist who said that the ultimate failure of a rich man was to die rich".[97] Raffia cloth, when eventually used as a garment, lasted only a short length of time. Thus, the actual use-value of raffia textiles was a very subordinate aspect in its production and exchange – raffia primarily served as a means to create and maintain a large network of social relations which often extended beyond kin-based relations.

Further toward the African west coast, raffia and other textiles served similar purposes in a variety of societies which were often organised in considerably steeper hierarchies.[98] In such contexts, there was more incentive for accumulation and greater freedom to convert textiles into commodities, i.e. textiles assumed more characteristics of a true currency. Most of the western African textile-based economies eventually collapsed during the process of colonial take-over when they were undermined by the introduction of exotic fabrics that were mass-produced in Europe.[99] However, the situation demonstrates the flexibility of such textile-based economies which seem to be easily adaptable along a continuum reaching from near-egalitarian societies to the needs of the pre-industrial state.

A Very Schematic Model for the Social Role of Textile Production and Textile Use in Late Chalcolithic Anatolia

The Anatolian evidence for early textile use and the Lele example allow us to develop some clearer ideas about the role textiles played in the 4th millennium BC. I see the emergence of pervasive textile use as a social strategy which accompanied the shift from a more community-centred ideology of earlier times to a structure which placed greater emphasis upon individual achievements. Textiles were likely used in the first instance as a means to meet social obligations within a system which placed high demands on the productivity of individuals and their social web as a precondition to acquire prestige, access social and cultic roles, and, possibly, also to obtain spouses and slaves. A corollary of this would have been increased competition within and between communities, with the main external effect being a greater demand on land rights. A reflection of the latter may be seen in the concomitant appearance of formalised weapons.

It is quite easy to see that such a system would have an inherent tendency to develop toward an unequal distribution of wealth within society and the creation of steeper and more formal hierarchies. The fact that such features do not become tangible prior to the later Early Bronze Age suggests the existence of social mechanisms which decelerated this process and stabilised the overall system. Of particular significance is the apparent lack of evidence for an increasing scale of sheep-raising, a phenomenon which may be understood through the Lele case. Douglas[100] points out that the time and effort the Lele invest into teasing out help from relatives, into the negotiation of raffia loans for particular projects, or into the recovery of outstanding debts has little relation to the requirements of making new raffia. Cloth raised through social channels, however, carries considerably more prestige since it demonstrates the extent of an individual's social bonds. The consequence is a permanent artificial *shortage* of raffia. This clearly shows that we are not dealing with a supply-and-demand driven economy but with a tool that facilitates and drives a specific set of social relations. A similar strategy in Late Chalcolithic Anatolia would inhibit large-scale investment into the growth of flock sizes and therefore correspond better to the actual situation in the archaeological record.

Besides providing individuals with a transient platform to obtain social standing, the production, distribution and consumption of textiles would have strengthened cooperation within

97 Douglas 1958, 118.
98 Kriger 2006.
99 Martin 1986.
100 Douglas 1958, 117.

corporate groups. Household production was simultaneously encouraged and 'capped' with the actual output limited by fluctuating household fortunes, a characteristic of the domestic mode of production. As the emphasis was on circulation rather than accumulation, textiles could be converted into social capital in a much more formalised way than before – but not into cumulative wealth or permanent social standing. Thus, rather than encouraging the emergence of stable social hierarchies, this initial configuration may have served to keep them relatively flat.

It is difficult to make assumptions on gender roles based on the Anatolian evidence alone, but there appears little reason to link this development to a status decrease of the weavers. If the model argued for here is accepted, textile production should rather be seen as a prestige-generating activity. Evidence from the 3rd millennium BC (cited below) is highly ambiguous as far as gender roles in textile production are concerned; the situation leaves the identity of the early producers of fibre entirely open – men, women or both may have spun the yarn and sat before the Chalcolithic looms.

Thus, the social and economic reorganisation which took place at the end of the 5th millennium can be seen as the birth of a new long-term structure which drastically departed from older traditions and extended into the 3rd and early 2nd millennia BC. Although the central role textiles played in this new arrangement seems to emerge quite rapidly and in high intensity at the beginning of the period, it would be wrong to see this development as a complete break with the preceding periods. A general tendency of sedentary Anatolian communities to gradually develop individualising features has been noted from the late 7th millennium onward.[101] A non-ordinary perception of textiles is already possible for the earliest finds which all come from 'liminal' contexts; either associated with death (Çatalhöyük, Kuruçay, Alişar) or with supernatural entities (Ulucak). Therefore, the concept of a special nature associated with woven fabric may actually have had considerable antiquity before this material was forcefully moved into the centre of social life.

Finally, it needs to be emphasised that we are not dealing with an entirely linear development. There is considerable spatial and chronological diversity in the economic strategies and social organisation of the different geographic 'theatres' during the early part of Anatolian history. After the beginning of the Late Chalcolithic, not all regions appear to have converted immediately to the 'textile model' and many continued older strategies. The distribution of finds *could* indicate that the mountain zones in the north and the southwest were the initiators of this new structure, although there is a danger of circularity in this conclusion since these regions are over-represented in terms of excavation.

The period which will prove critical to understanding the background of the change is without doubt the 5th millennium. Unfortunately, the 'Middle Chalcolithic' is one of the least well-understood periods in Anatolian prehistory and the extant information is both sparse and strikingly diverse, prohibiting insight into the economic and social constraints of the period.[102] Possible external triggers for this essentially internal development could have been a major climatic deterioration at this junction,[103] or the introduction of genetically modified, woolly breeds of sheep from the east or northeast.

Anatolian Textile Economies in the 3rd and 2nd Millennia BC

The textile industry of the Early Bronze Age can only be touched on here although it certainly did not lose any of its importance, even if metal seems to have increasingly been the medium of accumulated wealth.[104] However, instruments related to textile production continue to appear in

[101] Düring – Marciniak 2006; Marciniak – Czerniak 2007.
[102] Cf. Düring 2011b.
[103] Cf. Riehl – Marinova 2008.
[104] Bachhuber 2009; Bachhuber 2011.

special, now often even high-status contexts. An interesting case is the Demircihöyük necropolis where spindle whorls occurred in both male *and* female graves, which could also contain weapons to demonstrate the warrior status of the interred.[105] I take this as evidence that spinning was neither seen as an exclusively female task in the 3rd millennium, nor as a low-status activity. In fact, the contrary seems to be true. At Alaca Höyük and Horoztepe in central Anatolia, spindles made from copper, silver and electrum appear as part of the inventory of extraordinarily rich graves.[106] Like the rest of the inventories, these spindles were evidently meant to serve as status markers. Yakar and Taffet have further argued that they probably carried a strong symbolic/ritualistic meaning.[107] It seems that the production and exchange of textiles was still an important social strategy in the final centuries of the 3rd millennium BC.

This represented an open door for the Old Assyrian merchants in the early 2nd millennium BC when they began to inject exotic fabrics into a country which had been obsessed with its own textiles for more than two millennia. The Assyrian presence caused two important structural changes: firstly, they transformed at least part of the 'textile market' into a true prestige good economy whose exotic source could now be controlled by the emerging Anatolian elites. Secondly, their activities introduced silver as a means of free exchange in Anatolia, which helped to create a more profit-orientated economy in the area where they were active. These changes were immediately exploited by the Anatolian elites for their own benefit.

The Assyrian activities did not ruin the Anatolian production of textiles, however. The newly emergent palaces had great interest in local fabrics of different types whose designations, such as *pirikannum, sapdinnum* or *tisābum,* are preserved in the sources.[108] It is worth noting that this interest appears to be largely focussed on textiles made from wool and that linen fabrics played only a minor role.[109] Huge amounts of wool were mobilised and traded at this time. Although Assyrian traders occasionally latched onto this trade, it is clear that production, demand and consumption were essentially an inner-Anatolian affair.[110] It appears likely that a substantial part of the processing of wool and its conversion into woven fabrics took place in the palaces of the local rulers.[111] Animal remains belonging to the native Anatolian centres of this period are predominantly sheep and goats with a marked survivorship of adult male sheep, a pattern typical for a wool-based exploitation of these animals.[112] Thus, it can safely be assumed that large-scale production of woollen textiles and their redistribution were an important part of the political economy of Middle Bronze Age Anatolia, to which the Assyrian traders merely contributed the exotic, and therefore more valuable, top-end.

The Assyrians had mixed feelings about the exchange of local textiles. At one stage, there even existed an internal Assyrian order which forbade the merchants to engage in their trade[113] as this was seen as a threat to the Assyrian imports which earned them remarkable profits of up to 200%. The attitude is well exemplified in the exclamation of one Assyrian merchant: "What is the profit of *pirikanū* that I would trade them? May [the gods] Aššur and Šamaš trample it to dung!"[114]

105 Seeher 2000.
106 See the discussion of these objects in Barber 1991, 60–62.
107 Yakar – Taffet 2007; see also Bachhuber 2011, 167–171.
108 Michel – Veenhof 2010, 226.
109 Michel – Veenhof 2010, 211–218.
110 Lassen 2010.
111 Lassen 2013.
112 Arbuckle 2012b.
113 Veenhof 1972, 126–128; Michel – Veenhof 2010, 239.
114 Cited after Michel – Veenhof 2010, 238, no. 167.

Conclusions

This paper revolves around a fundamental change in the organisation of society during the Late Chalcolithic. At the onset of this period in the last quarter of the 5th millennium, a new and pervasive economic strategy emerged which centred on the production and distribution of – probably woollen – textiles. This strategy had repercussions that affected pastoral strategies and space requirements, but ultimately served social aims. Economically, it placed greater weight on the household as the central productive unit. Socially, it created the opportunity for individuals to obtain personal prestige through a network of social obligations, a purpose for which textiles were much better suited than other materials more difficult to obtain. As such, textile production played a central and dominating role in Late Chalcolithic society. Following this initial configuration, the central role of textiles in Anatolian society can be followed into later periods when the practice eventually lost its egalitarian character and led to the emergence of more vertically structured forms of society. I would argue that textiles did not serve this purpose yet in the Late Chalcolithic, but rather they were used within a context of flat hierarchies and a more transient nature of personal social status.

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