

The spinning process in the Central Balkans and the Rila-Rhodopes area in the context of the social and economic transformations during the final Chalcolithic

In memory of my grandmother – Stoyanka Mustashka

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ABSTRACT

The Final Chalcolithic Age in the Central Balkans and the Rila-Rhodopes area is characterized by growth in the number of the mountainous settlements. This process has been a consequence of the so-called rapid climate changes in the end of the fifth millennium BC that affected negatively the way of life in the plain lands of the Balkans. The bearers of the Krivodol–Salcuța–Bubani culture complex continued their typical way of life in the mountainous areas of the Balkans, but with a number of changes in their material culture which were mainly provoked by the intensive interactions between the Aegean, the Balkans and the Middle Danube. One of the main evidence for the intense contacts between the Krivodol–Salcuța–Bubani area and the Southern Balkans is the growth in quantity of the spindle whorls and the appearance of a new type – the so-called “short conical” spindle whorls, in both areas. This indicates the increment of spinning’s economic importance and changes in the spinning technique in the whole wide area. The aim of this article is to establish the nature of those changes. In comparison to most of the other Late Chalcolithic spindle whorls the “short conical” can be considered small and light. Such spindle whorls are suitable for spinning of short fiber raw materials – goat hair, wool. The increment of spinning’s economic importance and the use of “short conical” spindle whorls are also characteristic features for the mobile stockbreeding Chernavoda I culture. The existence of mobile pastoral groups in the Central Balkan Final Chalcolithic cultures had been suggested long ago. So, it is reasonable to presume that the mobile stockbreeding model of those groups led to intensive use of animal fibers in their textile production.

KEYWORDS

Spinning, “Short conical” spindle whorls, Wool, Final Chalcolithic Age, Mobile stockbreeding, Central Balkans

Introduction

The Final Chalcolithic Age (4250/4200–3950/3900 BC) (Тодорова 2017, 21; 29) is the last stage in the development of the Copper Age in present day Bulgarian lands. It covers the time after the end of the classical stages of late Chalcolithic culture complexes Kodzha-dermen–Gumelnița–Karanovo VI, Krivodol–Salcuța–Bubani and before the beginning of the proto bronze cultures (Todorova 1995, 90). This time is characterized by a drastic decrease of the population in the plain lands of the Eastern and an increase in the number of the settlements in the semi-mountainous and mountainous zones of the Central Balkans (Николов 2011, 286; Garašanin 1998, 169; Todorova 1995, 90) and the Rila-Rhodopes area (Гребска-Кулов, Кулов 2014; Todorova, Avramova 2016). This tendency has been given different explanations in the scholar literature (Георгиева 1992; 2005; Николов 2011, 286; Радунчева 1994; Тодорова 1979, 71; Garašanin 1998, 271; Jovanović 1979; 1998; Nikolova

2000; Todorova 1995, 90). At the current stage of the research, most of the scholars claim that the basic motive for this tendency were the climate changes that occurred in the Eastern Balkans in the last quarter of the fifth millennia BC (Todorova 2007; Николов 2011, 286). They have led to a migration of the population from the last region, end of the specialized productions, shift in the economic model into the mobile and semi-mobile pastoralism (breeding of sheep and goats) (Николов 2011, 286-287; Nikolova 2000) and an incursion of foreign pastoral groups from the North Pontic area (Георгиева 2005, 155). In the Central Balkans and the Rila-Rhodopes area, the opposite tendency has been observed – an increase in the quantity of the settlements (Николов 2011, 286; Todorova 1995, 90), preservation of the economic model (Николов 2011, 286), culmination in the production of copper objects (Pernicka et al. 1997, 144) and negligible amount of „steppe” elements in the culture (Георгиева 2005, 154-155). The climate changes didn't have the same disastrous influence on the inhabitants of the Central Balkans, as they had on those of the Eastern. Krivodol–Salcuța–Bubani culture continued its existence but with a number of changes in its material culture, which indicates the transition to the next proto bronze cultures (Galatin, Salcuța IV) (Георгиева 2012, 181; Georgieva 1990, 172; Patroi 2013, 135). The same trends can be seen in the Rila-Rhodopes area as well (Аврамова 1992; Гребска-Кулов, Кулов 2014; Тодорова 2014; Leshtakov, Todorova, Petrova 2016; Todorova, Avramova 2016). They are a part of complex cultural transformations caused by the intensive connections between the inhabitants of the Aegean, the Balkans and the Middle Danube (Георгиева 1992, 345; Todorova 1995, 90-91; Тодорова 2014, 290).

The spinning process in the context of the intensive social interactions

One of the main reasons for those interactions can be found in the large-scale exchange and the trade of copper and copper objects (Георгиева 2005, 155), driven by the metallurgical “boom” in the final phase of Krivodol–Salcuța–Bubani culture (Todorova 1995, 90-91; Pernicka et al. 1997, 144). There is a significant evidence for intensive contacts of the inhabitants of the Central Balkans, based on the copper exchange. The copper artefacts from the last stage of Krivodol–Salcuța–Bubani complex have a parallel typology, as compared to those found in the Middle Danube and the Carpathian basin. Separate similar objects are found in Central Europe, as well as in the North Pontic area (Kienlin, Pernicka 2009, 259-261; Manzura 2003, 375, table 1). In addition, at this time the Majdanpek mine, which is in present day Eastern Serbia, was the main source of copper not only for the Central Balkans but for a wider region, which reaches the Inn river valley (Central Europe) to the north and the Rila-Rhodopes area – to the south (Höppner et al. 2005; Pernicka et al. 1997, 144). The inhabitants of the Southern Balkans didn't take part in those wide contacts – ores came from different sources, their copper artefacts were limited in quantity and differed typologically from those in the northern part of the peninsula (Тодорова 1994, 11; Alram-Stern 2014, 316-320). However, lots of evidence exists for strong connections between the last region, the Central Balkans and the Rila-Rhodopes area. The whole wide region of the Central Balkans, Rila-Rhodopes area and the Aegean is a part of a common „ceramic koine” (Тодорова 2014, 291). Another common feature between them is the growth in the quantity of the spindle whorls and the appearance of the so-called “short conical” spindle whorls in a wide area, including: Oltenia, the Central Balkans, the Rila-Rhodopes area, North and Central Greece (Петрова 2008, 91; Петрова 2011; Leshtakov, Todorova, Petrova 2016, 203-204; Todorova, Avramova 2016, 265) (fig. 1). Unlike most of the other mentioned common elements in

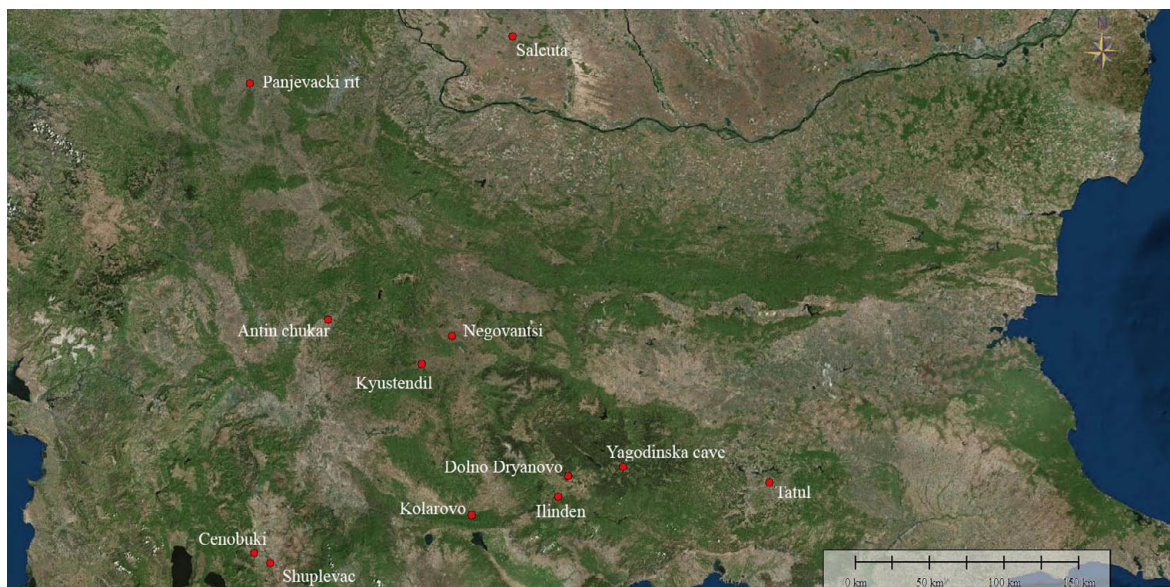


Fig. 1. Spatial distribution of the “short-conical” spindle whorls in the Central Balkans and the Rila-Rhodope area (I. Kotsov)

Обр. 1. Териториално разпространение на т. нар. нискокonusовидни преишени за вретено в Централните Балкани и Рило-Родопската област (И. Коцов)

this vast region, the occurrence of a new type of spindle whorls can't be connected with a common stylistic “fashion” only, because the form of the spindle whorl is directly related to its function (Чохаджиев 2007а, 11). So, it can be concluded that there were partial changes in the spinning technique and the spinning had increased its economic importance in the whole wide region in discussion. In some settlements – Antin čukar, Panjevački rit, Crnobuki, Dolno Dryanovo, Yagodinska cave – the “short conical” is the only found type of spindle whorls at all (Булатовић 1997, 75, Т. II; 1998, 166, Т. I; Симоска и др. 1976, 53, Т. IV; Тодорова 2014, 289, обр. 14; Todorova, Avramova 2016, 265, fig 13). It can be assumed that for them the dominant spinning technique was a new one.

Changes in the spinning technique

The spinning technique depends on the place of the whorl on the spindle. There are two main types of spindles: 1. with a whorl placed on the top of the spindle („high-whorl spindle”); 2. with a whorl placed in the bottom of the spindle („low-whorl spindle”). According to Vanya Petrova, in present day Bulgarian lands, during the Bronze Age, mainly low-whorl spindles were used (Петрова 2004, 104). In contrast to this, Alexander Chochazhiev argues that during the Chalcolithic Age, both types could have been used simultaneously (Чохаджиев 2007а, 13). Paula Mazăre shares the latter opinion about the types of spindles used during the Chalcolithic Age in Transylvania (Mazăre 2012, 35).

The preferred spindle type depends on the materials spun. High-whorl spindles are used mainly for spinning of plant fibers (flax, hemp) while low-whorl spindles are preferred for spinning of animal fibers (wool, goat hair) (Петрова 2004, 99; Чохаджиев 2007а, 11). But this doesn't mean that high-whorl spindles were not used for spinning of animal fibers. That is because some of the earliest known woolen textiles came from a region for which high-whorl spindles were typical (Петрова 2004, 99-100) – Northern Mesopotamia

Settlement	Diameter (cm)	Height (cm)	Volume (cm ³)	References
Antin čukar	4,5	1,1	4,738	Булатовић 1998, 166, Т. I: 16
	3,8	1,3	3,993	Булатовић 1998, 166, Т. I: 17
Crnobuki	2,3	1	1,125	Симоска и др. 1976, 53, Т. IV: 6
	2,7	1	1,550	Симоска и др. 1976, 53, Т. IV: 9
Dolno Dryanovo	3	1,5	2,871	Тодорова 2014, 289, обр. 14, 2
Ilinden	3,4	1,2	2,950	Делев, Тодорова, Кацаров, Петрова 2014, 137, обр. 2.3.
Kolarovo	3,3	2	4,632	Pernicheva 2000, 166, fig. 12.18: 1
	3,8	1,9	5,835	Pernicheva 2000, 166, fig. 12.18: 2
Kyustendil	3,1	1,5	3,066	Вандова 2005, 90, обр. 5: 1
	3,3	1	2,316	Вандова 2005, 90, обр. 5: 2
	3,2	1,2	2,613	Вандова 2005, 90, обр. 5: 3
Negovantsi	4,3	1,5	5,899	Георгиева 1993, 10, обр. 6: 10
	2,8	1,2	2,001	Георгиева 1993, 10, обр. 6: 11
Panjevački rit	4,5	2	8,614	Булатовић 1997, 75, Т. II: 4
Salcuța	4,7	2,3	10,807	Marinescu, Andreescu 2003-2004, fig. 29: 4
	4,3	2,1	8,259	Marinescu, Andreescu 2003-2004, fig. 29: 7
	4,2	1,8	6,754	Marinescu, Andreescu 2003-2004, fig. 29: 8
Šuplevac	2,5	1	1,329	Гарашанин, Симоска 1976, 17, Т. VIII: 26
	2,5	1,4	1,861	Гарашанин, Симоска 1976, 17, Т. VIII: 27
Tatul	4,2	1,8	6,754	Петрова 2008, 96, Ф.1: 2
	4,5	2,5	10,768	Петрова 2008, 96, Ф.1: 3
	4,3	2	7,866	Петрова 2008, 96, Ф.1: 4
Yagodina cave	3,1	1,1	2,248	Todorova, Avramova 2016, 265, fig 13: 1
	3,8	1,5	4,607	Todorova, Avramova 2016, 265, fig 13: 2
	3,5	1,8	4,690	Todorova, Avramova 2016, 265, fig 13: 3
	3,8	1,1	3,3787	Todorova, Avramova 2016, 265, fig 13: 4
	3,1	1,3	2,657	Todorova, Avramova 2016, 265, fig 13: 5
	3	1,2	2,297	Todorova, Avramova 2016, 265, fig 13: 6
	3,1	1,6	3,270	Todorova, Avramova 2016, 265, fig 13: 7
	3,1	1,6	3,270	Todorova, Avramova 2016, 265, fig 13: 8
	3,5	1,8	4,690	Todorova, Avramova 2016, 265, fig 13: 9
Average	3,52	1,52	4,442	

Table 1. Measurements and volume of the “short conical” spindle whorls in the Central Balkans and the Rilo-Rhodope area

Таблица 1. Размери и обем на т. нар. нискоконусовидни прешлени за вретено от Централните Балкани и Рило-Родопската област

(Arbuckle 2014, 212; Breniquet, Michel 2014, 2).

The spinning technique is not defined only by the type of the spindle. Regardless of the spindle type, the weight and the diameter of the used whorls are of central importance for understanding the spinning technique. Spindles with heavy whorls have lower rotation speed than those with light ones. Because of this, they rotate for a longer period of time. Also, spindles with big whorls have slower rotation speed than those with small diameters. This means that they have longer rotation time, as well. So, when whorls are made of the

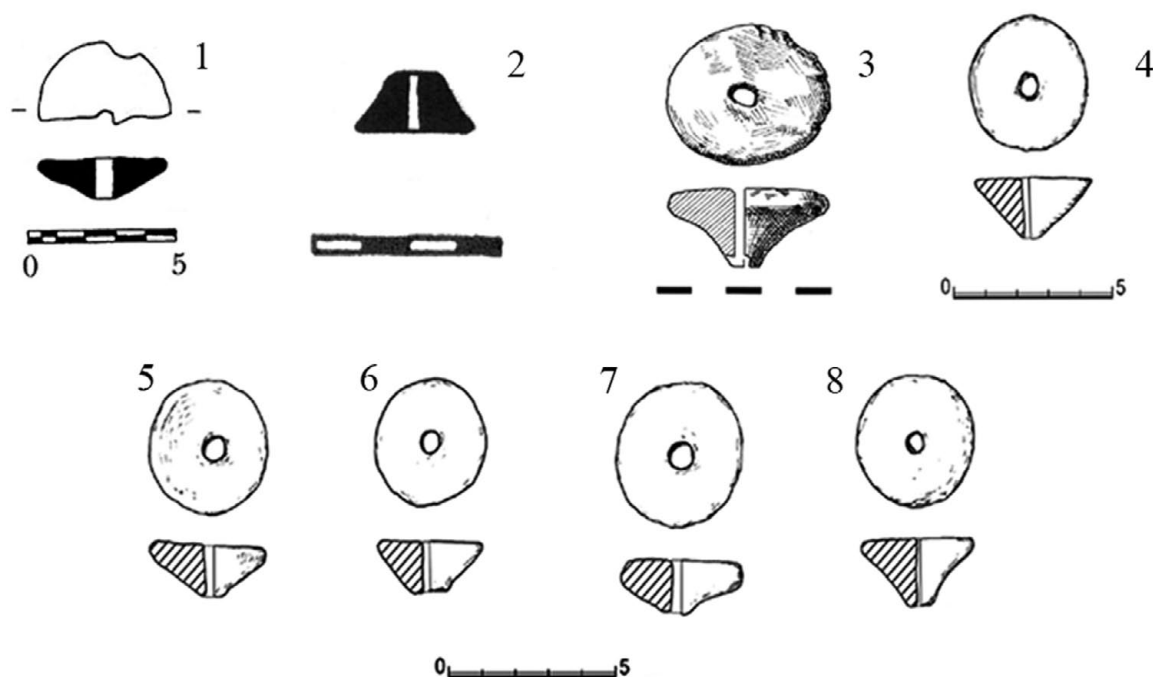


Fig. 2. "Short-conical" spindle whorls from subtype 1: 1. Kyustendil; 2. Negovantsi; 3. Tatul; 4-8. Yagodina cave (after the reference given in Table 1)

Обр. 2. Нискоконикувидни преишени за вретено от подтип 1: 1. Кюстендил; 2. Негованци; 3. Татул; 4-8. Ягодинска пещера (според цитирането, дадено в табл. 1)

same material, spindles which have bigger whorls rotate slower and longer in comparison to the small ones. The first are suitable for spinning of long fiber raw materials, like flax and knap, because they need less twining to make a strong thread. The second ones are suitable for spinning of short fiber materials, like animal ones, which need more intensive twining in order to make a strong thread (Barber 1991, 52).

The so-called "short conical" spindle whorls are divided by V. Petrova into two subtypes (Петрова 2008, 91): 1. with a flat base (fig. 2.1-8); 2. with a concave base (fig. 3.1-23). Their diameter is between 2,3 and 4,6 cm and height – between 1 and 2,5 cm (Table 1)¹. The spindle whorls from the earlier phases of Krivodol-Salcuța-Bubani complex are flat and biconical (Миков 1948, 51, обр. 37; Радунчева 1981, 35, обр. 24, 9-14; Чохаджиев 2007б, 192, обр. 3; Krauß 2001, 160, Abb. 28: 2). Both types continue their existence during the final phases of the Late Chalcolithic Age in the same region (Божилков 1999, 113, таб. 7:2; Георгиева 1993, 10, обр. 6; Миков 1948, 50; Marinescu, Andreescu 2003-2004, fig. 29; Merkyte 2005, 176, pl. 17: 12-15). In most cases, the flat ones have a larger diameter than the "short conical" ones (Миков 1948, 50; and Table 2). Moreover, most of the biconical spindle whorls have a greater height and a similar or larger diameter when compared to the so-called "short-conical" ones (Table 3). As a result, the volume of the "short conical" is several times lower than that of the biconical spindle whorls (Tables 1, 3). So, it can be concluded that the "short conical" spindle whorls are smaller and (because they are all made of clay) lighter than most of the biconical ones.

1 All the measurements are collected from the graphic documentation in the cited publications. Because of this there could be variations within ± 1 mm.

Settlement	Diameter (cm)	References
Ilinden	4	Тодорова 2014, 289, обр. 14:7
	4,5	Тодорова 2014, 289, обр. 14:8
	4,3	Тодорова 2014, 289, обр. 14: 9
Kolarovo	4,2	Pernicheva 2000, 166, fig. 12.18:3
	4,6	Pernicheva 2000, 166, fig. 12.18:4
Kyustendil	3,9	Вандова 2005, 90, обр. 5:4
Negovantsi	4,3	Георгиева 1993, 10, обр. 6: 9
Salcuța	5,6	Marinescu, Andreescu 2003-2004, fig. 29: 5
Tatul	4,6	Петрова 2008, 96: Ф.1:1
Telish – Laga	4,6	Merkyte 2005, 109, fig. VI.19

Table 2. Diameters of the flat spindle whorls in the Central Balkans and the Rilo-Rhodope area
Таблица 2. Диаметър на плоските прешлени за вретено от Централните Балкани и Рило-Родопската област

To be considered as a spindle whorl, one artefact has to be between 2 and 8 cm in a diameter and weigh – between 10 and 150 g (Чохаджиев 2007а, 11, 12; Петрова 2011). But the so-called “short conical” spindle whorls rarely have half of the maximum functional diameter. Therefore, they can be regarded as small, not only for their comparison with most of the other Late Chalcolithic spindle-whorls, but also because of the value of their absolute functional measurements. This is the reason why the weight of the studied new type of spindle whorls is between 10 and 15 g (Петрова 2008, 91; Todorova, Avramova 2016, 265)². Thus, it can be considered that both relative and absolute measurements of the “short conical” spindle whorls define them as small and light³.

On the other hand, the occurrence of spindle whorls suitable for spinning of animal fibers matches in time with the crisis in the sedentary farming economic model. The spinning process, unlike most of the other Chalcolithic economic branches, doesn't have to be done in definite time and place. It can be regarded as a mobile economic activity (Чохаджиев 2007а, 10). The increment of spinning's economic importance and the use of similar to the “short conical” spindle whorls are also characteristic features for the mobile stockbreeding Chernavoda I culture (Govedarica, Manzura 2015, 447; 448, fig. 13: 15-16; 449, fig. 14: 10-11; Hașotti, Popovici 1992, 40, pl. 9). In addition to the dominance of the short-lived naturally fortified and cave settlements in the Central Balkans and the Rila-Rhodopes area (Тодорова 2014, 291), those factors give a good support to the long ago supposed thesis for the occurrence of mobile pastoral groups in those regions during the Final Chalcolithic Age (Nikolova 2000, 2-3; Тодорова 2014, 291). Maybe such groups were the prevailing populations of the settlements from which only “short conical” spindle whorls are known.

² We have specific data about the weight of the “short-conical” spindle whorls only for the ones from Yagodinska cave and Tatul. But because of the same material from which the other mentioned artifacts were made, and the same measurements and shape, it's obviously they didn't have drastic difference in weight.

³ There is no research on the weight of the spindle whorls in present day Bulgarian lands. The nearest region with such research known to me is Transylvania. According to the research of P. Mazăre most of the Chalcolithic whorls weight between 15 and 50 g (Mazăre 2012, 29, fig. 3.30). So, the “short conical” spindle whorls have lower weight than most Chalcolithic artifacts of the same kind from Transylvania. Because of this their definition as light looks reasonable.

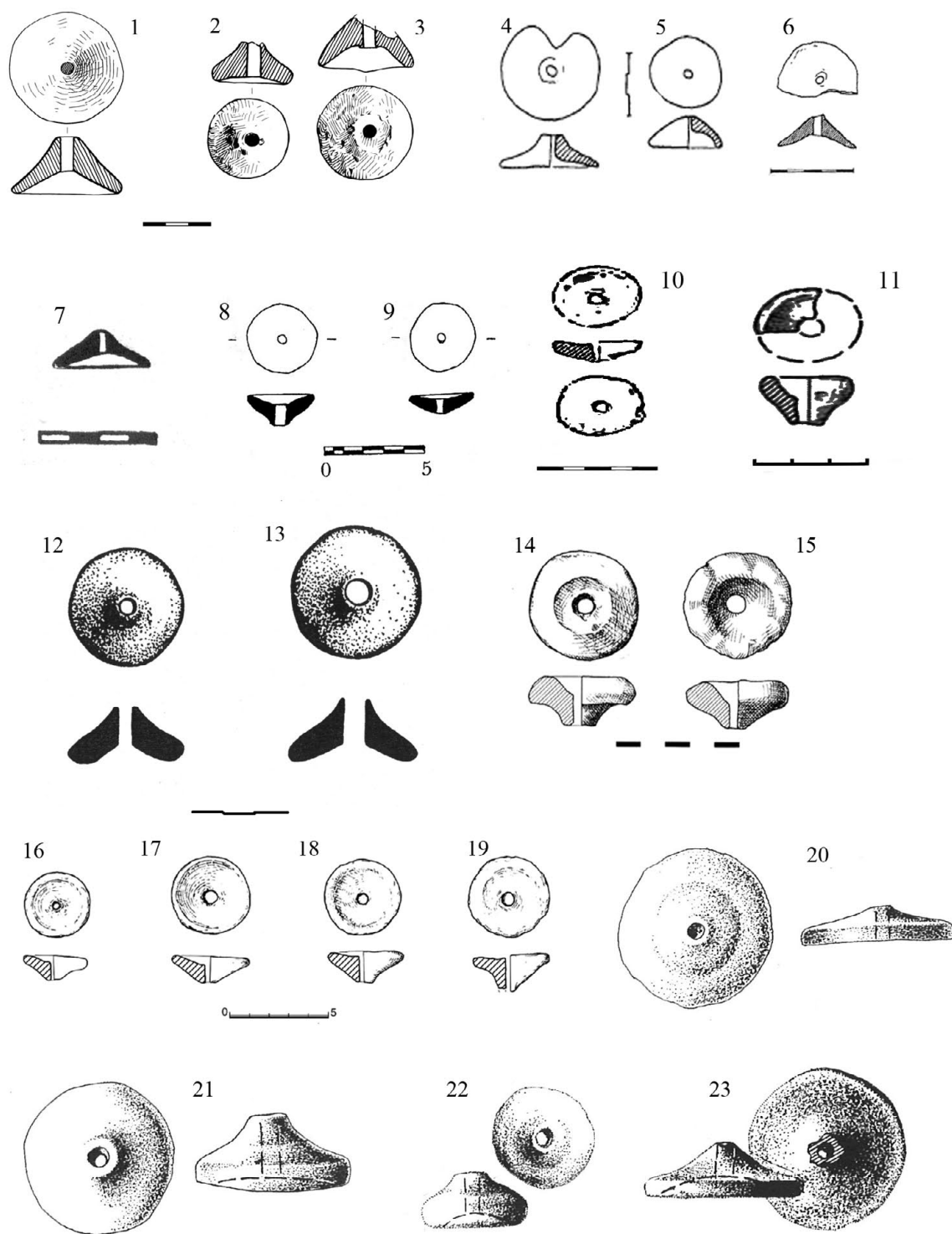


Fig. 3. "Short-conical" spindle whorls from subtype 2: 1-3. Salcuța ; 4-5. Antin čukar; 6. Panjevački rit; 7. Negovantsi; 8-9. Kyustendil; 10. Ilinden; 11. Dolno Dryanovo; 12-13. Kolarovo; 14-15. Tatul; 16-19. Yagodina cave; 20-21. Šuplevac (M 3:4); 22-23. Crnobuki (M 3:4) (after the reference given in Table 2)

Обр. 3. Нискокonusовидни прешлени за вретено от подтип 2: 1-3. Сълкуца; 4-5. Антин чукар; 6. Пенявачки рит; 7. Негованци; 8-9. Кюстендил; 10. Илинден; 11. Долно Дряново; 12-13. Коларово; 14-15. Татул; 16-19. Ягодинска пещера; 20-21. Шуплевац (М 3:4); 22-23. Църнобуки (М 3:4) (според цитирането, дадено в табл. 2)

Settlement	Diameter (cm)	Height (cm)	Volume (cm ³)	References
Dyakovo	3,8	4	12,286	Krauß 2001, 160, Abb. 28: 2
Kapitan Dimitriev	4	3,2	10,890	Божилов 1999, 113, таб. 7:2
Kolarovo	5,5	3	19,303	Pernicheva 2000, 166, fig. 12.18: 5
Negovantsi	3	2,8	5,3603	Георгиева 1993, 10, обр. 6: 8
Telish - Laga	4,5	3,2	13,783	Merkyte 2005, 109, fig. VI.19
	5,8	3,8	27,191	
Average	4,43	3,33	14,802	

Table 3. Measurements and volume of the biconical spindle whorls from the area of Krivodol–Salcuța–Bubani and the so called contact zone with Kodzhadermen–Gumelnița–Karanovo VI cultural complex

Таблица 3. Размери и обем на биконичните прешлени за вретено от ареала на Криводол–Сълкуца–Бубани и т. нар. контактна зона с Коджадермен–Гумелница–Караново VI

Discussion

It is obvious that the occurrence of the small and light spindle whorls during the Final Chalcolithic Age indicates a shift from long to short fibers use, like the animal ones. Also, the increase of spinning's economic importance makes me support the thesis about the occurrence of mobile pastoral groups during the Final Chalcolithic Age not only in the Eastern (Maznura 1999; Николов 2011, 286) but in the Central Balkans as well (Тодорова 2014, 291; Nikolova 2000, 2-3). So, it is reasonable to suppose that the mobile stockbreeding model of those groups led to more intensive use of animal fibers in the textile production – sheep wool and goat hair.

There is no direct evidence for the use of wool during the Chalcolithic Age in present Bulgarian lands (Петрова 2011). Long time ago it was supposed so but this was done only on the basis of circumstantial evidence (Чохаджиев 2003, 202), or a priori (Тодорова 1986, 159). Meanwhile, the use of flax in the textile production during the Neolithic and the Chalcolithic Age is well attested in a wide region, including the Near East, Anatolia and Southeastern Europe (Barber 1991, 11-12; McCorriston 1997, 519; Marinova, Valamoti 2014; Mazăre 2012; Popova 2010). The earliest evidence for the selection of the so-called “wooly sheep” comes from the second half of the fourth millennium BC in Northern Mesopotamia (Breniquet, Michel 2014, 3). However, the first indications for spinning of animal fibers come from the Near East at the end of the VII millennium BC (Helmer, Gourichon, Villa 2007, 64; Roojakkers 2012, 105). In the recent years, a new research shows regular use of primitive wool in the spinning process in Central Anatolia and Northern Mesopotamia, as early as the beginning of the fifth millennium BC (Arbuckle 2014, 219; Schoop 2014, 434; Sudo 2010, 176). In addition, in present day Bulgarian lands, a clay ram figurine with marked fleece from the Early Chalcolithic settlement near Slatino (Kyustendil District), gives a reason to some researchers to suppose that in Western Bulgaria some kind of indigenous wooly sheep species could have been already selected in the first half of the fifth millennium BC (Чохаджиев 2007б, 134). But, probably the use of wool from such kind of sheep wasn't on a regular base because in nowadays Western Bulgaria there are no similar Chalcolithic figurines known (Terzijska-Ignatova 2007, 231-

233). The intensive use of this local kind of wool in the textile production can be assigned to the time of the Final Chalcolithic Age. At that time goat hair could have been used, as well. Evidence in this direction gives us the proof that some of the earliest known preserved animal textiles are made from goat hair (Arbuckle 2014, 211, 221).

Conclusions

Seen in a global perspective, the increase of spinning's economic importance and the use of animal fibers in it is not an isolated process typical only for the Balkans at the end of the V millennium BC. Furthermore, at the end of the V and during the IV mill. BC this was a characteristic feature for a wide region, including the Near East, the Aegean and the Balkans (Arbuckle 2014, 219; Schoop 2014, 434; Sudo 2010, 176). The reasons for the occurrence of this phenomenon could only be guessed, but it is interesting to note that it matches in time with the broad climate changes, that affected the whole Eastern Mediterranean and the Circumpontic zone (6000-5200 BP) (Clarke et. al. 2016; Weninger et al. 2009; Weninger, Harper 2014). In that respect, it is reasonable to guess that the increase of spinning's economic importance and the intensification in the use of animal fibers, in such vast area, were provoked in the first place by those broad climate changes.

Therefore, it can be considered that the growth of spinning's share in the economy of the inhabitants of the Central Balkan and the Rila-Rhodope area during the Final Chalcolithic period and the intensification of animal fiber use in their textile production were part of complex supra-regional processes, which led to the appearance of the Proto and Early Bronze Age cultures in Southeastern Europe and the Aegean.

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Предачеството в Централните Балкани и Рило-Родопската област в контекста на социалните и икономическите трансформации през финалния халколит

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(резюме)

Финалният халколит е последният етап от развитието на каменно-медната епоха в днешните български земи. Той обхваща времето след края на класическите фази на къснохалколитните културни комплекси Коджадермен–Гумелница–Караново VI и Криводол–Сълкуца–Бубани и преди началото на протобронзовите култури. Характеризира се с драстично намаляване на населението на равнините в източната част на Балканите и увеличаване на броя на селищата в полупланинските и планински райони на полуострова (Централните Балкани и Рило-Родопската област). Тази тенденция е получавала различни тълкувания в научната литература. На сегашния етап повечето изследователи посочват като основна причина за нея настъпилите в последната четвърт на V хил. пр. Хр. климатични промени на територията на Източните Балкани. Те водят до загиването на къснохалколитния културен комплекс Коджадермен–Гумелница–Караново VI и промяна в икономическия модел на местното население, който се изразява в преминаване към подвижно скотовъдство. Културните общ-

ности в Централните Балкани и Рило-Родопската област продължават съществуването си, но в материалната им култура се наблюдава появата на редица нови елементи, индикиращи прехода към протобронзовата култура Галатин. Тези промени са част от комплексни културни трансформации, в чиято основа стоят зачестилите контакти в целия обширен регион на Егея, Балканите и Средния Дунав.

Една от основни причини за тях може да се търси в широкомощабните обмен и търговия с мед и медни предмети, продиктувани от металургичния „бум“ в ареала на комплекса Криводол–Сълкуца–Бубани през неговата последна фаза. Данните за наличие на такива контакти са многобройни. Въпреки това, Южните Балкани остават до голяма степен изолирани от тези процеси. Свидетелствата за контакти между района на Централните Балкани и Рило-Родопската област с южната част на полуострова обаче са значителни. Една от основните общи характерни черти за цялата обширна зона обхващаща ареала на Криводол–Сълкуца–Бубани, Рило-Родопската област, Северна и Централна Гърция е увеличаването на количеството и появата на нов тип прешлени за вретено – т. нар. нискокonusовидни. Повишаването на количеството на прешлените за вретено свидетелства за нарастване на значението на предачеството в стопанството през финалния халколит в Централните и Южни Балкани. Появата на новата форма прешлени за вретено трудно може да се свърже единствено с възприемането на обща естетическа „мода“, защото е пряко свързана с тяхното предназначение. Затова може да се говори за общи тенденции в развитието техниката на предачеството в целия посочен ареал.

Техниката на предене зависи най-вече от използваната суровина. Вретена с големи и тежки прешлени са подходящи за предене на суровини с дълги влакна, като лена и конопа, а тези с малки и леки – за такива с къси влакна, каквито са животинските. След анализ на относителните и абсолютните стойности на техните размери, т. нар. нискокonusовидни прешлени за вретено са приети за малки и леки.

С увеличеното икономическо значение на предачеството и употребата на нискокonusовидни прешлени за вретено се характеризира и частично синхронната на последната фаза на Криводол–Сълкуца–Бубани скотовъдната култура Черна вода I. Наличието на мобилно животновъдство през късния халколит в Централните Балкани е отдавна предполагано. Предвид това, логично е да се предположи, че появата на т. нар. нискокonusовидни прешлени за вретено свидетелства за употребата на вълна и козя козина в текстилното производство на тези общности.

Увеличаването на икономическото значение на предачеството и интензивната употреба в него на животински суровини в Южните, Централните и части от Източните Балкани през финалния халколит не е изолиран процес. Той е засвидетелстван в един обширен ареал в края на V и през IV хил. пр. Хр., обхващащ също така Анатолия и Северна Месопотамия. Причините, довели до развитието на този социално-икономически феномен в такава обширна територия, не са изяснени. Това което може да се каже, обаче е, че това е един от сложните надрегионални процеси, довели до появата на прото- и раннобронзовите култури на територията на Балканите и Егея.