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# Early twined textiles from Sugokleya (Ukraine)

The 2004 excavation season of the prehistoric Sugokleya kurgan in Ukraine produced some extraordinary archaeological finds consisting of small fragments of fabric and fibre. Textiles dating to the Early Bronze Age are exceedingly rare, especially in Ukraine and the neighbouring regions. Even when they are recovered from archaeological contexts, these fragile finds are rarely studied and/or conserved. The finds from Sugokleya are hence of great significance to our understanding of fiber technology in this geographical area during the third millennium BC. They provide important comparative material to the contemporary textiles from the Eurasian steppe contexts in Russia (Shishlina 1999; Shishlina, Orfinskaya and Golikov 2000; 2002; 2003).

## **Burial 5**

Two fragments of dark brown fabric were found under the right foot of probably a man in Burial 5, belonging to the Pit-Grave Culture (Yamnaya Kultura, *c.* 2500 BCE).

They were treated with acrilate immediately in order to preserve the fragile structure of these objects. It appears that the fibre remains were preserved thanks to the piece of wooden bark on which they lay.

A) Fragment A (Fig. 1), the larger of the two, measures 5 by 3.3 cm, its thickness ranging between 0.3 and 0.5 cm. Threads are relatively coarse, measuring about 0.1 cm in thickness. Two-three layers of the fabric are visible, reserved on a whitish substratum and soil. Thread count in System A is 7-9 threads/cm, and the threads appear to have a slight Z twist. Thread count in system B is 6-7 threads/cm. The structure of the weave appears to be somewhat unbalanced tabby. However, the poor preservation and the stiffness of the fibres resulting from the acrilate impregnation do not permit a more accurate identification. It is not unlikely that the fabric was in reality warp-twisted, like fragment B.

B) The smaller piece B (Fig. 2) measures 3.1 by 2.3 cm and has a thickness of 0.5 cm. The fragment is better

preserved, allowing for a better examination of its structure. At least 4 layers are visible in the section indicating that the fabric was folded when deposited in the burial. Threads in both systems are about 0.1 cm thick and have a slight S twist. System A has a thread count 9 threads/cm. Thread count in system B is 4-5 threads/cm. In the fragment, 2 threads of the system A are twisted 180 degrees before crossing the threads of system B. The technique of the weave is thus twining. However, because there are no edges preserved it is impossible to tell whether warp or weft was twined. Technology in either case would be different: whereas weft twining can be accomplished on a loom, warp twining requires loose warp ends to be fixed at one end only (Seiler-Baldinger 1994, 50 and 61).

C) In addition to the fabric pieces, some remains that look like fibre have been preserved on a piece of wood, possibly part of the coffin (Fig. 3). No fabric structure is visible, but the fiber accumulation may have belonged to a mat.

### Burial 24

Remains of twisted fiber were recovered from burial 24. D) Thick cord about 2 cm long and S-plied with two threads (Fig. 4).

### Fibre

All fragments were examined under 10x magnification and the disposition and coarseness of fibres suggest that, in all cases, they may be of vegetal nature. Flax or hemp are likely in the case of fragments found in Burial 5, while some sort of tree bast may have been utilized for the cord from Burial 24. Acrilate impregnation makes more precise fibre identification difficult and more specialised investigation is necessary in order to identify the nature of the fibres.

Although previously it was believed that the use of wool in the western parts of Eurasia started only in the second half of the third millennium BC (*i.e.* by the time of the Catacomb-Grave Culture), we now know that fibres of both vegetal and animal origin were available to the Bronze Age populations of Ukraine and the greater Eurasian zone (Orfinskaya, Golikov and Shishlina 1999). Thus, in the Majkop Culture textiles of the 4th millennium BC, wool, flax and possibly cotton fibres were used (Shishlina, Orfinskaya and Golikov 2003). The textile remains from Eastern Iranian site of Shahr-I Sokhta dated to the mid-3rd millennium BCE and thus, contemporary with the Sugokleya finds, are mostly made of wool (Good 1998, 658-659; Good 1999).

### Discussion

Preliminary examination of the Sugokleya material indicates that at least two different types of fabrics were deposited in Burial 5. The first, fragment A, was woven in tabby or was twined. The structure of fragment B,

definitely made using some kind of twining technique, merits special attention. Twined fabrics have been found on other Pit-Grave sites in Ukraine. Thus, two imprints of a cloth with twined warp appear on ceramic fragments from Dneprorudnij in Zaporozhye (Orfinskaya, Golikov and Shishlina 1999, 76 no. 25; Shishlina 1999, 48



Fig. 1.



Fig. 2.



Fig. 3



Fig. 4.

Fig. 10.2; Shishlina, Orfinskaya and Golikov 2000, 113 Fig. 1). Twined textile imprints have been found on pottery excavated in the Neolithic settlement of Nida, on the Baltic coast of Lithuania (Rimantienė 1989) and the Neolithic settlement Limba (near Alba Julia) in Romania (Mazare 2003). Textiles with twined structure and gauze-like appearance have been found in North Caucasus in burials of the Majkop culture (Novosvobodnaya Kurgan 2) dated to 3700-3200 BCE (Shishlina, Orfinskaya and Golikov 2002, 2003). Other examples come from Russian Bronze Age sites (Orfinskaya, Golikov and Shishlina 1999, 76). It has been suggested that the warp twining was accomplished with the help of tablets (Shishlina, Orfinskaya and Golikov 2003, 337).

Some of the earliest examples of twining have been identified in the Near East and date to the Neolithic period: at the 8th millennium BC Syrian site Tell Halula, (Alfaro in print) and at Çatal Hüyük, central Anatolia, dated ca. 6000 BCE, although here the fabric is weft-twined and has more of a net-like structure due to large distance between the paired wefts (Burnham 1965; Barber 1991, 128, Fig. 4.5).

In Europe, weft-twined textiles and mats have been found at Swiss Pfyn Culture sites Niederwil-Egelsee, Steckborn Schanz Pfyn (Bazzanella et al. 2003, 248-249, 251, 25, 263), as well as at Wetzikon-Robenhausen (Altorfer and Médard 2000, 55).

The third fibre object found in Burial 5 may have been that fragments A and B from Burial 5 have several layers suggests that they were folded before being deposited in

the grave.

The Pit-Grave Culture population was capable of producing a variety of complex fabrics as indicated by the yarns of various qualities, varied spin direction of threads (if only tentatively identified) and at least two technologically different weaving techniques: plain weave, produced on some kind of loom, and twined fabric, possibly made with the help of other tools. In general, the Sugokleya finds fit well within the corpus of contemporary Eurasian material. Future studies of the contemporary textile technology should include search for the presence and examination of textile tools, such as loom weights, spindle whorls and other implements.

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