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# Textiles and pottery: Insights into Neolithic and Cooper Age pottery manufacturing techniques as revealed by the study of textile imprints from Romania

## Introduction

Numerous studies have revealed the importance of textile imprints, especially in those areas that are lacking actual textile remains (Schlabow 1960; Carington Smith 1977; Wild 1988; Adovasio 1977; Barber 1991; Adovasio et al. 1996, 1997; Good 2001; Makkay 2001; Cybulska and Maik 2007; Marian 2009). Besides the usual technical information they offer a new perspective upon the usage of textiles in prehistory.

Most imprints are placed on the flat bottoms of vessels and they usually come from mats, even though the textile imprints were also created by other two-dimensional textile structures (sheets of fabric) made by linking, knotting, knotless netting, twining, weaving etc. (Petkov 1965; Bagolini *et al.* 1973; Carington Smith 1977; Makkay 2001; Adovasio and Maslowski 1988; Tringham and Stevanović 1990; Adovasio and Illingworth 2003; Ljaško *et al.* 2004; Văleanu and Marian 2004; Lüning 2005; Kaczanowska 2006; Mazăre 2008; Richter 2005, 2009; Chmielewski 2009; Marian 2009).

In addition to imprints on the bases of the vessels, textile imprints have also been identified on the walls and within the walls or bases of the vessels (Carrington-Smith 1977, 116, Pl. 90/167, 201;

Kostelníková 1985, 197, Fig. 1; Lüning 2005, 219, Fig. 374; Kaczanowska 2006, 108; Richter 2005, 143, Fig. 8, 2009, 212, Fig. 34.1; Chmielewski 2009, 228-229, Fig. 126).

Such textile imprints located inside of three pedestal foot vessels were recently identified on two Neolithic and Cooper Age sites in Romania. Alongside other similar findings, they attest the specific role and the intentionality of textile usage in Neolithic and Cooper Age pottery manufacturing. On this basis it was possible to reconstruct the production stages of the pedestal foot vessels.

## The Textile Imprints

The three textile imprints were identified within three fragments of pedestal foot vessels. Two of them are twined textile imprints identified inside the fragments of two Neolithic pedestal foot vessels (type A) of Vinča tradition discovered at Turdaş (ca. 5100-4700 BC; Figs. 1-2). The third one is a mat imprint situated inside the fragment of a Cooper Age painted pedestal foot vessel (type B) found at Sebeş-Valea Janului (Petreşti Culture, ca. 4450-4300 BC; Fig. 3). They have the following characteristics:

- a. *Diagonal S-twist weft twining* (warp thread diameter: 0.85-1.4 mm; weft thread diameter: 0.9-

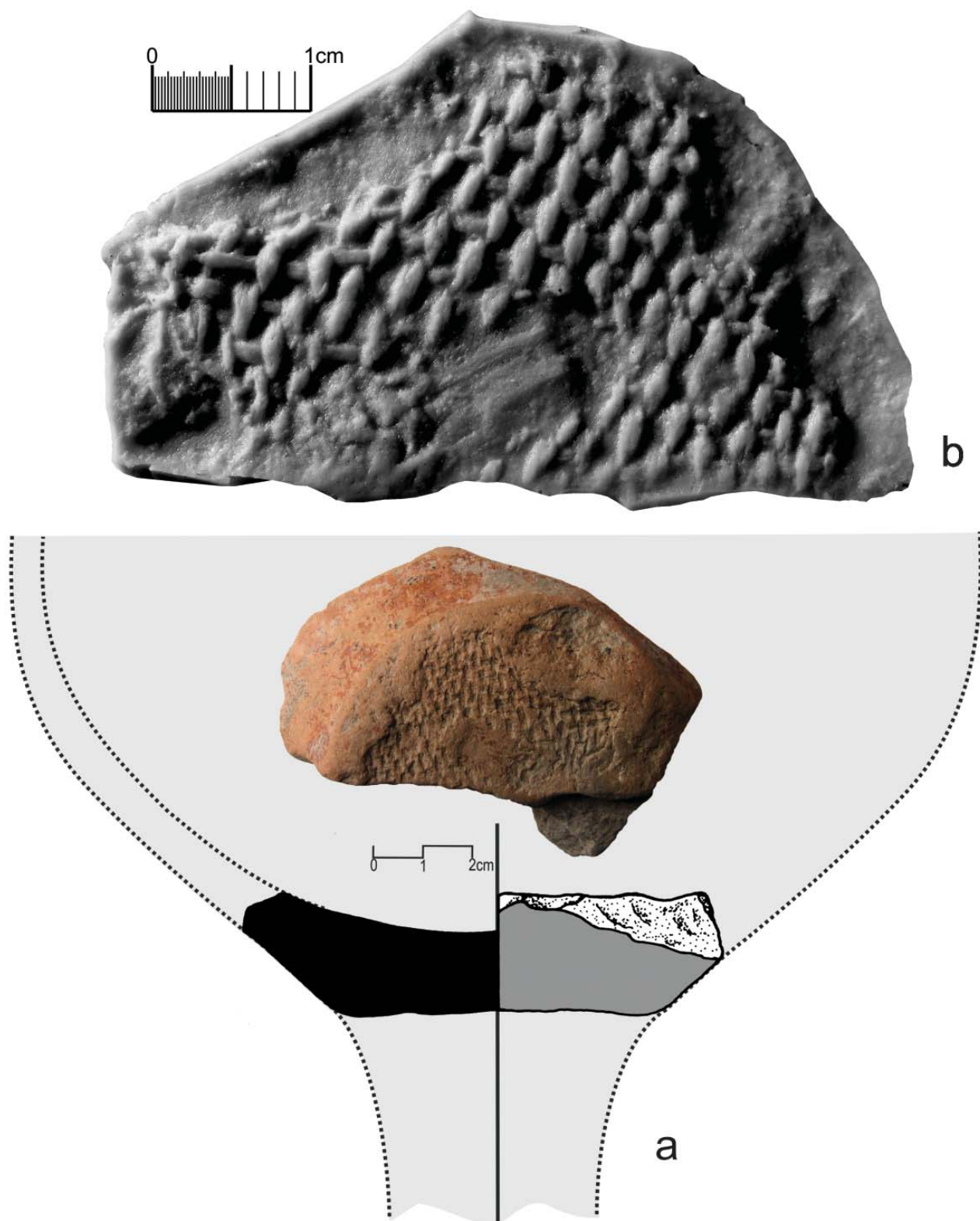


Fig. 1. Negative textile imprint on the base of a Vinča/Turdaș pedestal foot vessel (type A):  
a. The pottery fragment. Turdaș site. National Museum of Transylvanian History, Cluj;  
b. The cast of the textile imprint (© P. Mazăre).

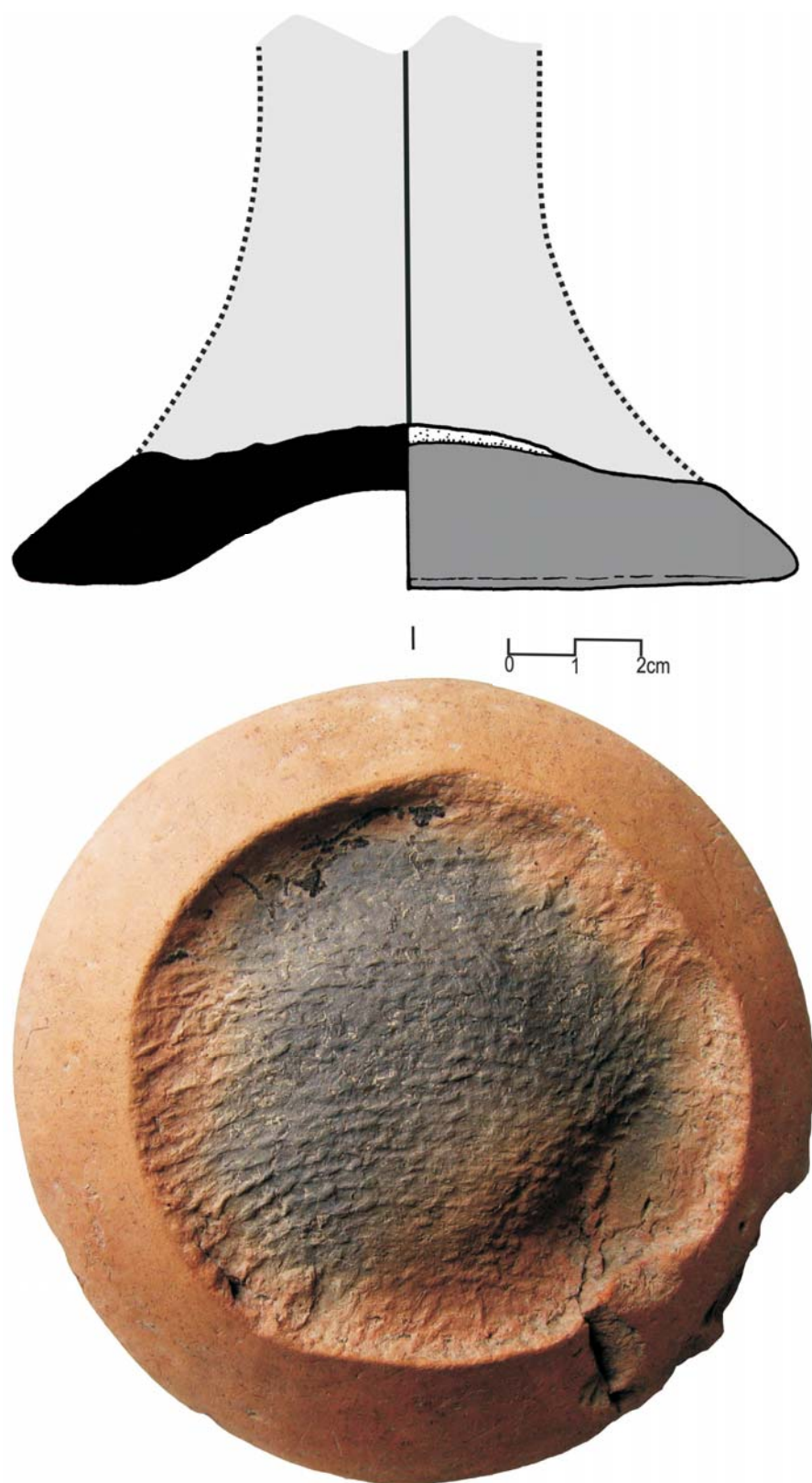


Fig. 2. Positive textile imprint inside the pedestal foot base of a Vinča/Turdaş vessel (type A). Turdaş site. National Museum of Transylvanian History, Cluj (© P. Mazăre).



1.5 mm; warp thread count: 5-7 threads/cm; weft thread count: 4-5 threads/cm; unspun fibres). Negative imprint on the bottom of a pedestal foot vessel (type A) (Fig. 1). Its positioning indicates that the imprint was invisible when the vessel was unbroken because it was covered by the vessel's foot.

- b. *Diagonal S-twist weft twining* (warp thread diameter: 0.6-1.4 mm; weft thread diameter: 0.7-1.6 mm; warp thread count: 6 threads/cm; weft thread count: 4 threads/cm; unspun fibres). This is the most interesting imprint. It is actually the positive cast of a negative textile imprint located

within the base foot of a pedestal vessel (Fig. 2). This indicates the fact that it was produced by contact with the vessel's pedestal, which already had a textile imprint on its lower part. The cast accuracy demonstrates that the negative imprint of the pedestal was hard enough to not deform under the pressure exerted by attaching the base foot to the pedestal.

- c. *Twill 2/2 plaited mat* (width of the element/strand: 2.5-5.7 mm). The imprint was located inside of a pedestal vessel (type B), in the contact area between the base and the vessel's pedestal (Fig. 3).

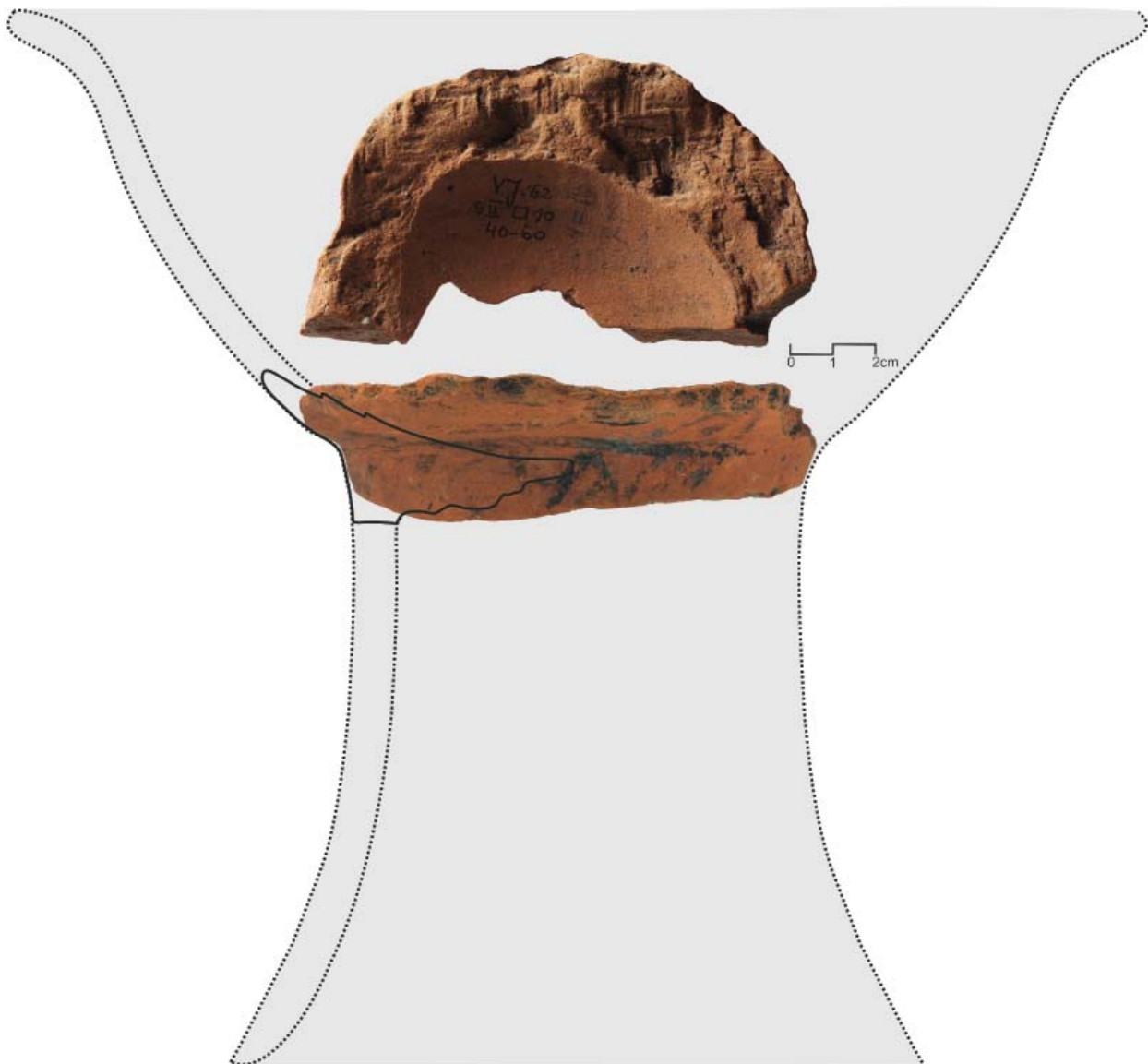


Fig. 3. Mat imprint inside the base of a Petrești pedestal foot vessel (type B). Sebeș-Valea Janului site. "Ioan Raica" Museum, Sebeș (© P. Mazăre).



### Reconstruction of Pedestal Foot Vessels Manufacturing Stages

Studies dedicated to pottery technology and ethnographic examples show that vessels with complex shapes are made by combining several components, built in sequential steps (Balfet 1984, 185; Shepard 1985, 55-56; McCurdy 2004). In some cases, shaping of the bases or feet is a final stage, them being added to the upper part of the vessel after, previously being shaped and partially dried (Balfet 1984, 181; Leeuw 1993, 245-246). Merging different parts requires special attention, because attaching still soft and moist clay surface to a hard partially dried surface is problematic as the different parts could separate during drying or firing. A technical solution to this problem is to create intentionally grooved or scraped surfaces for better adhesion, allowing perfect bonding of the different parts (Vitelli 1987, 121; McCurdy 2004, 27, Fig. 1). Some textile imprints found in the inner part of the ceramic fragments, more precisely in the merging area of the vessels' components indicate of the fact that this process was known to Neolithic potters. Examples of such pottery fragments with textile imprints are those from Luleč, Czech Republic (Linear Pottery culture; Kostelníková 1985, 197, Fig. 1); Hesserode, Germany (Linear Pottery culture;

Lüning 2005, 219, Fig. 374), Kraków-Nowa Huta-Cło, site 65, Poland (Modlnica group; Kaczanowska 2006, 108) and Zimne, Poland (Funnel Beaker culture; Chmielewski 2009, 228-229, Fig. 126).

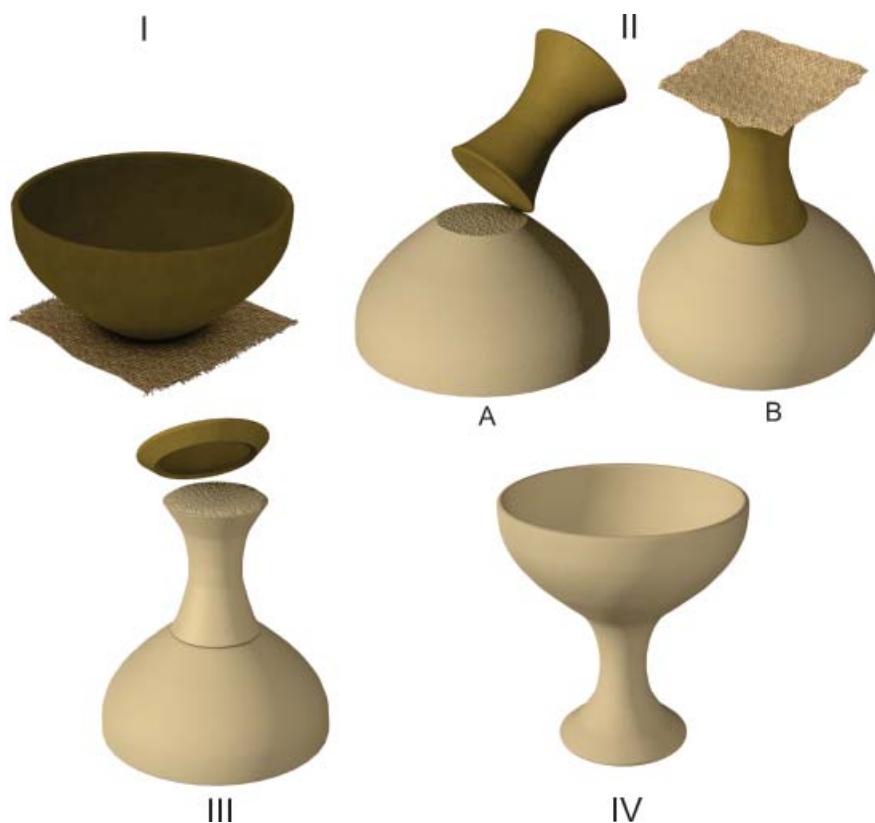
Based on these examples and the characteristics present in our imprints we attempted to reconstruct the type A pedestal foot vessels. Even though some of the technical details of the actual construction remain unknown, it can be suggested that the vessels were built in three stages starting with the upper part (the actual vessel itself), and ending with the pedestal foot (Fig. 4):

Stage I - the vessel's body was shaped on a textile support, and so the bottom displays, not necessarily intentionally, an impressed surface to be used in the next stage to bond the pedestal foot;

Stage II - the pedestal was constructed and attached after the vessel was partially dried. In its lower part, an imprint was produced intentionally by pressing a textile into the soft clay, so as to ensure good connection to the base of the foot;

Stage III - the base of the foot was shaped and attached after the pedestal had hardened<sup>1</sup>.

In a similar way the Type B vessel could have been created, except that it would have been made of only two parts (the hollow pedestal and the actual body of the vessel).



**Fig. 4. Reconstruction of manufacturing stages for a type I pedestal foot vessel (Graphics ©: T. Muntean).**



## Discussion

Depending on their location (on the bottom, on the wall or within the vessel's wall), textile imprints can be interpreted differently with respect to the method of their production, whether or not they were intentionally created, as well as the functional role of the structure itself that left those imprints. While the wall and bottom imprints can be seen more or less as an indirect consequence of the pottery manufacturing process<sup>2</sup> (Vitelli 1987, 119; Yiouni 1996, 61), the inner wall imprints are considered proof of an intentional and planned use of textiles.

Pre-Pottery Neolithic B finds from Nahal Hemar (ca. 7000 BC) and Ali Kosh (7<sup>th</sup>-6<sup>th</sup> millennium BC) have demonstrated that worked fibres and textiles were used for making containers before the invention of pottery (Schick 1988, Pl. XIV/1, 3; Barber 1991, 131-132). It is interesting that this tradition prevailed and was also used on pottery, as proven by inner wall imprints on pottery fragments found in Neolithic and Cooper Age sites. For instance, J. Carrington Smith (1977, 115) demonstrated that in the case of the imprints from Kephala, Greece cloths were incorporated into the walls of pots as a form of temper to strengthen the vessels.

In the case of our imprints, the textiles had two possible functions. Besides serving as the support structure role in which case the vessels were shaped on them, they were used deliberately to produce the grooved adhesive surface necessary to bond the different parts of the vessel together. As our reconstruction pottery manufacturing model is based on these isolated findings, we cannot conclude whether it represented an exception or a widely used practice of shaping Neolithic or Cooper Age pedestal foot vessels. The breakage of the base foot may be an indication that the practice of separately shaping the pedestal and the base foot, and subsequent joining of the two, was not very effective and could be subject to failure. More careful studies on textile imprints and Neolithic and Copper Age pedestal foot vessels could provide further clues in that regard.

## Notes

Our assumptions regarding the stages of producing vessels were confirmed by an experimental study on the use of textile structures during the manufacturing of ceramics. For more details see Mazăre *et al.* in press.

<sup>2</sup> There are two different archaeological interpretations concerning the imprints on the vessels bases: a) they were produced during the shaping phase, using mats or coarse textiles as supports for rotating and easier building of the vessels (a

primitive variant of turning devices); b) they are a passive consequence of placing the vessels on mats or sheets of fabrics in order to dry after they were shaped. Another explanation regards the textile imprints found on prehistoric vessels' walls as ornamental. They show an intentional usage of the textiles, but their function does not strictly concern the technological process of manufacturing pottery, but rather the treatment of the surface of the already shaped product.

## Bibliography

Adovasio, J. M. (1975-1977) The textile and basketry impressions from Jarmo. *Paleorient* 3, 223-230.

Adovasio, J. M., Klíma, B. and Soffer, O. (1996) Upper Paleolithic fibre technology: Interlaced woven finds from Pavlov I, Czech Republic, c. 26, 000 years ago. *Antiquity* 70, 526-534.

Adovasio, J. M., Hyland, D. C. and Soffer, O. (1997) Textiles and cordage: a preliminary assessment. In J. Svoboda (ed.), *Pavlov I-Northwest. The Upper Paleolithic Burial and its Settlement Context*, The Dolní Věstonice Studies 4, 403-424. Brno.

Adovasio, J. M. and Illingworth, J. S. (2003) Basketry and Textile Impressions (Appendix 6.1). In E. S. Elster, C. Renfrew (eds.), *Prehistoric Sitagroi. Excavations in Northeast Greece, 1968-1970, Volume 2: The Final Report*, University of California, 252-257. Los Angeles.

Adovasio, J. M. and Maslowski, R. F. (1988) Textile impressions on ceramic vessels. In A. McPherron, D. Srejovic (eds.), *Divostin and the Neolithic of Central Serbia*, Ethnology Monographs 10, 345-357. Pittsburg.

Bagolini, B., Barfield, L. H. and Broglio, A. (1973) Notizie preliminari delle ricerche sull'insediamento neolitico di Fimon-Molino Casarotto (Vicenza) (1969-1972). *Rivista di scienze preistoriche* 28 (1), 161-213.

Balfet, H. (1984) Methods of formation and the shape of pottery. In S. van der Leeuw and A. C. Pritchard (eds.), *The Many Dimensions of Pottery. Ceramics in Archaeology and Anthropology*, Cingula VII, Universiteit van Amsterdam, 171-199. Amsterdam.

Barber, E. J. W. (1991) *Prehistoric Textiles. The Development of Cloth in the Neolithic and Bronze Age with Special Reference to the Aegean*. Princeton.

Carrington Smith, J. (1977) Cloth and mat impressions.



- In J. E. Coleman (ed.) *Kephala. A Late Neolithic Settlement and Cemetery (Keos, Results of Excavations conducted by the University of Cincinnati under the Auspices of the American School of Classical Studies at Athens; v. 1)*, American School of Classical Studies, 114-127. Princeton, N.J.
- Chmielewski T. J. (2009) *Po nitce do kłębka... O przedzalnictwie i tkactwie młodszej epoki kamienia w Europie Środkowej*. Warszawa.
- Cybulska, M. and Maik, J. (2007) Archaeological textiles – A need for new methods of analysis and reconstruction. *Fibres and textiles in Eastern Europe* 15 (5-6), 185-189.
- Good, I. (2001) Archaeological textiles: A review of current research. *Annual Review of Anthropology* 30, 209-226.
- Kaczanowska, M., ed. (2006) *Dziedzictwo cywilizacji naddunajskich małopolska na przełomie epoki kamienia i miedzi/ The Danubian Heritage: Lesser Poland at the Turn of the Stone and Copper Ages*. Kraków.
- Kostelníková, M. (1985) Otisk tkaniny z mladší doby kamenné z Lulče (okr. Vyškov)/ Ein jungsteinzeitlicher Gewebeabdruck aus Luleč (Bez. Vyškov). *Archeologické rozhledy* 37, 197-198.
- Leeuw, S. van der (1993) Giving the pottery a choice. Conceptual aspects of pottery techniques. In P. Lemonnier (ed.), *Technological Choices. Transformation in Material Cultures since the Neolithic*, 238-288. London.
- Ljaško, S. M., Widejko, M. J and Burdo, N. B., eds. (2004) *Encyklopedija Trypil's'koji civilizaciji*, Tom. 2, Kyjiv.
- Lüning, J., ed. (2005) *Die Bandkeramiker. Erste Steinzeitbauern in Deutschland*. Raden/Westf.
- Makkay, J. (2001) *Textile Impressions and Related Finds of the Early Neolithic Körös Culture in Hungary*. Budapest.
- Marian, C. (2009) *Meșteșuguri textile în cultura Cucuteni/ Textile Crafts in Cucuteni Culture*. Iași.
- Mazăre, P. (2008) Impresiuni de țesături pe fragmente ceramice descoperite în situl preistoric de la Limba (jud. Alba). *Apulum* 45, 315-330.
- Mazăre, P., Lipot, Ș. and Cădan, A. (in press) Experimental study on the use of perishable fibre structures in Neolithic and Eneolithic pottery. In *First Arheoinvest Congress. Interdisciplinary Research in Archaeology, June 10<sup>th</sup>-11<sup>th</sup> 2011, Iași*. British Archaeological Reports International Series.
- McCurdy, M. (2004) Building large forms. In A. Turner (ed.), *Pottery Making Techniques. A Pottery Making Illustrated Handbook*, 25-30. Westerville, The American Ceramic Society, 26-29. Westerville, OH.
- Petkov, N. (1965). Praitoricheski pletki i tukani ot Sofijskoto pole i blizkite mu okolnosti. *Arheologija* 7, 45-57.
- Richter, É. (2005) Textil- és négyzetrendszeres fonatlenyomatok az Alföld neolitikumából/ Woven and plaited fabrics in the Neolithic of Great Hungarian Plain. In G. Lőrinczy and L. Bende (eds.), *Hétköznepok Vénuszai*, 123-144. Hódmezővásárhely.
- Richter, É. (2009) Our thread to the past: plaited motifs as predecessors of woven binding structures. In E. B. Andersson Strand, M. Gleba, U. Mannering, C. Munkholt and M. Ringgard (eds.), *North European Symposium for Archaeological Textiles X*, 189-216. Ancient Textiles Series 5. Oxford.
- Schick, T. (1988) Cordage, basketry and fabrics. In O. Bar-Yosef and D. Alon (eds.), *Nahal Hemar Cave*, Atiqot, English Series 18, 1-43. Jerusalem.
- Shepard, A. O. (1985). *Ceramics for the Archaeologists*. Washington D.C.
- Schlabow, K. (1960) Abdrücke von Textilien an Tongefäßen der Jungsteinzeit. *Jahresschrift für mitteldeutsche Vorgeschichte* 44, 51-56.
- Tringham R., Stevanović M. (1990) The Nonceramic Uses of Clay. In R. Tringham and D. Krstić (eds.), *Selevac. A Neolithic Village in Yugoslavia*, 323-388. Los Angeles, CA.
- Văleanu, M.-C. and Marian, C. (2004) Amprente umane, vegetale și de textile pe ceramica eneolitică de la Cucuteni-Cetățuie. In M. Petrescu-Dâmbovița and C.-M. Văleanu (eds.), *Cucuteni-Cetățuie. Săpăturile din anii 1961-1966. Monografie arheologică*, Bibliotheca Musei Antiquitatis 14, 318-327. Piatra Neamț.
- Vitelli, K. D. 1987. Greek Neolithic pottery by experiment. In P. M. Rice (ed.), *Pots and Potters*.



*Current Approaches in Ceramic Archaeology*, Institute of Archaeology Monograph XXIV, 113-131. Los Angeles, CA.

Wild, J. P. (1988) *Textiles in archaeology*. Shire Publications. Aylesbury, Bucks.

Yiouni, P. (1996) The Early Neolithic pottery: Technology. In R. J. Rodden (ed.), *Nea Nikomedeia I: The Excavations of an Early Neolithic Village in Northern Greece 1961-1964*, Supplementary of the British School at Athens 25, 55-78. Oxford and Northampton.