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Basketry rediscovered: Technological analysis and classification of the Neolithic basketry impressions from the Polish Lowland

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Abstract

The knowledge about textile production in the Neolithic period is relatively poor for all of Europe. Due to the lack of sources, the textile imprints preserved on pottery or other fired clay artefacts that appear on the finished product for example because of pugging clay are valuable materials. This chapter presents and discusses the results of the technical analyses of textile impressions identified on Neolithic ceramics. The materials are from three archaeological sites from the Polish Lowland – Mrowino, site 3, Kotowo, site 1 and Dobrzejowice, site 2. All fragments are dated back to the Funnel Beaker culture (4100/3900–2600/2500 BC). Two basketry techniques were identified from the analyzed textile imprints: twined work and coiled work. The impressions were mainly identified on the external bases on plates. Therefore, they are probably the negatives of technical textiles. Most of the impressions were observed earlier, but analysis was only done for one sample. The presented ceramic material is another collection of Neolithic basketry impressions from the territory of Poland that has been already recognised. This broadens our knowledge about this prehistoric branch of human production.

Keywords: textile impression, Polish Lowland, the Neolithic, basketery, Funnel Beaker culture

2.1. Introduction

Knowledge about textile production in the Neolithic period is relatively poor both for the Polish Lowland and for the entirety of Europe. It is connected with the fact that textile products degrade easily as they are deposited in the ground (Chmielewski 2009: 225; Maik 2012: 293; Grömer 2016: 22). The exceptions are artefacts found in extreme micro-environmental conditions. For Neolithic finds, these are textiles placed in aquatic contexts or preserved in permafrost (Cybulska and Maik 2007: 187–188; Chmielewski 2009: 225; Grömer 2016: 23–27; Banck-Burgess 2018: 105; Andonova 2021: 31). For the territory of Poland today, no textiles dating back to this period have survived to modern times. The exception is a mat made of cane and lime bast, discovered in the 1930s in Łączyńska Huta, Kartuzy district. A large fragment of the basketry was found in a peat bog and based on the palynological pollen analysis, it was classified as Neolithic (Dyakowska 1936: 92–94).

However due to, inter alia, the analysis precision, it remains controversial and it can be assumed that this product is later (Chmielewski 2009: 28; Słomska 2018: 571).

Due to the lack of direct sources confirming Neolithic textile production, textile imprints recorded on pottery or other clay artefacts, for example as result of pugging, should be considered a valuable research material (Chmielewski 2009: 226–223; Grömer 2016: 30). After textile tools, impressed negatives are the most common sources that can prove abilities connected with textile production for Central Europe in the Neolithic period (Chmielewski 2009: 226). They also provide the weakest data, because imprint analysis enable us to study the part of impressed material on an incomplete pottery fragment, without essential textile attributes as plasticity, texture, or colour (Chmielewski 2009: 226; Podkańska 2012: 207). Nevertheless, it is a relatively extensive source and it may enhance our knowledge of Neolithic textile production, especially in the areas where textiles have not been preserved (Drooker 2000: 59–68; Grömer 2006: 31; Cybulska and Maik 2007: 188–189; Chmielewski 2009: 226; Mazàre 2011a: 28a; Kaczmarek 2015: 263; Słomska 2018: 567; Skrzyniecka 2020: 232).

This chapter aims to present and discuss the results of microscopic analyses of textile impressions identified on sherds of ceramic vessels from the Polish Lowland. The chapter presents the basketry techniques identified in the analyzed ceramic collection. It also attempts to define the role of the use of basketry products in the ceramics production process. Furthermore, the possibilities and limitations related to the identification of prehistoric textiles based on impressions on ceramics are discussed. In this chapter, textiles are defined as the general term for any produced fabric-like material, as well as cord, basketry, and fabric.

2.2. Analysis of basketry impressions

2.2.1. Materials and method

The presented ceramic material is another collection of Neolithic basketry impressions from the territory of Poland that has been already recognised. As in the case of the pots from Tyńczyk, Legnica district, and Redecz Krukowy, Włocławek district, the negatives were identified on pottery fragments connected with the Funnel Beaker culture (Pfüetzenreiter 1931: 156–170; Słomska 2018: 567–573). The analyzed pottery fragments are from three Neolithic archaeological sites from the Polish Lowland (Figure 1). The development of the Funnel Beaker communities is dated to about 4100/3900–2600/2500 BC (Jankowska and Wiślański 1991: 55–57; Kruk and Milisauskas 1999: 102; Nowak 2009: 347; Wierzbicki 2013: 108–148). They were farmers, with the economic system based on crop cultivation and animal husbandry. The stabilization of the settlement network and home craftsmanship is also observed (Kruk and Milisauskas 1999: 141–157; Wierzbicki 2013: 245–266).

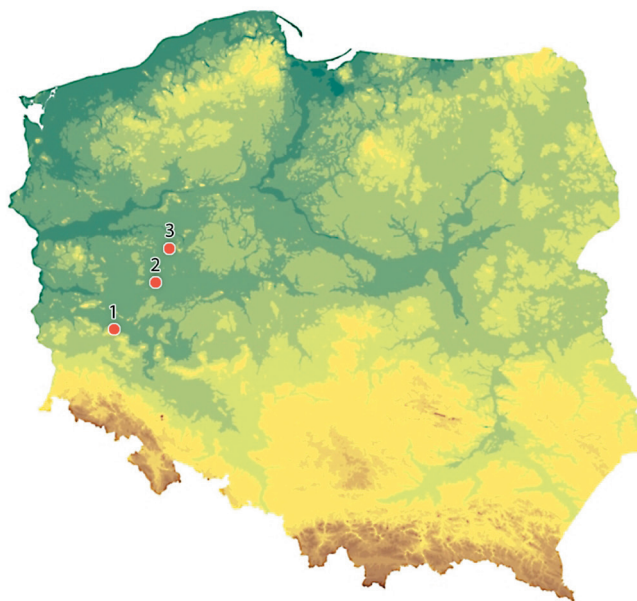


Figure 1. Sites location: 1 – Dobrzejowice; 2 – Kotowo; 3 – Mrowino. (Map: M. Kaczmarek)

The research material consists of twelve pottery fragments with basketry impressions on them. They are seven fragmentary vessels and one unidentified ceramic product. Some of the impressions were observed earlier and mentioned in previous publications, but analysis was only performed on the sample from Mrowino.

The analytical approach used in this chapter has been developed on the basis of commonly accepted and used research methods for textile impressions (Drooker 2000: 59–68; Marian 2009: 120–121; Grömer and Kern 2010: 3136–3137; Sikorski 2010: 49–56; Podkańska 2012: 207–213; Skrzyniecka 2020: 235–238). Textile imprints were analyzed using a digital Dino-Lite Premier AM4113ZT(R4) microscope. Positive impressions collected from the surface of ceramics using self-hardening sculpting clay were used for microscopic observation (Drooker 2000: 59; Kaczmarek 2015: 264; Skrzyniecka 2020: 235). The research enabled us to identify the fabric structure and determine the technological classification of the production techniques. A series of metric measurements of passive and active elements was made. When possible, individual thread characteristics (yarn, spin, cord, or fibre) were recorded, along with the fibre slant. (Emery 1980: 8–14; Harris 2013: 112–113; Adovioso 2016). Furthermore, the depth and location of the impression were identified, as well as the kind of temper added to ceramic mass and, if possible, the pot type. Detailed results of the analysis are presented in Table 1.

Due to the fact that the ceramics shrink during free drying and firing, the given measurements should be considered as minimal (Grömer and Kern 2010: 3141; Harris 2013: 112). Minor shrinkage also impacts casts made by using self-hardening sculpting clay, as well as dental compound and silicon mould (Drooker 2000: 61–62; Ulanowska 2021: 116). Likewise, the deformation related to applying the textile material on wet and moldable vessels is another limitation (Podkańska 2012: 207; Ulanowska 2021: 116). The measurements were made based on positive impressions and therefore they refer to the original structure of the product. The basketry materials were all made of plant fibres (Rast-Eicher 2005: 118–119; Grömer and Kern 2010: 3144; Harris 2013: 113). However, no attempt was made to determine the raw material precisely in terms of the type of plant fibres (tree bast, grass, etc.). This is due to the sample's state of preservation and doubts concerning the validity of such assessments based only on the textile impressions (Kordysh 1951: 104; Marian 2009: 84–87; Chmielewski 2009: 226; Mazāre 2011b: 25; Rammo 2017: 117; Lukesova and Holst 2021: 217).

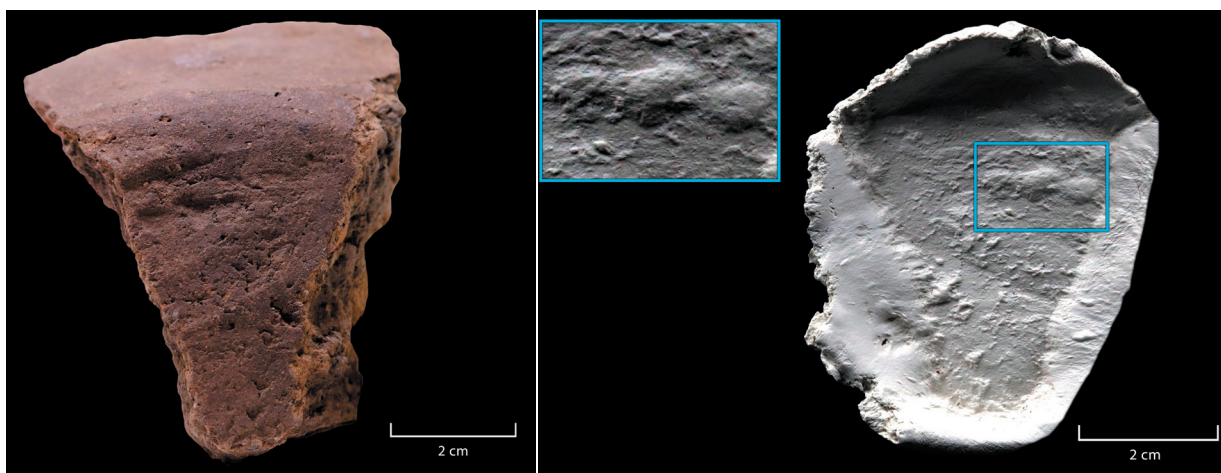


Figure 2. Dobrzejowice site 2, sample 1. Possible impression of twining, pottery fragment (left). Possible impression of twining, positive clay mould (close-up for weaving structure) (right). (Images: M. Kaczmarek)

Table 1. Technological analysis of basketry impressions in pottery.

Sample number, site, inventory number	1. Dobrzejowice, MH/A/5195/28(a)	2. Dobrzejowice, MH/A/5195/28(b)	3. Dobrzejowice, MH/A/5195/28(c)	4. Dobrzejowice, MH/A/5111/36	5. Dobrzejowice, MH/A/5195/79,	6. Kotowo, MAP 1958: 983	7. Kotowo, MAP 1958: 1011	8. Mrowino, MAP 1974: 2139
Total number of fragments	2	1	2	3	1	1	2	1
Raw materials	plant	plant	plant	plant	plant	plant	plant	plant
Fabric structure	twining (?)	twining (?)	twining, close	coiled basketry, open	coiled basketry, open	twining, close	twining (?), close?	coiled basketry, open and close (?)
Average width of wefts - active (mm)	4.27	5.34	3.8	4.69	3.03	3.95	3.73	3.83
Range width of wefts - active (mm)	4 - 4.5	4.2 - 6.5	2.9 - 4.6	3.4 - 6.4	2.4 - 3.9	3 - 5.9	2.7 - 5	2.6 - 5.5
Average width of wraps - passive (mm)	-	-	-	2.7	2.22	-	-	1.2
Range width of wraps - passive (mm)	-	-	-	2.3 - 3.3	2.1 - 2.4	-	-	1.2 - 1.3
Count per cm active/passive (twining only)	1.5-2/2 (?)	2/2?	2/2	NA	NA	1.5/2	2.5/3?	NA
Twist passive/active	not spun / -	not spun / -	yarn (?) / -	not spun / not spun	not spun? / not spun	not spun / -	?	not spun (?) / ?
Slant (twining only)	Z	Z?	Z	NA	NA	?	Z (?)	NA
Impression depth (mm)	0.8	0.6	0.5 - 0.7	0.5 - 0.8	0.8	0.9 - 1.1	0.3	0.8 - 1.2
Kind of temper	medium ceramic grog and fine sand	medium ceramic grog and fine sand	medium ceramic grog and fine sand	coarse ceramic grog	ceramic grog and medium crushed stone	fine sand and ceramic grog	medium ceramic grog	coarse crushed stone
Impression location, type of pot	base, flat plate	base, flat plate	base, flat plate?	base, undefined	undefined fragment	base, flat plate	base, plate with flat base and raised rim	base, undefined
Figure number	2	3	4	5	6	7	8	9

2.2.2. Site description and the result of microscopic analysis

Dobrzejowice, site 2

Dobrzejowice is a village in the southwest part of Poland, Dolnośląskie Province, Głogów Glacial Valley (Kondracki 2002: 156, 164–165). The site is situated on the rise, surrounded by the Dobrzejówka river from the west and Odra urstromtal from the north (Hendel 1996: 3).

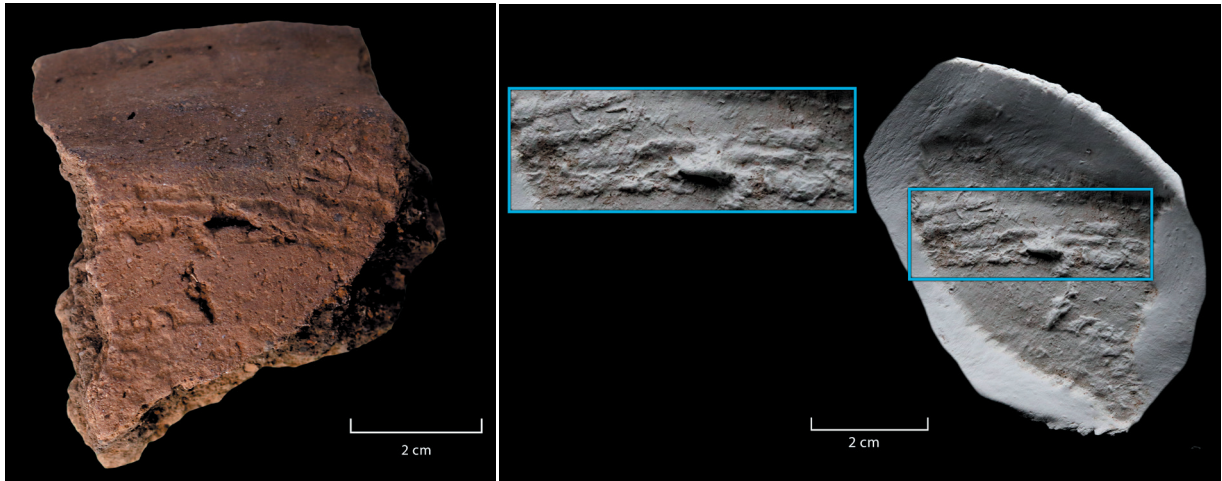


Figure 3. Dobrzejowice site 2, sample 2. Possible impression of twining, pottery fragment (left). Possible impression of twining, positive clay mould (close-up for weaving structure) (right). (Images: M. Kaczmarek)

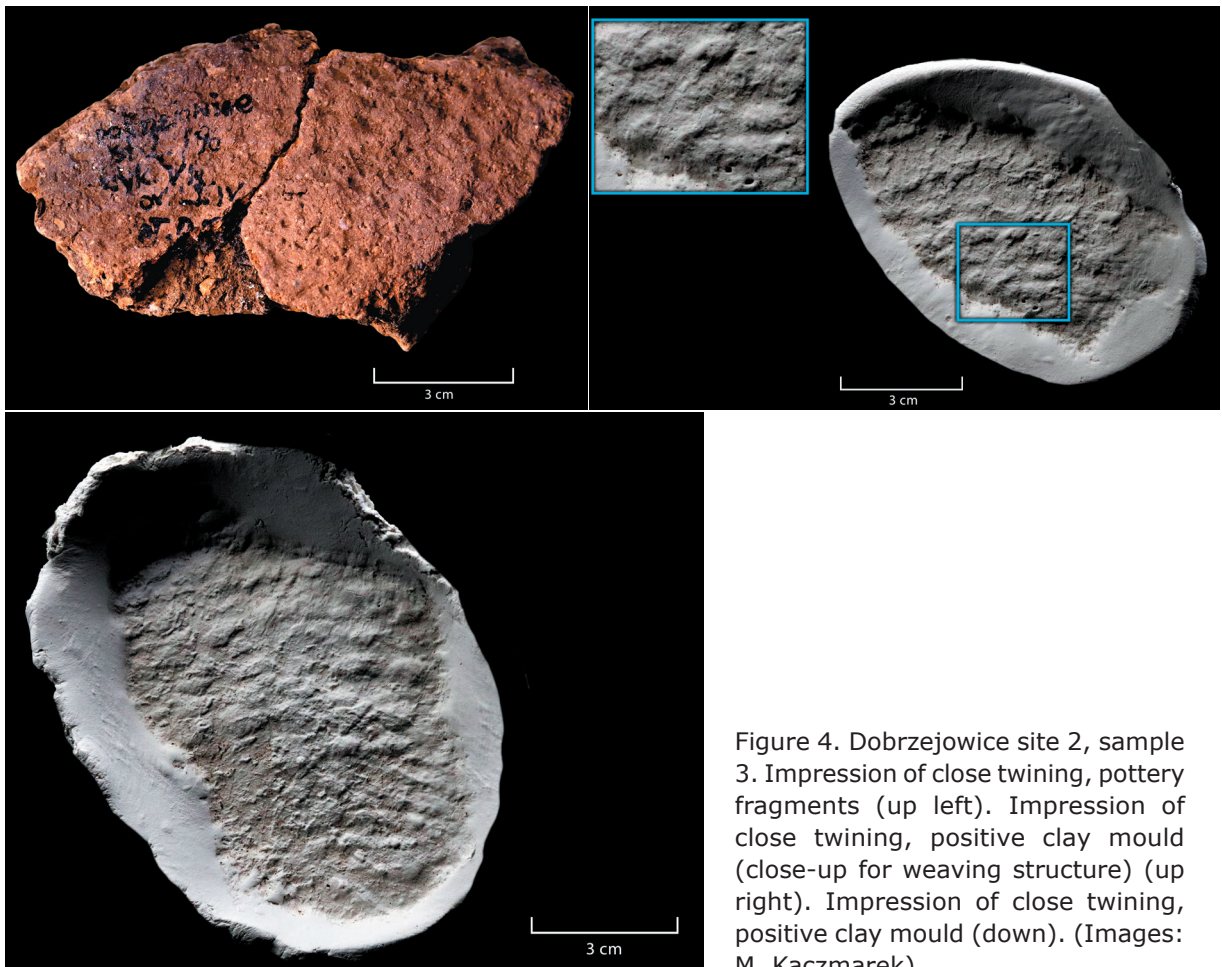


Figure 4. Dobrzejowice site 2, sample 3. Impression of close twining, pottery fragments (up left). Impression of close twining, positive clay mould (close-up for weaving structure) (up right). Impression of close twining, positive clay mould (down). (Images: M. Kaczmarek)

Archaeological excavation on the multicultural site was conducted for twelve years. Unfortunately, its results have never been fully compiled and published. The remains of the Neolithic communities that lived there are connected with the Funnel Beaker culture settlement and the Corded Ware culture cemetery. According to the author of the research, the late Funnel Beaker culture settlement dates back to the late Wiórek stage and Luboń stage (about 2900–2600 BC) (Hendel 1996: 25; Wierzbicki 2013: 156). Eight ceramic fragments with negative basketry impressions were identified in a huge collection of ceramics found during archaeological excavation on the site.

The twining impressions were found on the base of two flat plates (Table 1: 1, 2) and one possible plate (Table 1: 3). Pots were made of clay with medium grog and fine sand temper. The direction of twining is Z slant, and there were no passive element impressions on the items. The impressions are located on an external part of a pot base. In sample one and two, the twining impression is only partially visible (Figures 2 and 3). In sample 3, the impression covers all preserved space (Figure 4). The elements on samples one and two are unspun strips. The element on the sample three is a possible yarn.

The coiled impressions were found on two ceramics fragments made of clay with ceramic grog temper and crushed stone or sand (Table 1: 4, 5). In both samples the core (passive element) is not completely covered by the coiled stitching (active elements). All elements are unspun strips. The impression in sample 4 covers most of the preserved space. This unidentified ceramic product is block-shaped, and one of its sides is covered by basketry impression (Figure 5). The impression in sample 5 does not cover all preserved space but is visible on the edge of a base (Figure 6). Based on the preserved vessel fragments, it is impossible to define its type.

Kotowo, site 1

The site is located in Wielkopolska Province, Poznań Lakeland mesoregion (Kondracki 2002: 125, 138). It is situated on a small, isolated island by the Mogielnica river (Żurkiewicz 2020: 98). During

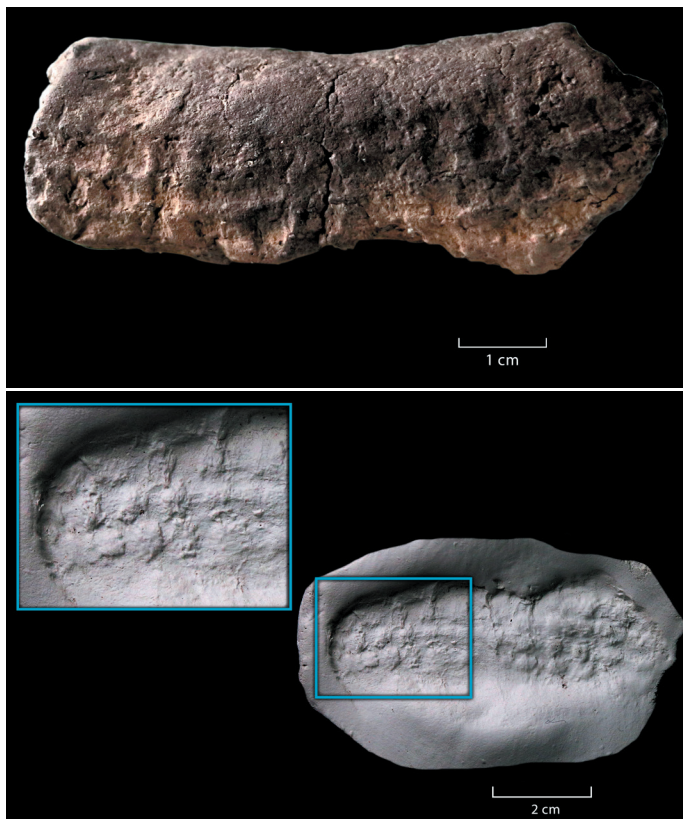


Figure 5. Dobrzejowice site 2, sample 4. Impression of coiled basketry, pottery fragments (up). Impression of coiled basketry, positive clay mould (close-up for weaving structure) (down). (Images: M. Kaczmarek)

the archaeological excavation at the Lusatioan culture cemetery, some remains of the Funnel Beaker settlement were found. The site included one utility pit and some materials collected on the surface of the settlement (Lipińska 1963: 303–310; Żurkiewicz 2020: 118–119). Based on the analysis of pottery technology and style, it was possible to define subsequent phases of the settlement in this area in the Neolithic phases. The first phase, connected with object no. 1, is the oldest phase of the Funnel Beaker culture in the Polish Lowland, dated to 4100/4000–3900/3800 BC (Wierzbicki 2013: 156; Żurkiewicz 2020: 114). The radiocarbon dating of bones and pottery fragments from this object also indicated the age range as between 3900 and 3700 cal. BC (Żurkiewicz 2020: 120, 124). The ceramic material collected on the surface of the site is nonhomogeneous and is dated from phase IIIC to IVA (about 3450–3150 BC) (Wierzbicki 2013: 108–148; Żurkiewicz 2020: 118). Basketry impressions were identified on two fragmentary preserved plates.

The close twining impressions were found on the external part of the base of two ceramic pots made of clay, with medium ceramic grog temper and fine sand and ceramic grog (Table 1: 6, 7). The

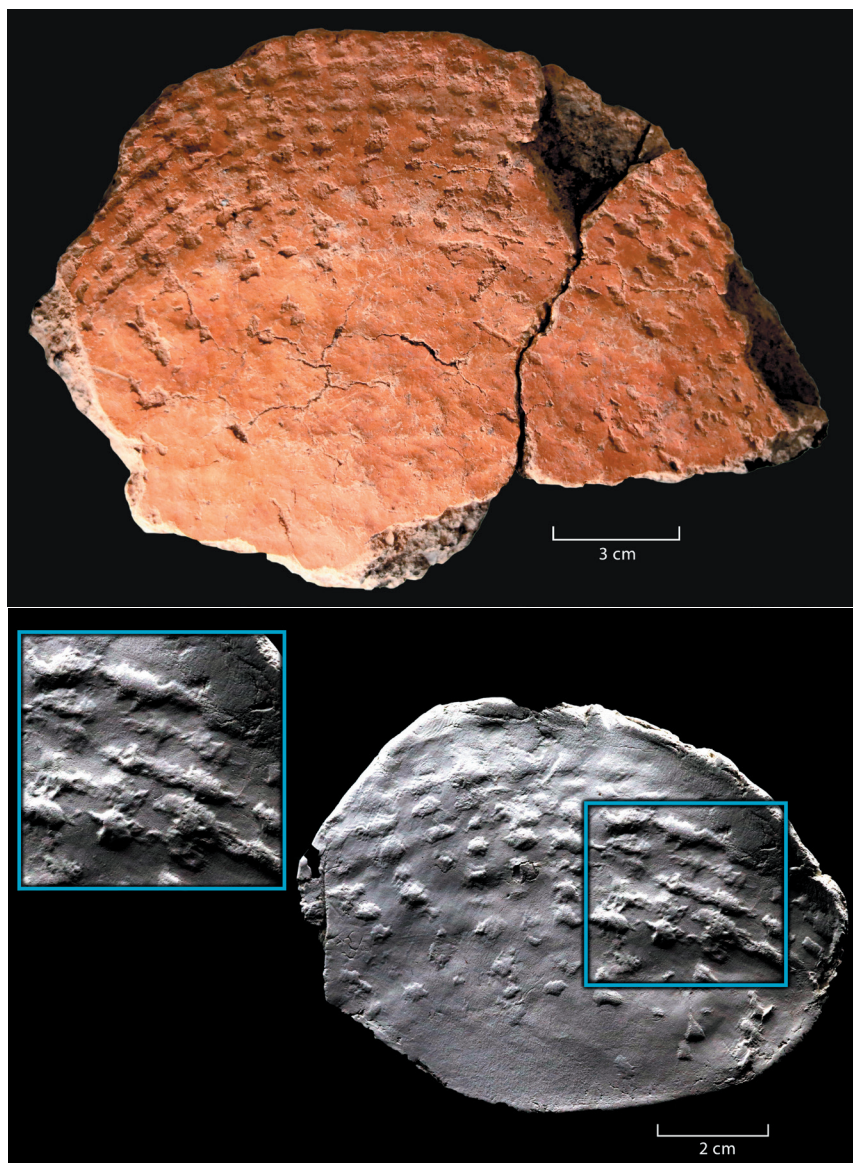


Figure 6. Dobrzejowice site 2, sample 5. Impression of coiled basketry, pottery fragment (up). Impression of coiled basketry, positive clay mould (close-up for weaving structure) (down). (Images: M. Kaczmarek)

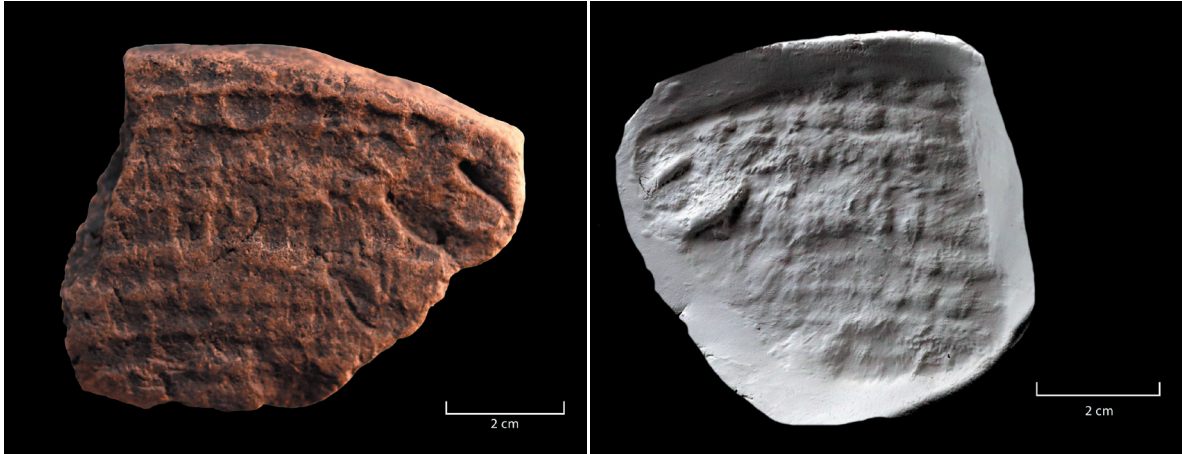


Figure 7. Kotowo site 1, sample 6. Impression of close twining (left). Impression of close twining, positive clay mould (right). (Images: M. Kaczmarek)

twining direction on sample 7 is possible Z-slant. The direction for sample 6 is hard to recognize. There were no passive element impressions on any of the items. Both vessels can be classified as a plate. Sample 6 was taken from a flat plate. The twining impression is visible and covers all the preserved space (Figure 7). Sample 7 was taken from a flat plate and raised rim. The mat impression is subtle and can be hardly recognised (Figure 8).

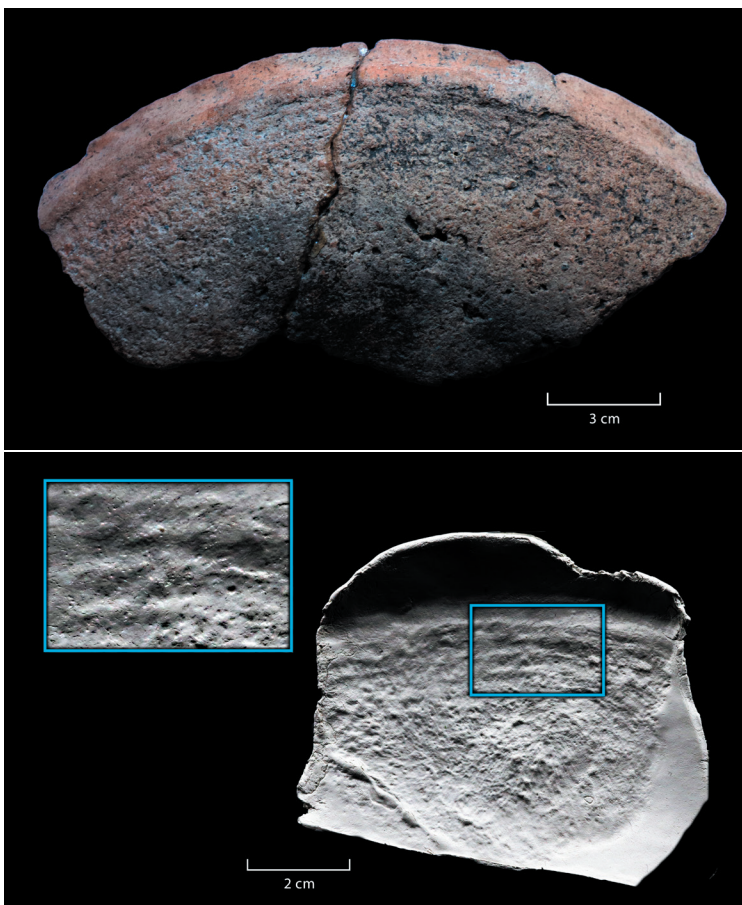


Figure 8. Kotowo site 1, sample 7. Possible impression of close twining, pottery fragments (up). Possible impression of close twining, positive clay mould (close-up for weaving structure) (down). (Images: M. Kaczmarek)

Mrowino, site 3

Mrowino is a village in the west of Poland, Wielkopolska Province, Poznań Lakeland mesoregion (Kondracki 2002: 125, 138). The site is situated on the small rise, surrounded by the Sama River from the west (Hildebrand-Radke 2018: 19–23). The oldest settlement traces are related to the arrival of the groups of hunter-gatherers. The subsequent phases date back to the Neolithic period, the Bronze Age, the Iron Age, the Middle Ages, and the postmedieval period (Szmyt 2018: 549–550).

The Neolithic settlement at this site is connected with the Funnel Beaker culture (3300–2950 cal. BC) and the Globular Amphora culture (2950 cal. BC). There was a settlement of Funnel Beaker communities (Luboń stage), consisting of a few houses. Materials, predominantly related to the associated human burials, are related to the Globular Amphora communities (Szmyt 2018: 327, 549). Basketry impressions were identified on one pottery fragment that dated to the FBC settlement (Szmyt 2018: 549).

The coiling impressions were found on the internal part of a pot base (Table 1: 8) The core left a light impression on the pottery, and is not visible on the entire surface (Figure 9). The coiled stitches are probably not spun strips. The vessel was made of clay with a coarse crushed stone temper. Based on the preserved part of the base, it is impossible to define impressions' type. Some fingerprints on the pot sides were observed (Figure 9b). They probably resulted from attempts to intentionally smooth the mat's negatives.

A textile analysis of a pot base fragment from Mrowino was done earlier, as part of the “Mrowino, site 3. Late Neolithics on the middle Warta” project. In an earlier study, a simple plaited mat and tabby weave imprints were recognised (Sikorski 2018: 454). Neither of these imprints were recognised during the current analysis.

2.3. Discussion

2.3.1. The identified basketry techniques

For the analyzed textile imprints, two of three sub-classes of basketry weaves were recognised: twined work and coiled work (Adovasio 2016: 1). Basketry, after ropes and nets crafts, is one of the oldest branches of human production. These processes date back to the Stone Age, and the skill of making

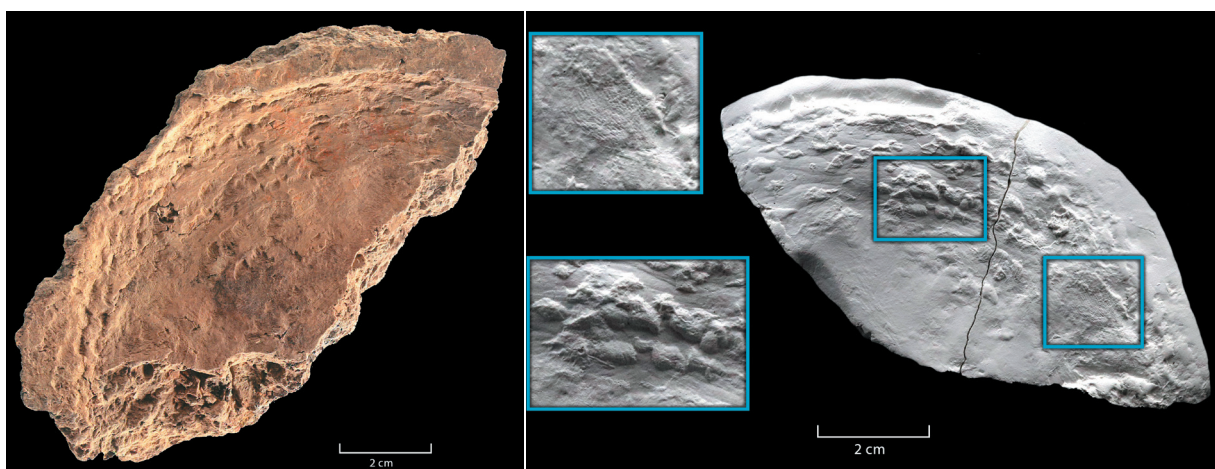


Figure 9. Mrowino site 3, sample 8. Impression of coiled basketry, pottery fragment (left). Impression of coiled basketry, positive clay mould (close-up for fingerprint and weaving structure) (right). (Images: M. Kaczmarek).

baskets and mats is used continuously, even into modern times (Adovasio 2016: 1; Słomska 2018: 567; Probst-Böhm 2021: 61). Today, however, we are not aware of the significant role it played in the past. Its universality results from the simple production technique on one side, but also the wide range of raw materials used on the other, which do not require multi-stage processing and are easily available at almost any latitude (Harris 2013: 109, 120; Szewczyk 2015: 49; Słomska 2018: 567).

The term “basketry” is used to describe a very wide group of products, such as: stiff baskets, bowls, or architectural elements (walls, fences), as well as flexible mats, pads and clothing items, hats, shoes, and bags (Harris 2013: 120; Szewczyk 2015: 73; Adovasio 2016: 1; Słomska 2018: 567).

All studied textile imprints were originally made of plant fibres. The basketry used in the pottery production only served a technical function, probably connected with the forming of the vessel or its free drying before firing (Kordysh 1951: 98; Vitelli 1999: 94; Chmielewski 2009: 226–227; Grömer 2017: 82–83). Based on the traces of intentional smoothing, none of the imprints were of decorative elements.

Coiling basketry techniques

Three coiled impressions were identified in the analyzed set of pottery (Table 1: 4, 5, 8). Coiled basketry is made by sewing a stationary horizontal passive element or set of elements (foundation core) with moving vertical active elements (stitches) (Figure 10). Coiling techniques are used almost exclusively for creating containers, hats, and rarely bags. Mats or other forms are seldom made using this technique. It is connected with the construction principle that the products prepared using this technique are stiff (Harris 2013: 122; Adovasio 2016: 53).

Two of the imprints were of open coiling type. This is one of the variants of this technique, where the stitch does not tightly twin the rod. The opposite of this is the close coiling variant, where the stitch is completely covered by the rod (Harris 2013: 122; Adovasio 2016: 53).



Figure 10. Examples of open coiling work in lime bast fibres. (Photograph: M. Kaczmarek)

In the case of the pottery fragment from Mrowino (Table 1: 8; Figure 9), a basketry impression made in open and close coiling type was probably identified. It combines the two above-mentioned types of this weave, and both weave techniques are alternately used within one product. Such a procedure may be used for decorative purposes, or it may have a functional justification (e.g. to provide a mesh structure) (Adovasio 2016: 53). Unfortunately, the analyzed imprint is too small to confirm whether the basketry impression on the vessel side is open and close coiling type or whether it is the result of destruction and/or repairing the basketry product.

The basketry impression on the pot from Mrowino may have been the result of forming a clay container on the sides of the basket (the imprint is inside the vessel) (Schneider 1924: 76–77). The fingerprint traces of intentional smoothing were also recorded, which proves that it had no aesthetic value (Figure 9b). It is likely that the structure of the vessel made it impossible to smooth it thoroughly.

The case of the impressions on the pot's base from Dobrzejowice (Table 1: 4; Figure 6) indicates that the imprints are probably the result of forming the vessel on a textile pad (Vitelli 1999: 94; Kosakivskyi 2004: 94; Chmielewski 2009: 226–227; Grömer 2017: 82–83; Słomska 2018: 572–573). Based on the preserved ceramic fragments, it can be assumed that the pot was more than 20 cm in diameter when it was formed. Hence, it is possible that the product was so big that the negatives could not be precisely smoothed over without destroying the vessel at the same time. Additionally, the impressions on the unidentified ceramic product (Table 1: 5; Figure 5) were probably made as a result of using the textile pad while forming. Unfortunately, because only pottery fragments preserved, it is impossible to determine the function of the basketry material.

Twining basketry techniques

Five twining impressions were identified in the analyzed set of pottery (Table 1: 1–3, 6, 7). Twining is a subclass of basket weaves, made by passing moving horizontal elements (weft) around stationary vertical elements (wraps) (Figure 11). Twining techniques may be used to produce a wide variety of objects, for example mats, containers, clothing, or fish traps (Adovasio 2016: 15).



Figure 11. Example of close twining in lime bast fibres. (Photograph: M. Kaczmarek)

Three of the imprints were close twining (Table 1: 3, 6, 7). This is a type of twining which is made by twisting two active elements around stationary passive elements so that the rows are tightly packed and the passive elements are concealed or nearly concealed (Adovasio 2016: 16). Two other incomplete pots (Table 1: 1, 2) probably have twining basketry impressions on them. Nevertheless, the preservation of the vessels as well as the quality of imprinted negatives make the identification very difficult.

It is worth highlighting that all impressions of twine basketry were situated on the external bases of the plates. Four of them are flat plates, and one is a plate with a flat base and raised rim. A similar situation was observed in the materials from site 20 in Redecz Krukowy, Włocławek district. During the archaeological excavation, 30 pottery fragments with textile impressions were observed. All of them were preserved on one type of vessel, the plate. The impression from Redecz Krukowy, as well as presented materials, were located on an external pot base (Słomska 2018: 567–568).

Similar to the coiling impressions, twining basketry products are applied as technical textiles used during the pottery production process. It can be assumed that it is not accidental that the negatives are recorded mainly on one type of pot. This may be connected with the functional aspect of using the basketry materials in the production of plates (Rast-Eicher 2005: 118–119; Marian 2009: 119–120; Grömer and Kern 2010: 3144; Harris 2013: 113). It is also possible that the negatives could not be precisely smoothed over without destroying the vessel at the same time.

2.3.2. Usability of the method to study textile impressions

The methods of technical analysis of textile impressions identified on pottery have some limitations. As mentioned above, these limitations are related to determining raw materials, and the precision of the textile measurements. However, the most significant problem is that textile negatives usually are recorded only on vessel fragments, which definitely hinders the technical analysis and technological recognition of the textile products. In the case of mats and basketry impressions observed on the base of the pots, the negatives are also often incomplete and show traces of intentional smoothing (Drooker 2000: 60–61; Chmielewski 2009: 226; Podkańska 2012: 207). The type of temper added to the clay mass as well as the poor firing technology negatively affects this type of analysis (Grömer and Kern 2010: 3142; Ulanowska 2021: 115). If the vessels were made of clay with ceramic grog temper, the textile traces degraded easily. It is impacted by both the production stage, when the negatives are observed on the containers, and the post-deposit processes which affect the pottery structure as a result of staying in the ground for a long time.

Due to the fact that weaving mats and baskets can have a wide range of properties due to the use of different natural raw materials, as well as other parts of the same plant (e.g. bark, bast, or twig), analyzing the negatives can be very difficult. Using the same basketry technique, it is possible to obtain stiff products such as baskets, but also more flexible products whose structure is closer to that of woven textiles (Drooker 2000: 60; Harris 2013: 126). Textile production is a highly time-consuming, therefore it can be assumed that textiles used during the pottery making process were recycled. Hence, they could have traces of damage and repair. Therefore, it can be crucial to identify textiles imprints correctly (Kosakivskyi et al. 1998: 38–39; Podkańska 2012: 207–208; Kaczmarek 2015: 279; Grömer 2017: 82).

Also the quantity of ceramics fragments with textile negatives impressed in relation to the total number of the pottery fragments obtained during field work is relatively small. Most of the textile imprints analyzed in this chapter were already observed during the first study of the ceramic material, but no textile analysis was done then. Reinspecting the material and the verification of the entire ceramics collection, including the mass material, significantly hinders and extends the research process.

Nevertheless, analyzing textile imprints allows for the reconstruction of the ancient techniques of weaving and pleating. The research is commonly conducted and more often included in the package

of basic ceramological analyses (Drooker 2000: 62–65; Marian 2009; Koško and Szmyt 2010: 7–12; Podkańska 2018: 207–213; Sikorski 2018: 453–458; Słomska 2018: 567–574; Skrzyniecka 2020: 231–258; Ulanowska 2021: 111–135). As such, the comparative base is systematically growing.

2.4. Conclusions

The presented ceramic material is another collection of Neolithic basketry impressions from the territory of Poland connected with the Funnel Beaker culture. Two basketry weaves types were recognised: twined work and coiled work. All pottery fragments were obtained during archaeological excavation at the settlements, and come from utility pits or from the surface of the site. The impressions are located on the pot's base or in the bottom portion. As in the case of the imprints from Redecz Krukowy, most of the negatives were recognized on one type of the vessel, plates (Słomska 2018: 568). It seems that all of these impressions had no decorative value and were the effect of using the textile when forming of the vessel and/or its free drying before firing. In this approach, imprinted basketry materials belong to the category of technical textiles, which may have initially been used in a different context (Vitelli 1999: 94; Kosakivskyi 2004: 94; Chmielewski 2009: 226–227; Podkańska 2012: 207; Grömer 2017: 82–83; Słomska 2018: 572).

Despite some limitations, the research of textile imprints registered on ceramics successively provides new information about prehistoric textile production. It is crucial, especially in areas and periods where textiles have not been preserved. The analysis of textile imprints and the study of textile tools allow us to know and understand ancient textile and basketry techniques.

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