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STUDIA ARCHAEOLOGICA

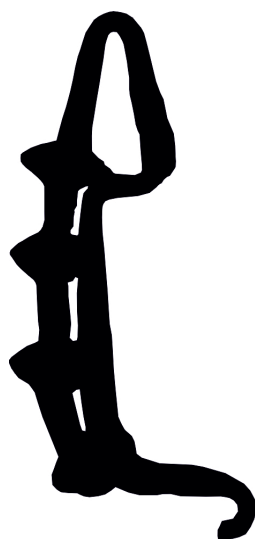
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*This volume is dedicated to Tudor Soroceanu at 80 years*

*Acest volum este dedicat lui Tudor Soroceanu cu ocazia împlinirii a 80 de ani*





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# Mureş culture pottery motifs and decorations. A view from the past: Dorin Popescu's excavations at Pecica-Şanţul Mare and Semlac-Livada lui Onea

**Anca Georgescu**

**Abstract:** Pottery, one of the most enduring and fascinating artifacts of human history, provides a window into the lives, cultures, and technologies of old societies. Its motifs and decorations are a visual language that transcended time and space, connecting the anthropologist to prehistoric household techniques, beliefs, daily life, and organization. In this approach, we explore the dynamics and changes of motifs and decorations from the Early Bronze Age through the end of the Middle Bronze Age on the pottery found at Pecica-Şanţul Mare and Semlac-Livada lui Onea, two Bronze Age sites of the Mureş Culture.

**Keywords:** Pecica-Şanţul Mare; Bronze Age; Mureş Group; pottery; decoration.

## Introduction

Around 2700 BC, in the eastern Carpathian Basin, a group of marshland communities set its villages and large inhumation cemeteries on low islands of dry lands alongside the course of the Mureş River. For more than one millennium, this group has centered its activity on raising livestock and crops, hunting, and fishing in the Mureş River. They were later referred to in archaeological literature as the Mureş group or the villagers of Mureş<sup>1</sup>.

The Mureş culture thrived during the Bronze Age, covering a vast region that included the northern part of Banat (today Serbia north), the southern part of the Pannonian plain (today western Romania), and the confluence of the Tisza-Mureş Rivers (today southeastern Hungary) (Fig. 1).

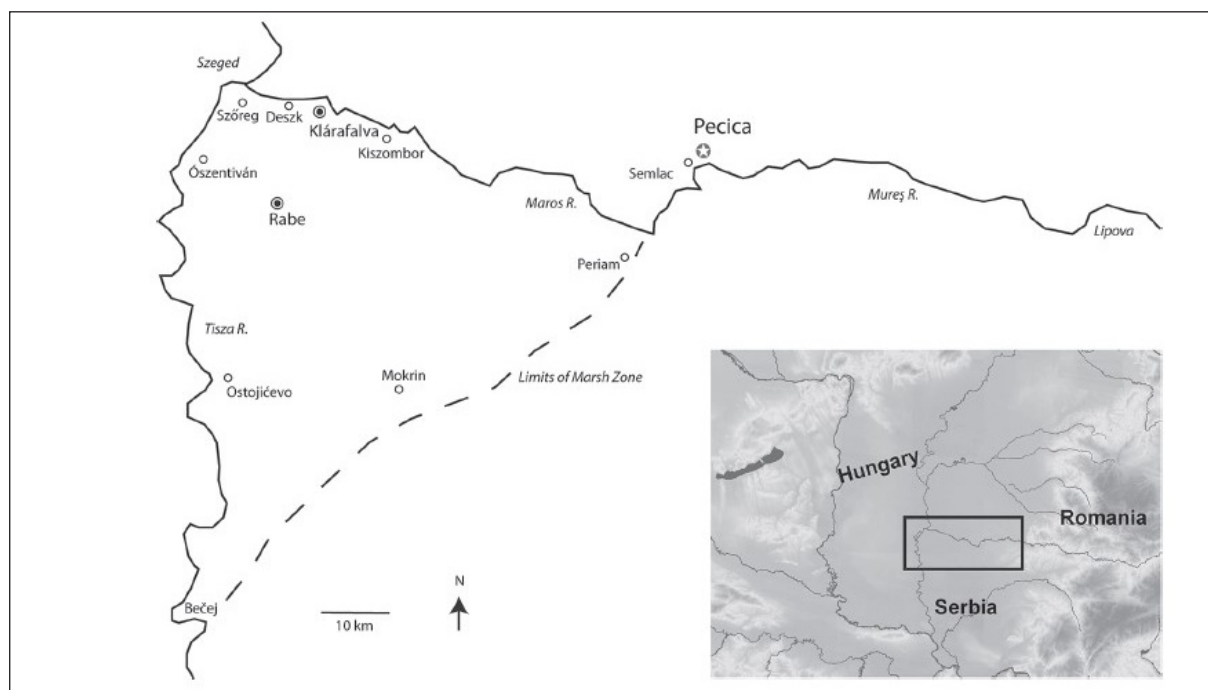


Fig. 1. Map of principal settlements and cemeteries of the Mureş culture (after O'Shea–Nicodemus 2018).

<sup>1</sup> Banner 1931, 47, O'Shea 1991.

For over a century, this culture was known in the archaeological literature under different appellations: Periamuş/Perjámos<sup>2</sup>, Periam-Pecica group<sup>3</sup>, Periam-Pecica Culture<sup>4</sup>, Periam-Mokrin-Pančevo group<sup>5</sup>, Mokrin group<sup>6</sup>, Mokrin-Perjámos group<sup>7</sup>, Periam-Mokrin culture<sup>8</sup>, Szöreg group of the Perjámos culture<sup>9</sup>, and the Pitvaros group related to Perjámos culture<sup>10</sup>.

The name “Mureş culture” was first introduced in literature by J. Banner<sup>11</sup>. He identified in the Tisza-Mureş region a non-Nagyrev culture with similarities to the Romanian Perjámos settlements. The name Perjámos was initially preferred, but now Mureş is more widely accepted<sup>12</sup>.

The Mureş culture was known initially for its large and well-preserved cemeteries, which have been the focus of systematic investigations for over a century. However, in recent decades, there has been an increasing research interest in well-preserved settlements.

Two major types of settlements were generally noted: tells and open settlements<sup>13</sup>. At this stage of the research, the best investigated tells are at Pecica-Şanţul Mare, Periam Sánchalom, Klárafalva-Hajdova, and Rábé Anka Sziget. Ószentiván Nagyhalom, Kiszombor-Új-Élet and Popin Paor are the best-known open settlements. The best-known cemeteries are Szöreg, Pitvaros, Deszk “A” and Deszk “F”, Ószentiván, Beba Veche, Mokrin, Ostojićevo, and Novi Knezevac. Burial sites have also been identified near settlements such as Klárafalva-Hajdova, Rábé Anka Sziget, Kiszombor-Új-Élet, and Periam.

### **A tale of two tells: Pecica-Şanţul Mare and Semlac-Livada lui Onea**

Pecica-Şanţul Mare has been investigated since the late 19<sup>th</sup> century when L. Dömötör conducted the first excavation at the site<sup>14</sup>. Márton Roska carried out notable investigations at Pecica (and Periam) during the first half of the 20<sup>th</sup> century. In the early 1940s, D. Popescu continued the excavations at the tell and another smaller mound ca. 3 km northeast of the Pecica tell, recorded in the literature as Semlac-Livada lui Onea<sup>15</sup>. Between 1960 and 1964, important excavations were carried out at Pecica-Şanţul Mare by a team directed by I. Crişan<sup>16</sup>.

In the 1990s and early 2000s, new investigations re-opened the old excavations: F. Gogáltan opened in 1994 a new excavation trench at Semlac-Livada lui Onea, the site previously excavated in the 1940s by Popescu<sup>17</sup>; in 2005 new excavations start on the tell Pecica-Şanţul Mare under an international collaboration between the University of Michigan, the Banat Museum from Timişoara and the County Museum from Arad<sup>18</sup>. In 2007, a collaborative team between the University of Michigan, the Arad County Museum, the Museum of the Banat, and Florin Gogáltan reopened Gogáltan’s trench at Semlac-Livada lui Onea to set a clear stratigraphy and internal chronology<sup>19</sup>.

### **A throwback in time: Dorin Popescu’s excavations**

In the summer of 1943, the National Museum of Antiquities in Bucharest began new investigations on the tell Pecica Şanţul Mare, led by Dorin Popescu. He opened six trenches labeled from A to F on

<sup>2</sup> Childe 1929; Nestor 1933; Patay 1938; Garasanin 1959; Garasanin 1973.

<sup>3</sup> Dumitrescu 1961, 288.

<sup>4</sup> Motzoi-Chicidleanu 2011; Popescu 1944, 54-79.

<sup>5</sup> Berciu 1961, 123.

<sup>6</sup> Girc 1987.

<sup>7</sup> Garasanin, Garasanin 1951, 18.

<sup>8</sup> Trbuhovic 1968, 59.

<sup>9</sup> Bóna 1975, 11.

<sup>10</sup> Bóna 1965, 17.

<sup>11</sup> Banner 1931, 47.

<sup>12</sup> Garasanin 1983; Girc 1971; Girc 1984; Gumă 1997; Michelaki 1999; Nicodemus 2014; O’Shea 1992; O’Shea 1996; Papalas 2008; Soroceanu 1978; Soroceanu 1991; Tasič 1984.

<sup>13</sup> Different definitions and sub-categories of tells have been recognized. See Kalicz, Raczky 1987, 15. Gogáltan makes a three-fold division: tell-settlements, tell-like settlements and mound-like settlement. See Gogáltan *et al.* 2014.

<sup>14</sup> Dörner 1978, 16-17.

<sup>15</sup> Popescu 1944.

<sup>16</sup> Crişan 1978.

<sup>17</sup> Gogáltan 1999.

<sup>18</sup> O’Shea *et al.* 2005; O’Shea *et al.* 2006; O’Shea *et al.* 2011; Nicodemus *et al.* 2015

<sup>19</sup> Gogáltan 1996; Gogáltan 2014; Nicodemus 2014; Oas 2010; O’Shea 2007.

the tell and has entirely excavated three: C, D, and E. He positioned his six trenches on the hill, with reference to the two villages Semlac and Rovine on one side and the road connecting these villages and the Mureş River on the other side. He described the positions and directions of the trenches as follows:

- Trench A was placed close to the center of the tell. It is oriented NW-SE (15 × 2 m, line Mureş-Road),
- Trench B was perpendicular on the Mureş side of Trench A, oriented NE-SW (15 × 2 m, with a view to the Mureş River),
- Trench C, perpendicular on the other side of A, oriented NE-SW (15 × 2 m, with a view to the road),
- Trench D was placed close to the edge of the tell towards Rovine village, oriented NW-SE (10 × 2 m, Mureş-Road, Rovine side),
- Trench E was placed parallel to trench B, close to the side with the view towards the Mureş River, oriented NE-SW (10 × 5 m, Mureş line)
- Trench F (direction not mentioned; only a brief note says it was next to Trench B) (Fig. 2).

An attempt to map the trenches on the tell is presented in Figure 2.

The three trenches submitted to a detailed observation (C, D, and E) were excavated to 5m of depth measured from the surface of the tell, reaching the archaeologically sterile soil.

The only stratigraphic remarks mention a layer of ca. 50 centimeters (0-50 cm) abundant in human remains associated with an Arpadian cemetery. The Bronze Age sequence was ca. 3 - 3.5 m (from 0.5 to 3.5/4m). The last approximate stratigraphic meter was dated to the end of the Eneolithic, marking the beginning of living on the tell.

The other site excavated by Popescu was *Semlac-Livada lui Onea*. This small tell is approximately 3 km southwest of Pecica-Şanţul Mare (Fig. 3). The tell is surrounded by two small fortification ditches, which enclose areas of 4.7 and 6.4 ha, respectively, comparable to the area within the inner ditch at Pecica<sup>20</sup>. Again, D. Popescu offered little information about the stratigraphic sequences or the excavation methodology. He dug a 9 by 6 meters trench on the higher edge of the loess terrace, overlooking the Mureş floodplain. The excavation reached a depth of four meters, revealing material similar to that found at the larger tell at Şanţul Mare. Despite the report published in 1944, little is known about the 1943 excavations directed by Dorin Popescu on both settlements. This is because there is a lack of clear documentation regarding the exact locations of the opened trenches, the stratigraphy, and any other information about the strategies and methodology used during the excavations, as summarized above.



Fig. 2. Possible location of Dorin Popescu's trenches. Their orientation was inferred based on D. Popescu's descriptions<sup>21</sup>.

<sup>20</sup> Nicodemus 2014.

<sup>21</sup> However, the descriptions make it impossible to locate the trenches precisely, and my reconstruction is hypothetical. Only



Fig. 3. Map location of *Semlac-Livada lui Onea* and *Pecica-Șanțul Mare*.

### The chronology of the two tells within the broader image

T. Soroceanu<sup>22</sup> divided the culture in two phases with phase I (subphases Ia and Ib) incorporating levels I-IV from Periam and Mokrin I (Ia), and levels V-XI from Periam, levels VIII-V from Pecica and Mokrin II (Ib) while phase II covered levels III-I in Pecica, as well as the late graves in Szöreg, and the necropolis of Deszk A<sup>23</sup>. A recent paper<sup>24</sup> also analyzed the Mureș pottery from Dudeștii Vechi – *Cociohatul Mic* from a statistical perspective, employing correspondence analysis to link various archaeological features to the phases defined from the perspective of the pottery styles.

The present author though, having participated in the recent excavations mentioned above, chose to work with the periodization used by the respective authors of the excavations. Significant information for the Mureș culture yielded <sup>14</sup>C dates obtained following excavations carried out on different sites in Romania and Hungary<sup>25</sup>. These dates place the EBA from 2700/2600-2200/2000 and the MBA from 2200/2000-1500/1400. The dates come from the sites Klárafalva-Hajdova, Kiszombor-Új-Élet, Mokrin, and several from Pecica-*Șanțul Mare* and *Semlac-Livada lui Onea*<sup>26</sup>. The earliest Mureș settlement appears around 2700 BC at Kiszombor Új Élet, followed by Klárafalva-Hajdova at around 2300 BC. Around 2000 BC, the Mureș settlements reached their greatest extent, but after 1850 BC, the majority of settlements and cemeteries were abandoned<sup>27</sup>. Around 1545 BC, Pecica was entirely abandoned, shortly followed by the abandonment of Klárafalva-Hajdova and Rábé-Anka Sziget.

The radiocarbon dates from Pecica-*Șanțul Mare* have revealed seven levels of occupation on the site, of which four belong to the Mureș sequence. The Mureș site occupation peaked during the Middle Bronze Age, divided into three sequences: Formative, Florescent, and Final (Tab. 1).

The latest <sup>14</sup>C samples indicate the occupation of *Semlac-Livada lui Onea* between c. 2400-1800 B.C. This settlement had been founded almost 500 years earlier than Pecica-*Șanțul Mare*, which existed between c. 1950-1545 B.C.<sup>28</sup>

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systematic field investigation or geomagnetic surveys could solve this issue.

<sup>22</sup> Soroceanu 1984, 43–78; Soroceanu 1991.

<sup>23</sup> Soroceanu 1991, 124–125.

<sup>24</sup> Berteau 2020.

<sup>25</sup> Gogăltan 1997; O’Shea 1991; O’Shea 1996; O’Shea, Nicodemus 2011; O’Shea *et al.* 2019; Nicodemus 2018; Nicodemus, O’Shea 2015.

<sup>26</sup> O’Shea 1991; O’Shea 1996; O’Shea *et al.* 2005; O’Shea *et al.* 2006; O’Shea *et al.* 2009; O’Shea, Nicodemus forthcoming.

<sup>27</sup> O’Shea, Nicodemus 2018.

<sup>28</sup> Nicodemus 2014; O’Shea-Nicodemus 2018.

Tab. 1. Radiocarbon-based chronology of Pecica “Şanţul Mare” (after Nicodemus, O’Shea 2018).

| Chronology of “Şanţul Mare” |             |                  |  |   |
|-----------------------------|-------------|------------------|--|---|
| Culture/Group               | Site Period | Date             | Major Developments   | Economic Focus  |
| Árpáadian                   |             |                  | A.D. 1000–1100   |   |
| Dacian                      |             |                  | 300–100 B.C.E.   |   |
| Mureş                       | Final       | 1680–1545 B.C.E. | The off-tell settlement was abandoned, there was a decline in occupation intensity, and a house was built over the central platform. | Generalized subsistence   |
| Mureş                       | Florescent  | 1820–1680 B.C.E. | Central platform constructed, construction of exterior ditches, off-tell occupation  | Peak metal production, peak horse production, display storage and feasting              |
| Mureş                       | Formative   | 1900–1820 B.C.E. | Construction of “Great Ditch” establishment of the central site plan, construction of the central plaza                              | Intense metal production, beginning of horse rearing, craft production of elite regalia |
| Mureş                       | Initial     | 1950–1900 B.C.E. | Site leveled, erection of ritual structure   | Intensive ore smelting and production, craft production incorporating exotic materials  |
| Hunyadihalom                |             | 3935–3800 B.C.E. |  |   |

<sup>14</sup>C dates thus suggest that at the time Pecica-Şanţul Mare reached its maximum extent (the Florescent Period, c. 1875-1680 B.C.), the neighboring settlement Semlac-Livada lui Onea had already been abandoned<sup>29</sup>.

The relationship between Semlac and Pecica remains unclear to this day. Semlac may have been an autonomous settlement, similar to other settlements along the Lower Mureş, or it might have been part of a hierarchical system with Pecica playing a central role in the region.

### Methodology and results

The artifacts unearthed from these excavations are currently being carefully preserved and cataloged at the “Vasile Pârvan” Institute of Archaeology in Bucharest. The ongoing study’s primary focus pertains to pottery collection dating back to the Bronze Age. The pottery sherds in the collection were visually inspected, and their main characteristics, such as vessel part, surface treatment, and paste type, were recorded. This study focuses on the decorated pottery within the larger collection uncovered during D. Popescu’s excavations. Both pottery collections were made available to me in 2017-2018. A total of 383 ceramic fragments were analyzed and together they had a total of 622 decors. There were situations when a fragment had two or more decors applied on its surface.

The examination of decorations was centered on identifying the types of elements and motifs found on the surface of the vessels/sherds collected from Popescu’s excavations. This analysis is divided into two parts, initially treating separately the decorations and motifs found at Pecica-Şanţul Mare and those from Semlac-Livada lui Onea. As the same type of decoration and motifs were noted at both sites, they will only be described once, in their order of occurrence.

To better understand the evolution/development of the decoration over time and space, several variables were used. One of them was the depth where the sherds occurred. At both excavations, Popescu used an artificial ordering system of the levels excavated. Most often, the thickness of these levels was 20-30 centimeters, which indicates spade levels. Most sherds bear a mark consisting of an inventory number and the level from which they have been collected. Based on this ordering system

<sup>29</sup> Nicodemus 2018a, 252.


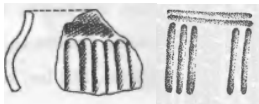

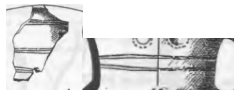


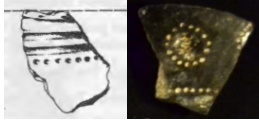


of levels, I attempted to reconstruct the internal chronological sequence and offer an interpretation of the development of various decorations over time.

I was also interested in identifying sherds with two, three, or more decorations or motifs. The purpose of this variable was to find a relationship between different types of elements/motifs and the decoration and shape of the vessel. Another analytical scheme was focused on finding possible relations between the type of surface treatment and the decoration/motif applied to it.

### **Pecica-Șanțul Mare**




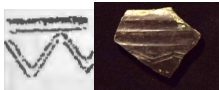


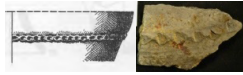


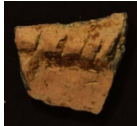

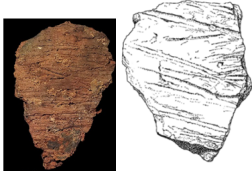
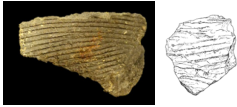
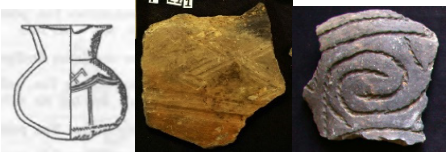
Generally, during the Mureș culture, three methods of decorative treatment were mainly employed: incision, impression, and applique, all in an extensive range of forms/motifs. The terminology, classification, and description used in this study have been adapted from the system developed during the excavations carried out between 2005 and 2015<sup>30</sup>. From Pecica-Șanțul Mare, 383 sherds were selected from the entire assemblage<sup>31</sup> (Tab. 2; Tab. 3).

Tab. 2. Main decorative patterns identified at Pecica-Șanțul Mare and Semlac-Livada lui Onea (adapted after Nicodemus 2018).

| <b>Type of decoration<br/>(no. of sherds)</b> | <b>Description</b>  | <b>Illustration</b>   |
|---|---|---|
| <b>Channeled (177)</b>                        | wide (variable thickness), linear, rounded cross-section<br>  |    |
| <b>Incised (46)</b>                           | thin, linear, usually more squared or v-shaped cross-section (but can be like a very thin channel)<br> |  |
| <b>Trailed (23)</b>                           | a lighter form of incision (sometimes just to the point of burnishing surface), line end tapers off, generally sloppier than incising (uncommon)  |  |
| <b>Engraved (0)</b>                           | incision into leather hard clay, edges raised with clay „overflow” (rare)   |   |
| <b>Tick (29)</b>                              | small linear impression made with a thin, sharp tool  |  |
| <b>Punctated (15)</b>                         | small, rounded impression, made with thin, sharp tool, usually in series  |  |
| <b>Node (13)</b>                              | larger rounded depression, made with a wide, rounded tip tool   |  |
| <b>Bossed (23)</b>                            | a rounded projection, usually circular or ovoid, either pushed outwards from the vessel interior or applique  |  |

<sup>30</sup> Nicodemus 2018.

<sup>31</sup> One single piece had possibly 2, 3 or more decorations on it. This fragment with several decorative patterns will be treated separately.

| Type of decoration<br>(no. of sherds) | Description   | Illustration  |
|---------------------------------------|---|---|
| <b>Arch (23)</b>                      | incised arches, usually in series   |    |
| <b>Hatch (2)</b>                      | tightly spaced linear incisions/<br>hatching, used to fill interior spaces<br>within/between incised elements<br>(lines, arches, triangles, etc.) |    |
| <b>Triangular (4)</b>                 | triangular shape (all three sides<br>present)   |    |
| <b>Chevron (19)</b>                   | V-shape (2 sides only)  |    |
| <b>Prow (28)</b>                      | „beak” shaped relief  |    |
| <b>Encrusted (1)</b>                  | decorative element filled with white<br>lime  |    |
| <b>Pinched Fillet (81)</b>            | applique band with vertical pinched<br>elements (sometimes tool im-<br>pressed)   |   |
| <b>Pin. fillet even w/ lip (7)</b>    | fillet at the lip rather than below it<br>or on the neck  |  |
| <b>Pinched lip (41)</b>               | lip itself pinched, rather than appli-<br>que fillet  |  |
| <b>Fingernail impressed (26)</b>      | like pinching but small vertical inci-<br>sions made with the fingernail  |  |
| <b>Applique (6)</b>                   | variety of forms, any other type that<br>is added to vessel surface (esp. ribs)   |  |
| <b>Rusticated/Brushed (27)</b>        | decorative form applied on the<br>vessel surface, made with soft plant<br>broom/brush   |  |
| <b>Combed (31)</b>                    | decorative form applied on the vessel<br>surface, made with a solid comb-like<br>tool   |  |
| <b>Other (0)</b>                      | describe and sketch, including „bent<br>cross,” unusual-shaped stamps/<br>impressions/„punctated,” cord<br>impressed                              |   |

*Channeling* (also known as grooving) is the most common type of ornamentation at Pecica-Șanțul Mare (Tab. 3). It is produced by drawing broad lines with a tool with a rounded tip on the firm unbaked pot surface (Fig. 4). The tip variation and the size of the tool confers variable breadth to the decoration. Of the 177 sherds with this type of decorative treatment, 34 were rims, 19 handles, 13 bases, and 12 combinations of the above<sup>32</sup>, and 99 body sherds. As indicated by the recent excavations, grooving was present in all cultural phases; we

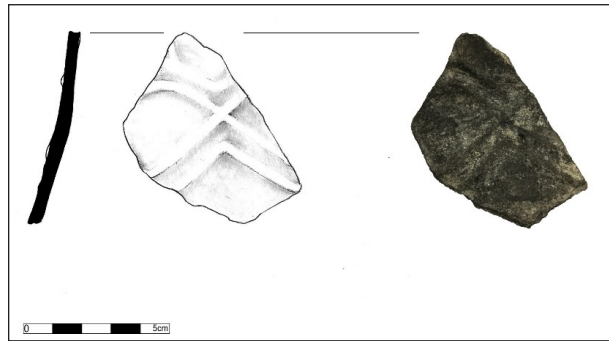


Fig. 4. Sherd IV 8414, with channel decoration.

cannot determine precisely when the peak of this type of decorative treatment was reached. Grooving was applied to vessels used for serving and storage, displaying different surface treatments like plain, burnished, or smoothed surfaces. Grooving also appears on fine-ware ceramics, small cups, or bowls.

The *incised* element is characterized by the soft cutting of the surface of the clay with a sharp instrument. It is represented by narrow lines, usually rectangular, and a V-shaped cross-section. The incisions may differ in size and shape, the function of the tip of the instrument, the angle of the tool and the amount of pressure applied, the stage of application (before or after polishing, smoothing, burnishing, etc. of the respective surface), the dryness of the clay (soft, hard), while the skill of the potter permitted a vast range of esthetic effects<sup>33</sup>. Many other complex incised decorations may develop from a basic incision under various forms. In the studied assemblage, the incision technique was used mainly to create geometric forms such as dots, triangles, and arches (see below).

Incision was used on 11 rims, 14 handles, two bases, nine combinations, and nine body sherds. Similar to grooving, incision was present in all periods of the existence of the Mureș culture. A slight preference for the potter was observed when using this decorative treatment, mostly on rims, handles, bases, or combined. It is applied mainly on vessels with burnishing, coarse burnishing, smooth, or plain surfaces. Small cups with burnished and polished surfaces were decorated with this decorative form. It appeared on almost all vessels, from utilitarian vessels used for serving and storage to high-quality pottery. During the Florescent period, special vessels (baroque-style vessels) with a typical handle in the 'ansa lunata' and 'kantharos' styles were produced<sup>34</sup>. Among the sherds studied, incision was the most common decorative treatment on this type of handle.

The *trailed* element is a lighter form of incision, generally sloppier, made with a thin, sharpened tool. It appears like a line that tapers off towards the end. It is not a common decorative form in the Mureș culture. Trailing was identified on five rims, four handles, two bases, and four body sherds. The first occurrences during the cultural phases at Pecica-Șanțul Mare are impossible to discern. Trailing appears on utilitarian vessels used for cooking, serving, and storage, with burnished and coarse burnish surface treatment.

The *engraved* element is another type of incision applied on leather-hard clay. It involves removing clay from the vessel's surface to produce deep designs with clear marks; the edges of the cut appear raised, triggered by clay "overflow." Unfortunately, no fragments of this type of decorative treatment were noted among the samples analyzed.

*Ticks* are small linear impressions made with a thin, sharp tool (Fig. 5). They were identified on ten rims, five handles, two bases, three combinations, and nine body sherds. This

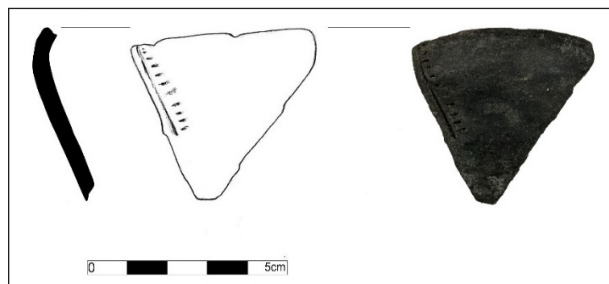


Fig. 5. Sherd IV 8365 f, possibly from a cup/jug with ticks.

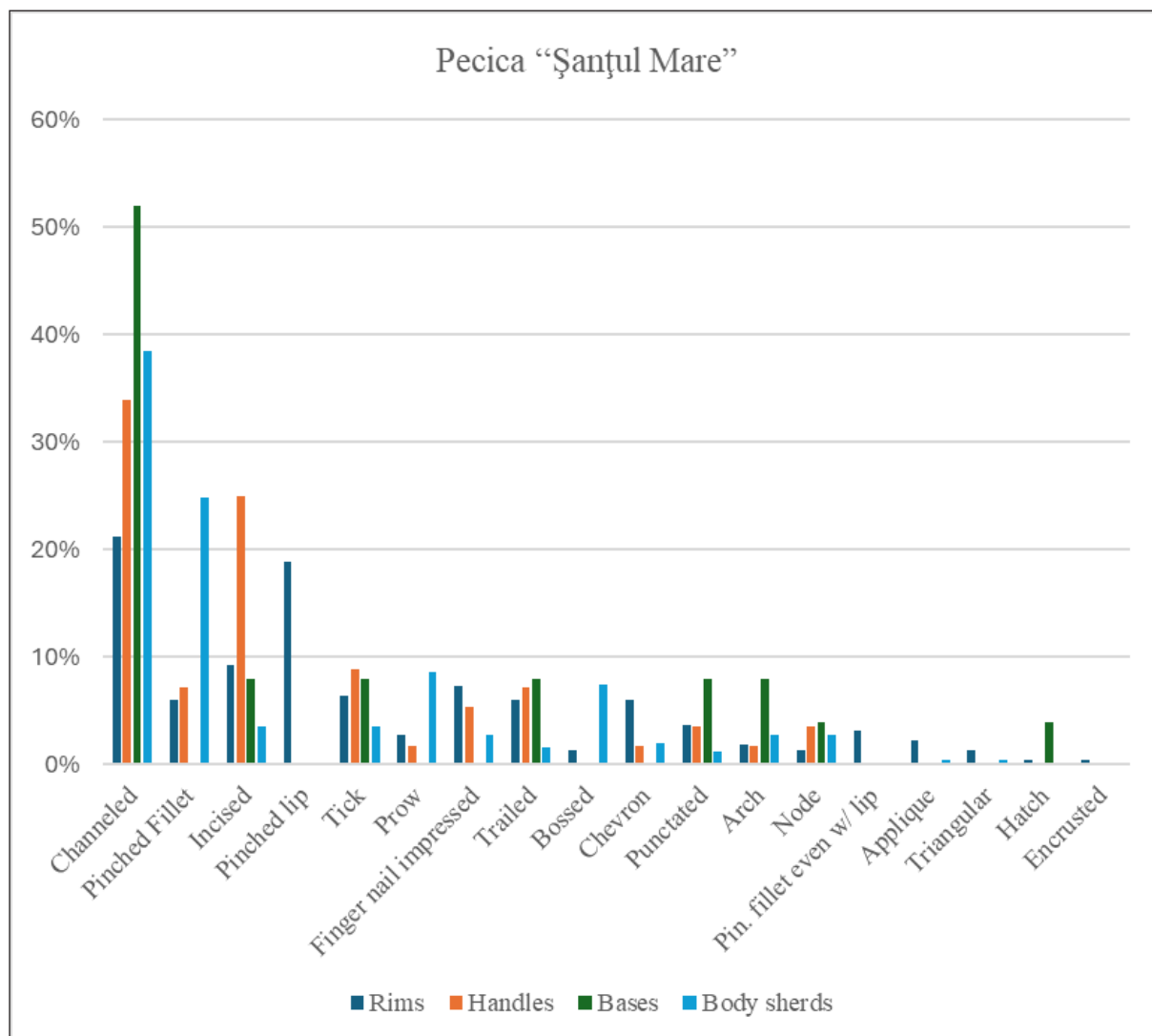
<sup>32</sup> Pot fragments which have combined diagnostic parts such as a rim with attached handle, or handle attached to base or all three parts.

<sup>33</sup> Rye 1981, 90.

<sup>34</sup> O'Shea-Nicodemus 2015.



Tab. 3. Decorative styles observed on rims, handles, bases, and body sherds.



element appears on utilitarian and fine ware vessels used for cooking, serving, and storage, mostly on bowls and pitchers. The surfaces of those vessels varied from simple plain treatment to smooth, coarse, and fine burnishing or polished. Considering the stratigraphy of the excavation levels reported by Popescu, this element was more frequent in the early phases of the settlement and less used during the Middle and the Florescent Period<sup>35</sup>. This observation should be further reviewed when more precise chronological data from a detailed layer is available.

*Punctuation* is applied by repeatedly pressing small rounded impressions into the wet clay with the end of a small, thin, and sharp instrument such as bones, cane, or other narrow tool (Fig. 6). This decorative form was

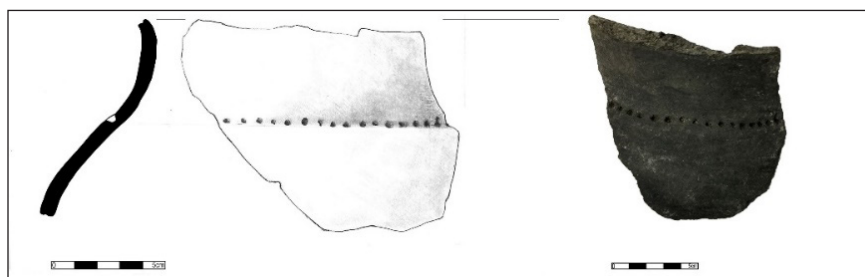


Fig. 6. Sherd IV 8352 a, possibly from a jug/jar fragment with punctuation.

<sup>35</sup> This observation should be put under a further review when there will be more precise data in terms of a detailed layer sequence. The ongoing pottery analysis of the project directed by the University of Michigan will bring complete information on the dispersal and evolution of decorated pottery inside the settlement. During the excavations all diagnostic pottery was mapped (for more information on this topic see Nicodemus 2014, 137).

applied especially on fine ware ceramics and mainly on the non-body elements like shoulders, and the upper and lower body. Our study identified 3 rims, 2 handles, 2 bases, 5 combinations, and 3 body sherds with this decoration form. Punctuation was applied to the wet clay, followed by a high-quality burnishing treatment. It was primarily found on small vessels like cups, bowls, and pitchers with burnished, polished, and sometimes coarse burnished surfaces. These vessels were not for daily use in household activities but for storage and serving on special occasions.

*Nodes* are larger rounded depressions made with a comprehensive, rounded tip tool. A few pieces were identified: 1 rim, 2 handles, one base, 2 combined, and 7 body sherds. It is hard to determine precisely which type of vessel was the most preferred or the kind of surface treatment used for this type of decoration. On the few sherds we identified, nodes were applied on coarse burnished and burnished bowls or jugs used for serving and storage.

*Bosses/Nipples* are rounded projections, usually circular or ovoidal, either pushed outwards from the vessel interior or appliques. Three rims with sufficiently large body showed this decorative element. 19 other examples were noted on simple body sherds. This projection occurs on utilitarian vessels used for serving and storage, such as bowls, plain cooking vessels, jars, or jugs with plain, coarse, burnished surfaces.

*Arches* are incised or channeled geometrical decorations that usually come in series on the vessel's surface. This decorative form was consistently applied to fine-ware vessels with burnished, coarse burnished, and polished surface treatment. It is found on medium- and big-size vessels like bowls, jugs, or jars and is used primarily for serving drinks and already-cooked food. Pots ornated with arched decorations were likely used for special events, ceremonies, or feasting. Given the few sherds found, it is hard to determine the internal trajectory of this decorative form within the Mureş culture. The few pieces probably range from the Middle Bronze Age sequence to the end of Pecica's existence.

*The hatch* is a tightly spaced linear incision that fills interior spaces within/between incised elements (lines, arches, triangles, etc.). Only three samples were identified: one on a cup, the other on a sherd fragment including part of the rim and a handle, and the third on a rim. The cup and the single rim have burnished surfaces, and the combination fragment has a plain surface. This decorative form might be typical of an MBA.

*Triangular shapes* are common geometric motifs applied on the surface of vessels. This decorative treatment was identified on one rim, two combination sherds, and one body sherd. It appears on coarse burnished and burnished vessels. According to the levels numbered by Popescu, this decoration can be integrated into the typical ornamentation of the MBA and LMBA.

*Chevrons* comprise a series of connected incised W-shapes (Fig. 7). It is a common motif in the Mureş culture. From Pecica-Şanţul Mare were recovered 8 rims, one handle, 5 combination sherds, and 5 body sherds. Chevron appears on fine ware vessels, especially large opened bowls, cups, and jugs used mainly for serving and storage on special occasions, ceremonies, and feasting. It was intensively employed during the whole MBA sequence.

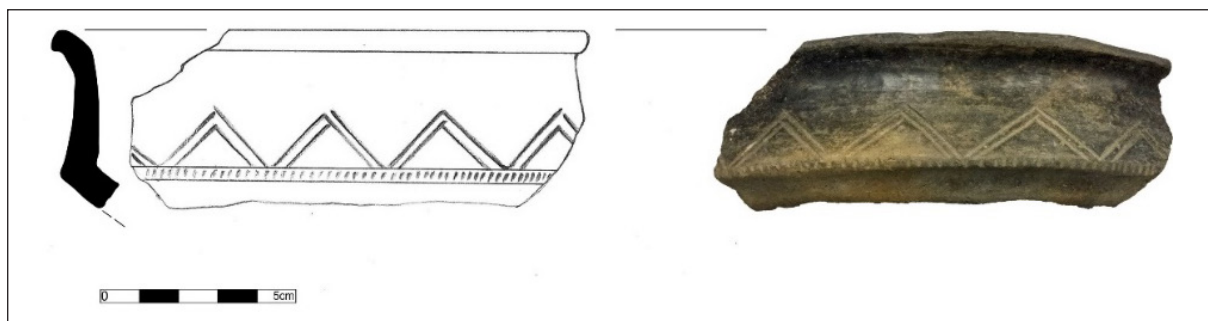


Fig. 7. Sherd with no inventory number, from a bowl fragment with various decorative forms: chevron and tick.

A *prow* is a “beak” shaped relief applied on the surface of a vessel (Fig. 8). It has been identified on 5 rims, one sherd with a handle, and on 22 body sherds. This shaped relief was frequently noted on large bowls, jars, or jugs with burnished and coarse burnished surface treatment. Considering Popescu's layer seriation, it seems it was from MBA on.

*Encrustation* is an imported decorative element filled with white lime. It was identified on a sherd with only one combination (rim with handle). It was applied at the bottom of a high-arched handle from a cup with a smoothed surface.

A *pinched fillet* is an applique band with vertical pinched elements (sometimes tool-impressed) (Fig. 9). A lump of clay is manipulated into a vessel shape, creating a small opening in the lump by squeezing it between the thumb and the fingers or between the fingers of both hands. The same technique is used for *pinched fillets*, even with lip and *pinched lips*.

A *pinched fillet, even with a lip*, is an applique fillet band attached at the lip and not below it or on the neck, while a *pinched lip* is when the lip itself is pinched during the pot-making.

These three pinching types are common decorative forms used throughout the Mureş sequence. All three pinching forms are mainly applied on utilitarian vessels used primarily for cooking and storage. This pinched treatment is expected to be found on large and very large coarse ware vessels like large-opened cooking bowls, jars, or plain cooking pots. The pinched fillet was associated with 9 rims, 4 handles (decoration was not applied directly on the handle), 4 combination sherds, and 64 body sherds. Pinched fillet with lip was identified on 5 rims and 2 combined sherds, and the pinched lip on 23 rims and 18 combination sherds.

*Fingernail impression* is a sub-category of the impressing decoration similar to pinching. Still, the result is small incisions made with the fingernail (Fig. 10). The impressing might have also been made with a tool that pressed into the soft clay, leaving the negative of its motif. Not only fingernails can be used to produce this motif, but other natural tools can also be used, such as shells or plant stems. This decoration was mainly applied on rims (14 samples have been identified) but sometimes on other parts of the vessels (3 handles, 2 combination sherds, and 7 body sherds). This impression was mainly applied on large, plain cooking pots with coarse surface treatment. Most of the fingernail-impressed rim fragments came from such types of pots<sup>36</sup>.

*Applique* comprises a variety of shaped pieces of clay forms, especially ribs, bonded to the vessel surface by pressure (Fig. 11). Five sherds with rims and one

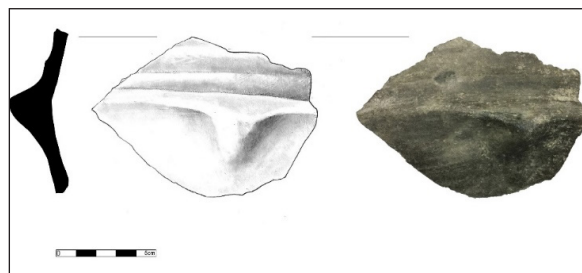


Fig. 8. Sherd IV 7886c, Prow.

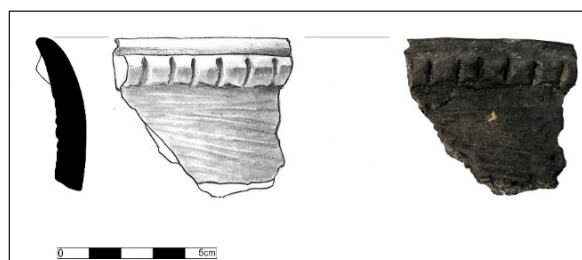


Fig. 9. Sherd IV 8375, from plain cooking pot fragment/jar, with pinched fillet and combed decoration.

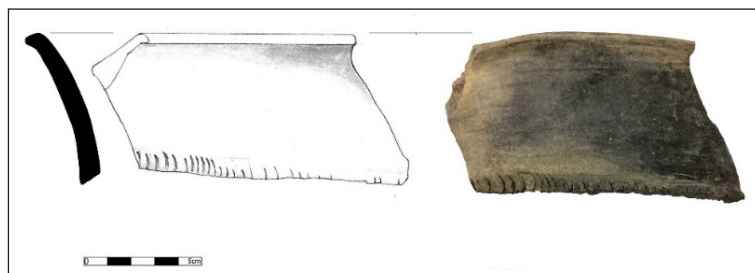


Fig. 10. Sherd IV 8410, possibly from a bowl with a fingernail impression.

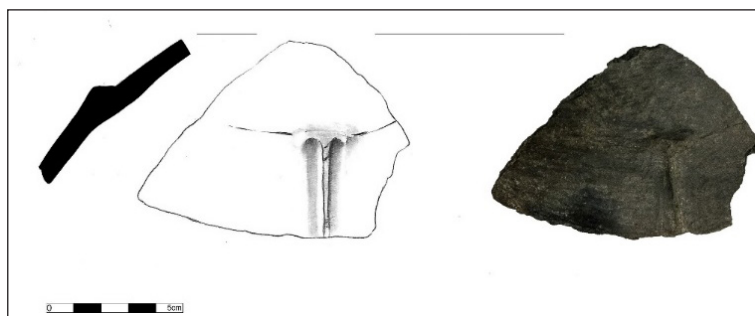


Fig. 11. Sherd IV 8358 d, possibly from a bowl with appliqué.

<sup>36</sup> All rims were measured using the rim measuring chart. Most of the fragments with fingernail-impressed rims had large diameters and represented less than 20% of the whole vessel. These fragments originated from large open vessels such as jars, bowls, or plain cooking pots.

body sherd displayed this decorative form. The ribs are usually placed on fine ware bowls, sometimes on the necks of large fine ware jars.

### ***Vessels with more than one decorative form***

This is a particular topic that deserves to be discussed separately. This study has indicated a tendency to use some elements and motifs in combination, thus creating specific local patterns of design configurations. Such fragments have black/dark brown or orange polished, burnished surfaces. As previously mentioned, *channeling* is the most used type of decoration applied on almost all parts of a vessel: rim, handle, and body. There were various instances when *grooving* was applied on fine ware ceramics alongside tick/punctuation, node, or chevron (Fig. 12; 13; 14). *Channeling* and nodes appear together on various fine ware medium bowls and cups. There are several studied sherds where channeling surrounds the bossed decoration.



Fig. 12. Sherd with no inventory number, small two-handled cup with various decorative forms: channel and punctuation.

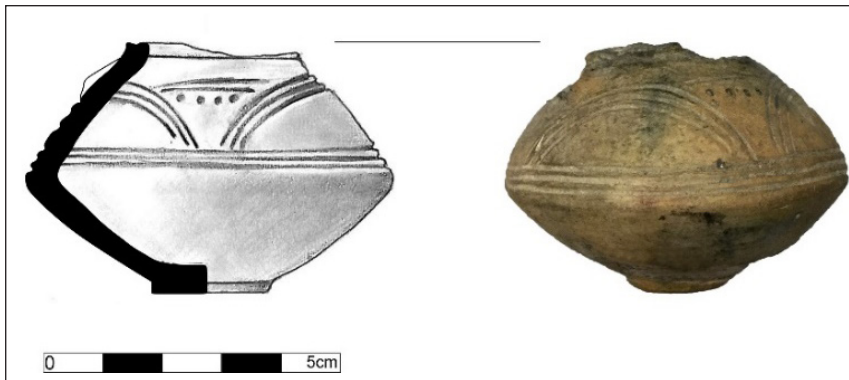


Fig. 13. Sherd IV 8077, small cup/pitcher with various decorative forms: channel, punctuation, arch, and trail.

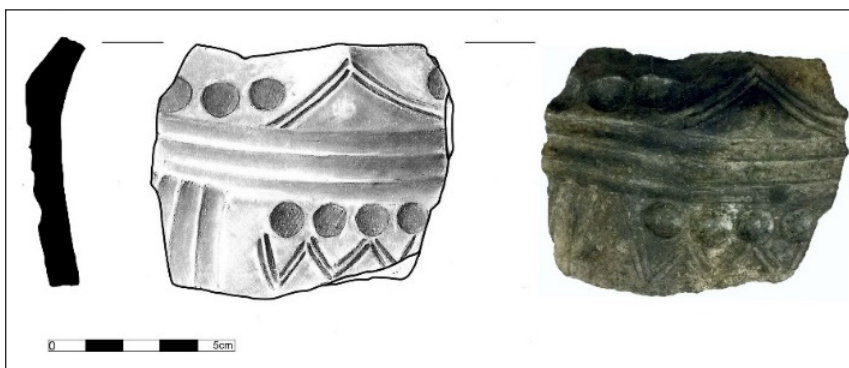


Fig. 14. Sherd IV 7668, possible bowl with various decorative forms: channel, node, chevron, and prow.

The incision is another decorative form applied alongside arches, hatches, and chevrons on fine ware ceramic (pitchers, bowls, or cups - Fig. 15). Several sherds displayed ticks together with chevrons or grooving. Prows, appliques, and pinched decorations are often not associated with other decorative forms. Vertical incisions sometimes accompany fingernail impressions. On the coarse ware ceramics, a pinched fillet is sometimes present alongside grooved decoration, usually vertical<sup>37</sup>.

<sup>37</sup> This was also noted by Soroceanu when he analyzed the fine ware pottery fragments from Crișan's excavations (Soroceanu 1991, 39-49).

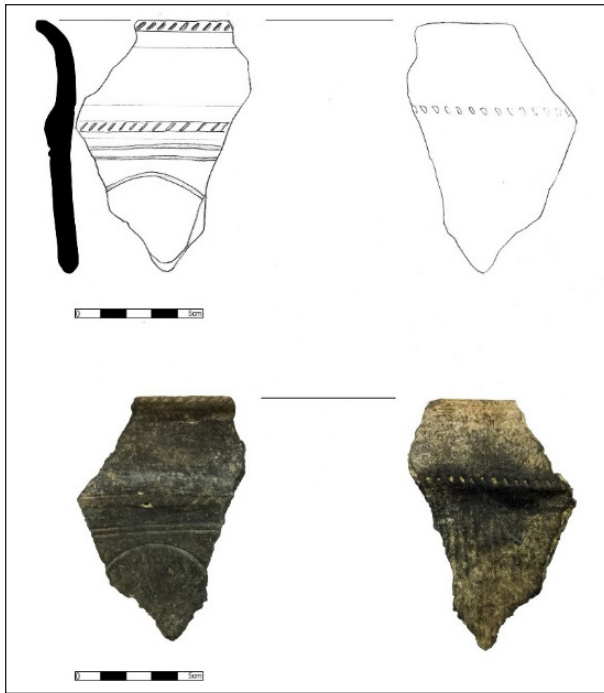


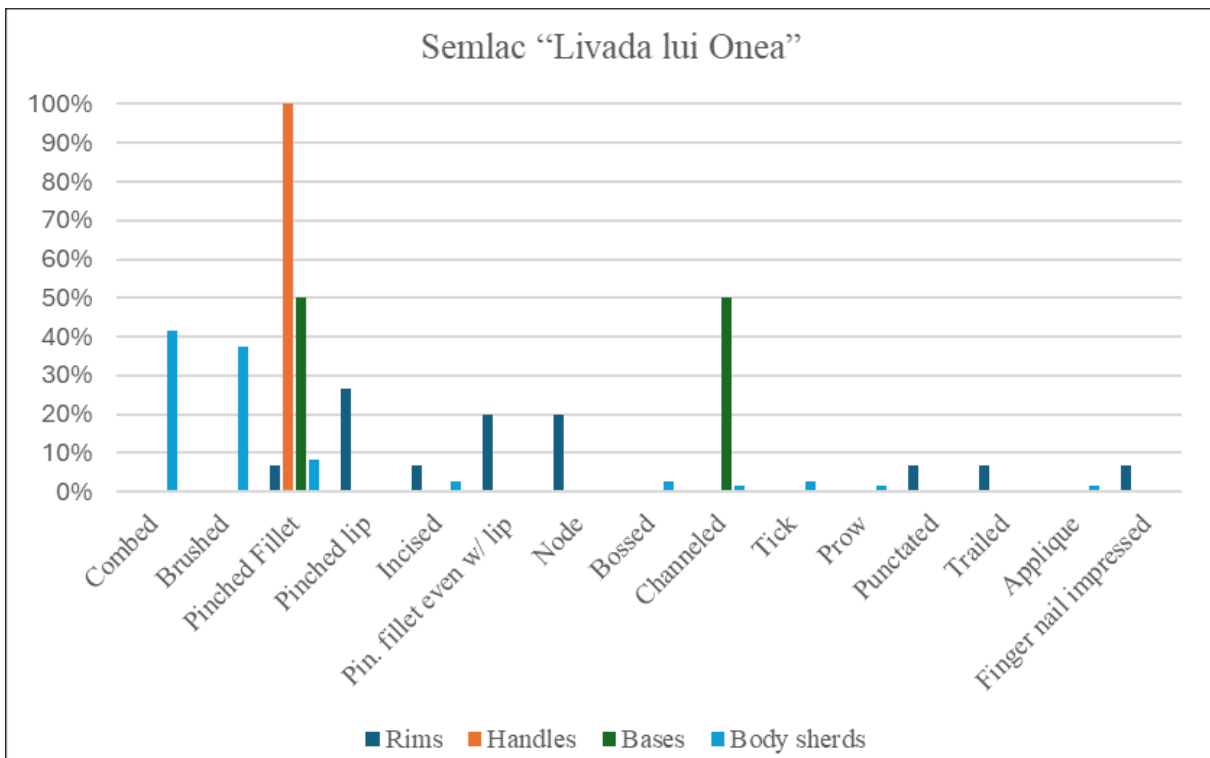
Fig. 15. Sherd with no inventory number, from a jar fragment decorated both on the inside and outside by incision, punctuation, and arch.

### Semlac-Livada lui Onea

Compared to Pecica-Șanțul Mare, *Semlac-Livada lui Onea* only yielded a small number of decorated specimens to be analyzed (Tab. 5). Twenty-nine ceramic fragments were examined of which 3 were channeled, 1 trailed, 3 incised, 1 punctuated, 2 with bosses, 2 tick with ticks, 4 with nodes, 8 with pinched fillets, 4 with pinched lips and 4 with fillets with lip, and the prow, applique and fingernail impressed comprised one sample each. A particularity of this tell was that pottery comprised a considerable amount of combed and brushed/rusticated sherds (27 brushed fragments and 30 combed fragments) in comparison to Pecica-Șanțul Mare, where only one combed fragment was present (Tab. 4). D. Popescu noted the same in his field report from 1944. By the presence of large combed and brushed/rusticated fragments only, the material was likely selected on the field, and only significant pieces were kept for the record. This assumption is based on the fact that the recent excavations at Pecica-Șanțul Mare yielded a considerable amount of

combed pottery fragments, especially during the 2013-2015 seasons when phases 5b-7 were excavated (Fig. 4)<sup>38</sup>. O'Shea and Nicodemus proposed separately treating the combed and the brush/rusticated pottery<sup>39</sup>. The ongoing studies on the pottery from Pecica-Șanțul Mare highlighted variabilities in

Tab. 4. Decorative styles on rims, handles, bases, and body sherds.

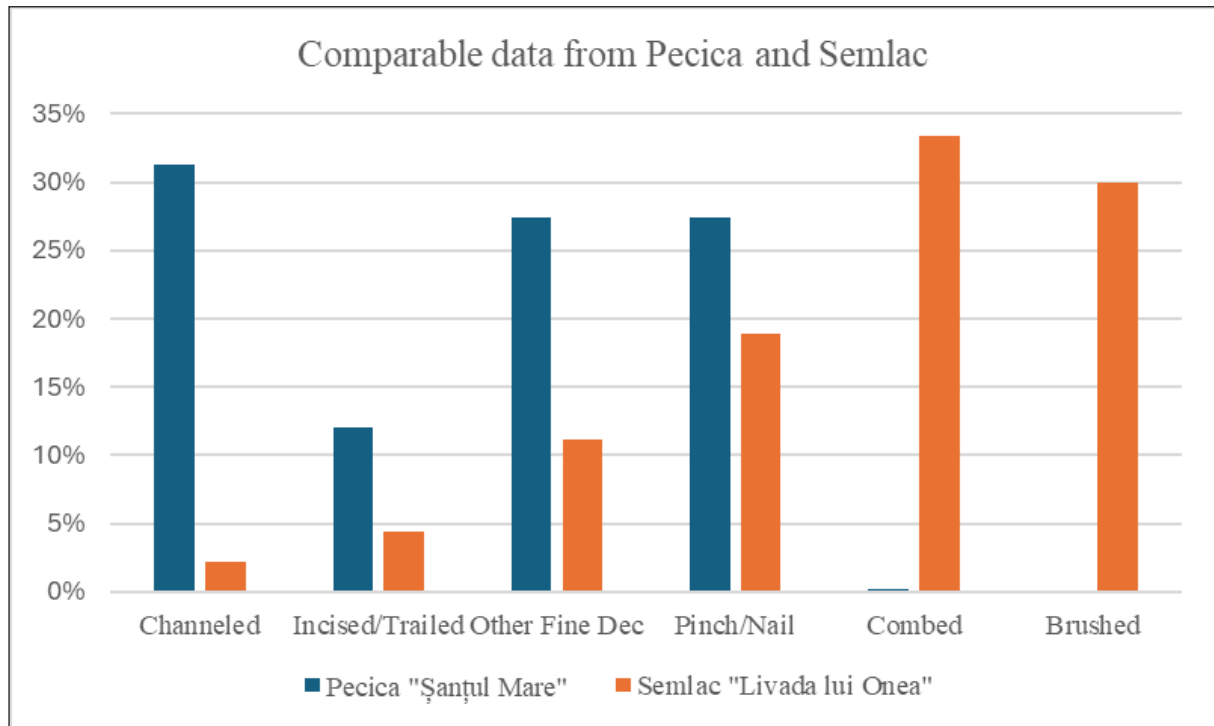


<sup>38</sup> However, it is expected that combed and brushed to exist in a higher quantity at Semlac than at Pecica, since these are EBA and early MBA decorative elements and that Semlac was founded earlier than Pecica.

<sup>39</sup> Nicodemus, O'Shea 2015.

surface decoration and the chronological positions of the respective sherds<sup>40</sup>. Those decorative forms were used with different types of tools. Brushed/rusticated decorations were probably made with a soft plant broom/brush while combing resulted from a rigid, solid, comb-like tool. Unfortunately, most samples recorded from Popescu's excavation at Semeac do not have an inventory number or mark referring to the level they were excavated from (Tab. 4).

Tab. 5. Comparative data from Pecica and Semeac. Internal organization of the decors according to the scheme proposed by Nicodemus and O'Shea.



## Discussions

Tracing a possible correlation between Popescu's excavations and the recent ones was one of the goals of the present study, with the purpose of better understanding the internal chronological evolution of some elements and motifs. This analysis should be seen as a hypothetical approach since there is no clear information on the location of Popescu's excavation (at both sites) and the stratigraphy (no record of phase/cultural layers identified, profile drawings, or other technical descriptions). The only levels recorded by Popescu were the 20-30 cm thick artificial ones (Tabs. 7 and 8).

Recent investigations indicated minor differences between the elevations and total layer thickness of the main historical periods recorded on the tell (Tab. 6). The highest difference might be noted in the thickness of the post-BA period (only 20 cm MBS - meters below the surface). This situation is due to the variations in the surface of the tell's time, including Crișan's excavations, which removed some of the surface deposits. Also, agricultural work leveled partially to the top of the tell.

Pecica-Șanțul Mare has a stratigraphic sequence 4.5m deep. According to Popescu's observations, the first approx. 50 cm represented a mixture of Iron Age and Early Medieval materials. The level between 40-60 cm likely comprised some BA material. Among Final MBA pottery sherds, the present research identified Dacian pottery. The possible explanation is that the Dacian occupation of the site started during the final Bronze Age<sup>41</sup>. The lowest level marked on sherds was 4.6 m depth, but few ceramics were recorded in the lowermost layers. A critical gap (pottery-wise) was noted between 3.40 m and 4.50, with no (decorated) fragments recorded. Due to these limitations, our analytical scheme was thus applied mainly to the sequence between 0.60-3.40 m. The evolution of decorations is presented diachronically from the oldest to the latest phases of the occupation in Tab. 7.

<sup>40</sup> Nicodemus, O'Shea 2015.

<sup>41</sup> O'Shea *et al.* 2006.

Tab. 6. Pecica-Şanţul Mare. Layer thickness correspondence between the recent and Popescu's excavations.

| University of Michigan |             |               |           |             |           | Popescu                             |                    |                    |           |  |
|------------------------|-------------|---------------|-----------|-------------|-----------|-------------------------------------|--------------------|--------------------|-----------|--|
| Period                 | Layer Start | Start Elv mbs | Layer End | End Elv mbs | Thickness | Period                              | Start Elv mbs      | End Elv mbs        | Thickness |  |
| post-BA                | surface     | 0.00          | B1        | -0.20       | 0.20      | post-BA (medieval and dacian level) | 0.00               | until -0.4 and 0.6 | 0.4 - 0.6 |  |
| Final                  | B1          | -0.20         | C3        | -0.90       | 0.70      | Bronze Age Sequence                 | until -0.4 and 0.6 | from 0.6 and 0.8   | 3 m       |  |
| Florescent             | C4          | -0.90         | E1        | -1.40       | 0.50      |                                     | from 0.6 and 0.8   | 3.6 m -3.8 m       |           |  |
| Formative              | E2          | -1.40         | E6        | -2.00       | 0.60      |                                     |                    |                    |           |  |
| Initial                | E7          | -2.00         | I         | -2.80       | 0.80      |                                     |                    |                    |           |  |
| Copper Age             | J           | -2.80         | M         | -4.00       | 1.20      | Copper Age                          | from 3.6m -3.8m    | until 5 m          | 1.4-1.2 m |  |

Channeling, incision, and pinched fillets are the most common decorations at Pecica-Şanţul Mare and were present in all phases of the occupation. No variation in the use time of these decorations was observed, as they seemed to have been equally used in all phases. The *pinched fillet even with lip* and the *pinched lip* were not common in all phases. *Pinched lip* occurred regularly from 1m in depth to the end. Between 0.40-1m, it was no longer a common decorative. *Pinched fillet even with lip* was not noted in the lowest levels, but was sporadically used in all phases down to the depth of 250-280 cm.

*Fingernail impressions* were sporadically noted through all phases of the Pecica occupation. Ticks did not occur very often between 2.00-3.10 m but started to appear regularly between 0.40-2.00 cm.

Tab. 7. Diachronic stylistic variability within Pecica-Şanţul Mare using Popescu's artificial layers.

| Reference             | Depth                                |         |                     |             |                  |         |                   |             |             |         |                   |             |                   |  |
|-----------------------|--------------------------------------|---------|---------------------|-------------|------------------|---------|-------------------|-------------|-------------|---------|-------------------|-------------|-------------------|--|
|                       | 425-450                              | 310-340 | 280-310             | 250-280     | 220-250          | 200-240 | 180-200           | 160-180     | 130-160     | 100-130 | 80-100            | 60-80       | 40-60             |  |
| Channeled             | Present in all phases                |         |                     |             |                  |         |                   |             |             |         |                   |             |                   |  |
| Incised               | Present in all phases                |         |                     |             |                  |         |                   |             |             |         |                   |             |                   |  |
| Pinched fillet        | Present in all phases                |         |                     |             |                  |         |                   |             |             |         |                   |             |                   |  |
| Fingernail impression | Sporadically used through all phases |         |                     |             |                  |         |                   |             |             |         |                   |             |                   |  |
| Pinched lip           | Used with regularity                 |         |                     |             |                  |         |                   |             |             |         | Not commonly used |             |                   |  |
| Pinched fillet at lip | Not present                          |         | Sporadically used   |             |                  |         |                   |             |             |         |                   |             |                   |  |
| Tick                  | Not present                          |         | Not very often used |             |                  |         | Regularly used    |             |             |         |                   |             |                   |  |
| Prow                  | Sporadic presence                    |         |                     |             |                  |         | Intensively used  |             |             |         |                   | Not present |                   |  |
| Trailed               | Regularly used                       |         |                     |             |                  |         |                   |             |             |         | Rarely used       |             |                   |  |
| Bossed                | Not present                          |         |                     |             | Very few records |         |                   | Highly used |             |         |                   |             |                   |  |
| Chevron               | Not present                          |         | Irregularly used    |             |                  |         | Very few records  |             |             |         | Regularly used    |             |                   |  |
| Punctated             | Not present                          |         | Regularly used      |             |                  |         |                   |             |             |         |                   |             | Reduced frequency |  |
| Node                  | Not present                          |         |                     |             |                  |         | Sporadically used |             |             |         |                   |             |                   |  |
| Arch                  | Not present                          |         | Regularly used      |             |                  |         |                   |             |             |         | Very few records  |             |                   |  |
| Applique              | Not present                          |         | Often used          | Not present |                  |         |                   | Few records | Not present |         |                   |             |                   |  |
| Hatch                 | Very few records                     |         |                     |             |                  |         |                   |             |             |         |                   |             |                   |  |
| Triangular            | Very few records                     |         |                     |             |                  |         |                   |             |             |         |                   |             |                   |  |
| Encrusted             | Very few records                     |         |                     |             |                  |         |                   |             |             |         |                   |             |                   |  |

Tab. 8. Diachronic stylistic variability within Smlac-Livada lui Onea using Popescu's artificial layers.

| Reference             | Depth       |         |         |         |         |           |         |         |         |           |      |
|-----------------------|-------------|---------|---------|---------|---------|-----------|---------|---------|---------|-----------|------|
|                       | 340-370     | 330-370 | 290-310 | 270-290 | 250-270 | 210-230   | 170-180 | 120-150 | 90-120  | 70-90     | 0-50 |
| Channeled             |             |         |         |         |         |           |         |         | present |           |      |
| Incised               |             |         |         | present |         |           | present |         |         |           |      |
| Pinched fillet        | present     |         |         |         |         |           |         |         |         |           |      |
| Fingernail impression |             |         |         |         |         |           |         |         | present |           |      |
| Pinched lip           |             |         |         | present |         |           | present |         |         | present   |      |
| Pinched fillet at lip |             |         |         |         | present |           |         |         |         | present   |      |
| Tick                  |             |         |         |         |         |           |         |         | present |           |      |
| Prow                  |             | present |         |         |         |           |         |         |         |           |      |
| Trailed               |             |         |         |         |         |           |         |         |         | present   |      |
| Bossed                |             |         | present |         |         |           | present |         |         |           |      |
| Chevron               | Not present |         |         |         |         |           |         |         |         |           |      |
| Punctated             |             |         |         |         |         |           |         |         |         | present   |      |
| Node                  |             |         |         |         |         | Very high |         |         |         |           |      |
| Arch                  | Not present |         |         |         |         |           |         |         |         |           |      |
| Applique              |             |         | present |         |         |           |         |         |         |           |      |
| Hatch                 | Not present |         |         |         |         |           |         |         |         |           |      |
| Triangular            | Not present |         |         |         |         |           |         |         |         |           |      |
| Encrusted             | Not present |         |         |         |         |           |         |         |         |           |      |
| Brushed/Rusticated    |             |         |         | present |         |           | present |         |         |           |      |
| Combed                | present     |         |         |         |         |           |         |         |         | Very high |      |

From 1.80 down, prows were sporadic and frequent at 0.60-1.80 m, with many sherds recorded at 0.60-0.80 m. *Trailed fragments* regularly appeared in the sequences between 1.00-4.25 m, while in the upper levels, between 0.40-1.00m, they rarely occur. Bosses are not common decorative forms in the lower layers. Their lowest occurrence comes from 2.00-2.40 m. It was only noted twice between 1.60-2.40 m but frequently in the layers between 0.60-1.60 m depth.

Chevrons occurred in almost all phases of the occupation. However, there was variation in their frequency within the layers. The 2.50-2.80 m depth records the deepest occurrence; irregularity is noted between 1.80-2.50 m. Between 0.80 and 1.80 m, only 3 samples were recorded, which might signify that this motif was not preferred in that cultural period. It was frequently noted in the upper layers between 0.40-0.80 m. *Punctuation* was regularly recorded between 1.00-3.10 m, and its frequency decreased between 0.40-1.00 m. The lowest layers yielded no node decoration. It appears between 1.80-2.00 m. Sporadically, it occurred in all phases, represented by the level of 0.60 to 2.00 m. Arches were quite common between 1.00 and 3.10 m. The levels between 0.40-1.00 m yielded very few records (4 samples). Although only 4 sherds with *applique* exist, three were recorded from the layer between 2.80 and 3.10 m. The fourth came from a depth between 1.60 and 1.80 cm. Triangles, hatches, and incrustation are poorly represented, and it was impossible to see a time pattern.

As mentioned earlier, decorated sherds from Smlac-Livada lui Onea were much fewer. This made an accurate analysis of stylistic variation within the internal chronology difficult. The irregular registration of the artificial levels suggested the hypothesis that the material had been previously sorted (Table. 8). As presented, only 2 channeled fragments were collected from the same depth. The same situation was noted for the incised fragments, with only 3 samples recorded. Four pieces with



node decoration were collected from the same depth at 210-230 cm. There were no records of chevrons, arches, hatches, triangles, or encrustation from Semlac.

The analyzed sherd assemblage shows that most decorations and motifs have existed almost through all phases of the Mureș occupation at both sites. As presented by Soroceanu, several decorative forms have continued in the BA sequences from the Eneolithic occupation of the settlement<sup>42</sup>. This can be the case of the *pinched fillet*, *channeling*, or *incision*. Some decorations such as ticks, bosses, chevrons, *punctations*, nodes, *arches*, and *appliques* seem not to have been known/used during the early phases. They might belong to the Formative, Florescent, and Late MBA occupations. However, the ongoing research on the pottery fragments (in this case, stylistic studies) collected from the recent excavations at Pecica-Șanțul Mare (2005-2015) should bring more precise information on the pottery and stylistic internal organization within the BA occupation of the tell.

## Conclusions

D. Popescu's excavations at Pecica-Șanțul Mare and Semlac-Livada lui Onea have yielded significant assemblages for the study of decorative styles of pottery. Information from whole vessels to ceramic sherds was obtained on decorative patterns, knowledge, behavior, manufacturing techniques, and social relations. All this information is pieced together to reconstruct part of the daily life of the Mureș culture communities. Following patterns in cultural norms established since the late phases of the Eneolithic period, the Mureș people developed decorative styles that placed them in a distinct position within the region.

This study focused on identifying decorative patterns within the Mureș culture by analyzing the sherd samples recovered from the two sites: Pecica-Șanțul Mare and Semlac-Livada lui Onea (Arad County, Romania). *Ca* 20 decorative elements and motifs were identified and analyzed in the pottery fragments. The most preferred decorative forms were incisions, channeling, pinching, and impressions. Particular forms, such as chevrons, arches, hatches, or triangles, occurred regularly on vessels used for serving or storage on special occasions, during ceremonies, or feasts.

Another focus of this research was to establish an approximate correlation between the excavations conducted in the early 1940s by D. Popescu and those of the University of Michigan (2005-2015). This correlation integrated the Bronze Age sequence investigated by Popescu into the detailed sequence provided by the later excavations. The whole Bronze Age sequence of the Pecica-Șanțul Mare has been divided into four main phases – Initial, Formative, Florescent, and Final – covering the later Early Bronze Age and Middle Bronze Age. The levels recorded by Popescu stretch mainly over the Formative, Florescent, and Final phases. This approximate correlation of the stratigraphic levels provided a better understanding of the internal evolution of pottery decoration from the two sites. Channeling, incisions, or pinching are decorative forms present throughout all phases. In contrast, other decorative forms like arches, punctation, and trailing, infrequent in the early phases of the settlements, peaked during the Florescent Period.

The analysis of the decorative forms applied on the vessel surface has shown that fine-ware pottery was more frequently decorated than coarse pottery. Decorations have often been applied to pottery with various degrees of surface burnishing. A considerable amount of the plain surface pottery has also been decorated. Fine ware sees a variety of elements and motifs, from superficial incisions and channels to complex decorative configurations that combine sets of channels with arches, chevrons, ticks, and punctations. Pinching was regularly used on plain surface pottery. Incisions and channels are more characteristic of vessels with simple surface treatments.

A social approach to this analysis suggests that the Mureș potters were mostly household producers, very skillful and knowledgeable of pottery techniques, and able to manipulate decorative techniques to obtain desirable styles. Their decorated pottery played a significant role in funerals, ceremonies (marriage, etc.), and household feasting activities (as shared valuable goods-gifts, acquisitions, offerings, dowries, or endows).

The several decorative patterns identified throughout this small-scale analysis can help us integrate them into a larger-scale pottery analysis. The ongoing work on the pottery recovered from the recent excavations done at Pecica-Șanțul Mare should bring more insights into what decorative

<sup>42</sup> Soroceanu 1991.

forms were used during the Early to Middle Bronze Age sequence and in what manner. Also, it is expected it will bring new observations on the evolution of the combed and brushed decoration at Pecica. In comparison to Popescu's excavations of Popescu at the tell, of which few decorated sherds remained, recent investigations allowed the recovery of a large amount of this type of decorative form, especially the combed one.

The present study aims to represent a starting point for further investigations of decorative patterns from other Mureş settlements and other Bronze Age cultures in the region contemporaneous with Mureş culture.

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