Baltic-Pontic Studies
vol. 24: 2019-2020, 177-203
ISSN 1231-0344
DOI 10.2478/bps-2019-0001

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A VESSEL OF THE FUNNEL BEAKER CULTURE AT SALGÓTARJÁN-PÉCS-KŐ

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ABSTRACT

This study describes and discusses an old find from a wholly new perspective. The non-local fragment or fragments represent imports or imitations that can be linked to the Funnel Beaker culture and not to Kostolác, Coţofeni, Livezile or Bošáca as originally suggested by József Korek. The hallmarks distinctive to the culture are the ornamented rim exterior and rim interior, the zigzag motif under the rim and the ladder motif on the belly. However, the channelling on the belly is a typical Baden trait, which has not been noted on Funnel Beaker vessels to date. The best and closest analogies can be cited from the Baden settlement at Oldalfala/Stránska–Mogyorós, where they were erroneously identified as Coţofeni/Livezile imports. The occurrence of Funnel Beaker pottery on several sites on the southern fringes of the Western Carpathians suggests a more complex situation; however, their stratigraphic contexts on these multi-period, stratified sites remain unclear due to the field techniques employed during the old excavations. The determination of the exact

place of origin is rather difficult within the culture's vast distribution, although they can most likely be assigned to the Funnel Beaker eastern group, Wiórek phase (IIIB – IIIB-C in the current terminology), whose absolute dates fall between 3700/3600 and 3200 BC. The petrographic analyses revealed that the clay and the tempering agents are of local volcanic origin, providing conclusive evidence that Funnel Beaker vessels had been made locally. In this sense, the pottery fragment discussed here can be best described as a local hybrid product.

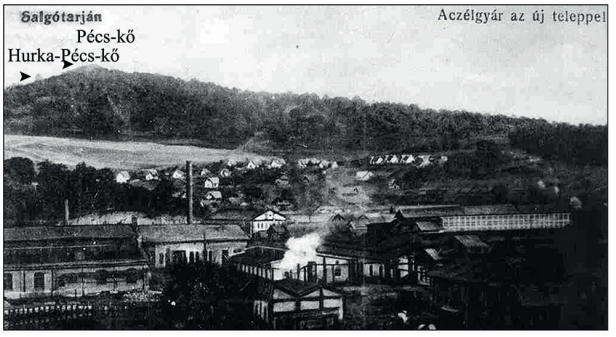
Keywords: Funnel Beaker pottery in a Baden milieu in Hungary, import, imitation or hybrid.

INTRODUCTION

This study examines a vessel fragment known to Hungarian archaeological scholarship for over fifty years found on the stratified hilltop settlement of Salgótarján-Mt. Pécskő, whose cultural attribution was only established in 2017, hopefully through convincing arguments [Horváth 2018: 126]. The goal of this study is to answer the question of whether the vessel fragment, whose best typological parallels can be found among the pottery wares of the Funnel Beaker culture, was indeed an import that had reached the site through long-distance trade or some other connection, or conversely, a locally made hybrid product by integrating the findings of archaeometric analyses and the archaeological evidence.

1. PREVIOUS ARCHAEOLOGICAL RESEARCH

The archaeological investigation of Mt. Kis-Pécskő, Mt. Nagy-Pécskő and Mt. Hurka-Pécskő, a triple basalt outcrop that evolved in the wake of young volcanic activity on the north-eastern outskirts of Salgótarján, but still within the city's administrative boundary, began in the wake of coal mining and basalt quarrying activities [Prakfalvi 2018]. The naturally fragmented, but nevertheless good quality surface basalt began to be mined from 1818 on Mt. Pécskő-Laposa and Mt. Hurka-Pécskő (Fig. 1: 1 and 1: 3). The basalt quarry that damaged Mt. Pécskő was officially active between 1923 and 1926; however, Mt. Kis-Pécskő was dynamited before the official opening of the quarry and was completely quarried out by 1930. The quarry itself was only closed down in 1940–1941. After 1926,



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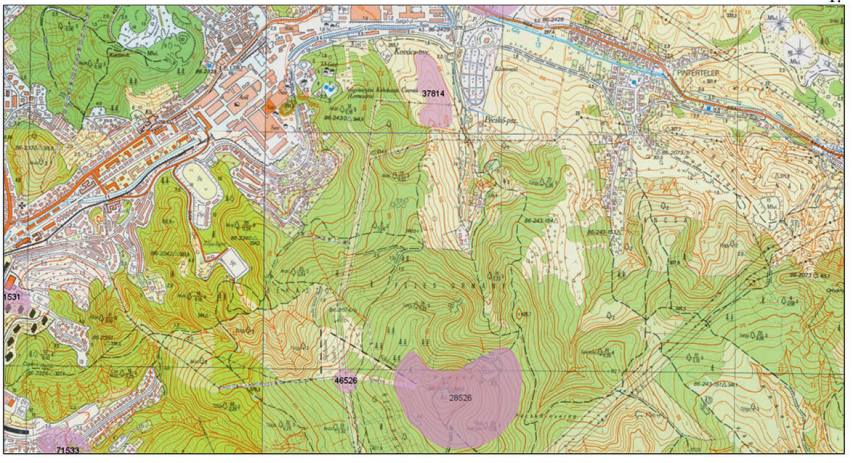

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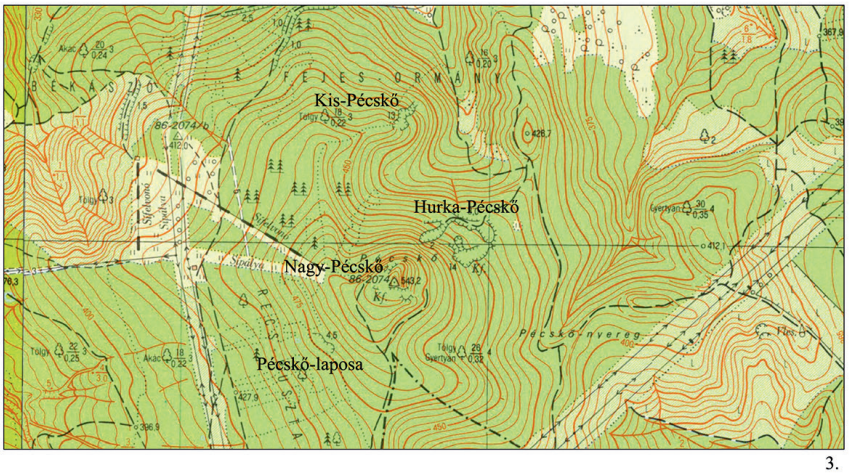

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F i g . 1. 1. Location of Mts Kis, Nagy and Hurka-Pécskő [detail of a postcard: György Kerta: "Steel factory with its new plant"; Salgótarján, Mining Museum, inv. no. 501; enlarged by L. Buda, after Prakfalvi 2018, Fig. 23]; 2. Archaeological sites in the area of Mt. Pécs-kő registered in the cadastre database; 3. Reconstruction of the original conditions, before the onset of quarrying and coal mining, after Prakfalvi 2018

it was operated by smaller private companies. Coal broke through the basalt in the form of natural coking at Kis-Pécskő. The coalmine located closest to Pécskő was the Nándor-táró.

The first archaeological finds came to light in March 1926, during the quarrying of a large basalt rock on the eastern side of Mt. Pécs-kő [Dornyay 1926]. On March 7, 1928, the Pécskő Basalt Quarry Company sent an owl to the local Chorin Ferenc Gymnasium, to which it had earlier presented archaeological finds from Mt. Pécs-kő [Balogh 2015] to contribute appropriate material to the growth of the school collection. Between 1933 and 1936, the area of the mine was leased by Sándor Holub, whose son, the younger Sándor Holub, was an amateur archaeologist who assembled a smaller collection of finds that is currently housed in the Kubinyi Ferenc Museum of Szécsény. His recently discovered hand-written diary revealed that an intact, finely made cross-footed bowl of the Early Bronze Age Makó culture, previously published as originating from Zagyvapálfalva, had actually come to light on Mt. Pécs-kő, in his father's quarry (Szécsény, Kubinyi Ferenc Museum, Accession no. 285) [Horváth 2017: 420, Fig. 2]. What seems certain is that late nineteenth- and early twentieth-century quarrying activity had completely transformed the landscape and that only Mt. Pécs-kő survives of the triple basalt volcano, on which the abandoned shafts can still be clearly seen.

Pál Patay and József Korek undertook an excavation on Mt. Pécs-kő (Fig. 1: 2) between May 17 and 25, 1960 (site registry no. 28526). The area they decided to investigate had been earlier disturbed by various illegal excavations conducted by treasure-hunters. They first opened a trial trench in April. Two adjacent trenches covering an area of roughly 60 m^2 were opened for investigating the hilltop Baden settlement, which were adjusted to the terraces. The trenches were cleared according to spade spits, and the features and the finds were similarly recorded according to spade spits. The excavation report with the assessment of the features and their finds was published by József Korek [Korek 1968]. The site is currently described in the archaeological cadastre as a hilltop settlement of the Baden and Piliny cultures and as the site of an Árpádian Age hillfort. As a matter of fact, the critical re-assessment of the finds revealed that the ceramic inventory was dominated by Hatvan pottery, implying that the site had been most intensely occupied by this prehistoric culture and by the Tumulus culture in its late phase [Horváth 2017; 2018].

In 1953, Pál Patay collected Baden and medieval pottery under the peak of Mt. Pécs-kő, on the western slope, at the edge of the wood by the ski run (Fig. 1.2), at the time the look-out or the restaurant was built (site registry no. 46526).

The remains of a timber-framed longhouse (post-holes, a hearth and a ditch) came to light on the hill lying south of the current municipal cemetery east of Salgótarján during the salvage excavation ahead of the laying of a 120 KW cable.

Regrettably, the current hilltop is strongly eroded owing to earlier cultivation and natural erosion. The few prehistoric finds are unsuitable for dating the building; however, in contrast to the Early or Middle Bronze Age date suggested in the published report, a date in the Neolithic/Early Copper Age (Lengyel III) seems more likely (site registry no. 37814) [for the correct chronological attribution, *see* Horváth 2018a: 416, note 19].

In his 1968 report, Korek described the Pécs-kő site as an independent stratified settlement of the Baden culture, which could be assigned to the culture's late, Ózd-Piliny group distributed in north-eastern Hungary. All the finds brought to light were inventoried as the culture's artefacts in 1960 in the collection of the Kubinyi Ferenc Museum in Szécsény.

In his doctoral thesis completed in 1986, István B. Kovács took a fresh look at the Ózd-Piliny group, reviewing also the group's Slovakian sites and proposed that the Piliny label should be discarded. He claimed that the sites in the Salgótarján area form a separate group, whose ornamental attributes (such as scoring, Ózd-type flat knobs and the positioning of applied ribs) partially overlap with those of the Ózd group. In his view, the separation of the Salgótarján group from the Ózd group was justified on account of the striking frequency of two decorative techniques, specifically ladder motifs and barbotine, on the sites in County Nógrád [Kovács 1986: 110-134]. He assigned sixteen key sites to the Salgótarján group, to his new Baden group: Várgede/Hodejov–Vár-hegy, Rimaszombat/Rimavská Sobota–Nyugat-Lakótelep, Felsőpokorágy/Vyšná Pokoradz–Banka, Felsőváły/Vyšné Valice–Desko-vár, Nagybalog/Veľký Blh–Zsibóka, Nagybalog/Veľký Blh–Ó-vár, Ozsgyán/Ožďany–Bikk, Alsósziklás/Nižný Skálnik–Maginhrad, Baracca/Barca–Kovalcsík-tag, Feled/Jesenské, Dúlháza/Dulovo, Zeherje/Zacharovce–Nagy-hegy and Beretke/Bretka–Peskő-barlang. However, most of the finds are either surface finds or originate from old excavations and are in this sense stray or unstratified finds. Moreover, most of the ceramic attributes he claimed as being distinctive to the Salgótarján group are in fact typical of other cultures and not characteristic of the Baden culture, a point noted in this author's critical review of the group [Horváth 2018: 146-152].

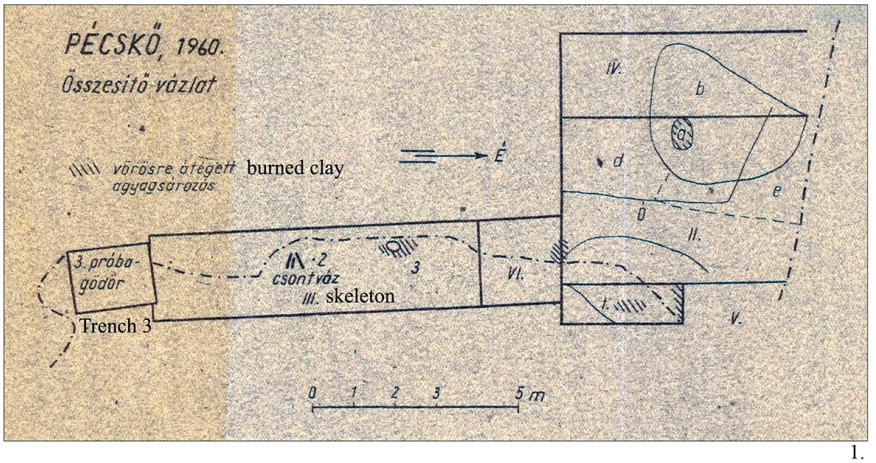
Pál Patay also addressed the problem of the late Baden Ózd-Piliny group distributed in north-eastern Hungary. Citing the findings of his excavation at Salgótarján in 1960 and his earlier investigations at Piliny–Vár-hegy, he posited an unbroken transition between the Late Copper Age Baden and the Early Bronze Age Makó cultures [Patay 1999].

The Ózd-Piliny group was recently discussed in brief by László György in his doctoral thesis, in which he surveyed the Late Copper Age in County Borsod-Abaúj-Zemplén, from where 126 Boleráz/Baden sites are known [György 2014]. His ultimate conclusion, based principally on ceramic correspondence analyses, was that there was no good reason to draw a distinction between the Ózd–Piliny and the Salgótarján group [György 2014: 225].

The critical review of the sites of the Ózd-Piliny group was begun as part of a research project funded by an international grant whereby the re-assessment of the sites in the Ózd area was followed by that of the sites in the Salgótarján area. The studies published in the wake of this work noted that the Ózd-Piliny group could hardly represent a late group of the Baden culture since it practically spans the entire Late Copper Age within the Baden complex, from the IB Boleráz phase to the close of Phase IV [Horváth 2017; 2018; Horváth *et al.* 2017; 2018]. Neither can it be regarded as a regional group of the Baden culture, merely a regional variant, whose emergence and distinctive ornamental attributes were to a large extent probably influenced by the terminal Middle Copper Age and its cultures. The ultimate insight offered by the critical review of the sites was that there is no good reason for disassociating the sites in County Nógrád (the so-called Salgótarján group) from the Ózd-Piliny group distributed in County Borsod-Abaúj-Zemplén. In contrast to István B. Kovács, a case was made for retaining the original name of the Ózd–Piliny group, because the name Piliny refers to the group's distribution in County Nógrád in the same way as the name Ózd, simultaneously the group's eponymous site, refers to County Borsod-Abaúj-Zemplén, in addition to alluding to one of the prominent Baden sites in the county investigated at an early date [*see* Horváth *et al.* 2017: 388, note 36; Horváth *et al.* 2018: note 34]. In this context, Róbert Malček's work on the Cserova hill country, also known as the Cseres Mountains, covered the south-western Slovakian region adjacent to the north-eastern Hungarian Baden territory and offered a broad overview of the fourteen Baden sites in that region as well as of their research [*see* Malček 2016][1].

Given that the archaeological material from the Salgótarján-Pécs-kő site was always treated as representing the Age Baden culture, the description of the finds followed the sequence of the inventory numbers in the re-publication of the assemblage, although the finds were grouped according to the cultures and periods distinguished during the critical review of the finds [Horváth 2018: 113-152]. Only the Baden and Kostolác finds were discussed at greater length, with a focus on the Ózd area and the sites in north-eastern Hungary rather than the entire Baden complex. The finds of the Makó and Tumulus cultures were covered in similar detail because these had been culturally misattributed, giving rise to a series of misunderstandings. The finds of the Hatvan, Tumulus and Piliny cultures were not assessed in detail because the lack of contexts in the case of these finds makes them little more than stray or unstratified finds. The Makó finds were published in a separate study [Horváth 2017].

[1] The sites in question are as follows: Hodejov/Várgede–Hrádok, Belina/Béna–Belinská jaskyňa, Drňa/Darnya–Tuszavár, Fil'akovo/Fülek–Hrad, Gortva/Gortvakisfalud–bližšie neurčená poloha, Hajnáčka/Ajnácskő––Hrad, Hajnáčka/Ajnácskő–Zaboda, Husiná/Guszona–bližšie neurčená poloha, Lipovany/Romhánypuszta–Pri mučínskom chotári, Stará Bašta/Óbást–Pohanský hrad, Šiatorská Bukovinka/Sátorosbánya, Šiatorska Skala, Širkovce/Serke–Sirkovský hrad, Šíd/Gömörsíd–Vysoká, Šurice/Sőreg–Sovi hrad, Jesenské/feled–bližšie neurčená poloha [*cf.* Malček 2016].



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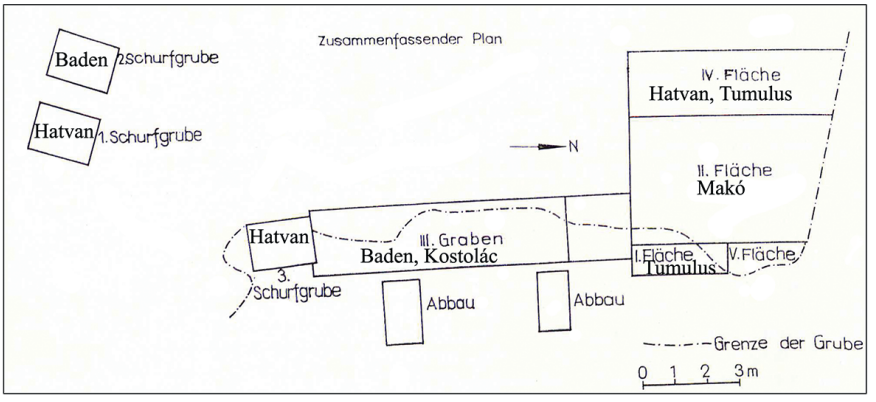


F i g . 2. Excavation trenches opened by József Korek and Pál Patay and the possible location of the features of various periods as reconstructed after the critical re-assessment of the finds, based on the 1960 plan of the excavation. Szécsény, Kubinyi Ferenc Museum, Archives

The pottery find identified as the import of another culture (inv. no. 60.1.496) and another fragment (refitted, inv. no. 60.1.435-436) are discussed here in detail. These pottery fragments were left out of the original site report published in 1968, since they do not appear either in the description of the finds, or among the illustrations. Trench X, from which it was recovered, does not appear on the site plans (neither on the ones in Korek's 1968 publication, nor in the field documentation deposited by Pál Patay in the Szécsény museum), although we know from Pál Patay's description of the excavation that Trench X, measuring 10×2 m, was opened south of Pécs-kő rock (Fig. 2). No stratification was noted in this trench and thus its excavation was soon terminated. The occupation level (marked as Layer h) yielded finds of the Tumulus culture (inv. no. 60.1.497-498, 501, 503) and Hatvan

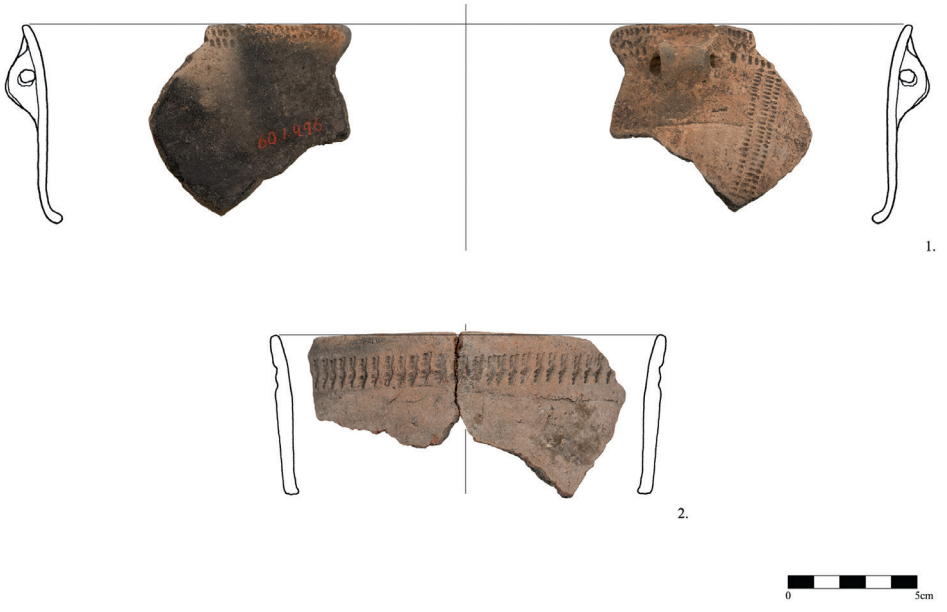
pottery (inv. no. 60.1.499-500, 502). However, the vessel fragment of the Funnel Beaker culture was not marked as coming from Layer h, suggesting that it had not been recovered from the occupation level or that it had been found above it.

2. DESCRIPTION OF THE POTTERY FINDS

2.1. Description of the Funnel Beaker vessel

Inv. no. 60.1.496 (Sample 6). Rim and body fragment of a decorated, thin-walled, wide-mouthed pot or bowl. Fine ware, decorated (Fig. 3: 1). Reddish, worn exterior, dark greyish, mottled interior, tempered with grog and micaceous sand, smoothed on both sides.

Vessel form: out-turned rim, fairly tall neck and rounded belly. The lower half of the vessel is missing. The out-turned rim is decorated with a double row of impressed, oblique stabs on the rim interior and rows of tiny impressed dots run on



F i g . 3. 1. Inv. no. 60.1.496. Exterior and interior of the Funnel Beaker vessel; 2. Inv. no. 60.1.435-436. Rim fragment of a pot, possibly of the Funnel Beaker culture. Photos by Timor Shah

the rim exterior too. Owing to the vessel fragment's extremely worn condition, it is unclear whether this pattern encircled the entire rim or only decorated the area above the handle. An incised zigzag line runs between two rows of stabs under the rim exterior.

A horizontally set string-hole lug with grooved terminals is set under the rim in a field outlined by lightly incised lines measuring *ca*. 47×45 mm; this field is plain, except for the decorated rows under the rim exterior. The handle was pierced with a plant stem, as shown by its surviving impression. A bundle of three vertical lines of stabbed dots runs along both sides of the handle toward the belly. The dots were created with horizontally positioned stabs, and perhaps formed a ladder-like motif. Only a single row is visible on the left side along the fracture surface. The belly was decorated with vertical channelling under the field with the handle attachment.

Dimension: 77×75×4 mm, rim diameter 340 mm.

Findspot: Salgótarján–Pécs-kő, Pál Patay and József Korek's excavation, May 17–25, 1960, Trench X, now in the collection of the Kubinyi Ferenc Museum, Szécsény.

The description of the vessel fragment in the museum's accessions register: '*Rim fragment of a deep bowl. Two rows of stabs on the interior, the exterior is richly decorated. An incised chevron set between two lines under the rim, flattened handle, two vertical rows of stabs, reddish channelling. 7×8 cm*'.

2.2. Another possible TRB vessel fragment

Inv. no. 60.1.435–436 (Sample 5). Rim fragment of a pot with an out-turned rim tempered with grog, micaceous sand and calcareous lumps, decorated with a double line of stabbed dots made with plant stems under the rim. Reddish-grey, smoothed exterior, red, polished interior. Rim diameter 160 mm. Refitted from two shards. From Trench V (Fig. 3.2).

2.3. Other Bronze Age finds from Layer h of Trench X

Late Bronze Age, Tumulus culture

Inv. no. 60.1.497 (Sample 7). Rim and neck fragment of a vessel with out-turned rim, perhaps from a bowl, decorated with a row of elongated stabs on the shoulder. Reddish-yellow, worn, tempered with micaceous sand and grog. 47×74×7 mm, diameter at least 300 mm. Trench X, Layer h (Fig. 4: 1).

F i g . 4. Pottery of the Hatvan and Tumulus cultures from Trench X (Bronze Age)

Inv. no. 60.1.498 (Sample 8). Body fragment of an amphora decorated with a rib with oblique grooving. Brownish-grey, smoothed, worn, tempered with micaceous sand and grog. 110×68×11 mm. Trench X, Layer h (Fig. 4: 8).

Inv. no. 60.1.501 (Sample 11). Worn fragment of the upper part of a small jug, cup or small bowl with an out-turned rim, short conical neck and spherical belly, the latter decorated with vertical channelling. Reddish colour, sandwich core, tempered with micaceous sand, calcareous lumps and grog. 48×40×2–6 mm, rim diameter 80–150 mm. Trench X, Layer h (Fig. 4: 3).

Inv. no. 60.1.503 (Sample 14). Strongly worn body fragment of a larger vessel, perhaps an amphora, decorated with wide channelling. Reddish colour, sandwich core, tempered with micaceous sand, smoothed interior. 116×76×7 mm. Trench X, Layer h (Fig. 4: 2).

Early and Middle Bronze Age, Hatvan culture

Inv. no. 60.1.499 (Sample 9). Rim fragment of a worn wide-mouthed bowl with an out-turned rim. Reddish colour, deeply scored exterior, smoothed interior, tempered with calcareous micaceous sand and grog, sandwich core. The rim and neck are thickened and decorated with incised horizontal lines that strongly resemble turn marks. 63×51×7–15 mm, diameter at least 400 mm (Fig. 4: 4).

Inv. no. 60.1.500 (Sample 10). Rim fragment of a vessel, perhaps a bowl, with an out-turned rim drawn out into a triangular ledge. Yellowish-grey colour, sandwich core, tempered with micaceous sand, calcareous lumps and grog, smoothed. 95×56×9 mm, diameter at least 480 mm. Late Hatvan-Tumulus culture (Fig. 4: 7).

Inv. no. 60.1.502 (Samples 12-13). Indistinct rim fragments of vessels with an out-turned rim and prominent shoulder carination. Yellowish-greyish-red, smoothed, tempered with micaceous sand and grog. 74×46×7 mm, diameter 200 mm; 88×41×10 mm, diameter at least 300 mm (Fig. 4: 5-6).

2.4. Baden pottery used as comparative material in ceramic petrography analyses

Inv. no. 60.1.46 (Sample 1). Rim fragment of an amphora or jug with an out-turned rim and a fluted strap handle terminating in two Ózd-type flat knobs and a third knob in between set on the rim. Reddish-grey, polished, sandwich core, tempered with grog. Diameter 100 mm. Trench I, spit 7 (Fig. 5: 1).

Inv. no. 60.1.243 (Sample 2). Rim fragment of a bowl with an in-drawn rim and a Viss-Ózd-type strap handle with a string-hole-like perforation attached to

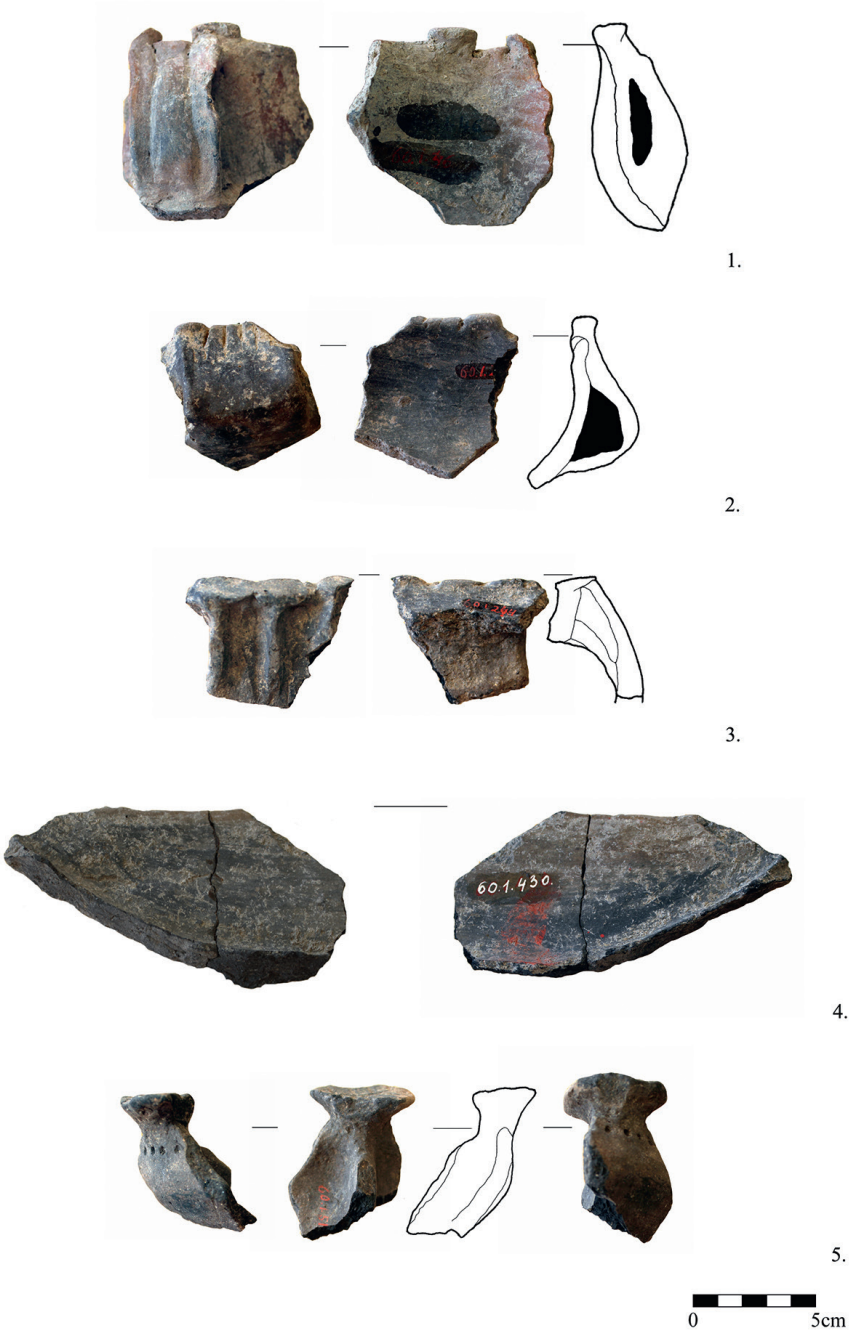


Fig. 5. The Baden pottery finds from the Pécskő site excavated in 1960, as determined by the critical re-assessment of the finds (Late Copper Age)

the body almost in line with the rim: the double fluting is a Viss trait, while the flat knob an Ózd trait. Reddish-grey, polished, tempered with micaceous sand and grog. 70×62×6 mm. Trial trench III, spit 1 (Fig. 5: 2).

Inv. no. 6.1.244 (Sample 3). Rim fragment with an out-turned rim and Ózd-type double fluted strap handle from an amphora or jug. Greyish-red, polished, tempered with grog. 63×50×12 mm. Trial trench III, spit 1 (Fig. 5: 3).

Inv. no. 60.1.430 (Sample 4). Inner dividing wall of a bipartite bowl. Dark greyish-brown, polished. 160×68×30 mm. Trench IV, Layer 10 (Fig. 5: 4).

Inv. no. 60.1.510 (Sample 15). Rim fragment of a bipartite bowl with an in-drawn rim and an ornamental knob decorated with radially incised lines in a divided field on the flat top. Reddish-brown, worn, tempered with gravel. 47×68×7 mm. Test pit 2, Trench IV, Layer 12 (Fig. 5: 5).

3. THE CULTURAL CONTEXT OF THE FUNNEL BEAKER FINDS

The assistance of a foreign specialist was enlisted in order to determine the cultural attribution of the vessel fragment inventoried under no. 60.1.496. This culturally intrusive vessel can in all likelihood be assigned to the Funnel Beaker culture and not, as earlier posited, to Kostolác, Coţofeni, Livezile or Bošáca. The most distinctive cultural markers are as follows: the decorated rim exterior and interior, the zig-zag motif under the rim and the 'ladder' pattern on the belly. The shallow, wide, vertical channelling is typical of the Baden culture and does not occur in any group or phase of the Funnel Beaker culture. Thus, the contention that the vessel fragment is not an import, but a local imitation or hybrid, whose creation was inspired by the ornamental repertoire of both cultures, seems more likely.

The best and geographically closest parallels can be cited from the Baden settlement at Oldalfala/Stránska–Mogyorós, where they were identified as originating from the Coţofeni/Livezile circle [Horváthová, Nevizánsky 2017: 9-100, Obr 15/1, Obr/16/1, Tab. XXXVIII/4, Tab. XLVI/2, Tab. LIX/5, Tab. LXI/2, Tab. LXII/10, Tab. LXXIX/12].

While the determination of the exact place of origin within the vast Funnel Beaker distribution is not an easy task, it can most likely be assigned to the eastern group, Wiórek Phase, corresponding to Phases IIIB/IIIB–C in the current periodisation, whose absolute dates fall between 3700/3600–3200 BC [Kośko, Przybył 2004: 270; Kośko 2006].

Its parallels from the Kujawy–Pomorze province in Poland are as follows: Opatowice, site 33, Phases Op33-A1 and Op33-A2 [Kośko 2006], Wilkostowo, site 23/24 [Rzepecki 2015: Fig. 5.22, 5.43-44, 5.60.12], Wolica Nowa (Polówka), site 1 [Grygiel 2016: 233, Fig. 188], and Nowy Młyn, site 6 [Grygiel 2016:

Fig. 239: 4, 295: 11]. Comparable pieces have been published from the classical phase of the south-eastern Funnel Beaker groups, which is generally dated between 3650-3400 BC [Włodarczak 2006], or in two phases of Bronocice settlement: BR II, 3700-3500 BC, and BR III, 3500-3300 BC [Kruk *et al.* 2016]. Nevertheless, the culture's Moravian group cannot be excluded as a possible place of origin or contact zone.

4. CERAMIC PETROGRAPHY

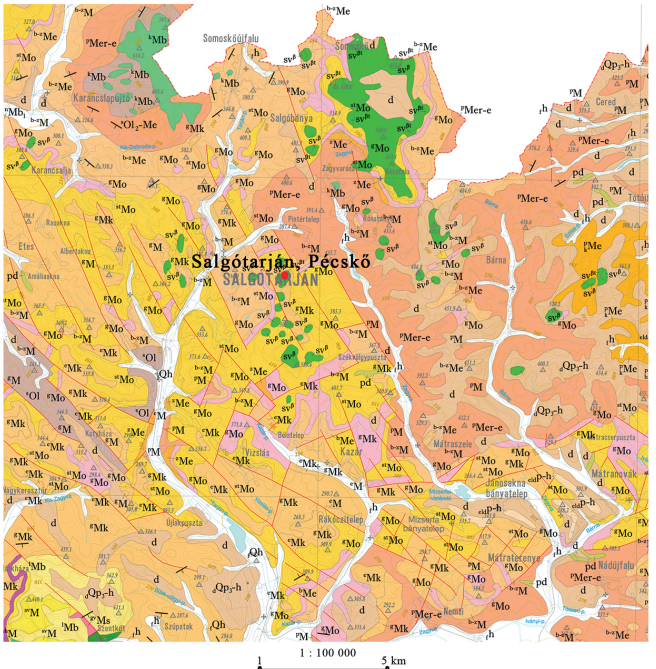
A total of 15 ceramic samples from the site were analysed petrographically in thin sections. Eight samples (7, 8, 9, 10, 11, 12, 13, 14) represent the Bronze Age Hatvan and Tumulus cultures, while seven (1, 2, 3, 4, 5, 6, 15) can be assigned to the Copper Age Baden culture. The Copper Age ceramics include two pieces, which show Funnel Beaker traits regarding their form and decoration, but channelling also appears on them. The aim of this study is to analyse the petrographic characteristics of the Funnel Beaker vessels and compare them with Copper and Bronze Age shards in order to assess whether they could have been made locally.

Six fabric groups could be distinguished among the analysed thin sections. The detailed petrographic descriptions of these fabric groups are presented elsewhere [Kreiter, Viktorik 2019]; here, the main traits of the fabric groups are discussed.

4.1. Geological background

The archaeological site is located (Fig. 6) at the meeting point of two microregions of the North Hungarian Mountains, namely the Medves region and Zagyva River valley [Dövényi 2010: 810-818]. The site itself is in the southern part of the Medves region, which is bordered by the Zagyva River valley from the east, south and south-west, while from the west it is bordered by the valley of the Tarján Stream [Dövényi 2010: 820-824].

The Zagyva valley developed into a sinus graben, which subsided between the Cserhát and Mátra Mountains at the end of the Miocene. The valley of the Tarján Stream is the northern branch of the Zagyva valley graben, which divides the Karancs Mountains from the Nógrád basalt area and the plateau of the Medves [Juhász 1987]. The most common formations around the site are Oligocene and Miocene clay marl, sandstone (Szécsény Schlier Formation, Pétervására Sand-



Holocene
Holocene, in general
$_{f}Qh$ — Fluvial Formations

Pleistocene–Holocene
Upper Pleistocene–Holocene
$_{pd}Qp_3$-h — Proluvial-deluvial Formations
$_{d}Qp_3$-h — Deluvial Formations
Pleistocene–Holocene, in general
$_{eld}Qp$-h — Eluvial-Deluvial Formations

Pliocene–Pleistocene
Upper Pannonian–Lower Pleistocene
Salgóvár Basalt Formation
$_{sv}Pa_2$-$Qp^{\beta}{}_1$ — basalt
$_{sv}Pa_2$-$Qp^{\beta t}{}_1$ — basalt tuff

Miocene
Badenian–Lower Pannonian
^{sv}Mb-Pa_1 — Sajóvölgy Formation
Sarmatian
^{gv}Ms — Galgavölgy Rhyolite Tuff Formation

Badenian
^{l}Mb — Lajta Limestone Formation
$^{n}Mb_1$ — Nógrádszakál Formation
^{k}Mb — Karancs Andesite Formation
Karpatian
^{g}Mk — Garáb Schlier Formation
^{e}Mk — Egyházasgerge Formation
Ottnangian
stMo — Salgótarján Lignite Formation ottnangian part
^{g}Mo — Gyulakeszi Rhyolite Tuff Formation
Eggenburgian
^{z}Me — Zagyvapálfalva Formation
$^{b-z}$Me — Budafok and Zagyvapálfalva Formation together
^{b}Me — Budafok Formation
Egerian–eggenburgian
^{p}Mer-e — Pétervására Sandstone Formation
^{pk}Me — Kéménektető Member

F i g . 6. Geological map of Salgótarján and the surrounding area, after Prakfalvi 1999

stone Formation), rhyolite tuff (Gyulakeszi Rhyolitic Tuff), Pannonian sediments, and sediments of river terraces and slope sediments [Prakfalvi 1999; Dövényi 2010].

The site and its surroundings are part of the catchment area of the Zagyva, Salgó and Tarján Streams. The sediments contain Oligocene and Pliocene coal seam beds with clay, marl, silt and sand; rhyolitic tuff and basalt (basalt tuff, basalt lava rock). In the southern part of the Medves region, basalt formations appear as individual basalt cones and laccoliths, a continuous basalt plateau is characteristic of the northern area of the Medves region [Juhász 1987; Prakfalvi 1999; Dövényi 2010: 815-818].

East of Salgótarján, there is a wide, almost 4.5 km-long mountain which, apart from Oligocene and Miocene formations, also features the products of basaltic volcanism (tuff, lava). There are three eruption centres in this range: Pécskő, Kis-Somlyó (Kis-Somlya) and Somlyó (Somlya), among which further basalt and basaltic tuff reliefs also appear [Jugovics 1968].

4.2. Results of the petrographic analysis

During the petrographic classification, apart from considering all visible rock and mineral fragments, we paid particular attention to the presence or absence of acidic volcanic tuff and volcanic glass since tuff is common around the site, but is a relatively soft rock and easily disintegrates. Therefore, its presence in ceramic thin sections indicates that the raw materials of the ceramics lie close to the outcrop of tuff or its regolith. Volcanic glass mainly appears in those ceramic samples that show more acidic volcanic tuff.

A common characteristic of the Copper and Bronze Age samples is that they were tempered with different amounts of grog. There is only one Bronze Age sample (No. 9, Hatvan culture) that is not tempered with grog, but where sand tempering was used instead. It must be noted that the practice of sand tempering was difficult to assess for the analysed ceramics because the site is located on the top of a hill and clayey raw materials must have been collected at the hill foot containing its detritus.

During the petrographic analysis, the inclusion density, size categories, inclusion sorting and roundness of the components were determined according to the guidelines of the *Prehistoric Ceramic Research Group* [PCRG 2010]. Inclusion density: rare (< 3%), sparse (3-9%), moderate (10-19%), common (20-29%), very common (30-39%) and abundant (> 40%). Size classification: very fine (< 0.1 mm), fine (0.1-0.25 mm), medium (0.25-1 mm), coarse (1-3 mm) and very coarse (> 3 mm). Inclusion sorting: poorly-sorted, moderately-sorted,

well-sorted, and very well-sorted. Roundness classes: angular, sub-angular, sub-rounded, rounded and well-rounded. An overview of the Fabric groups is presented in Table 1.

Table 1

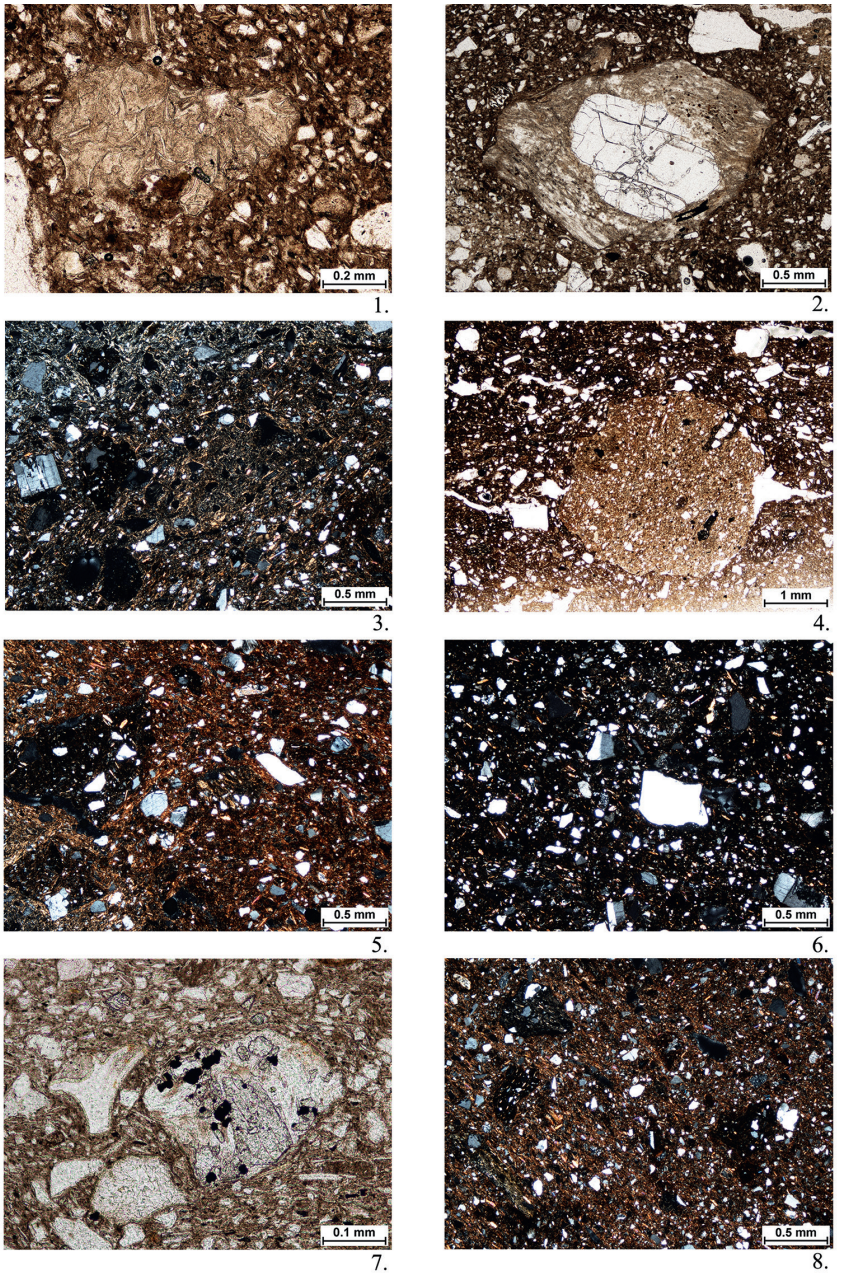
Main characteristics of fabric groups and their distribution of samples.

Fabric group	Inclusion	Size range of sand (tempering?)	Temper	Ceramic style and sample number
1	VF–F (0.05–0.25 mm), moderate; M–C, rare	–	grog	Baden: 2, 3, 4, 15; Hatvan: 10, 12;
2	VF–F (0.05–0.25 mm), sparse; M–C, sparse	–	grog	Funnel Beaker: 5; Hatvan: 13; Tumulus: 7, 8, 14
3	VF–F (0.05–0.25 mm), moderate; M–C, rare	–	grog	Tumulus: 11
4	VF–F (0.05–0.25 mm), common	M (0.25–0.8 mm), common	grog	Baden: 1
5	VF–F (<0.25 mm), moderate, well-sorted inclusions	–	grog	Funnel Beaker: 6
6	VF (<0.1 mm), moderate	M (0.25–0.6 mm), moderate	medium-sized sand	Hatvan: 9

Fabric 1 is represented by six samples (Fig. 7): four Baden (nos 2, 3, 4, 15) and two Hatvan shards (nos 10, 12). This raw material is very fine to fine-grained with medium amounts of inclusions. These ceramics were tempered with sparse to moderate amounts of fine to coarse (0.125-3.3 mm) grog. Samples 3 and 10, both Baden, have the most grog tempering (10–15%). Also, a Baden sample (no. 2) shows the most acidic volcanic tuff and volcanic glass fragments. In samples 3, 4, 10 and 15 (all Baden), acidic volcanic tuff is also present, but in lesser amounts than in sample 2, while in sample 12, basalt is also present alongside tuff.

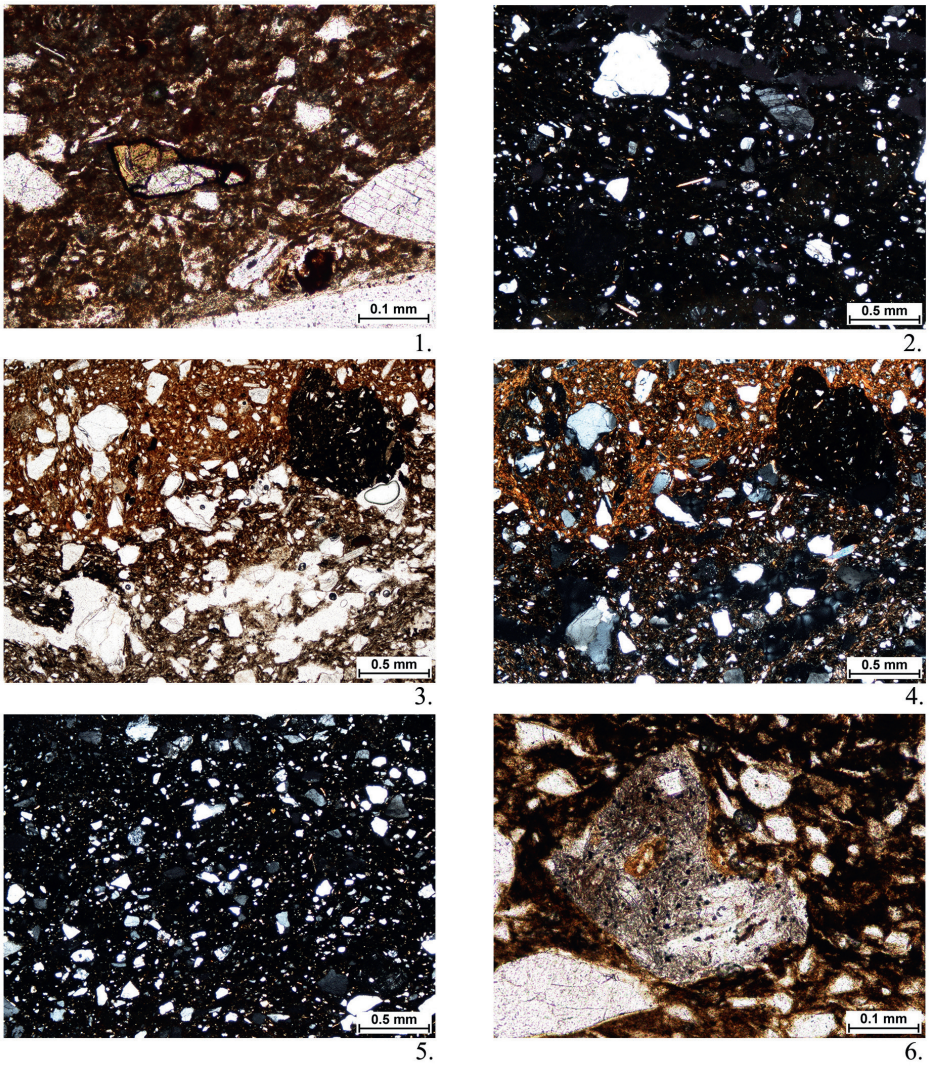
Fabric 2 is represented by five samples (Fig. 8: 1-2): one shard of the Funnel Beaker culture (no. 5), three of the Tumulus culture (nos 7, 8, 14) and one of the Hatvan culture (no. 13). This raw material is also very fine to fine-grained, the amount of inclusions is sparse and thus here it is in much lesser quantity than in Fabric 1. The ceramics were tempered with sparse to moderate amounts of fine to coarse (0.12-2.75 mm) grog. A Baden sample (no. 7) shows the most acidic volcanic tuff and volcanic glass fragments in this Fabric. In samples 5, 13 and 14, acidic volcanic tuff is also present, but in lesser amounts, while in sample 8, only volcanic rock fragments appear without tuff.

Fabric 3 is restricted to one Tumulus shard (sample 11). Similarly to Fabric 1, this raw material is very fine to fine-grained with medium amounts of inclu-



F i g . 7. Fabric 1 (all Baden culture). 1. Glassy acidic tuff fragment with volcanic glass, 100×, PPL (Sample 2); 2. welded acidic tuff, 40×, PPL (Sample 2); 3. General matrix of the ceramic, 40×, XPL (Sample 2); 4. Grog, 20×, PPL (Sample 3); 5. General matrix of the ceramic, 40×, XPL (Sample 3); 6. General matrix of the ceramic, 40×, XPL (Sample 4); 7. Volcanic glass and acidic volcanic fragment, 200×, PPL (Sample 15); 8. General matrix of the ceramic, 40×, XPL (Sample 15)

sions. The difference from Fabric 1 is that Fabric 3 does not show acidic volcanic tuff. Instead, neutral or acidic igneous inclusions appear. The raw material of this Tumulus vessel originated from a more allochthonous sediment, but it is very likely that it still lay close to the site. The inclusions in the Fabric show orientation, it being tempered with moderate amounts of fine to coarse (0.15–3.1 mm) grog.



F i g . 8. 1. Fabric 2: Allanite, 200×, PPL (Sample 5, Funnel Beaker culture); 2. Fabric 2: General matrix of the ceramic, 40×, XPL (Sample 5, Funnel Beaker culture); 3. Fabric 4: General matrix of the ceramic, 40×, PPL (Sample 1, Baden culture); 4. Fabric 4: General matrix of the ceramic, 40×, XPL (Sample 1, Baden culture); 5. Fabric 5: General matrix of the ceramic, 40×, XPL (Sample 6, Funnel Beaker culture); 6. Fabric 5: Andesite, 200×, PPL (Sample 6, Funnel Beaker culture)

Fabric 4 is represented by one Baden sample (no. 1; Fig. 8.3-4). This raw material is very fine to fine-grained with common amounts of inclusions. Unlike in Fabrics 1 to 3, in Fabric 4 there are no medium to coarse zoned plagioclase feldspars, but it shows more and larger tourmalines. This Baden vessel was tempered with sparse amounts of fine to medium (0.2–0.8 mm) grog.

Fabric 5 is represented by a Funnel Beaker sample (no. 6; Fig. 8: 5-6). This raw material is very fine to fine-grained with moderate amounts of rock and mineral inclusions. The inclusions are well sorted, they show serial size distribution. This vessel was tempered with spare amounts of fine to medium (0.1-0.75 mm) grog. The composition of this vessel is a mature sediment,[2] quartz dominates among the non-plastic inclusions. The appearance of andesite in this sample also indicates that the raw material of this ceramic lay somewhat farther from the site, but still in its vicinity.

Fabric 6 is represented by a Hatvan vessel (sample 9). This raw material is very fine-grained with moderate amounts of rock and mineral inclusions. The inclusions are poorly sorted, sand tempering seeming to be more apparent here than in the other ceramics. In the case of the other ceramics, we could not decide whether the inclusions were part of sand tempering or part of the sediment due to erosion. This vessel was tempered with moderate amounts of medium-sized sand. According to the composition of this sample, its raw material is also a mature sediment. Quartz dominates over feldspars among the non-plastic inclusions, and the inclusions are well rounded, rocks are metamorphic inclusions (gneiss, mica-schist, quartzite, tourmaline, granitoid).

Considering the petrographic composition of the analysed ceramics, they were most probably made from locally available raw materials that could be found in close proximity to the site.

4.3. Comparison and discussion

From a geological viewpoint, the basic, acidic and neutral volcanic inclusions in the ceramics (acidic volcanic tuff, andesite/dacite, basaltic andesite, basalt), the volcanic glass fragments, the medium-sized zoned plagioclase feldspars and allanite (orthite) among the heavy minerals found in the thin sections indicate that the raw materials of most of the ceramics came from a very similar volcanic environment.

[2] Since rocks and minerals are fragmented after erosion, they are transported increasingly farther away from their source; the proportion of the hardest and most stable rocks increases in the debris, and thus the debris becomes more mature.

Samples 3 (Baden, Fabric 1) and 7 (Tumulus, Fabric 2) show the most acidic volcanic tuffs and volcanic glass fragments, indicating that their raw materials were close to the tuff or its debris, thus lying very close to the archaeological site.

In Samples 3, 4, 10 and 15 (Baden, Hatvan, Fabric 1) and in Samples 5, 13 and 14 (Funnel Beaker, Hatvan, Tumulus culture, Fabric 2) acidic volcanic tuff is also present, but in lower amounts. The raw materials of these ceramics were procured farther from the tuff, thus a little farther from the archaeological site, but still close to the site.

The composition of Sample 5 (Funnel Beaker) is very similar to the other samples in Fabric 2. Its raw material also shows acidic volcanic tuff, therefore its local origin is highly likely.

Sample 12 (Fabric 1) is a Hatvan vessel containing basalt. We compared the basalt in this shard with a basalt sample from Mt. Pécskő (on whose top the archaeological site is located) from the comparative collection of the Department of Petrology and Geochemistry, Eötvös Loránd University. The fabric and composition of these basalts are very similar in the thin section and the analysed Hatvan ceramic could indeed contain Pécskő basalt.

Samples 8 and 11 (Tumulus culture, Fabric 2) show only neutral/acidic igneous inclusions (andesite/dacite) and no tuff (Karancs, Mátra, Cserhát Mts). The raw materials of these ceramics could also have occurred in the close vicinity of the site. In these ceramics medium-sized plagioclase feldspars also appear, which are linked to rhyolite tuffs, but derived from an allochthonous sediment, which is common in the area (Nagy-verő, Aranyos Stream valley, Tordas-tető, Fő-bárd, Vizslás Hill, Ortás-puszta, Kazári-völgyfő, Pécskő, Pécskő-puszta, Ortvány Hill, Kazár-Székvölgypuszta west, Kupán-hegyes, Gusztáv Hill, Tarján Stream valley, Szilas-tető) (Hámor 1985).

Sample 1 (Baden, Fabric 4) shows sparse amounts of acidic volcanic tuff and has no medium-sized plagioclase. This raw material could also have been procured farther from the site, but it can still be considered local. It shows a development of tuff in which larger zoned and twinned plagioclase feldspars are not characteristic.

Sample 6 (Funnel Beaker, Fabric 5), has two andesite fragments in its raw material, indicating that this raw material also came from a volcanic area, again, slightly farther from the site. The inclusions in this vessel are well sorted and the raw material is well prepared. It would appear that this Funnel Beaker vessel was more elaborately made than the other analysed shards.

Sample 9 (Fabric 6) is a Hatvan vessel and also has a mature sediment as raw material. It is rich in quartz and poor in feldspars, the inclusions are well rounded and rock fragments are mainly metamorphic. The granitoid containing tourmaline (*Gömörikum*) implies that the raw material of this vessel also lay farther from the site: the catchment area of the Zagyva or the area to its north seems to be a likely source of this raw material.

5. CONCLUSION

We identified the ceramic ware of a distant culture previously unencountered in Hungary during the critical re-assessment of the finds from the Salgótarján-Pécskő site. Although the vessel fragment was brought to light in the course of an excavation, it is an unstratified find in the sense that its exact context could not be determined within the settlement, especially in the light of the settlement's occupation in successive archaeological periods. The few pottery shards recovered from Trench X whose cultural attribution can be determined represent the Koszider phase at the close of the Middle Bronze Age and a mixed late Hatvan–early Tumulus horizon, while a few indistinct shards could equally well be assigned to the Late Copper Age Baden or the Late Bronze Age Tumulus culture. Since that particular area was not stratified, it seems more likely that the latter can also be assigned to the Bronze Age.

According to the field diary and the accessions register, the Funnel Beaker vessel fragment was not associated with these pottery shards and was found in another stratigraphic context, even if in the same trench. Its typological traits link it to the settlement's Late Copper Age occupation, possibly to its initial Boleráz period in view of the early date [Horváth, Svingor 2015]. However, since no Boleráz pottery is known from the site, it seems more prudent to focus on the Baden period in future studies and search for its origins somewhere in the contact zone between these two major cultural complexes (Fig. 9).

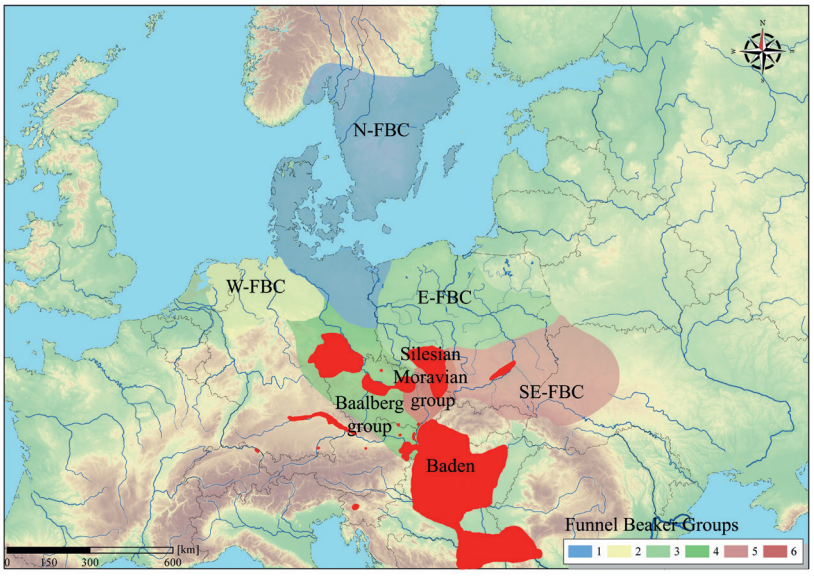


Fig. 9. Distribution of the classical Baden and Funnel Beaker cultures. Based on Nowak 2017: Fig. 1

The channelling on the vessel fragments is a clear indication that Baden impacts definitely played a role in the vessel's creation, meaning that it can be conceptualised as a hybrid. The issue of whether it is an import or a locally made piece has been conclusively settled by the petrographic analyses.

The petrographic analysis revealed that the composition of one of the Funnel Beaker vessels (Sample 5) is very similar to the other samples in Fabric 2. Its raw material also shows acidic volcanic tuff like most of the other local ceramics. This raw material could have originated from the site's vicinity. The composition of the other Funnel Beaker vessel (Sample 6) is slightly different, containing andesite, indicating that this raw material also came from a volcanic area, but slightly farther from the site. Nevertheless, the local origin of the Funnel Beaker vessels is also highly probable.

ACKNOWLEDGMENTS

* A cultural attribution to the Funnel Beaker culture was confirmed when the finds from Salgótarján–Pécs-Kő were presented at a conference "Dorzecze Dniestru jako przestrzeń kontaktów kulturowych w IV i III tys. przed Chr. III. Na rubieżach osadnictwa społeczności kultury pucharów lejkowatych" (December 11, 2018). We are particularly grateful to Prof. Dr. Marzena Szmyt and Dr. Agnieszka Przybył for their help in identifying the vessel fragments and for generously sharing their knowledge for elucidating several questions regarding the Funnel Beaker culture.

** We are also grateful to György Szakmány from the Department of Petrology and Geochemistry, Eötvös Loránd University for providing a comparative basalt sample.

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