

PROBLEMS OF THE LATE HATVAN PERIOD AT THE SOUTHERN FOOTHILLS OF THE BÜKK MOUNTAINS. A CASE STUDY OF BOGÁCS-PAZSAGPUSZTA AND NOVAJ-FÖLDVÁR

Ákos Mengyán

Eötvös Loránd University, Institute of Archaeological Sciences, Budapest
mengyanakos@gmail.com

Kivonat A cikkben két középső bronzkori tell település szerkezetét és leletanyagát vizsgálom, melyek Északkelet-Magyarországon, a Bükk-hegység déli lábánál találhatók. Célom elsősorban a késő hatvani (középső bronzkor 3) leletanyag bemutatása és értékelése a Bogács-pázsagpusztai leleteken keresztül. Előbb a Hatvan-kultúra középső bronzkori tovább élésének kutatástörténetét foglalom össze, ezután pedig bemutatom Bogács-Pázsagpuszta és Novaj-Földvár lelőhelyét szerkezetük és kerámiastílusuk által.

Kulcsszavak Kárpát-medence, Északkelet-Magyarország, középső bronzkor, Hatvan-kultúra, Füzesabony-kultúra, tell település

Keywords Carpathian Basin, North-eastern Hungary, Middle Bronze Age, Hatvan Culture, Füzesabony Culture, tell settlement

Introduction

The sites are located at the Southern foothills of the Bükk mountains in North-eastern Hungary (Fig. 1). The area's settlement system is well known owing to the BORBAS project (Kienlin et al. 2018: Fig. I-2).

The characteristic of the settlements in this region is that there is an intensive, central, multi-layered part, which has a circular enclosure. However, the settlements has a horizontal settlement section at the outer side of the ditch (Kienlin et al. 2018).

The interested area's geographic structure is characterized by stream valleys, which streams comes from the Bükk mountains and goes to the Tisza river. Both settlements are on the same microregion, which name is Egri-Bükkalja. In addition, there are one more known Middle Bronze Age settlement in this microregion: Tard-Tatárdomb (Fig. 1 no. 5) a settlement of the Hatvan and Füzesabony Culture (Fischl et al. 2014).

The investigated zone is the part of the Hatvan Culture's distribution territory in the third period of the Early Bronze Age. During the Middle Bronze Age, there is the Eastern „boundary” of the Hatvan/Late Hatvan ceramic style and the Southwestern „border” of the Füzesabony Culture's territory. Füzesabony-Öregdomb (Fig. 1 no. 1) is the westernmost settlement of the

Füzesabony Culture and it was inhabited until the beginning of the Middle Bronze Age's third phase (Szathmári 2011, 492).

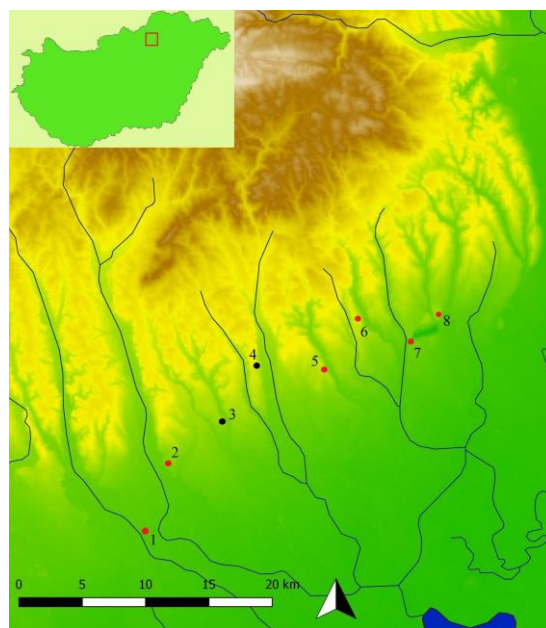


Figure 1. Middle Bronze Age settlements at the Southern foothills of the Bükk mountains: 1. Füzesabony-Öregdomb, 2. Maklár-Baglyashalom, 3. Novaj-Földvár, 4. Bogács-Pázsagpuszta, 5. Tard-Tatárdomb, 6. Tibolddaróc-Bércút, 7. Bükkábrány-Kálvária, 8. Vatta-Testhalom

Research history of the Hatvan Culture's continuity into the second part of the Middle Bronze Age

However, the Hatvan Culture is one of the oldest known prehistoric culture in the Carpathian Basin, the case of the research corresponds with the twentieth century's state. Therefore, there is many unclear subject about the culture. Although, the aim of this study is to investigate the late Hatvan period, hence I summarized the research history of this theme.

Important to mention, that Nándor Kalicz thought, the Hatvan Culture's life ends at latest in the first period of the Middle Bronze Age (Kalicz 1968: 110–114; Kalicz 1984: 201–205).

István Bóna mentioned in 1975, that the Hatvan Culture preserved its own identity at the Körös river's first area until the end of the Middle Bronze Age (Bóna 1975: 168–170). Moreover, he noted that the ceramic style of Jászdózsa-Kápolnahalom and Tószeg-Laposhalom were determined by Hatvan elements, rather than Füzesabony components in the Koszider period (Bóna 1975: 169).

The researchers—especially Judit Tárnoki and Ilona Stanczik—started to investigate the Hatvan Culture's survival into the second part of the Middle Bronze Age in the 1980s.

In 1982, Ilona Stanczik and Marietta Csányi notes, that Tószeg-Laposhalom was not the part of the Füzesabony Culture's territory (Csányi & Stanczik 1982: 253).

Then, Ilona Stanczik noticed that Jászdózsa-Kápolnahalom was not occupied by the Füzesabony Culture, but the upper layers of the settlement corresponds with the Füzesabony period (Stanczik 1988: 73–74) in time. Moreover, she thought that after the destruction of the typical Hatvan layers by fire, at least partly the previous population could moved back to the settlement (Stanczik 1988: 71, 73–74).

Tibor Kovács published a study about the Bronze Age of the Ipoly-Zagyva region, in 1989 (Kovács 1989). He noted that, when the Füzesabony Culture appeared, the Hatvan Culture was forced back in the Western part of their initial territory, which is at North: the county of the Nyitra, Zsitva, Garam and Ipoly rivers and the Kassa basin, at Southwest: the line of Szolnok and Kunszentmárton, at East: the line of the Hortobágy and the Berettyó river and at Southeast: the lower part of the Körös river's right bank (Kovács 1989:

4). In another study, Kovács noted that the material of Dunakeszi-Kopolya contains late Hatvan bowls with four or five handle; moreover, the ceramic style of the site is greatly similar to the materials of Bag and Tószeg (Kovács 1989a: 63–65).

István Bóna noticed that the Hatvan ceramic style revived in the second part of the Middle Bronze Age (Bóna 1992: 36).

Judit Tárnoki studied this theme by Törökszentmiklós-Terehalom and Buják-Tarisznyapart. In her dissertation, she made a quartered chronology to the Hatvan Culture, which starts in the third part of the Early Bronze Age and ends in the third period of the Middle Bronze Age (Tárnoki 1996: 92–96). Accordingly, she dated the multi-layered Middle Bronze Age settlement of Törökszentmiklós from the first phase until the third period (Early Bronze Age 1 – Middle Bronze Age 2), while she dated the horizontal settlement of Buják to the fourth phase, which corresponds with the Koszider period (Tárnoki 1996: 92–93). Furthermore, she outlined the Hatvan Culture's territory in the second part of the Middle Bronze Age. This zone was described in the Gödöllő-Piliny-Vác area (Tárnoki 1986: 139–143). Moreover, she thought that the Galga valley was a „buffer zone” between the Füzesabony and Vátya Cultures in the second part of the Middle Bronze Age (Tárnoki 1988: 144).

According to Klára P. Fischl, we will be able to separate territorial groups in the Hatvan Culture's Koszider period, such as in the Vátya Culture (Fischl 1997: 20). Furthermore, she noted that Szelevény-Menyasszonypart was the settlement of the Hatvan Culture and it was occupied until the third period of the Middle Bronze Age (Fischl 1997: 21).

Lately, Szilvia Guba published a study about the settlements of Zagyvapálfalva-Homokbánya and Pásztó-Csontfalva. From the former mentioned site, she noted a significant Füzesabony influence in the ceramic style, but those could be Hatvan products, from the second part of the Middle Bronze Age. Furthermore, she thinks Pásztó was occupied by the Hatvan Culture and she dated this settlement to the Koszider period (Guba 2009: 137).

In 2010, there was an excavation at the site of Vatta, Telek-oldal-dűlő, which is a Middle Bronze Age burial cemetery of the Füzesabony Culture. Vatta has a similar location like Bogács and these are very close to each other. That's why interesting that the excavator observed Hatvan influence on a

few graves' vessels (Somogyi 2010: 396).

Recently, Sziliva Guba summarized the state of the Hatvan Culture's research in Nógrád county (Guba 2016) and the ISzAP project (Ipoly-Szécsény Archaeological Project) found more Hatvan site, in the Szécsény basin (Fábián et al. 2016) and hopefully they can increase our knowledge about the Hatvan Culture.

Bogács-Pázsagpuszta

The Bronze Age settlement of Bogács-Pázsagpuszta is located in the Eastern part of plateau with North-South orientation (Fig. 1, no. 4). The multi-layered settlement is protected by the Eastern slope of the terrace and the valleys around the plateau. The site is around 3 km away in beeline to South from the modern town of Bogács.

The size of the settlement is around 4 ha. Thereout is surrounded by double circular enclosures ca. 0,15 ha and there is an outside part of the settlement, which could be ca 0.25 ha. Nándor Kalicz mentioned on his monography and he noted that it was occupied by the Hatvan Culture (Kalicz 1968: 119), and he published a few finds (Kalicz 1968: LXXIII/4, 7; CXVI/13, 16).

Former research

There was an excavation under the direction of Judit Koós (Herman Ottó Museum) and Ildikó Szathmári (National Museum of Hungary) in 1988 and 1989. There were excavated 280 m² at the central part of the settlement (see below the report about the excavation).

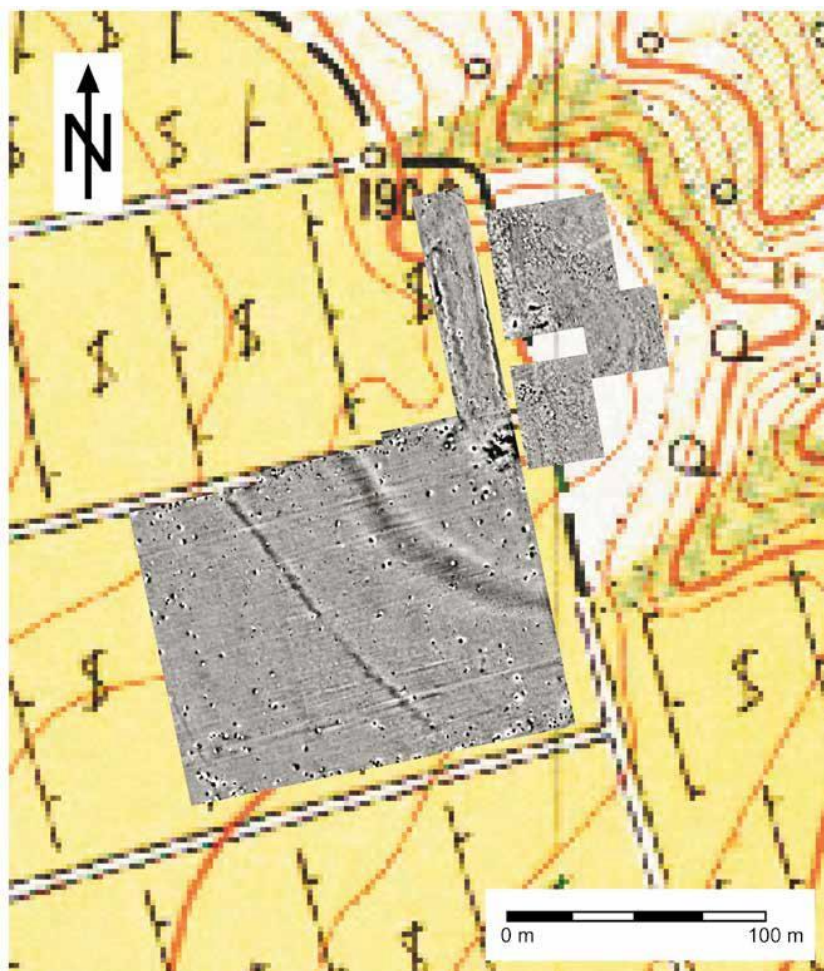


Figure 2. Magnetometry of Bogács-Pázsagpuszta after Kienlin et al. 2018, Fig. III-11

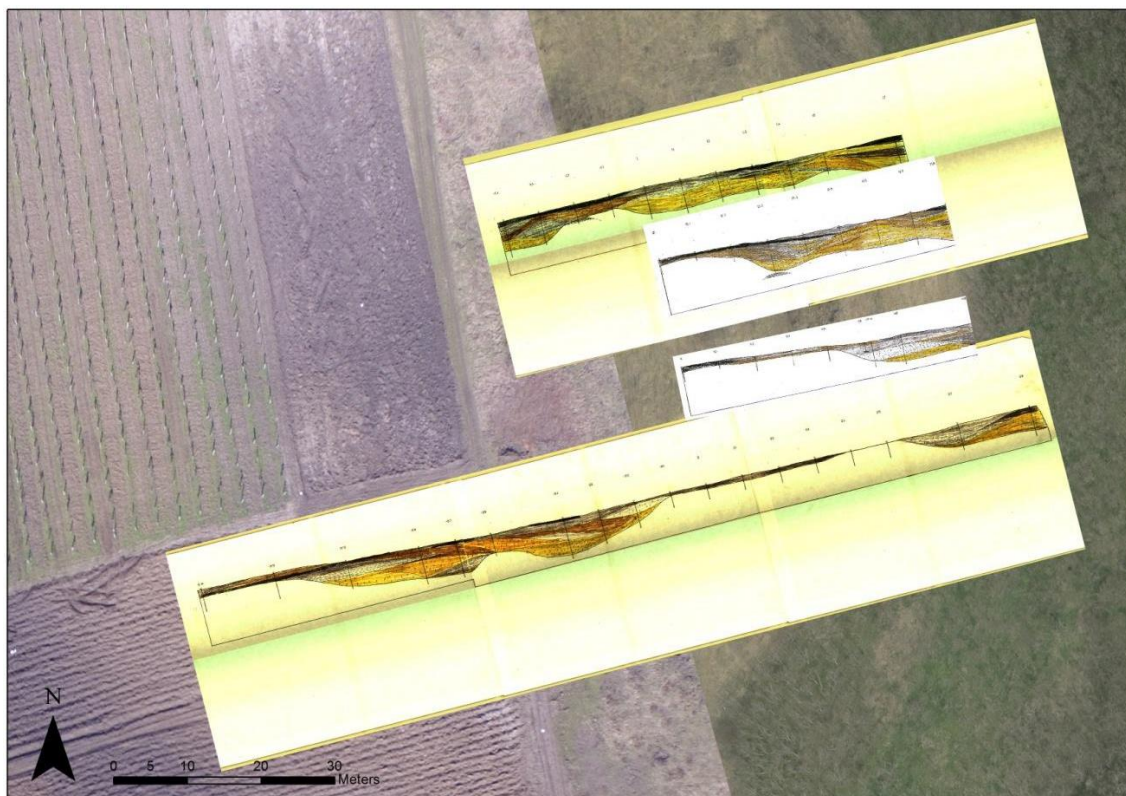


Figure 4. The reconstructed stratigraphy of Bogács-Pázsagpuszta by the geological drillings after Gulyás (2016, Abb. 8), made by Klára P. Fischl

In 2015 and 2016, there was geophysical surveys on ca. 2.4 ha by the BORBAS project. On the result, a part of the outer enclosure is viewable (Fig. 2), which is ca. 10-15 m wide. Moreover, there is observable a short part of the inner ditch. The interpretation of the other anomalies are ambiguous, because of the bad preservation and this place is used as a vineyard.

In 2016, there was taken aerial photography by the Herman Otto Museum of Miskolc (Kienlin et al. 2018: Fig. II-10) and from this a 3D modell from the site was made too (Fig. 3).

Furthermore, there was a systematic field survey on ca. 0,71 ha. During this there was collected around 18,656 ceramic sherds (Kienlin et al. 2018: 155). From the result of the field survey it is clear, that there was a settlement part at the outer side of the circular enclosures. At the same time, there was a metal detecting on ca. 1,1 ha (Kienlin et al. 2018: 155) and there was found a few bronze finds (see below).

In the same year, there was geological drillings by the help of Endre Dobos (University of Miskolc, Institute of Geography and

Geoinformatics). The aim was to prove the correctness of the drillings which was done in 1988 by András Varga (Móra Ferenc Museum).

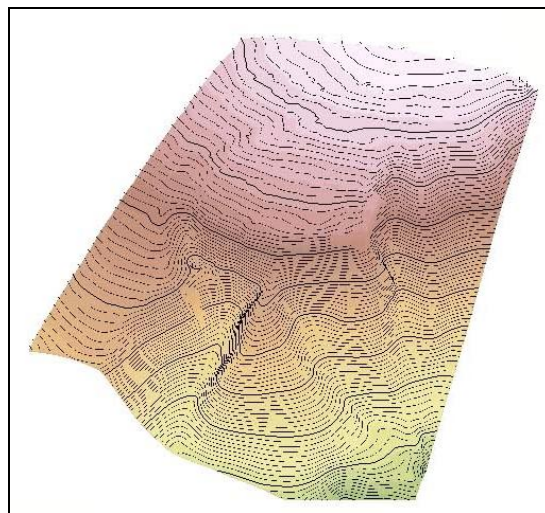


Figure 3. Bogács-Pázsagpuszta's 3D modell, made by Tamás Pusztai

Accordingly, in the center of the settlement, there is a homogeneous subsoil without anthropogenic impact under the humus layer (-80 cm). Around this zone, there is a ca. 4 m thick stratigraphic layers (Fig. 4). There are two possible interpretations. The first, that the central part was surrounded by a circular enclosure and the plateau is sloping to West–East. Therefore, the anthropogenic layers could have slid into the manmade enclosure because of the erosion. The second explanation is that the ditch was filled in purposely by people, to use that place as living space. There are two examples to this idea in this region, namely in Ároktő-Dongóhalom (Fischl 2006) and Tard-Tatárdomb (Fischl et al. 2014).

All in all, it seems certain that there were two life periods of the settlement (Kienlin et al. 2018, 156). The first, when the settlement was found (probably in the third period of the Early Bronze Age) and there was a circular enclosure around the central part. We can conclude to the onetime existence of this enclosure by the result of the geological drillings. In the second period there could be double circular enclosures around the central settlement part. The outer ditch (Fig. 2) belongs to this phase and there could be a parallel inner ditch, but we can conclude this latter just by the drillings.

Lately, Klára P. Fischl and Tobias Kienlin summarized the known datas about the site, in the catalogue of the BORBAS project (Kienlin et al. 2018: 155–162).

Report of the 1988-1989's excavation

During the first year of the excavation, there were set four, 10x5 m sized trenches in the core of the settlement. In the next year, there were another four square, but their size was 10x2 m. We do not know the exact places all of the trenches, because of a local geodesy system was used by the documentation. The mostly imaginable places of the trenches shows Fig. 5.

In 1988, they have found a dug-in building of which size was 3x3,5 m. It had rounded corners and four plastered clay floor levels. Above the first, a child's burial was found that could be dated most likely to the Middle Ages and it was dug into a Bronze Age kiln. The top of the first level was ashy and the floor was ca. -90 cm deep. At the south-eastern part of the building there were five postholes side by side placed in a row and in the

middle was a kiln (Fig. 6).

The north-western side of the surface was disturbed by pits, but there could be postholes too. They have found daub and sherds in large number. The next level was -100-120 cm deep (Fig. 7). There was a hearth at the Southern corner of the building and there were two postholes at the south-eastern side. The third level was not clean-cut because of the dense filling, but it could have been observed in the cross section at -170 cm deep (Fig. 8). They have found eight net weights in -200 cm deep. The last, fourth level was found as a regularly plastered clay floor in ca. -250 cm deep. The sides of the building was covered with wooden boards up to 50 cm height and beneath these was also plastered clay. Moreover, they have found a beat, which diameter was 10 cm, and the bottom of the building was slightly dug into the subsoil. Finally, there was no other house or building near and, from ca. -100 cm deep, there was only the subsoil around the object.

Important to mention a few words about the building, because its size and structure is fairly unusual in the Middle Bronze Age. The known houses/buildings of the Hatvan Culture has different sizes and structures (none of them were dug-in house and those has a framework of woven rods and twigs covered and plastered with clay). The size of the surface can change between 17.5 and 100 m² (Kalicz 1968: 134–143). Usually, their width is between 4 and 6 m and their length is between 8 and 11 m. Ilona Stanczik found similar sized, square shaped building at the IV. level (Koszider period) on Jászdózsa-Kápolnahalom, which was 5x5 m (Stanczik 1988: 23–40), but there was not wooden boards at the bottom of the walls. We have not many data about the inner structures of the Füzesabony Culture's settlements. In Füzesabony-Öregdomb, there were a smaller (4x5–6 m) and a larger (5x12–14 m) house type (Szathmári 1992: 135–136). In Košice-Barca/Bárca (Sk.) there were a 4,8x6 m and a 4,8x12 m sized type (Gašaj 2002: 21–51). Furthermore, we do not know any similar buildings from the Middle Bronze Age Carpathian basin.

Probably it could had economic role in the life of the settlement after the opinion of the excavators. It is suggested by the kilns and the wooden boards on the wall at the bottom, which could have been used against the rodents or the wetness.

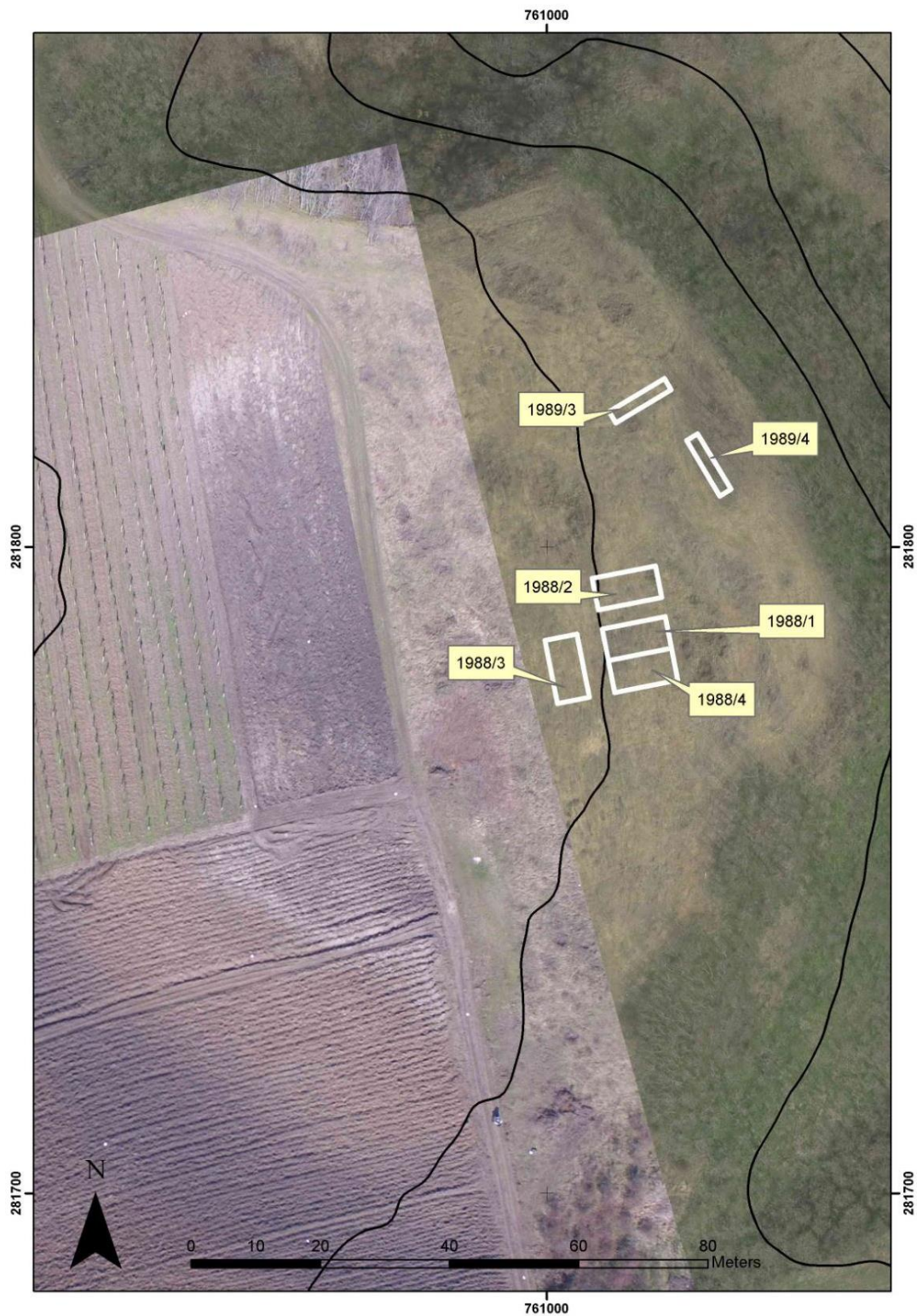


Figure 5. The location of the excavation trenches at Bogács-Pázsagpuszta after Gulyás (2016, Abb. 5) made by Klára P. Fischl

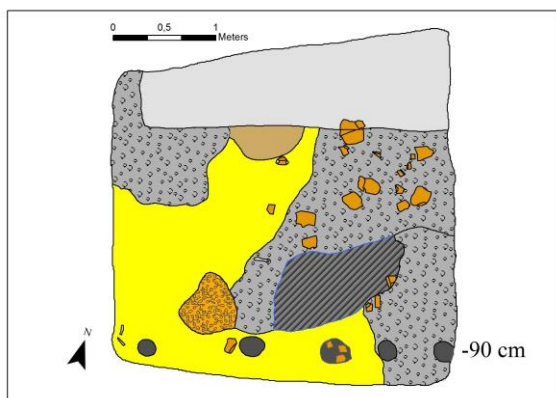


Figure 6: The first level of the building ca. -90 cm deep, made by Klára P. Fischl

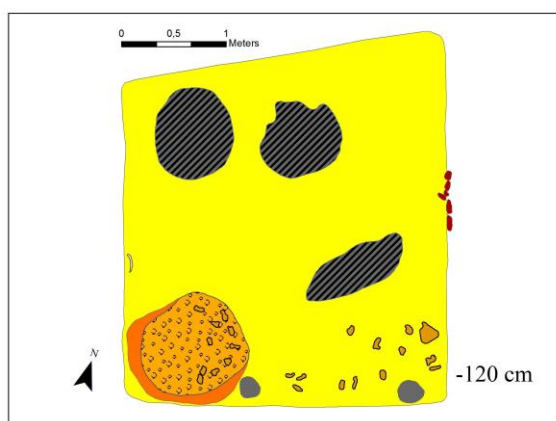


Figure 7: The second level of the building ca. -120 cm deep, made by Klára P. Fischl

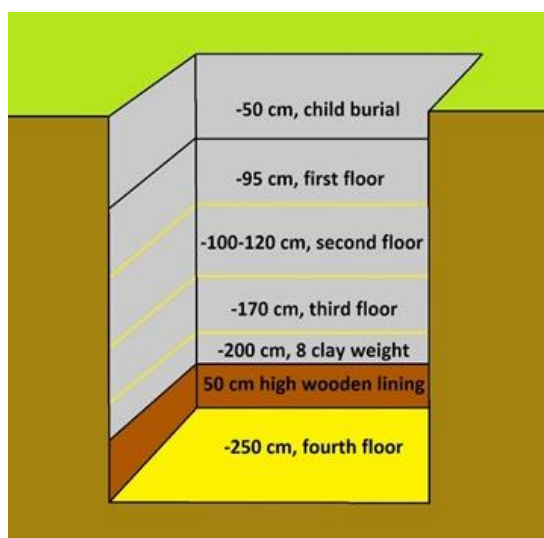


Figure 8: The excavated building's reconstructed layers

One more possible explanation can be considered, because of the observed structure, the wooden boards, the beam at the bottom, the dug-in construction and the high number of the excavated material (more than 4000 sherds and finds from this object), could be interpreted as a well. We know a Neolithic well, which usage was closed by a burned layer with a lot of daub from Polgár-Csőszhalom (Sebők et al. 2013). Furthermore, there was found an Early Bronze Age well at Gánovce/Gánóc (Sk.), which had wooden construction at the bottom and there were found many sherds, molten bronze finds and human and animal bones, which were burned and broken (Vlček & Hájek 1963).

In 1988, they have found a small part of a ditch, which had a V-shaped profile and it was ca. 1,1 m deep, but it is unclear that it was made or used, during the Middle Bronze Age.

In the next year, they have excavated a part of a house in the fourth trench, which had plastered clay floor. The width of the house was ca. 5–6 m, its orientation was East-West and it could have been a rectangle shaped which is typical in the Middle Bronze Age. Under the floor of the house, they have found disturbed soil and a few sherds and finds, but they have not found any features or surfaces. They found the subsoil by drillings in ca. -4–5 m deep.

Finally, they have found a part of a kiln in the second trench. There were two postholes nearby and the traces of two burned beam, but only a small part was in the trench; therefore, it is unclear that it was a house or a roofed hearth.

Material

After the excavation, the material of the 1988's excavation was mixed; therefore, these stratigraphic position is not identifiable. The 1989's material's exact classification to trenches and objects is known, but we must note the geographic and anthropogenic impacts which affected to the site.

Decorated vessels

In the material of Bogács there is a characteristic, unique type vessel which has suddenly shrinking bottom, biconical body, curved neck, splayed rim and triangular handle on the neck (Fig. 9, 10, 11, 12/2). The neck and the body is often decorated with horizontal channels, channelled bosses,

channelled bosses surrounded by ticks or punctates, girland motifs by dual or triple channels, incisions, and/or crosshatched triangles. Furthermore, the surface is highly polished; however, sometimes there are irregular brushes under the belly line on a few vessels (Fig. 9/2, Fig. 11).

A few biconical vessel has vertical channel groups on the belly line (Fig. 9/2; 11/1, 2).



Figure 9. Decorated vessels from Bogács-Pázsagpuszta

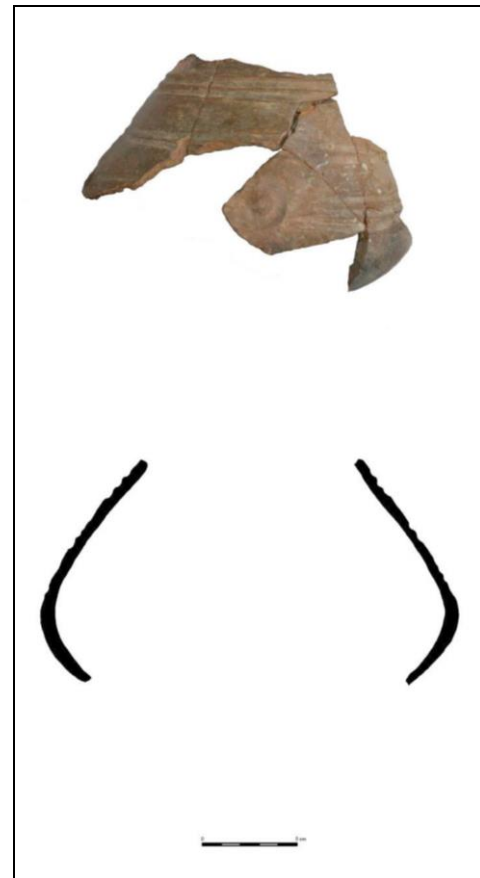


Figure 10. Decorated vessel from Bogács-Pázsagpuszta



Figure 11. Decorated vessels from Bogács-Pázsagpuszta

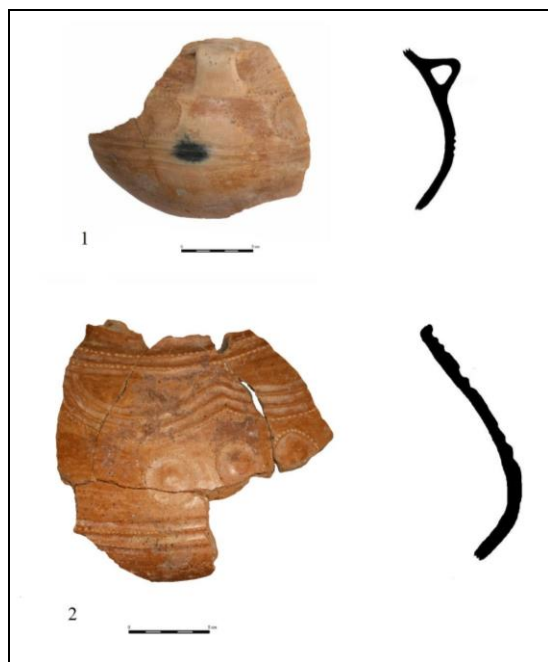


Figure 12. Decorated vessels from Bogács-Pázsagpuszta

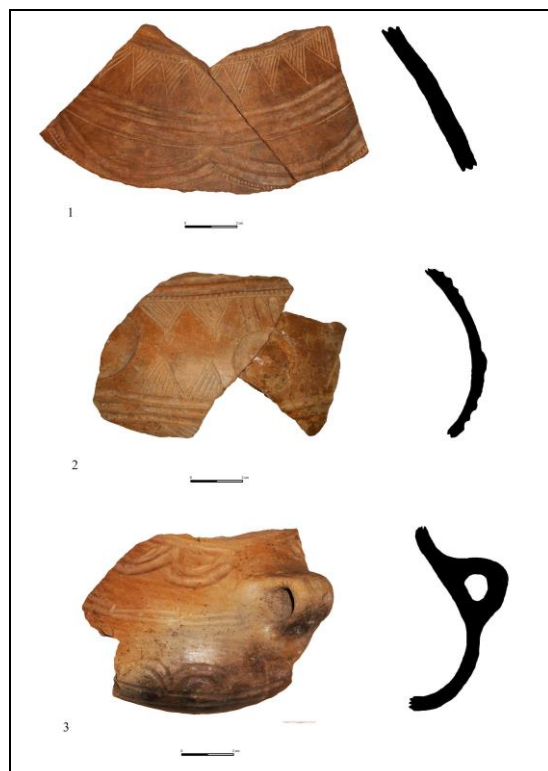


Figure 13. Decorated vessels from Bogács-Pázsagpuszta



Figure 14. Decorated vessels from Bogács-Pázsagpuszta

According to Judit Tárnoki, the channelled bosses were appeared in the Hatvan ceramic style as the influence of the Füzesabony Culture, in the second part of the Middle Bronze Age (Tárnoki 1996: 40). Among these, a few of them is surrounded by ticks or punctates. This combination becomes frequently in the Middle Bronze Age's third period (Koszider period) in the Hatvan pottery.

Moreover, according to Judit Tárnoki it was the influence of the Vátya Culture (Tárnoki 1996: 72). This type's best analogy was found at Vátya, Telek-oldal-dűlő from an urngrave (Somogyi 2010: 393-397, back cover photo). There are similar shaped or decorated vessels in Jászdózsa-Kápolnahalom (Stanczik 1988: 37/1, 93/2, 3, 4, 105/3, 121/1), Buják-Tarisznyapart, Kerekdomb (Tárnoki 1996: Tab. 56; Tárnoki 2010: 2/2), Túrkeve-Terehalom (Tárnoki 2013: 9/5), but these are not exact analogies, because only the decorations or the forms are similar. Finally, there is a similar form in the Otomani/Gyulavarsánd ceramic style (Németi & Molnár 2007; Bóna 1975: Taf 152/4, 16), but the ornaments are different. In my opinion, this biconical shaped vessels could be a characteristic form in the late Hatvan ceramic style in a given geographical unit. It could have appeared in the second phase of the Middle Bronze and it can be the part of the Hatvan pottery until the end of the culture.

Among the decorated pots, there is a globular

vessel type (Fig. 12/1; 5), which has the similar, before mentioned ornaments, such as channels, ticks, punctates, girland motifs by two or three channels, channelled bosses, channelled bosses surrounded by ticks or punctates and crosshatched triangles. There is no intact vessel from this type; therefore, the full form is unclear, but there could be handles on or above the belly line. Globular vessels are common in the Middle Bronze Age. However, the combination of the ornaments on the vessels are typical late Hatvan (Middle Bronze Age 2–3) characteristics.

There is an S-shaped pot type, with splayed rim and two handles on the neck (Tab. 6). This shape is common, but the decoration of this pot is fairly rich. There are crosshatched triangles and girland motifs on the neck and channelled bosses on the belly, separated by vertical channels. Its analogies are from Vámosgyörk-Atkári lapos (Kalicz 1968: LXXXIX/23) and Sarkad (Bóna 1975: Taf. 146/11). There are similar forms at Túrkeve-Terehalom's layer 2 (Tárnoki 2013: 9/5), Hatvan-Ifjúság útja 21 (Somogyvári 1984: V/4) and Tarnaméra-Uszoda (Kalicz 1968: LXXXII/4).



Figure 15. Amphoras from Bogács-Pázsagpuszta

Amphoras

Among this type, there is a completely restored amphora (Fig. 15/1), but besides this there are quite a lot fragments (Fig. 15/2; 16/1, 2, 3). Their characteristics are the globular body with two handles, corniculated neck and splayed rim. Usually, there is a zigzag-shaped ribbing in the belly from handle-to-handle. Below this, the surface is brushed or there is textile decoration on it. Above this, the surface is usually smoothed. Also common the moustache motif at the handles (Fig. 16/1) or at W-shaped cordons (Fig. 16/2), what is typical Hatvan ornament.

Finally, there is a cylindrical shaped storing pot with suddenly shrinking bottom (Fig. 16/4), which could have served for grain storage. Their rims are finger impressed and its surface is brushed.

Pots

The egg-shaped pots with sharp or less sharp shoulder and corniculated neck is typical in the Hatvan Culture (Fig. 17/1, 2). Often, there are smaller knob groups on the neck and the rim is usually finger or fingernailed impressed. Usually, their surface is brushed, but these could have been made with textile decoration.

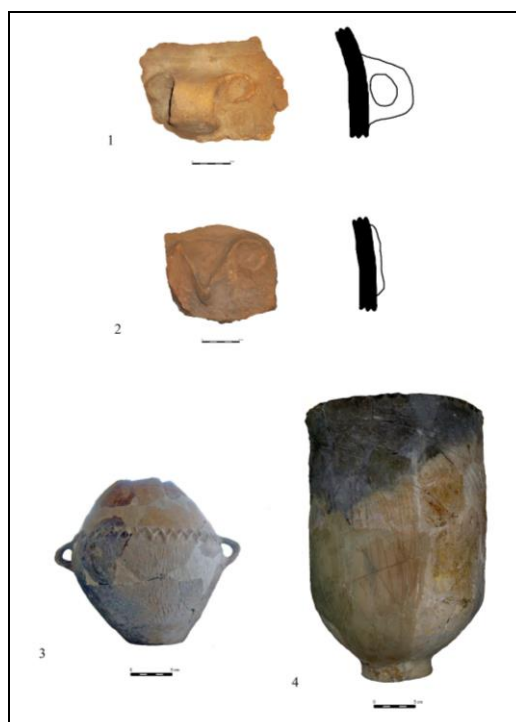


Figure 16. Amphoras from Bogács-Pázsagpuszta



Figure 17. Pots from Bogács-Pázsagpuszta

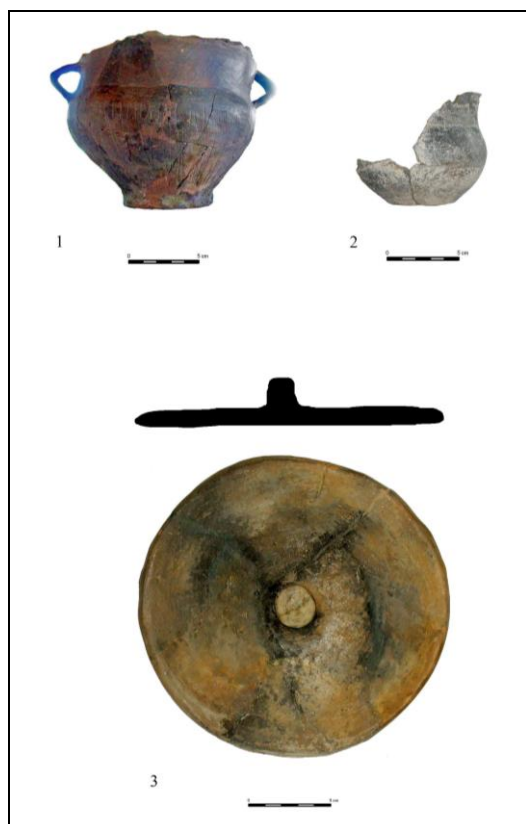


Figure 18. „Dishpots” from Bogács-Pázsagpuszta

This type is dated to the Early Bronze Age 3 – Middle Bronze Age 1 phase (Fischl 2006: 150).

A common pot type is a longish, drawn barrel-, or cylindrical-shaped form with straight rim. Often, there are finger or nail impressed ribs on or under the rim (Fig. 17/3). Their surface could be brushed or there could be comb decoration on it. This form is common in every tell culture in the second part of the Middle Bronze Age (Fischl 2006: 154).

„Dishpots”

The characteristic of this type is, that its height and its rim diameter is equal. In this material, there is a type with slightly splayed rim, curved neck and globular body (Fig. 18/2). This is an early type, its analogies can be found among others in Ároktő-Dongóhalom (Fischl 2006: 30/37).

The other type has curved neck, sharp shoulder and suddenly shrinking bottom (Fig. 18/1). There are irregular incisions on the belly. There is an analogy at Tarnaméra-Uszoda (Kalicz 1968: LXXXII/4) and this shape is on Kalicz’s tables as 2a1 type (Kalicz 1968: CXXVIII).

Bowls

There were excavated swedish helmet bowls in large number, which is the characteristic type of the Hatvan Culture (Bóna 1975: 67; Bóna & Nováki 1982: 79). These bowls’ ornaments are greatly rich. The similar decorations observable as on the decorated vessels such as channels, channelled bosses, girland motifs by dual or triple channels, lens decorations, incisions, ticks, punctates, crosshatched triangles and the combination of these ornaments (Fig. 19, 20, 21, 22, 23). Moreover, one of them has S-spiral surrounded by incisions (Fig. 24/1). These bowls’ surface is highly polished. Usually, there are concentric circle motifs on the bottom of the bowls. Every swedish helmet bowl is unique and their sizes are different too.

One bowl has an ornament at the bottom, which could be interpret as sun motifs. This is the largest swedish helmet bowl and it has zigzag motif made by dual channels and the outer part is crosshatched (Fig. 23).



Figure 19. Bowl from Bogács-Pázsagpuszta



Figure 21. Bowl from Bogács-Pázsagpuszta



Figure 20. Bowl from Bogács-Pázsagpuszta



Figure 22. Bowl from Bogács-Pázsagpuszta



Figure 23. Bowl from Bogács-Pázsagpuszta

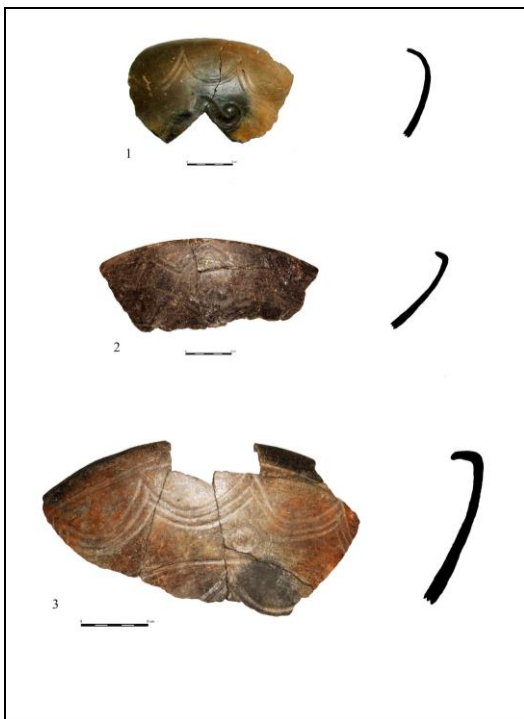


Figure 24. Bowl from Bogács-Pázsagpuszta



Figure 25. Bowl from Bogács-Pázsagpuszta



Figure 26. Vessels of distinct type from Bogács-Pázsagpuszta

This swedish helmet bowls has analogies at Tiszakeszi-Szódadomb (Kalicz 1968: LXXII/6) and Törökszentmiklós-Terehalom (Tárnoki 1996: 25/3). There is a greatly similar bowl at Vatta (Somogyi 2010, back cover photo), which has analogous ornaments like one of the Bogács' bowls (Fig. 21). Furthermore, There are a few bowls from Tószeg-Laposhalom, which has similar style by the form and the ornaments (Bóna 1980: abb 17–21)

Frequent are the spherical shaped and the shirred rims bowls too. Among these, there are smooth, polished and decorated (zigzag and girland motifs, lens, channelled bosses...etc.) ones (Fig. 24/2, 3).

There are a few spherical shaped coarse bowls, with two or four handles and brushed surface or textile decoration (Fig. 25). The rims often finger or nail impressed.

Moreover, there is only a few collared (strong horizontal rib on the shoulder), truncated cope shaped bowls, which type is frequent in the Füzesabony Culture (Fig. 26/1). In the late Füzesabony C – after the periodisation of I. Bóna – period the shoulder is larger and decorated with channels, lens and incisions.

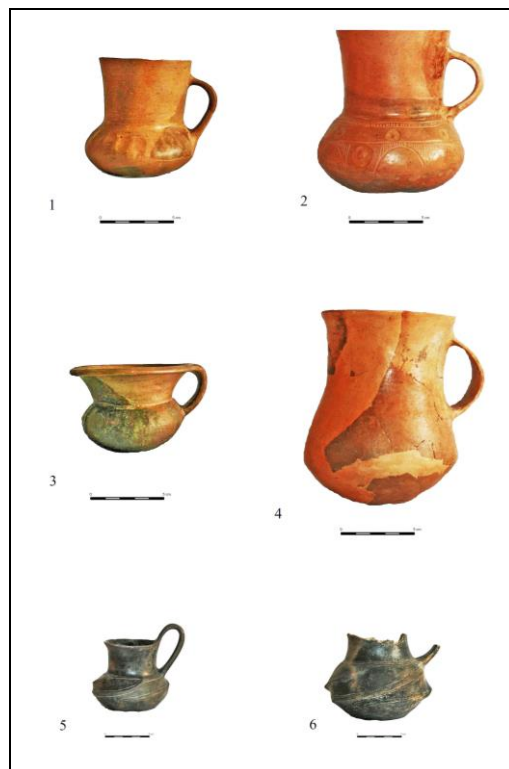


Figure 27. Mugs and jugs from Bogács-Pázsagpuszta

Mugs/jugs

The material contains a few mugs which could be dated to the early and classical phase (Early Bronze Age 3 – Middle Bronze Age 1) of the Hatvan Culture. There is a type with long neck, globular body and sharp shoulder (Fig. 27/1). This one is a common form in the Hatvan ceramic style. The shape is the same at the Tab. 19/2's mug, but it has rich decorations. Under the shoulder, there are two, parallel incised line with stabbed dots between them. Below this, there are small, channelled bosses and incised lines with arched motif and between them there are vertical lines.

Another thype of the Hatvan ceramic style is with the splayed rim, curved neck and spherical belly. (Tab. 19/3). Its decorations are channelled bosses surrounded by stabbed dots (Gulyás 2016: 16–18).

The Hatvan type mugs of Bogács, occurred in Nándor Kalicz 1968's monography as type 1 and 3 (Kalicz 1968: CXXIX).

Furthermore, there is an S-shaped, undecorated mug with a handle (Fig. 27/4).

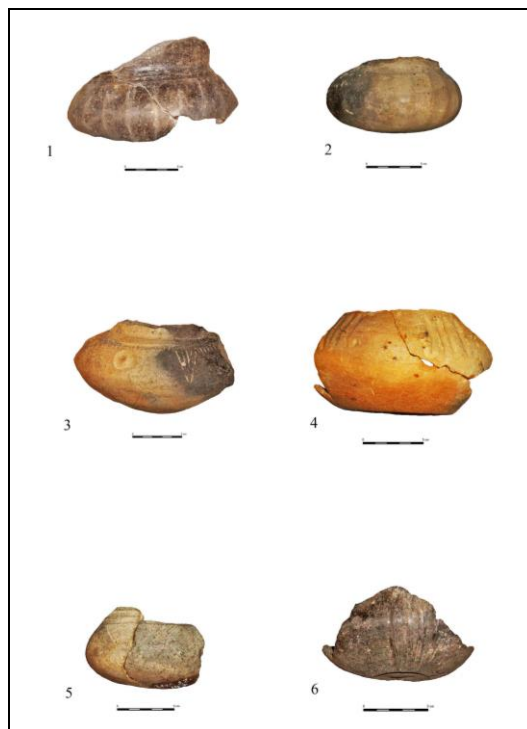


Figure 28. Mugs and jugs from Bogács-Pázsagpuszta

This form similar to the mugs of the Somogyvár-Vinkovci Culture (Kulcsár 2009: Fig. 49, 1/12), but the place of the handle is different. This type is not typical in the Hatvan Culture, its analogy is at Zagyvapálfalva-Homokbánya (Guba 2009: Taf. 2/5).

The mugs with spirals on their body is typical in the Füzesabony Culture (Fig. 27/5, 6). Two of them has spherical body and cylindrical neck. These are common in the Füzesabony Culture's early (A) and classical (B) periods. The analogies are there at the most Füzesabony Culture site. For example from Gelej, Kanális-dűlő (Kemenczei 1978: Taf. 1/6, 10, 14) and Emőd-Istvánmajor (Koós 1991: 46/3).

In the material, most of the mugs has spherical or oblated spherical body. This type is common in the Füzesabony ceramic style, rather than in the Hatvan. The decoration of this is various, there are not two with the same decoration. Most common ornament is the vertical channelling of the body (Fig. 28/1, 2). Among others, there are mugs with horizontal channels, incisions and incised hatched triangles (Fig. 28/3), with vertical channel groups, when the wingers lower part ends in a loop (Fig. 28/4) and one of them with crosshatched triangles and horizontal channels at the neck (Fig. 28/5).

There are a few mugs with biconical body. One of them have vertical channel groups (Fig. 28/6) on the body.

The mugs with spehircal and oblated spherical body could be dated by their ornaments. The oldest ones are those, which have vertical channeling and spirals on the body. This is the characteristic of the early phase of the Füzesabony Culture (Tárnoki 1996: 46).

According to Frigyes Kőszegi, those spirals which edges are scratched and the spirals are followed by incised lines, could be dated to the Füzesabony B (classical) and C (late) period and he thought that this ornament was typical around the Füzesabony region (Kőszegi 1968: 118–119).

Those mugs, which has vertical channels or incisions, channelled bosses, lens or crosshatched triangles or those which has horizontal channels on the upper part of the body could be dated to the Füzesabony C phase.

Other domestic ceramics

There are a few portable hearthes in the material. Most of these are highly fragmented; therefore, the classification is not possible. However, there is a

fragment which is a part of an roast type portable hearth (Fig. 26/2). In addition this type is typical in the Hatvan Culture (Fischl et al. 2001: 169).

There were found many pickling pots which are highly fragmented. The characteristic of this type is that knobs were placed on the inner side of the pot and this side's surface often brushed too. Probably, it was used to fermentation or to pickling (Szathmári 2009).

Furthermore, there were many strainer vessels, but those were highly fragmented too. There is one truncated cope shaped (Fig. 26/3), which could had been completely restored.

Finally, there are two lids which belongs to different types. One of them is a truncated cope shaped lid (Fig. 29). There are four knobs on one side and a handle on the other side. Anaologies known from Vatta-Testhalom (Kalicz 1968: LXVI/5, 7). The other is a straight shape with a handle boss (Fig. 18/3). These analogies are known from Tiszalúc-Dankadomb (Kalicz 1968: LI/10, 11). Both type occurred on Kalicz's table. The latter as a 11c1 type (Kalicz 1968: CXXIX) and the former as the 11c4 type (Kalicz 1968: CXXIX).

Small finds

During the excavation in 1989, they have found an undecorated violin-shaped figurine (Fig. 30/2) under the humus layer. There is a similar type on the 1984's Kalicz table (Kalicz 1984, Tafel LVII/2). These two figurines are from Benczúrfalva-Majorhegy, from the Early Bronze Age, Hatvan Culture (Csányi and Tárnoki 1992, 207. 452–453), which has similar stylized form and there is no decoration on these. However, there are decorated figurines too, from the Middle Bronze Age, Aszód-Domonyvölgy (Kovács 1984: Taf. LXIX/1, 2; Csányi & Tárnoki 1992: 207, 454–455). Moreover, there are three decorated figurines from Vatta (Király et al. 2014: Tab. III/24–26).

This type could be present from the Middle Bronze Age and those became frequently in the beginning of the Late Bronze Age in the Carpathian Basin (Király et al. 2014: 320–321). Tibor Kovács thought, these are the heritage of the Urnfield Culture (Kovács 1977). Judit Koós noted that these figurines were known from the eastern part of the Carpathian basin to the Dniester river during the HaA-HaB periods (Koós 2011: 156).



Figure 29. Lid from Bogács-Pázsagpuszta

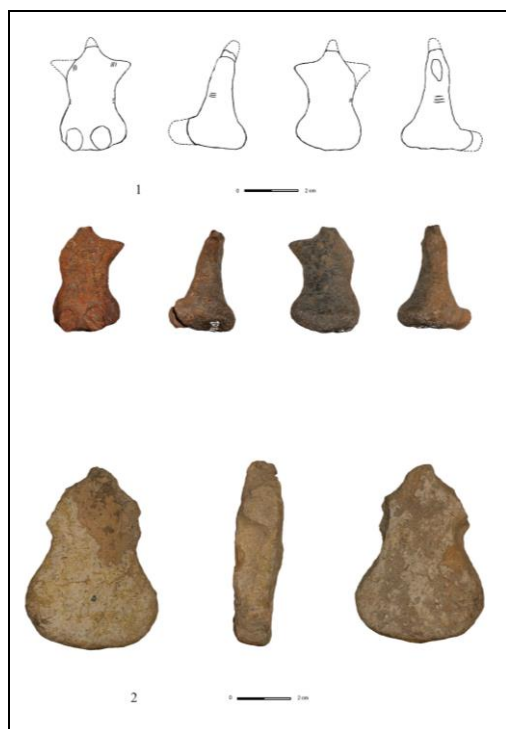


Figure 30. Figurines from Bogács-Pázsagpuszta

The figurine from Bogács is undecorated, but most of the Middle and Late Bronze Age violin-shaped idols are decorated (Király – Koós – Tarbay 2014). Therefore, it could be an older figurine (from the Early and/or Middle Bronze Age) or this is just an undecorated type.

In 2016, there was found a „sitting figurine” as a stray find. Its head and limbs are schematic and on its waist and on the shoulders are 3–4 small incisions (Fig. 30/1), which could show their „clothes”. I have found the best analogy in the collection of the Herman Otto Museum (Koós 2011). Their site is unknown, but Judit Koós mentioned an analogy in an Early Iron Age fortified settlement, at Belsk, Ukraine (Koós 2011, 157).

There was found a four-legged, small „altar” – in the fourth trench in ca. -230–250 cm deep – which was perforated twice and its flat side is polished (Fig. 31). It has an analogy at Jászdózsakápolnahalom’s layer IV. (Koszider period) (Stanczik 1988, Tab. 66/17) and a fragmented one also from here (Stanczik 1988, 122/3). Moreover, there are similar altars at Békés-Várdomb (Banner – Bóna 1974, Taf. 23/1, 2, 3, 7) too.

At Bogács, there were found several clay animal figurines (Fig. 32/5, 6, 7) which are known from almost every Middle Bronze Age settlements.

There were found a few clay wagon wheel models and spindle-weights too (Fig. 32/8, 9). Moreover, there were excavated numerous secondary polished, circular sherds. It has two types: one of them is which are not perforated, the other one was perforated in the middle. The previous type can be interpreted as a spindle-weights (Parditka 2006, 128).

There were many firedogs/net weights too. Important to note, those eight pieces which were found in the building ca. -200 cm deep (see above).

All of them has truncated cope shape and perforated. Their size is various, there are smaller and larger ones too. Each of them are undecorated. Finally, there were two miniature, perforated clay axe fragments (Fig. 32/3, 4). Their surfaces are highly polished and both of them were found in the 4. trench ca. -80 cm deep in 1989.

Metal artifacts

During the excavation, there was not found any metal artifacts. However, we have found a few bronze finds by the metal detector in 2016. Two of

them are cast, piked, tanged arrowheads (Fig. 33/1, 2). Moreover, there were also found two perforated bronze knobs (Fig. 33/3, 4). Similar arrowheads and knobs were found on Middle Bronze Age settlements of Central Hungary (Szeverényi & Kulcsár 2012: 329–332) and on Emőd-Nagyhalom. There was also found a bronze flanged axe.



Figure 31. „Altar” from Bogács-Pázsagpuszta

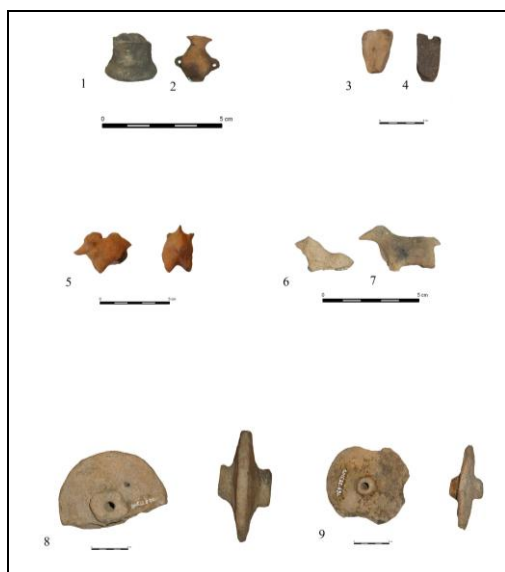


Figure 32. Small finds from Bogács-Pázsagpuszta

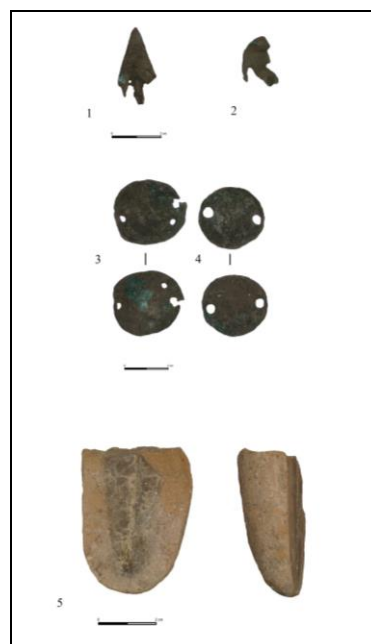


Figure 33. Metal artifacts and mould from Bogács-Pázsagpuszta

There were found a bronze pin's mould (Fig. 33/5) in 1989. The classification is not possible, because the fragment is too small.

Novaj-Földvár

The Bronze Age tell settlement of Novaj-Földvár is located in the Eastern part of a plateau with North-South direction (Fig. 1, no. 3; Fig. 34). To the East, there is the Novaji-stream, and to the West, the Ostoros-stream. It has similar lying as Bogács. The settlement is ca. 6-7 beeline kilometers from Bogács-Pázsagpuszta (Fig. 1, no. 3–4).

Nándor Kalicz mentioned the site in his monography and noted, it was also a settlement of the Füzesabony Culture (Kalicz 1968: 119 no. 44). The research history of the settlement was summarized by Gyula Nováki (Nováki et al. 2009: 49). Lately, the site was summarized by the BORBAS project's settlement catalogue (Kienlin et al. 2018: 221–227).

The settlement has a circular enclosure, which is observable at the result of the geophysics (Fig. 34–35), around the multi-layered settlement part. This enclosure's width ca. 12-16 m. The central part's size is around 0,46 ha. Around this, there is an intensive outer settlement on ca. 0,5 ha. (Kienlin et al. 2018: 222).

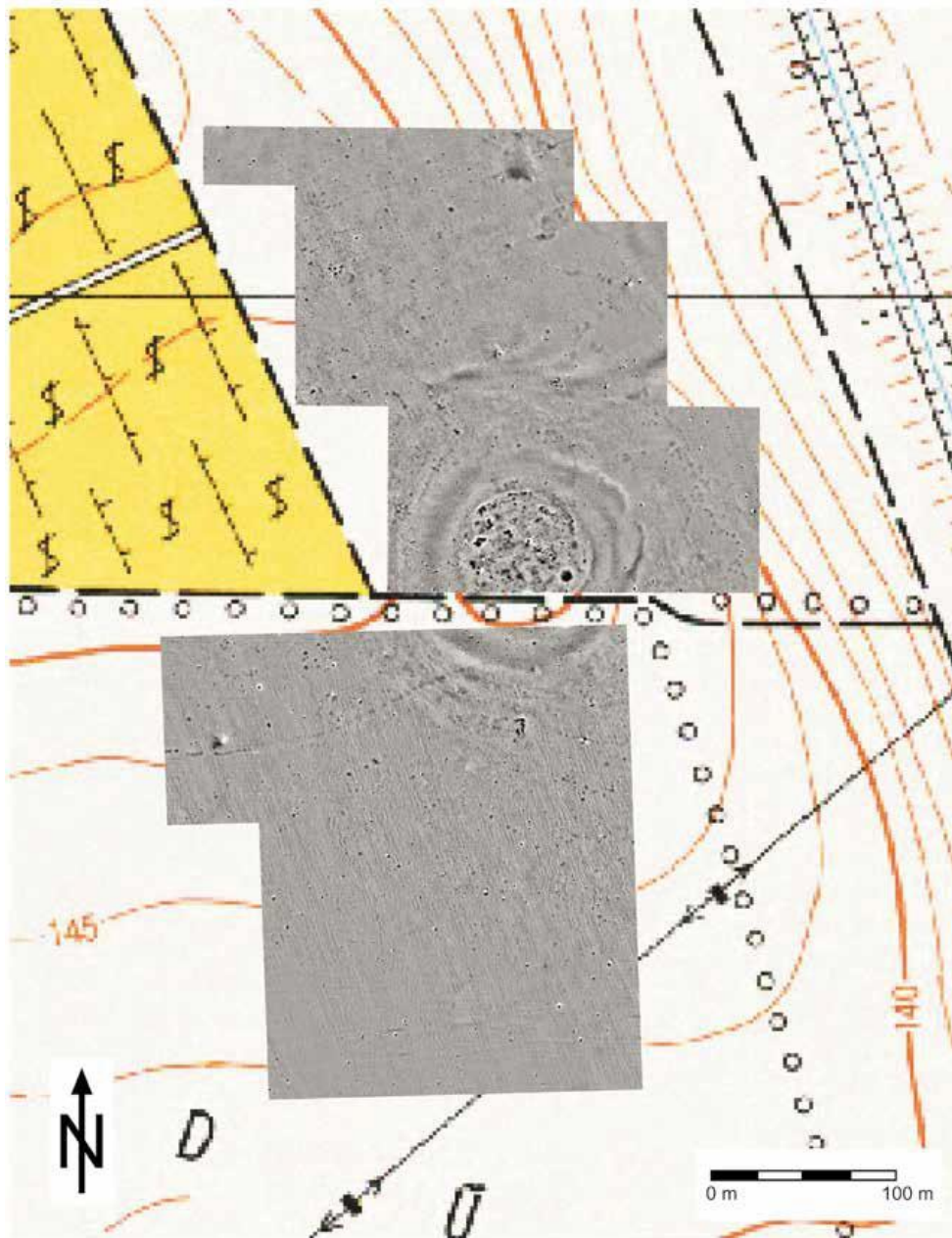


Figure 34. Magnetometry of Novaj-Földvár after Kienlin et al. 2018 Fig. III-65



Figure 35. Aerial photograph from Novaj-Földvár (photo: Civertán Bt.)

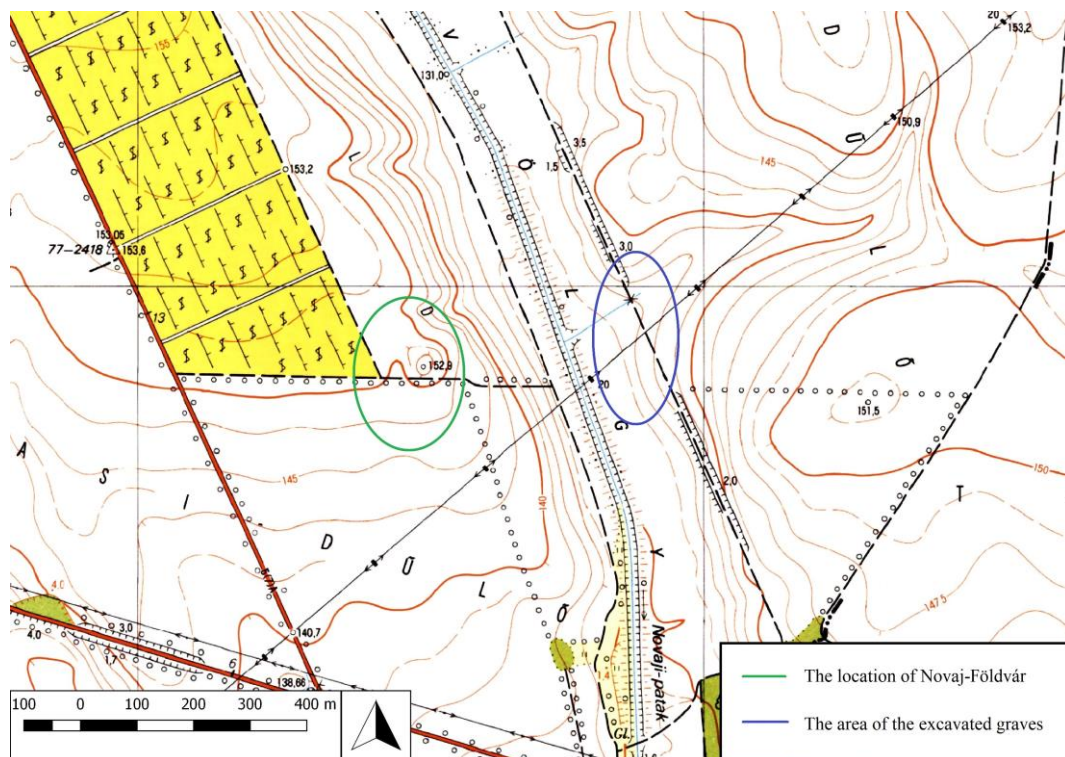


Figure 36. The location of Novaj-Földvár and the excavated graves

Researches at Novaj-Földvár

An excavaton was held in the summer of 1981 and 1982 by the direction of Ágnes Somogyvári (Dobó István Museum). The exploration was went on a section, which size was 10x5 m and it was placed in the central part of the settlement. There were found two houses, which has postholes, kilns and plastered clay floors. During the excavation, they did not dig till the subsoil, only get on ca. 1 m (4 spit), so most of the ceramics are dated to the Füzesabony C period. However, it is probably, that the settlement came to be during in the last period of the Early Bronze Age (Hatvan culture), same as the other Bronze Age settlement in this area.

In 1982, they have found 8 graves next to the settlement, on the other side of the Novaji-stream (Fig. 36). Most of the graves were in a bad condition, but probably there is a large Füzesabony cemetery.

The processing of the material from the excavation is still in progress, as soon as the work will be complete, we will get a more accurate aspect.

However it is clear at now, that the characteristics of the ceramic material shows late Füzesabony (C phase) attributes. The mugs and jugs often have a foot ring or a pedestal (Fig. 37/3, 4). Their necks are often articulated by horizontal channels and incised lines. Their shoulder lines are not so pronounced, and their rims are outcurving (Fig. 37/5). On their bodies are bosses or spherical section bosses and their necks are cylindrical.

The bowls are often spherical shaped, shirred rims bowls and thick, ribbed shoulered bowls (Fig. 37/1, 2).

Conclusion

Bogács-Pázsagpuszta and Novaj-Földvár shows the similar characteristics like the other settlements in this region.

Novaj could have been founded in the Early Bronze Age third period by the Hatvan Culture (Nováki et al. 2009: 49). The excavated material of 1981 and 1982 shows typical late Füzesabony forms and decorations (see above). Accordingly, the site was occupied until the third phase of the Middle Bronze Age (Koszider period).

When the processing of this material will be complete we will can make specify chronology and we can compare the ceramic style with Bogács-Pázsagpuszta.

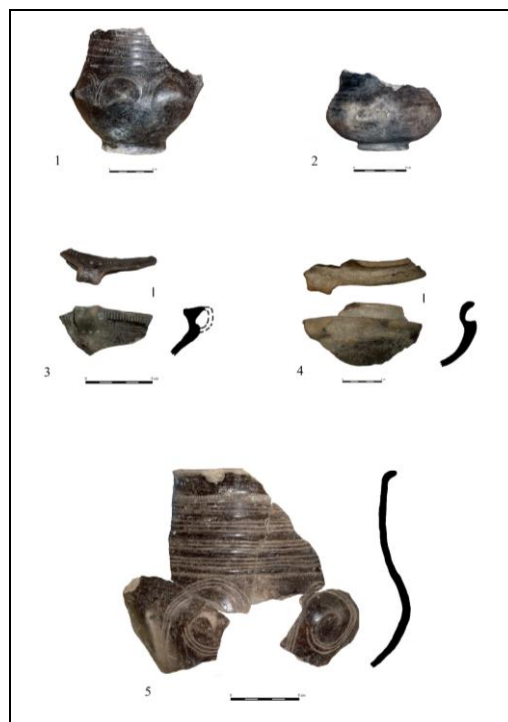


Figure 37. Ceramics from Novaj-Földvár

The Bogács' material chronologization by layer to layer is not completely possible and it could be deceptive because of the bad condition of the settlement. However, it is presumptive that the site was founded by the Hatvan Culture in the third phase of the Early Bronze Age. In this time, there could have been a circular enclosure around the multi-layered settlement part and an outer settlement part too. Then, the structure of the settlement could have been changed in the beginning of the Middle Bronze Age, when the Füzesabony Culture appeared in the North-eastern part of the Carpathian basin (Kalicz 1984: 201–205; Fischl 2006: 164). At this time, the circular enclosure could have been filled in and there were made a double circular enclosure; however, we have to count with a settlement part at the outside part of the enclosures. After this change, at least partly, the earlier Hatvanian population could have been lived in the settlement until the third phase of the Middle Bronze Age (Koszider period), such as at Jászdózsa-Kápolnahalom (Stanczik 1988: 71, 73–74). In order to get a more unambiguous idea about the structure of Bogács-Pázsagpuszta, it would be necessary to do modern excavations and observations.

The ceramic finds shows duality in Bogács. In

lower number, but there are forms and decorations from the Füzesabony ceramic style from each phase of the culture. However, the presence and the characteristics of late Hatvan ceramic style is much more prominent and significant. The forms (for example biconical vessel with triangle handles or swedish helmet bowls) and the decorations (among other the horizontal and vertical channels on the necks and channel groups, girland motifs, channelled bosses, channelled bosses surrounded by ticks or punctates, crosshatched triangles, lens decorations) and these combinations make it sure. Furthermore, the analogies of the ceramics shows to sites like Jászdózsza-Kápolnahalom, Buják-Tarisznyapart, Kerekdomb or Törökszentmiklós-Terehalom, where the Hatvan Culture preserved its independence in the second part of the Middle Bronze Age. However, the material of Bogács-Pázsagpuszta prove that we have to consider, that there is a significant Hatvan influence and continuity at the Southern foothills of the Bükk mountains in the second part of the Middle Bronze Age. It seems, that beside the characteristic Füzesabony ceramic style we have to take account an independent late Hatvan identity, especially on this region (the Southern foothills of the Bükk mountains and the Northern part of the Great Hungarian Plain), until the end of the Middle Bronze Age. A further site can prove this which name is Vatta, Telek-oldal-dűlő and this cemetery's material shows strong Hatvan influence (Somogyi 2010: 396, back cover photo). Finally, when the research proceed, we can separate different regional groups here. The investigation of these sites at this region would be important because here, we can compare the Hatvan and Füzesabony ceramic styles; moreover, their lifestyles and their connections in the same area, close to each other.

Acknowledgement

I would like to express my gratitude to Judit Koós and Ágnes Somogyvári, who allowed me to process the materials of Bogács-Pázsagpuszta and Novaj-Földvár. Since this article was partly made from my BA and MA thesis, hence I am very grateful to Klára P. Fischl and Gábor V. Szabó, who were my supervisors and supported me during my work.

References

Banner J., Bóna I. 1974. Mittelbronzezeitliche

- Tell-Siedlung bei Békés, *Fontes Archaeologici Hungariae* 4. Budapest
- Bóna I. 1975. Die Mittlere Bronzezeit Ungarns und Ihre südöstlichen Beziehungen. *Archaeologia Hungarica* 49, Budapest
- Bóna I. 1980. Tószeg-Laposhalom (1876-1976). *Szolnok Megyei Múzeumok Évkönyve*, 83–108.
- Bóna I. 1992. Bronzezeitliche Tell-Kulturen in Ungarn. In: Bóna I., Raczky P., Maier-Arendt, W., (ed.): *Bronzezeit in Ungarn. Forschungen in Tell-Siedlungen an Donau und Theiss*. Frankfurt am Main, Budapest, 9–39.
- Bóna I., Nováki Gy. 1982. Alpár bronzkori és Árpád-kori vára. Alpár. Eine Bronzezeitliche und mittelalterliche Burg. *Cumania. A Bács-Kiskun Megyei Múzeumok Közleményei* 7. 17–268.
- Csányi M., Stanczik I. 1992. Tiszaug-Kéménység. In: Bóna I., Raczky P., Maier-Arendt, W., (ed.): *Bronzezeit in Ungarn. Forschungen in Tell-Siedlungen an Donau und Theiss*. Frankfurt am Main, Budapest, 115–119.
- Csányi M., Tárnoki J. 1992. Katalog der ausgestellten Funde. In: Bóna I., Raczky P., Maier-Arendt, W., (ed.): *Bronzezeit in Ungarn. Forschungen in Tell-Siedlungen an Donau und Theiss*. Frankfurt am Main, Budapest, 175–210
- Fábián Sz., Salisbury, B. R., Serlegi G., Larsson, N., Guba Sz., Bácsmegi G. 2016. Settlement and trade in the Ipoly Region: Introducing the Ipoly-Szécsény Archaeological Project. *Hungarian Archaeology E-Journal*. Spring.
- P. Fischl K. 1997. Középső bronzkori leletek Szelevényről. Adatok a Tiszaug középső bronzkorának kronológiai és terminológiai kérdéseire. *Mittelbronzezeitliche Funde aus Szelevény. Angaben zu den chronologischen und terminologischen Fragen der mittleren Bronzezeit in Tiszaug*, *A Móra Ferenc Múzeum Évkönyvei: Studia Archaeologica* 7–37.
- P. Fischl K. 2006. Ároktő-Dongóhalom bronzkori tell telep - Bronzezeitliche Tell-Siedlung in Ároktő-Dongóhalom. *Borsod-Abaúj-Zemplén megye régészeti emlékei* 4. Miskolc.
- P. Fischl K., Kiss V., Kulcsár G. 2001. A hordozható tűzhelyek használata a Kárpát-medencében. The Use of Portable Stoves in the Carpathian Basin I. The Middle Bronze Age. In: (ed.) Dani J., Hajdú Zs., Nagy E., Gy. *ΜΩΜΟΣ* I. Debrecen, 163–193.
- P. Fischl K., Kienlin, T. L., Pusztai T., Brückner, H., Klumpp, S., Tugya B., Lengyel Gy. 2014.

- Tard-Tatárdomb: An Update on the Intensive Survey Work on the Multi-Layer Hatvan and Füzesabony Period Settlement. In: Kienlin, T. L., Valde-Nowak, P., Korczyńska, M., Cappenberg, K., Ociepka, J. (ed.): *Settlement, Communication and Exchange around the Western Carpathians: International Workshop held at the Institute of Archaeology, Jagiellonian University, Krakow, October 27–28, 2012.* Archaeopress Archaeology, Oxford, 341–379.
- Gašaj, D. 2002. Osady warowne i życie gospodarcze. Fortified Settlements and their Economic Life. In: Gancarski J. (ed.): *Między Mykenami a Bałtykiem*, Krosno-Warsawa, 21–51.
- Guba Sz. 2009. Neuere Daten zur mittelbronzezeitlichen Besiedlung des Zagyva-Tales. *Tisicum. A Jász-Nagykun-Szolnok Megyei Múzeumok Évkönyve* 19. 127–142.
- Guba Sz. 2016. A hatvani kultúra elterjedése és kutatásának állása Nógrád megyében. *Tisicum. A Jász-Nagykun-Szolnok Megyei Múzeumok Évkönyve* 25. 81–90.
- Gulyás E. 2016. Bogács-Pázsagpuszta 1988-1989-es ásatásából származó bögreleletek tipológiai vizsgálata. BA Szakdolgozat kézirat, Miskolci Egyetem, Miskolc
- Kalicz N. 1968. Die Frühbronzezeit in Nordost-Ungarn. Abriss der Geschichte des 19.-16. Jahrhunderts v. U. Z. *Archaeologia Hungarica* 45. Budapest,
- Kalicz 1984: N. Kalicz: Die Hatvan Kultur. In: Tasič, N. (ed.): *Kulturen der Frühbronzezeit des Karpatenbeckens und Nordbalkans.* Beograd, 191–215.
- Kienlin, T. L., P. Fischl K., Pusztai T. 2018. Borsod Region Bronze Age Settlement - BORBAS. Catalogue of the Early to Middle Bronze Age Tell Sites Covered by Magnetometry and Surface Survey. *Universitätsforschungen zur prähistorischen Archäologie* 317, Bonn.
- Király Á., Koós J., Tarbay G. J., 2014. Representations of Jewellery and Clothing on Late Bronze Age anthropomorphic clay Figurines from north-eastern Hungary. In: Boroffka, N., Rustoin, G. T., Ota, R. (ed.): *Carpathian Heartlands – Studies on the prehistory and history of Transsylvania in European contexts, dedicated to Horia Ciugudean on his 60th birthday.* APULUM LI, Alba Iulia.
- Koós J. 1991. A füzesabonyi kultúra sírjai Borsod megyében. *Archaeologiai Értesítő* 118, 45–61.
- Koós J. 2011. Újabb adatok bronzkori agyagplasztikáinkhoz. *Hermann Ottó Múzeum Évkönyve* 50, 153–165.
- Kovács T. 1977. *Die Bronzezeit in Ungarn.* Hereditas, Budapest.
- Kovács T. 1984. Die Füzesabony Kultur. In: Tasič, N. (ed.): *Kulturen der Frühbronzezeit des Karpatenbeckens und Nordbalkans.* Beograd, 235–254.
- Kovács T. 1989. Adatok az lpoly-Zagyva-vidék középső bronzkorához. eiträge zur mittleren Bronzezeit der Eipel-Zagyvagegend. *Archaeologiai Értesítő* 114, 3–21.
- Kovács T. 1989a. Die verbliebenen Funde des bronzezeitlichen Gräberfeld von Dunakeszi im Ungarischen Nationalmuseum. *Communicationes Archaeologicae Hungariae*, 45–72.
- Kőszegi F. 1968. Mittelbronzezeitliches Gräberfeld in Pusztaszikszó. *Acta Archaeologica Academiae Scientiarum Hungaricae* 20, 101–153.
- Kulcsár G. 2009. The Beginnings of the Bronze Age in the Carpathian Basin. The Makó-Kosihy-Caka and the Somogyvár-Vinkovci cultures in Hungary. *Varia Archaeologica Hungarica* 23, Budapest.
- Némethi, J., Molnár, Zs. 2007. A tell-telepek fejlődése és vége a Nagykárolyi-síkságon és az Ér völgyében. *Sapientia Könyvek Társadalomtudomány* 48. Kolozsvár.
- Nováki Gy., Baráz Cs., Dénes J. 2009. Heves megye várai az őskortól a kuruc korig. *Magyarország várainak topográfiája* 2. Budapest, Eger.
- Parditka Gy. 2006. Ludányhalászi-sóderbánya késő bronzkori település. Neograd. *Nógrád Megyei Múzeumok Évkönyve, A. Dornyay Béla Múzeum Évkönyve*, 30, 109–143.
- Sz. Máthé M. 2001. Angaben zum ursprung der Ottomány (Otomani) Kultur (Forschungsskizze). In: Kacsó, C. (ed.): *Der nordkarpatische Raum in der Bronzezeit. Spatiul Nordcarpatic in epoca Bronzului. Symposium Baia Mare, 7.-10. Oktober 1998 - Simpozion Baia Mare, 7-10 octombrie 1998.* *Bibliotheca Marmatia* 1. Baia Mare.
- Sebők K., Raczky P., Anders A., Faragó N., Hajdú Zs. 2013. Egy különleges kút és leletei Polgár-Csőszhalom késő neolitikus településéről, *Archaeologiai Értesítő* 138, 29–79.
- Somogyi K. 2010. Vatta, Telek-oldal-dűlő. In:

- Kisfaludy J. (ed.): *Régészeti kutatások Magyarországon 2010.* Archaeological investigations in Hungary 2010. Budapest, 393–397.
- Somogyvári Á. 1984. Bronzkori sírok Hatvanban. *Bronzezeitliche Gräber in Hatvan. Egri Múzeum Évkönyve, Agria* 20. 47–71.
- Stanczik I. 1988. *Jászdózsa-Kápolnahalom.* Bölcsészdoktori disszertáció. Kézirat. Budapest
- Szathmári I. 2009. Megjegyzések a bronzkori háztartások edénykészletéről. *Ammerkungen zur Gefässensembles bronzezeitlicher Haushalten. Tisicum. A Jász-Nagykun-Szolnok Megyei Múzeumok Évkönyve* 19, 295–307.
- Szathmári I. 2011. Megjegyzések a füzesabonyi bronzkori tell-telep időrendjéhez. In: Tóth E., Vida I. (ed.): *Corolla Museologica Tibor Kovács dedicata. Régészeti füzetek Új sorozat* 4. Budapest, 485–504.
- Szeverényi V., Kulcsár G. 2012. Middle Bronze Age Settlement and Society in Central Hungary. In: Jaeger, M., Czebreszuk, J., P. Fischl K. (ed.): *Enclosed Space – Open Society. Contact and Exchange in the Context of Bronze Age Fortified Settlements in Central Europe.* Bonn, 287–352.
- Tárnoki J. 1986. Fragen des Fortbestehens der Hatvan-Kultur in Nordungarn. In: Chropovsky, B., Caplovic, D., Lamiová-Schmiedlová, M. (ed.): *Urzeitliche und frühhistorische Besiedlung der Ostslowakei in Bezug zu den Nachbargebieten.* Nitra, 139–143.
- Tárnoki J. 1988. The Settlement and Cemetery of the Hatvan-culture at Aszód. In: Kovács T., Stanczik I. (ed.): *Bronze Age tell settlements of the Great Hungarian Plain I. Inventaria Praehistorica Hungariae* 1. 137–169.
- Tárnoki J. 1996. *A Hatvani-kultúra telepe Törökszentmiklóson és Bujákon.* Bölcsészdoktori disszertáció. Kézirat. Budapest
- Tárnoki J. 2010. A hatvani kultúra települése Bujákon. In: Guba Sz., Tankó K. (ed.) *„Régről kell kezdenünk...” – Studia Archaeologica in honorem Pauli Patay.* Szécsény, 51–71.
- Vlček, E., Hájek, L. 1963. A Ritual Well and the Find of an Early Bronze Age Iron Dagger at Gánovce near Poprad (Czechoslovakia). In: Bosch-Gimpera, P. (ed.) *A Pedro Bosch-Gimpera en al septuagésimo aniversario de su nacimiento (México 1963)* 427–439.