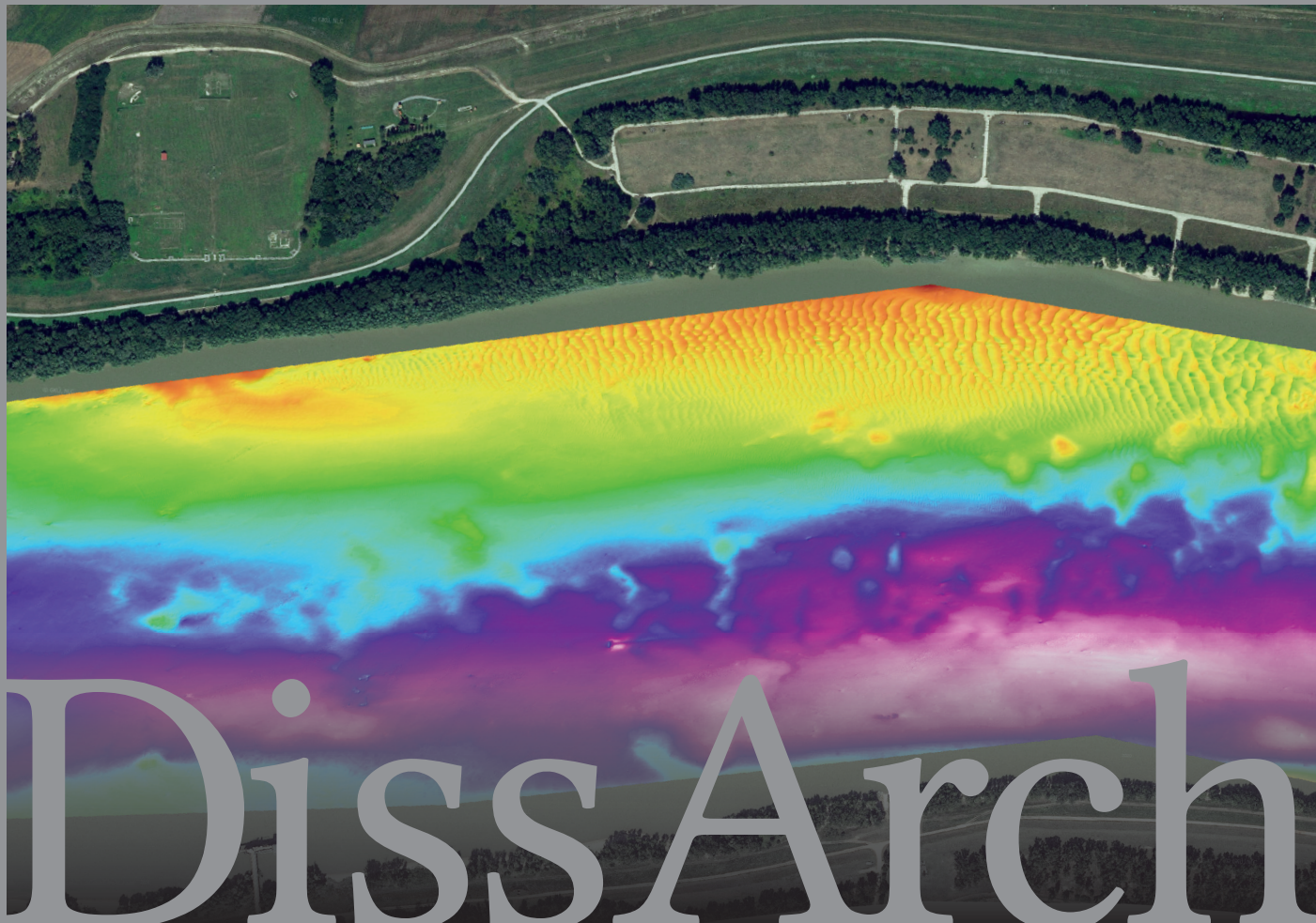


DISSERTATIONES ARCHAEOLOGICAE

ex Instituto Archaeologico

Universitatis de Rolando Eötvös nominatae



DissArch

Ser. 3. No. 13. | 2025

Dissertationes Archaeologicae
ex Instituto Archaeologico
Universitatis de Rolando Eötvös nominatae

Ser. 3. No. 13.

Editor-in-chief

Dávid BARTUS

Editorial board

László BARTOSIEWICZ (Stockholm University, Stockholm, Sweden)

Ondřej CHVOJKA (University of South Bohemia, České Budějovice, Czech Republic)

Alexandra ANDERS (ELTE Eötvös Loránd University, Budapest, Hungary)

Miroslava DAŇOVÁ (University of Trnava, Trnava, Slovakia)

Mario GAVRANOVIĆ (Austrian Archaeological Institute AAS, Vienna, Austria)

Hajnalka HEROLD (University of Exeter, Exeter, United Kingdom)

Tomáš KÖNIG (Comenius University, Bratislava, Slovakia)

Tina MILAVEC (University of Ljubljana, Ljubljana, Slovenia)

Gábor V. SZABÓ (ELTE Eötvös Loránd University, Budapest, Hungary)

Tivadar VIDA (ELTE Eötvös Loránd University, Budapest, Hungary)

Technical editor

Gábor VÁCZI

Proofreading

Katalin SEBŐK, Emilia GRANDI, Zsófia GYURKA, Borbála NYÍRI, Julianna REY-BENE

Cover picture

HELICOP s.r.o.

Aviable online at <http://ojs.elte.hu/dissarch>

Contact: dissarch@btk.elte.hu

Support: vaczi.gabor@btk.elte.hu

ISSN 2064-4574 (online)

Publisher

Lénárd DARÁZS

© Author(s)

© Institute of Archaeological Sciences, ELTE Eötvös Loránd University

Budapest 2025



PKP
PUBLIC
KNOWLEDGE
PROJECT



DOAJ

ERIH PLUS
EUROPEAN REFERENCE INDEX FOR THE
HUMANITIES AND SOCIAL SCIENCES



CONTENTS

WATER DIVIDES – WATER CONNECTS: ROMAN MILITARY, COMMERCIAL AND CULTURAL CONTACTS BETWEEN THE MIDDLE DANUBE REGION AND THE BLACK SEA

Lajos JUHÁSZ 7

Water Divides – Water Connects: Roman military, commercial and cultural contacts between the Middle Danube Region and the Black Sea

Chiara CENATI 9

Aequora Danubii cunctis transnare sub armis: A new interpretation of the poem CLE 427

Nikola RUSEV 25

Trimammium: The Roman limes fortress and the necropolis

Miroslava DAŇOVA – Klaudia DAŇOVA – Ján RAJTÁR 51

The Danube riverbed near the Roman fort at Iža-Leányvár: Results of investigations, 2019–2022

Varbin VARBANOV 63

Evidence of fishing from the excavations of the Roman fortress of Sexaginta Prista (Ruse, Bulgaria)

Svetlana VELIKOVA 75

Medieval life along the Roman limes at the Danube, Ruse Region

1ST NATIONAL CONFERENCE OF ARCHAEOLOGY STUDENTS

Dániel HÜMPFNER – Bence PÁRKÁNYI – Rita Helga OLASZ 87

Introduction

Rita SULIMAN 89

Egyptian influence on Late Bronze Age (1600–1200 BC) ivory artefacts from the kingdoms of Ugarit and Qatna

Mirtill ÁRVAI	105
Some Thoughts on five Mycenaean Terracotta Figurines from the Collection of the Museum of Fine Arts in Budapest	
Bence PÁRKÁNYI	119
Not all Gorgons are Greek: A red-figure kylix fragment in the collection of the Museum of Fine Arts, Budapest	
Virág Veronika SZÁNTÓ	131
Representation and object: <i>Pyxis</i> on the sarcophagus of Titus Aelius	
Dániel HÜMPFNER	147
New data on the settlement history of the so-called <i>villa</i> , a Roman period building, at Testvérhegy	
Rita Helga OLASZ	167
Child graves from Brigetio	
Márton SZABÓ	189
Imported ceramics from the Roman camp at Almásfüzitő	
Ferenc BARNA	211
Gestempelte Ziegel aus den Ausgrabungen von Komárom/Szőny-MOL-Kiskertek (Brigetio) im Jahr 2015	
Regina Viktória CSORDÁS	257
From the table to the grave? The question of animal sacrifices in Avar cemeteries on the Little Hungarian Plain	
Kata SZATHMÁRI	279
Possible ways of use of medieval and early modern bone tools based on results of use-wear analysis, experimental archaeology, and ethnographic parallels	

ARTICLES

Attila PÉNTEK – Ferenc CSERPÁK – Krisztián ZANDLER – Szilvia GUBA	297
First Open-Air Mousterian Site in the Mátra Mountains (North Hungary): Preliminary Results from Szurdokpüspöki-Lapos-tanya	

Kristóf István SZEGEDI – Annamária BÁRÁNY – Julia BLUMENRÖTHER – Endre DOBOS – Tibor MARTON – Gergely PÁLL-BARNA – György LENGYEL	321
Szekszárd-Palánk and the postglacial recolonization of the Pannonian Basin	
Eszter SOLNAY – Zita HRABÁK – Péter HORNOK – Péter KISS – Zsuzsanna M. VIRÁG – Zsuzsanna SIKLÓSI	353
Pottery technological analysis of the Copper Age Transdanubia (Western Hungary)	
Gábor SÁNTA	381
Ceramic Depositions, Ritual Features, and Irregular Burials of the Tumulus Culture in Hungary	
Ákos MENGYÁN – Ferenc KRISTÁLY	413
Pots for a purpose? Interdisciplinary analysis of small amphorae from the Late Bronze Age cemeteries of Maklár (Northeast Hungary)	
Attila MRENKA	447
A peculiar Late Bronze Age find from Sopron-Warischberg	
János Gábor TARBAJ	459
Late Bronze Age Arrowheads from Transdanubia and Beyond: Distribution, Chronology, Bronze Technology, and Use-Wear	
Ábel GARCZIK	543
New data on base marks of Late La Tène <i>situlae</i>	
Máté Róbert MERKL – Gábor CSÜLLÖG – Gabriella DARABOS – Ilona PÁL – Maria HAJNALOVA – Enikő Katalin MAGYARI	563
The vegetation of the Roman province of Pannonia based on wood charcoal, pollen, anthracological and carpological studies (1st–5th century AD)	
Dávid BARTUS	611
Roman Bronze Figurines Depicting Iuppiter from Brigetio	
Radu PETCU – Ingrid PETCU-LEVEI	633
A bronze statuette of the Héros Horseman (Thracian Rider) discovered near Tomis (Palazu Mare), Moesia Inferior	
Kata DÉVAI – István FÓRIZS	645
On the functionality of <i>vasa diatreta</i> : The case of the cage cup fragments from Gorsium	

Linda DOBOSI	663
Pieces of gaming equipment from Roman Pannonia: The Collection of the Kuny Domokos Museum in Tata (Hungary)	
Bence GULYÁS – Tamás CZUPPON	699
A stirrup type with Byzantine provenience in Central and Eastern Europe	
Alin FRÎNCULEASA – Daniel GARVĂN – George TROHANI – Elena RENȚA – Mirela MIHON – Cristian MANAILESCU – Oana GAZA – Doru PACESILA – Alexandru PETRE – Erwin GÁLL	713
Absolute dating of the Early/Pre-state Medieval date burial features in Muntenia (the 7th–14th century AD)	
Attila TÜRK – Flórián HARANGI	743
A 13th-century headwear fragment with metal threads from southeastern Hungary and the Bulgarian connections of Árpád Age headdresses	

FIELD REPORTS

Dávid BARTUS – Melinda SZABÓ – Rita Helga OLASZ – Ákos MÜLLER – Bence SIMON – Szilvia JOHÁCZI – Lajos JUHÁSZ – Tibor NÉGYÖKRŰ – Kitti IVANCSICS – László BORHY – Emese SZÁMADÓ	763
Excavations in the legionary fortress of Brigetio in 2025	
Bence SIMON – Szilvia JOHÁCZI – Ákos MÜLLER – Bence PÁRKÁNYI – Lőrinc TIMÁR	781
Pilisszentiván-Hárs-erdő 2025: New buildings and finds from a Roman village in the northwestern hinterland of Aquincum	
Attila Botond SZILASI – Attila TURI – Rita RAKONCZAY	791
2000 years of settlement horizons in the area of the second inner courtyard of the <i>Neue Residenz</i> in Salzburg	

THESIS REVIEW ARTICLES

Nóra SZABÓ	827
Change and transformation during the transition from the Middle to the Late Bronze Age along the capital region of the Danube: Settlement structure analyses based on particular sites from the Vátya III – Koszider Period and the Early Tumulus Culture	

New data on base marks of Late La Tène *situlae*

Ábel GARCZIK  

Doctoral School of History, Archaeology Doctoral Programme, ELTE Eötvös Loránd University,
Budapest, Hungary
garczikabel@student.elte.hu

Received 30 June 2025 | Accepted 29 September 2025 | Published 30 January 2026

Abstract: Graphite-tempered vessels are important diagnostic finds of the Late Iron Age La Tène culture of Central Europe, yet they are still enigmatic. One of the most interesting phenomena connected to them is a group of more-or-less sophisticated symbols, the so-called ‘base marks’ (*Bodenzeichen* in German), added before the firing to the exterior of the base of a small proportion of these vessels. The paper presents five new examples from two Late Iron Age sites, Perkáta-Nyúli-dűlő and Bába-Öreghegy (Hungary), supplementing the current assemblage of such finds from the Carpathian Basin. The description of new finds is completed by a discussion of the possible functions of these symbols and some economic-cultural and chronological conclusions based on their occurrence.

Keywords: graphite-tempered pottery, base marks, Late La Tène period, networks, symbols

Introduction and research history

Pottery has been an indispensable part of humanity’s daily life since the Neolithic. In both prehistoric and historic times, relative ease of production and extreme malleability made clay one of the most important materials for making, amongst others, pottery vessels, such as cookware, tableware, and containers. Throughout history, pottery vessels were marked with symbols, pictograms, or inscriptions for a variety of purposes. The practice became widespread in Central Europe since the Roman conquest, but a similar phenomenon was already present during the Late Iron Age: the so-called base marks appearing mostly on graphite-tempered *situlae*.

Special graphite-tempered vessels were popular in La Tène areas east of the Rhine; however, the means of their distribution, the exact technology of their production, their significance and function are still not fully understood. The vast majority of these pots represent the so-called *situla* (plural: *situlae*) vessel type, characterised by a conical body, a swollen rim, a combed or otherwise roughened exterior, and a wide, flat base; but not by size, which varies from small, beaker-like vessels to large, even barrel-sized ones (though the standard pot size is the most common).

Rarely, the outer surfaces of the flat bases of these vessels bear conspicuous burnished, smoothened, incised, or stamped, mostly very simple, but occasionally more elaborate geometric motifs added before firing.¹ This phenomenon is characteristic mainly of the Late La Tène period, with some examples dating up to the 1st century AD.² Less frequently, such symbols also appear on *situlae* with no graphite in their material and even on other pottery types (such as jars, bowls, bottles or pots); however, base marks and graphite tempering seem to have been closely connected.³

1 KAPPEL 1969, 6; TREBSCHKE 2011, 465.

2 ZEIDLER 2003, 70; DRĂGAN 2023, 288–290.

3 BEKIĆ 2006, 115; REPKA 2020, 91; DRĂGAN 2023, 288–289.

The first researcher to describe these base marks was Martin Hell in 1922,⁴ but only Irene Kappel—47 years later—developed the first typological framework, classifying them into seven categories with several sub-categories⁵ in her monograph on the important graphite-tempered pottery material of the Manching *oppidum*. Later, Miloš Čižmář and Jiří Meduna refined the typology, adding five more categories; their system was later compiled into a typological table by Miloš Hlava.⁶ Jürgen Zeidler attempted to introduce a new classification system, paying closer attention to details, and distinguished between no less than 94 types.⁷ Despite his efforts, his typology, along with his (later explained) interpretations, has not become widely accepted; therefore, the analysis presented in this paper relies on the typology of Čižmář and Meduna to maintain comparability with other studies. The depicted symbols had probably even more variations, ranging from simple lines and circle or cross patterns to elaborate mandala-like motifs and inscriptions.⁸

Martin Hell was also the first to analyse the scatter of these marks; he discovered that the distribution of the 50–60 pieces from 14 sites included in his study covers most of Central Europe.⁹ Later, Irene Kappel collected 430–440 specimens from 35 sites with specimens from the Eastern Celtic area among them.¹⁰ Next, Čižmář and Meduna collected 65 specimens from 19 sites only in Moravia,¹¹ proving that the phenomenon is much frequent than presumed earlier. Jürgen Zeidler compiled the largest database to date, listing about 660 specimens (of the estimated ca. 1,200) from 97 sites;¹² however, the Carpathian Basin seems fairly underrepresented in his collection. As for this region, Marek Gere collected specimens from the most intensive concentration of the phenomenon in Slovakia,¹³ followed by Radoslav Čambal and Branislav Kovár¹⁴ and, later, by Dominik Repka.¹⁵ Currently, 52 specimens from 18 sites in the Carpathian Basin are available.

The significance of graphite-tempered pottery

To understand the meaning of these mysterious markings, we must take into account the characteristics of their bearers. Graphite-tempered pottery (*Graphittonkeramik* in German, not to be mistaken for pottery with a graphitic finish, i.e. coating or painting) has been present in various archaeological cultures since the Neolithic, reaching its peak in Central Europe during the Late Iron Age. Later, it was almost forgotten until the Middle Ages, when its popularity witnessed a second, albeit smaller, increase from the 8th century AD onward.¹⁶

Graphite-tempered pottery raises many questions in the research of the Celtic Late Iron Age. Rooted in the Hallstatt culture, the technique first spread in west-central Europe and became common in the La Tène B–C period, occurring in large quantities in almost all La Tène sites from southern Germany to Transylvania and from southern Poland to the northern Balkans. In addition, other

4 HELL 1922.

5 KAPPEL 1969, 104–122, Abb. 52.

6 ČIŽMÁŘ – MEDUNA 1985, 94–99; HLAVA 2008, Obr. 3.

7 ZEIDLER 2003, 77, Fig. 5.

8 VRTEL 2012, 170, Obr. 277; PIETA – ZACHAR 1993, 166, Obr. 88.5.

9 HELL 1940.

10 KAPPEL 1969, 109–110.

11 ČIŽMÁŘ – MEDUNA 1985, 78.

12 ZEIDLER 2003, 70, 124–132.

13 GERE 2017, 100.

14 ČAMBAL – KOVÁR 2019, 181–182.

15 REPKA 2020, 92–93.

16 TREBSCHKE 2011, 451–453.

peoples, such as the Dacians or the Bastarnae, seem to have adopted this method from the Celts.¹⁷ The following Late La Tène period is characterised by spatial heterogeneity: as in some regions, graphite tempering continued to flourish or even peaked, while in others, the scarcity of such ware attests either to difficulties in obtaining graphite or to the vanishing of the related know-how. However, the significance of these vessels seems to have remained unchanged or even increased, as attested, for example, by the appearance of imitations of graphitic *situlae* or the base marks. Only a small-scale survival of the technique can be detected in the 1st century AD, except in the area of the Púchov culture in the northern Carpathians.¹⁸

Chemical analyses identified the main graphite source as the Czech Massif and the surrounding areas; but it is possible that, several other, less abundant or lower-quality natural graphite deposits (some within the Carpathian Basin) may also have been exploited.¹⁹ Together with the raw material, the technological knowledge of graphite tempering and of the making of such vessels spread hundreds of kilometres from the core region, while the most common vessel type, *the situla*, remained almost identical in both quality and design across the whole distribution area. This technological diffusion and the high degree of uniformity across the eastern Celtic areas imply a strong network of contacts spanning a vast region, enabling the transport of large quantities of raw materials, technological knowledge, and traditions.

Composition analyses of the vessels' fabric and finds from pottery workshops revealed that graphite was traded throughout Central Europe during the entire La Tène period, mainly in the form of raw lumps. These were then processed by Celtic potters, who mixed the graphite powder with local clay in workshops that supplied single settlements or smaller regions.²⁰ In addition to the export of graphite lumps, there is also some evidence of the distribution of clay with a natural graphite content, although that seems to be limited to the Late Hallstatt–Early La Tène periods and west-central Europe.²¹ It is difficult to draw conclusions about the commerce of finished vessels; archaeometric analyses indicate, at best, small-scale trade in graphite-tempered pottery.²² However, some typological characteristics—such as *situlae* with 'C' motifs stamped on their shoulders—might imply distribution over longer distances. According to Miloš Hlava, this motif is characteristic of a smaller region in Moravia; thus, the few examples found in other regions can be interpreted as exports.²³ Moreover, the isolated occurrences of graphite-tempered *situlae* outside Eastern Celtic, Dacian, and Bastarnian territory provide evidence that these vessels were sometimes transported over hundreds of kilometres.²⁴

The production of graphite-tempered vessels required considerable skills and clearly attests to the presence of specialised potters in the Late Iron Age. In an oxidising environment, graphite readily burns out of the ceramic matrix at relatively low temperatures, leaving holes in the fabric and

17 Evidence (e.g., finds of raw graphitic lumps) indicates local production at Dacian and Bastarnian sites; see [RUSTOIU 1993](#), 131–133.

18 [HANÍK 2010](#), 352; [TREBSCH 2011](#), 455.

19 Possible other sources include Styria, the *Alpenostrand* (the eastern feet of the Alps), the Little Carpathians, Slavonia (based on the plausible mining activities here in the Hallstatt period), and Transylvania; however, none of these is irrefutably proven to have been exploited in the Late Iron Age ([KAPPEL 1969](#), 40, Abb. 11; [POTREBICA – RAKVIN 2019](#), 142; [REPKA 2020](#), 99; [BŘEZINOVÁ – GERE 2021](#), 62).

20 [HLAVA 2008](#), 209; [SZÖLLŐSI et al. 2009](#), 385; [TREBSCH 2011](#), 456–457; [KOUČKÁ – NOVÁK 2016](#), 56; [BŘEZINOVÁ – GERE 2021](#), 67.

21 [KAPPEL 1969](#), 23; [TREBSCH 2011](#), 457.

22 [SZÖLLŐSI et al. 2009](#), 385; [TREBSCH 2011](#), 457.

23 This special decoration can be dated to the La Tène B–C1 period ([HLAVA 2008](#), 218–223).

24 These include specimens from the Western La Tène culture (Aulnat: [KAPPEL 1969](#), 82), the Przeworsk culture (Januszkowo: [FILIPOWIAK 1953](#)) and from Illyrian (Knin: [PARET 1929](#), 141), Thracian (Seuthopolis: [DIMITROV et al. 1984](#), 52–53, Fig. 24) and Roman sites (Aquileia: [KAPPEL 1969](#), 81, Abb. 49. 21).

rendering the vessel unusable.²⁵ To avoid that, potters must have sought a perfect reductive firing. However, in an experiment conducted in 2015 by the Institute of Archaeology and Museology at Masaryk University in Panská Lhota, researchers failed to create a reductive environment sufficient for the firing of graphite-tempered vessels, despite placing the test pieces inside modern terracotta covers.²⁶ František Makyta hypothesised that, to ensure the proper preservation of graphite, potters treated it with animal tallow during multiple firing stages at different temperatures, which might be seen as evidence of some advanced chemical and physical knowledge in the period.²⁷

A key question about graphite-tempered pottery concerns its function. According to the prevailing view, such vessels functioned as cooking pots; however, both supporting and opposing arguments are equally available. The most obvious supporting evidence includes the shape (of *situlae*), the circular impressions on the interior surfaces, the frequent soot remains on their outer surfaces, and the rarely observed food residues identified in them.²⁸ But why was such a material, often only available through long-distance trade in limited quantities, worth using for tempering simple cookware? Perhaps because graphite has extremely advantageous physical and chemical properties: experimental archaeological investigations have revealed that graphite-tempered pottery is highly heat-resistant and thermally conductive, chemically resistant, and highly impermeable.²⁹

However, other properties tell against such a use: for example, graphite-tempered pottery crumbles easily, can stain food and turn liquids black,³⁰ and graphite may cause constipation.³¹ In addition, the wide range of sizes in which graphite-tempered vessels occur raises doubts as to whether all specimens served the same function. Other plausible uses include—in light of the improved durability of graphite-tempered pottery—the long-term storage of substances that would damage simple ceramics (e.g., salt).³² However, nothing else points to such a function, and the lack of evidence for large-scale trade of finished products also contradicts it. Graphite-tempered vessels were perhaps also believed to possess magical or symbolic properties;³³ however, the relatively large proportion of such vessels in settlement pottery is a strong argument against that being the sole reason for their use.³⁴

Base-marked specimens seem to form a distinct group within graphite-tempered *situlae*; the handful of examples with such markings date almost exclusively to the La Tène D period. The proportion of base-marked vessels in the Carpathian Basin is lower than in the western regions; in parallel, most such vessels with no graphite in their material, mainly also *situlae*, are also known from there. The phenomenon might indicate that local potters imitated graphite-tempered base-marked vessels, which presupposes the import of finished products as models³⁵ or the existence of itinerant potters who also operated in areas where the availability of graphite was limited.

25 KAPPEL 1969, 18; KREITER *et al.* 2016, 174.

26 KOUČKÁ – NOVÁK 2016, 60–63.

27 He claims to have proven his theory through experiments whose details were, however, never published; see MAKYTA 1971, 98–99.

28 HLAVA 2008, 214; TREBSCH 2011, 451; KREITER *et al.* 2016, 172.

29 DUMA 1980, 22–23; BŘEZINOVÁ – GERE 2021, 61.

30 RUSTOIU 1993, 135; KOUČKÁ – NOVÁK 2016, 57.

31 Graphite consumption in larger quantities can lead to stomach pain and vomiting in sensitive individuals (GOODLOE – SOULEK 2023, Chapter 51). However, in smaller quantities it can even have beneficial effects, e.g. it can cure diarrhea (NÉMETI 2009, 269).

32 HLAVA 2008, 214.

33 TREBSCH 2011, 469.

34 For example, in the *oppidum* of Třisov (close to the supposed main graphite extraction areas), the material of 70–80% of all pottery finds contained graphit; see MEDUNA 1998, 13.

35 The available geochemical analyses of graphite-tempered wares from this period are unsuitable to prove or disprove this hypothesis, as most focus on the provenance of graphite and include only Middle La Tène pottery in the first place.

New finds

Perkáta-Nyúli-dűlő is a rural Celtic settlement in the central part of Fejér County in north-eastern Transdanubia. Loránd Olivér Kovács and his team from the National Heritage Centre at the Hungarian National Museum, in collaboration with the King St. Stephen Museum, excavated there the remains of ten Late Iron Age sunken features between 2009 and 2011. The unfortified settlement was used in the La Tène C1–C2/D1 period, corresponding to the transition between the Middle and Late La Tène period, which is relatively early compared to the general appearance of base marks.³⁶ Four base-marked fragments, three graphite-tempered *situlae* (Fig. 1.1–3) and a graphite-free vessel (Fig. 1.4) were found in three sunken buildings on the site. All marks could be identified as Kappel's Type 5 (i.e., concentric circles), albeit their technology differed: one was burnished (Fig. 1.1), two were incised with sharp (Fig. 1.3–4), and one with a blunt instrument (Fig. 1.2).

Báta-Öreghegy is a so-called *oppidum* in the southern part of Transdanubia, in the southernmost region of Tolna County. *Oppida* were large, fortified settlements in the Late La Tène period that served as strategic, economic, and cultural centres across Celtic territory—although the sites classified in this category are quite diverse. The Báta *oppidum* has been known since the 19th century, but only little research has been carried out there. In 2008, a team led by Zoltán Czajlik from the Institute of Archaeology of the Faculty of Humanities at Eötvös Loránd University conducted a

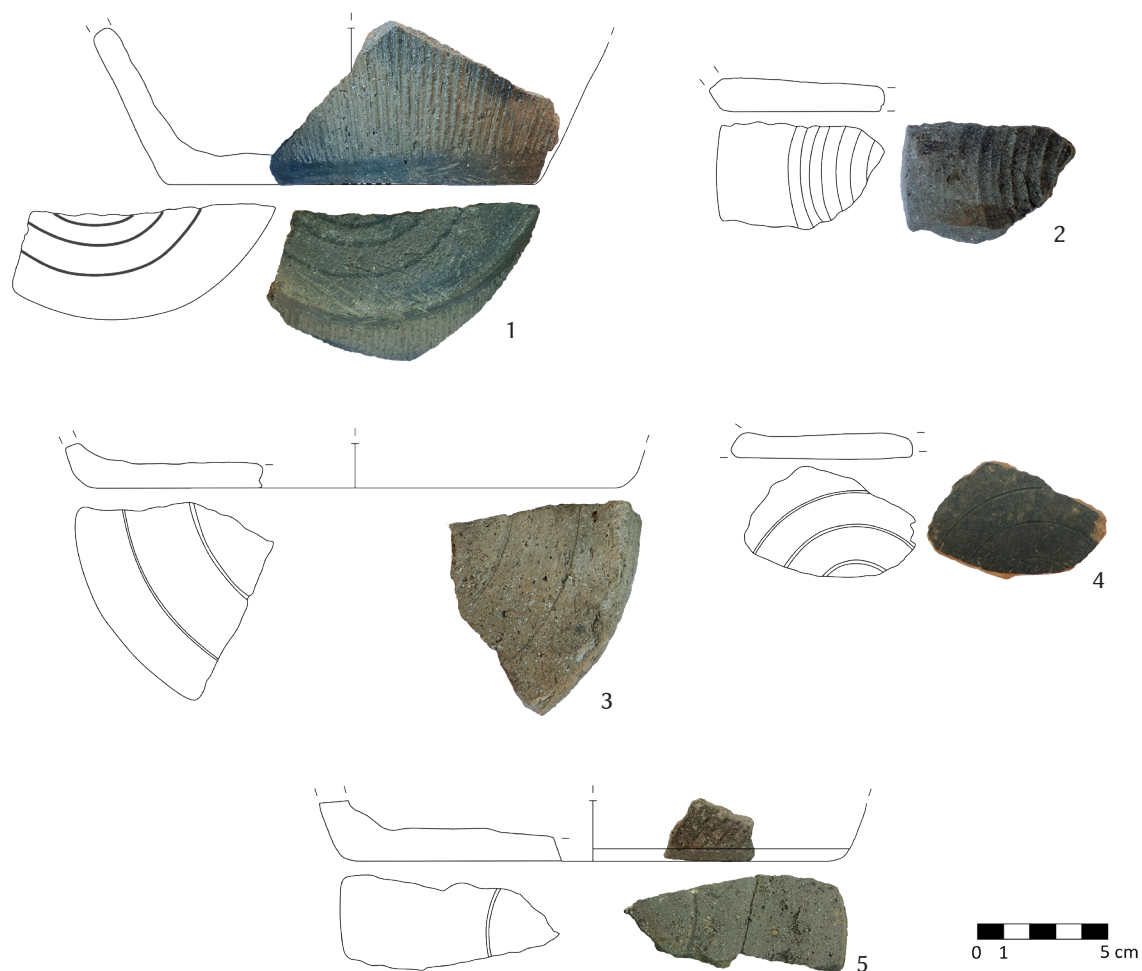


Fig. 1. *Situla* fragments with base marks. 1–4 – Perkáta-Nyúli-dűlő, 5 – Báta-Öreghegy.

36 GARCZIK 2021. Processing of the find material has been completed since the writing of that article, and the results suggest that the settlement persisted until the beginning of the La Tène D1 period.

small-scale excavation on the site in the area identified as the *acropolis* of the *oppidum*. Intensive agricultural activity (mainly vine cultivation, still practised today) has disturbed almost all prehistoric stratigraphy—thus, most finds were recovered from mixed layers. One of them (Fig. 1.5) was a base fragment of a graphite-tempered *situla* with a crosswise-combed surface, a type characteristic of the Late La Tène period.³⁷ Unfortunately, the sherd is too small to identify the incised symbol.

Function and origin of the base marks

If graphite-tempered *situlae* were simple cooking vessels, why, compared to other pottery, were they marked in such a special way? It seems probable is that there is a connection between the markings and the value of the graphite added to their paste. But such marks in the Carpathian Basin also appear on *situlae* (and occasionally even on other vessel forms), without graphite content in their fabric. Perhaps these symbols had multiple functions or those differed by area and period. Graphite tempering is unique in Late La Tène pottery, but other types also presumably held particular importance (such as painted ware), thus it is surprising that they were not marked in a similar way.³⁸ One thing seems to be clear: these signs were not (or at least not solely) decorative, as they are sometimes very roughly executed and, more importantly, are placed on the least visible part of the objects: the exterior of their bases.³⁹

In the first half of the 20th century, Marin Hell was the first to investigate base marks,⁴⁰ concluding that these motifs were primitive letters deriving from northern Italian alphabets. Later, Jürgen Zeidler accepted and developed his hypothesis,⁴¹ seeing the marks as possible evidence of an independent Eastern Celtic script, also appearing on coinage, other pottery types,⁴² and timber from the Hallstatt mines. He also argued for this primitive writing system's influence on the development of Germanic runic writing. Zeidler's conclusions have remained contested, have attracted little scholarly support, and are generally regarded as speculative. The hypothesis concerning the origin of the marks appears well established in some cases, whereas in others the forms are too simple to be securely traced. Even where a cultural transfer of certain Etruscan or Venetic letters or symbols is accepted, the manner in which their meanings may have changed in the course of this process remains unclear.

At first glance, one might assume that base marks, like the stamps on Roman *amphorae*, referred to the contents or owners of the vessels, or possibly even to their capacity or origin. However, several things speak against that. First, the vessels had to be turned upside-down to make the marks visible, which means they had to be empty; therefore, if the marks played a role in trade, it must have been related to the trade of the vessels themselves. Second, base marks are rare, and the depicted symbols do not seem to form a system. Third, at some sites only one motif prevails, while in other settlements numerous types appear at the same time, which makes their use as owner's marks seem improbable.⁴³

The Mursi tribe in present-day Ethiopia offers an interesting ethnographic parallel. The tribe's members are fond of 'Western', imported plastic and metal vessels, which—including their bases—they often decorate with their own incised motifs, also used in scar tattoos, to personalise the mass-produced objects and to protect their valuable possessions from theft by making them

37 TREBSCHKE 2011, 462; REPKA 2020, 145.

38 ZEIDLER 2003, 79; TREBSCHKE 2011, 465.

39 ZEIDLER 2003, 76–77.

40 HELL 1922.

41 ZEIDLER 2003.

42 Similar symbols can be found, for example, on the so-called *Dreifußschüsseln* (three-footed vessels), a unique pottery type specific to the La Tène D period, which sometimes also contains graphite.

43 TREBSCHKE 2011, 465–466; KAPPEL 1969, 120; ZEIDLER 2003, 79.

unique.⁴⁴ The analogy seems close, but one should not forget that Celtic base marks were created before firing, i.e. as part of the manufacturing process.

The key to understanding the meaning of the marks probably lies in considering that they were likely drawn by the potters themselves. The most obvious explanation is that these marks are workshop markings or potter's marks, that is, a guarantee of quality and authenticity. Irene Kappel⁴⁵ was the first to reach this conclusion, which is today accepted by a significant percentage of researchers. Although this solution seems logical, multiple facts tell against it. First, only a fraction of graphite-tempered *situlae* are marked, although that would require minimal time, effort, and no special skills or tools at all. Second, although some signs appear to be site-specific,⁴⁶ potentially indicating a workshop and its products, others appear without a clear distribution pattern—such as the variants of the most popular Type 1 motif (*Hahnentritt* or bird's foot), which account for almost one-quarter of all known examples and are to be found everywhere in the distribution area of base marks.⁴⁷ Third, as discussed below, on sites with particularly many marked vessels, examples with different marks are often found in the same stratigraphic layers. And fourth, similar marks appear on vessels with and without graphite tempering, as well as on those differing in clay quality, size, and the execution of forming.

If the marks did not have a role in trade or distinction, what could have been their purpose? Perhaps the best-established hypothesis is that of Peter Trebsche,⁴⁸ who suggests that these symbols can be interpreted as magical signs added to the vessels to enhance the chances of a successful firing. As mentioned above, firing was the most critical step in the production of graphite-tempered pottery, because the physical properties of graphite required advanced technical knowledge and particular care at this stage; in hence, even the most experienced potters probably relied on good luck or perhaps on supernatural powers. The small proportion of marked vessels might reflect that it was sufficient to mark only one vessel per firing in order to reduce the risk of failure by magical means. Accordingly, the bases were marked because the vessels were placed upside down in the kiln, while the general simplicity of the symbols may indicate that sophistication was not a particularly important consideration in the magical rite. Furthermore, the late appearance of this custom may suggest that as the access to graphite became more uncertain during the Late La Tène period; a precious batch wasted during firing would have constituted a more painful loss than before. However, the scatter of base marks contradicts the latter interpretation: they are most frequent in the immediate vicinity of graphite sources, whereas they are less common in areas more dependent on imports, such as the Carpathian Basin.⁴⁹

These hypotheses do not rule out the possibility that the marks are related to, or derived from, some form of Celtic literacy. However, none of them explains their occurrence on graphite-free *situlae* and other vessels in the Carpathian Basin, where the custom appears to have arrived through a long series of contacts, itinerant craftspeople, or traded goods. The traditions associated with these objects likely changed repeatedly during adaptation, becoming distorted and attached to entirely different underlying content. Access to graphite in the Carpathian Basin—varying by region and period—depended on long-distance trade and was probably often limited. Nevertheless, demand for graphite-tempered vessels across the region to the Scordiscan sphere of influence in the northern Balkans, and even at the easternmost Dacian sites, appears to have remained constant until the end of the Late Iron Age.

44 RÉGI 2019, 142–144; see 25. kép for the decoration process.

45 KAPPEL 1969, 121–122.

46 TREBSCHKE 2011, 467; REPKA 2020, 94. Type 7 is dominant in the settlement of Milovice, whereas Types 9, 11, and perhaps 6 might be characteristic of the *oppidum* of Staré Hradisko; see HLAVA 2008, 216–217.

47 ZEIDLER 2003, 82. Some consider all Type 1 specimens to be exports from central pottery workshops at either Hallstatt or Třisov; see HLAVA 2008, 216.

48 TREBSCHKE 2011, 466–467.

49 ZEIDLER 2003, 72, Fig. 1; REPKA 2020, 92–93.

Distribution and chronology

The earliest appearance of base marks in the Celtic world is generally associated with the end of the La Tène C2 / beginning of the La Tène D1 period.⁵⁰ The origin of the custom can only be inferred; however, it seems likely that at least some of the motifs were borrowed from Etruscan and/or Venetian cultural environments.⁵¹ If so, the custom was likely first adopted in the contact zone of the Celtic area and northern Italy, spreading from there across the Celtic territory and beyond, where the palette was possibly completed with local symbols later. The phenomenon peaked during the La Tène D1b period and remained frequent in the La Tène D2 period as well.⁵² Only a few seemingly isolated specimens date after the start of the Common Era,⁵³ probably marking the fading of the custom together with graphite tempering.

About half of the base marks known today come from five important Late La Tène sites (Fig. 4): the settlement of Hallstatt–Dammwiese (~120 pcs) and the *oppida* of Manching (~200 pcs), Třísov (~150 pcs), Magdalensberg (~70 pcs), and Staré Hradisko (~60 pcs).⁵⁴ These sites in west-central Europe may have been relatively large centres producing graphite-tempered ware, which the respective workshops likely exported at least on a regional scale. This is particularly interesting because not all of these sites are located near the Czech Massif, the only source of graphite in the area, that is known to have been exploited in the Iron Age. Apart from these, base marks can be found on pottery in all sorts of sites, including rural settlements.⁵⁵ In the Carpathian Basin, most sites yielded only a few or even only a single fragment with a base mark, except for the (unfortunately still unpublished) material of the *oppidum* at Bratislava-Staré Mesto, preliminary reports of which mention dozens of base marks, representing at least fourteen (!) different types, on both graphite-tempered and graphite-free vessels.⁵⁶

This paper is the first to present some of the south-easternmost occurrences of this phenomenon (save for the somewhat younger specimens from Divici-Grad)⁵⁷ (Fig. 2): three graphite-tempered and a graphite-free fragment from the La Tène C1–C2/D1 settlement of Perkáta-Nyúli-dűlő and a graphite-tempered sherd from the Báta-Öreghegy *oppidum*. With these, the total number of specimens published from the Carpathian Basin increased to 52 (20 of which come from the Bratislava *oppidum*) (see Figs 4–5, Tab. 1). The marks on all fragments from Perkáta can be classified as Type 5 (a circle or concentric circles). This fits well into the overall picture of the interior of the Carpathian Basin, where most published base marks belong to this type (Bernolákovo-Triblavina: 1 pc,⁵⁸ Sered'-Prúdy: 1 pc,⁵⁹ Nitra-Šindolka: 4 pcs,⁶⁰ Sárvár-Móka-dűlő: 1 pc⁶¹) or to Type 6 (Komárno-Stará

50 KAPPEL 1969, 117; ČIŽMÁŘ – MEDUNA 1985, 93–94.

51 See HELL 1922; ZEIDLER 2003.

52 ČIŽMÁŘ – MEDUNA 1985, 92; ČAMBAL – KOVÁR 2019, 182.

53 ZEIDLER 2003, 70; DRĂGAN 2023, 288–290.

54 ZEIDLER 2003, 70; HLAVA 2008, 216.

55 ČAMBAL – BAZOVSKÝ 2017, 127.

56 Vrtel points out that about half of the vessels (mainly *situlae*) with base marks were graphite-free (VRTEL 2012, 170). For an example of a previously unidentified, complex type; see VRTEL 2012, obr. 277. Currently, 20 specimens have been published from the site; see Tab. 1.

57 The site of Divici-Grad is generally considered to be a Dacian settlement with strong Celtic cultural influences. The two *situlae* with base marks found here can be dated to the 1st century AD (DRĂGAN 2023, 288–289).

58 ČAMBAL – BAZOVSKÝ 2017, 122, 127, Tab. 2. 4a–c.

59 DAŇOVÁ – KISSOVÁ 2021, 87, Pl. 5.1.

60 BŘEZINOVÁ 2000, Taf. 52.1, Taf. 108.10, Taf. 140.4, 10.

61 SZILASI 2006, 236, 13. T. 3.

pevnost': 1 pc, Komárno-Nová pevnost': 1 pc, Iža-Dunaj, 1759 km: 2 pcs,⁶² Esztergom-Várhegy: 1 pc,⁶³ Budapest-Tabán: 1 pc,⁶⁴ Divici-Grad: 1 pc⁶⁵), representing different variations of the symbol 'X'. These patterns, presumably because of their simplicity, are also common in Western and Central Europe, because of this their simplicity and high variability make reconstructing the associated networks rather difficult. The only exceptions include two Type 12b fragments from Iža-Dunaj, 1759 km⁶⁶ and some unidentifiable, but certainly more complex symbols on graphite-free vessels from Šurany-Nitriansky Hrádok⁶⁷ and Divici-Grad.⁶⁸

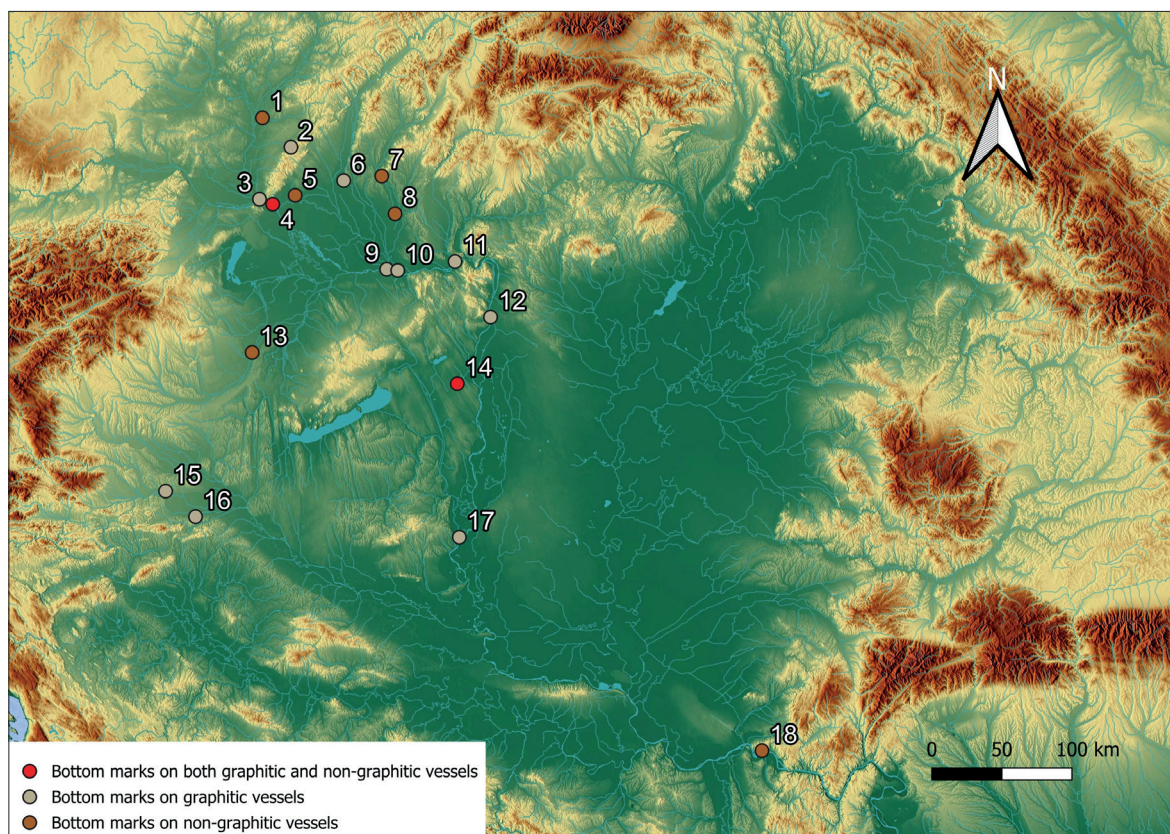


Fig. 2. Distribution of *situlae* with base marks in the Carpathian Basin. 1 – Kúty-Čepangát, 2 – Plavecké Podhradie-Pohanská, 3 – Bratislava-Devín, 4 – Bratislava-Staré Mesto (Hlavné námestie, Nálepková ulica, Partizánska ulica, Vydrica), 5 – Bernolákovo-Triblavina, 6 – Sered'-Prúdy, 7 – Nitra-Šindolka, 8 – Šurany-Nitriansky Hrádok, 9 – Komárno-Stará pevnost', Nová pevnost', 10 – Iža-Dunaj, 1759 km, 11 – Esztergom-Várhegy, 12 – Budapest-Tabán, 13 – Sárvár-Móka-dűlő, 14 – Perkáta-Nyúli-dűlő, 15 – Ormož-Hotel, 16 – Jakopovec-Blizna, 17 – Bába-Öreghegy, 18 – Divici-Grad.

By contrast, more complex examples are known from north-western Slovakia (including numerous graphite-tempered and graphite-free sherds from the *oppida* of Bratislava-Staré Mesto and Bratislava-Devín,⁶⁹ three Type 12b specimens from Plavecké Podhradie-Pohanská,⁷⁰ and a Type 1 sherd from

62 GERE 2017, 102–103; Obr. 1.1a–b, 2a–b, 5a–b, 6a–b.

63 BALOGH 1927, 211, 110. kép I.d.

64 B. BÓNIS 1969, 186, Abb. 50.14.

65 DRĀGAN 2023, 289, Fig. 2.2.

66 GERE 2017, 102, Obr. 1.3a–b, 4a–b.

67 BŘEZINOVÁ 2010, 123, Tab. 5.14.

68 DRĀGAN 2023, 288, Fig. 2.1.

69 KAPPEL 1969, 121; VRTEL 2012, 170.

70 PAULÍK 1976, Tab. 15.9, 18.5; 29.5, 5a.

Kúty-Čepangát⁷¹) and further south from the Mura region (Ormož-Hotel: 1 pc of Type 7,⁷² Jakopovec-Blizna: 1 pc of Type 11⁷³). This is not surprising, since the largest concentration of base marks is known in the neighbouring regions to the west,⁷⁴ from where technology or finished products could have easily reached these areas. The presence of a single marked *situla* in each *oppidum* in the inner parts of the Carpathian Basin (Esztergom, Budapest, Bába), compared to the large number of such finds at *oppida* west of that or even in Bratislava, may also suggest that these particular vessels were not local products but either traded imports or pieces brought by travellers along the Danube.⁷⁵

Some of these finds are surprisingly early, dated to the end of La Tène C2 period (Sereď, Nitra, Sárvár, and Perkáta), which might prove valuable for the research of the origins of the custom (Fig. 3). The early appearance of base marks in such relatively remote regions could indicate either a very fast spread of the related practice or a different point for emergence.

The marking of the bases of pottery vessels was, in general, uncommon in earlier La Tène periods. An exceptional region, however, is worth special atten-

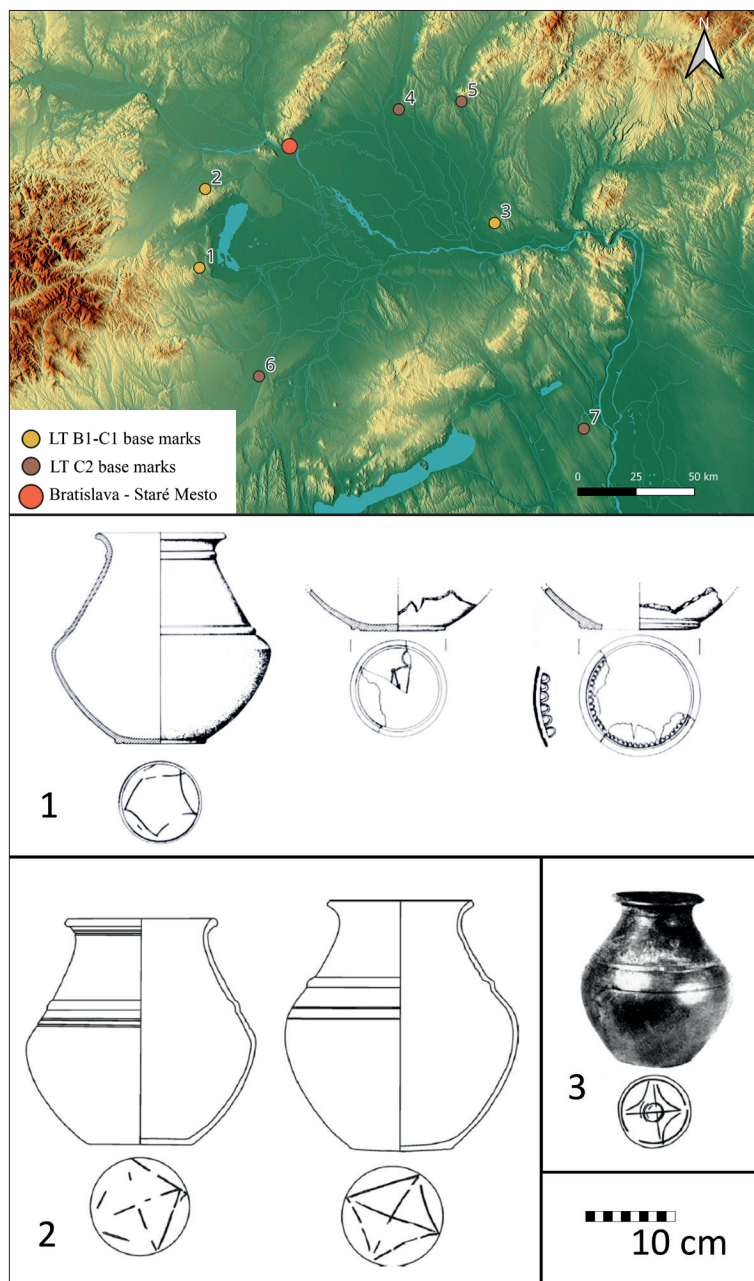


Fig. 3. Distribution of pottery with base marks from the La Tène B1–C1 period (with specimens depicted) and *situlae* with base marks from the La Tène C2 period in the Carpathian Basin. 1 – Sopron-Krautacker (JEREM 1984, Fig. 4.6,7,8), 2 – Mannersdorf am Leithagebirge (RAMSL 2011, Taf. 100.4, Taf. 141.4), 3 – Svätý Peter (DUŠEK 1960, Tab. 1.7), 4 – Sereď-Prúdy, 5 – Nitra-Šindolka, 6 – Sárvár-Mókadűlő, 7 – Perkáta-Nyúli-dűlő.

71 ZACHAR 1976, 31, Obr. 4.6,7.

72 DULAR – TOMANIČ JEVREMOV 2009, 172, T. 10.9. This vessel is particularly interesting because, as mentioned, this type is almost exclusive to the settlement of Milovice in Bohemia.

73 A bowl without graphite in its material, bearing an 'X' mark on its base, was also found there; see BEKIĆ 2006, 115, 141, Tab. 20.1.

74 ČAMBAL – BAZOVSKÝ 2017, 127.

75 Although this anomaly might only reflect a lack of thorough research of these sites.

tion: the Lake Fertő area in the La Tène B1–C1 period. There, the bases of some fine wheel-thrown pottery vessels, especially bottles and small jugs (without graphite tempering), were incised with complex motifs, including semicircular arches starting at the base edge, sometimes combined with circles and straight lines. Altogether, six such vessels are known so far: three from a pottery workshop in Sopron-Krautacker,⁷⁶ two from the Mannersdorf am Leithagebirge cemetery,⁷⁷ and one from the cemetery of Svätý Peter.⁷⁸ Erzsébet Jerem's study, which includes an assessment of the typological and geochemical characteristics of this material of Sopron-Krautacker, has revealed significant pottery production there, both for local use and for trade. According to her the workshop's products are easily traced through occurrences of, for example, a stamped spiral S motif in an oval frame in the broader region.⁷⁹ The base marks mentioned above also appear across the same region; Jerem interpreted them as workshop or quality marks.⁸⁰ Although no continuity can be detected between the phenomenon in focus and the base marks of the Lake Fertő area, that practice possibly influenced later traditions. Even though this region was not part of the core area of Celtic graphite mining and distribution, it lies along the so-called Amber Road (a contact route between the Mediterranean and temperate Europe) and close to the later *oppidum* of Bratislava.

As mentioned above, the *oppidum* of Bratislava-Staré Mesto yielded pottery with an outstanding concentration and diversity of base marks, perhaps not unrelated to the circumstance that it occupies an important strategic location at the western entrance of the Carpathian Basin. The neighbouring *oppidum* of Bratislava-Devín is only a few kilometres away. A unique find, 3.5 kg of raw graphite was discovered there, along with kilns and spoiled ware, indicating large-scale production of graphite-tempered pottery.⁸¹ This group of proto-urban sites, which may have been a centre of a Boii community, probably played a similar, central role as the five sites—mentioned earlier—with the highest amount of base-marked *situlae* (Fig. 4). The region around what is Bratislava today probably played an important role at the time, connecting the area west of it with the inner parts of the Carpathian Basin; the most important communication route was certainly Danube River. However, the contrast between the high occurrence and diversity of base marks in the western half of the Eastern La Tène complex and their scarcity in the Carpathian Basin and the Balkans is conspicuous.

A base mark found in Bratislava (Fig. 4.8)⁸² is particularly important because it may be interpreted as an inscription. It can be an isolated example, but it can also lead to the reevaluation of some of the hypotheses presented above. The archaeologists who published this find, Karol Pieta and Lev Zachar, linked it to the influence of Late Hellenistic *grafittos*, together with similar incisions on the sides of *Dreifüßschüsseln* (three-legged cauldrons) from the same site.⁸³ The *Dreifüßschüsseln* (three-legged vessels), a special pottery group with a practical design and often made of graphite-tempered clay, are occasionally decorated with enigmatic incised symbols; on their sides are specific to the pottery record of this area and period.⁸⁴

Simultaneously, during the La Tène D period, a very similar tradition seems to have developed in the southern Carpathian Basin and the northern Balkans, inhabited by the Scordisci at the time: the bases of a small percentage of *kantharoi*, a different but also significant pottery type,

76 JEREM 1984, 57–58, Fig. 4.6,7,8.

77 RAMSL 2011, Pl. 100.4, Pl. 141.4.

78 DUŠEK 1960, 467, Tab. 1.7.

79 JEREM 1984, 68–72.

80 JEREM 1983, 90.

81 BŘEZINOVÁ – GERE 2021, 62–63.

82 PIETA – ZACHAR 1993, Obr. 88.5.

83 PIETA – ZACHAR 1993, 165–166.

84 ZACHAR – REXA 1988, 46, Abb. 17.7–8; PIETA – ZACHAR 1993, 166, Obr. 91; TREBSCHKE 2011, 455; VRTEL 2012, 169–170.

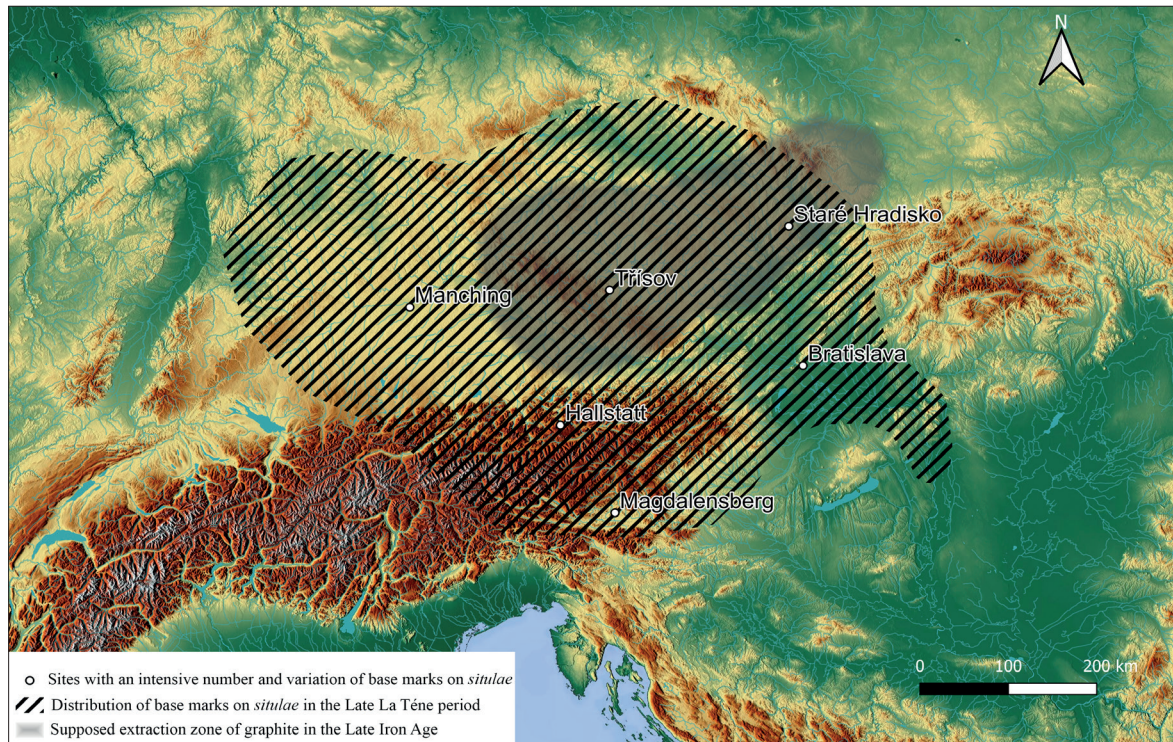


Fig. 4. Main distribution area of situlae with base marks in the Late La Tène period; with the most intensive sites highlighted (after Zeidler 2003, 72, Fig.1).

are sometimes marked with an 'X'. So far, marked *kantharoi* are known from only three sites: the *oppidum* of Gomolava⁸⁵ and two settlements at Bare-Voganj and Sremska Mitrovica.⁸⁶ These marks attest to the same pottery techniques (the patterns are burnished or incised before firing), based on which their purpose was probably similar to that of the base marks of graphite-tempered vessels. *Kantharoi* must have had a distinguished role among Scordiscan tableware, as this vessel form also attests to a long chain of contacts from the Hellenistic Mediterranean.⁸⁷ It is difficult to trace if the practice of marking vessels in this region reflects north-western influence, but the analogies are striking. However, as the same motif also appears on the interior of the bases of *kantharoi* and also on other pottery forms, it might be purely decorative. This practice might be connected to the base-marked vessels found in the Dacian site Divici-Grad, which are the easternmost and youngest examples of such marks known from the Carpathian Basin, and the only ones that can certainly be dated to the 1st century AD.⁸⁸

Conclusions

Late La Tène base marks are a complex phenomenon which cannot be fully understood from available information. Graphite-tempered vessels were a flagship group of Celtic pottery for centuries; their making required the active use of a network of connections that spanned Central Europe and enabled the large-scale flow of raw materials, know-how, and customs. Graphite-tempered *situlae* certainly played a significant role in the daily life of the Celts. They were not the earliest pottery decorated with various pictograms that may seem strange at first glance but represent the first

85 Here, the same mark also appears on a bowl; see: JOVANOVIĆ – JOVANOVIĆ 1988, T. 2.7,9, T. 35.4.

86 BRUKNER 1995, Pl. I1.5, Pl. 4.39.

87 Scordiscan *kantharoi* were the result of hundreds of years of pottery form evolution, rooted in Hellenistic imports and local Illyrian–Pannonian traditions (RUSTOIU – EGRI 2010, 236–237).

88 DRĂGAN 2023, 288–289.

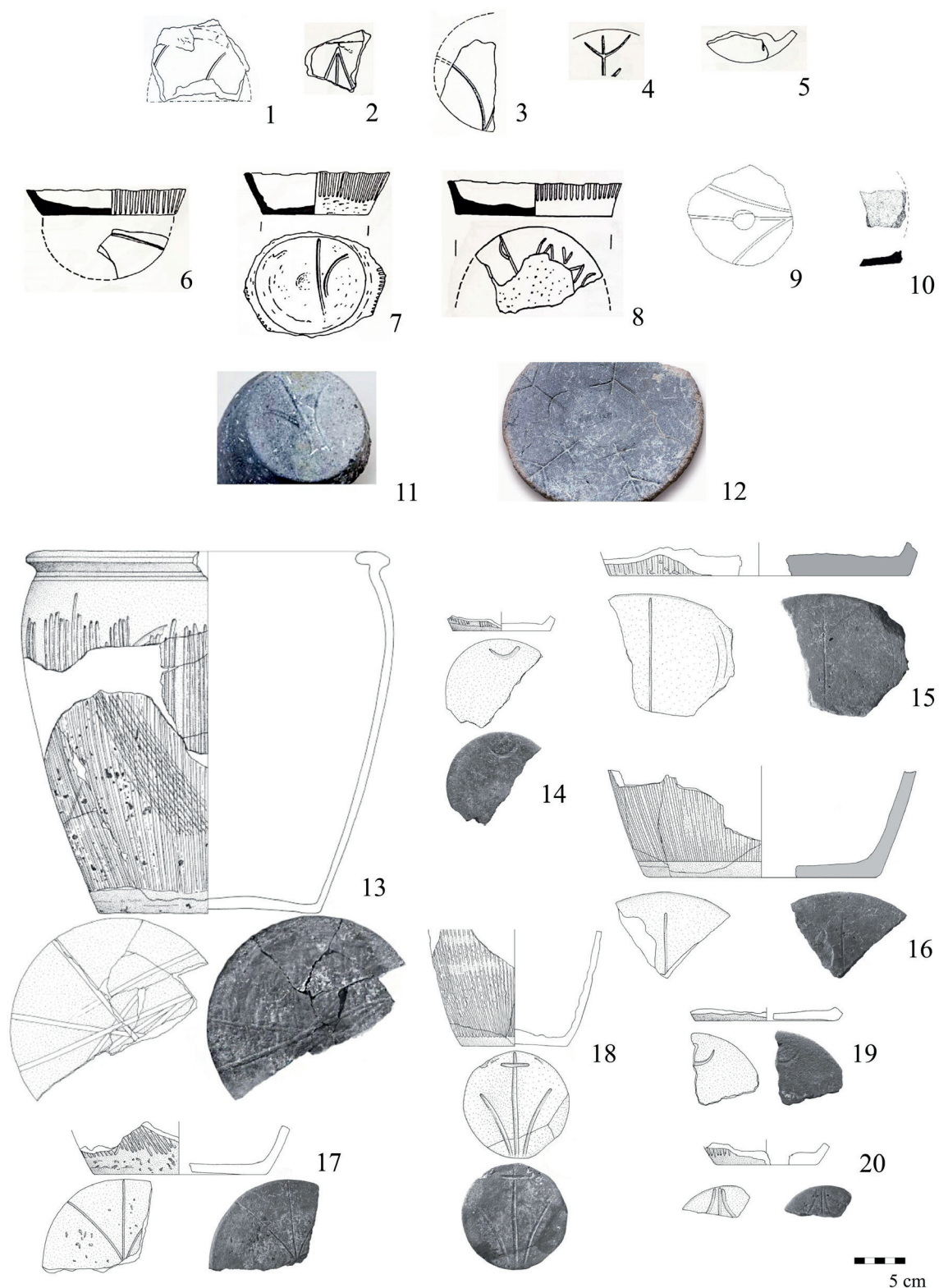


Fig. 5. *Situlae* with base marks from the *oppidum* of Bratislava (for references, see Tab. 1).

relatively large and consistent group of markings. The oldest base-marked *situlae*—with some of the motifs presumably originating from Venetian and Etruscan cultural environments—appeared at the very end of the La Tène C period and spread later across almost the entire distribution area of graphite-tempered pottery. Some interpret them as potters' or workshop marks or as magical symbols; however, neither theory is irrefutable. It must be borne in mind that the marks had been

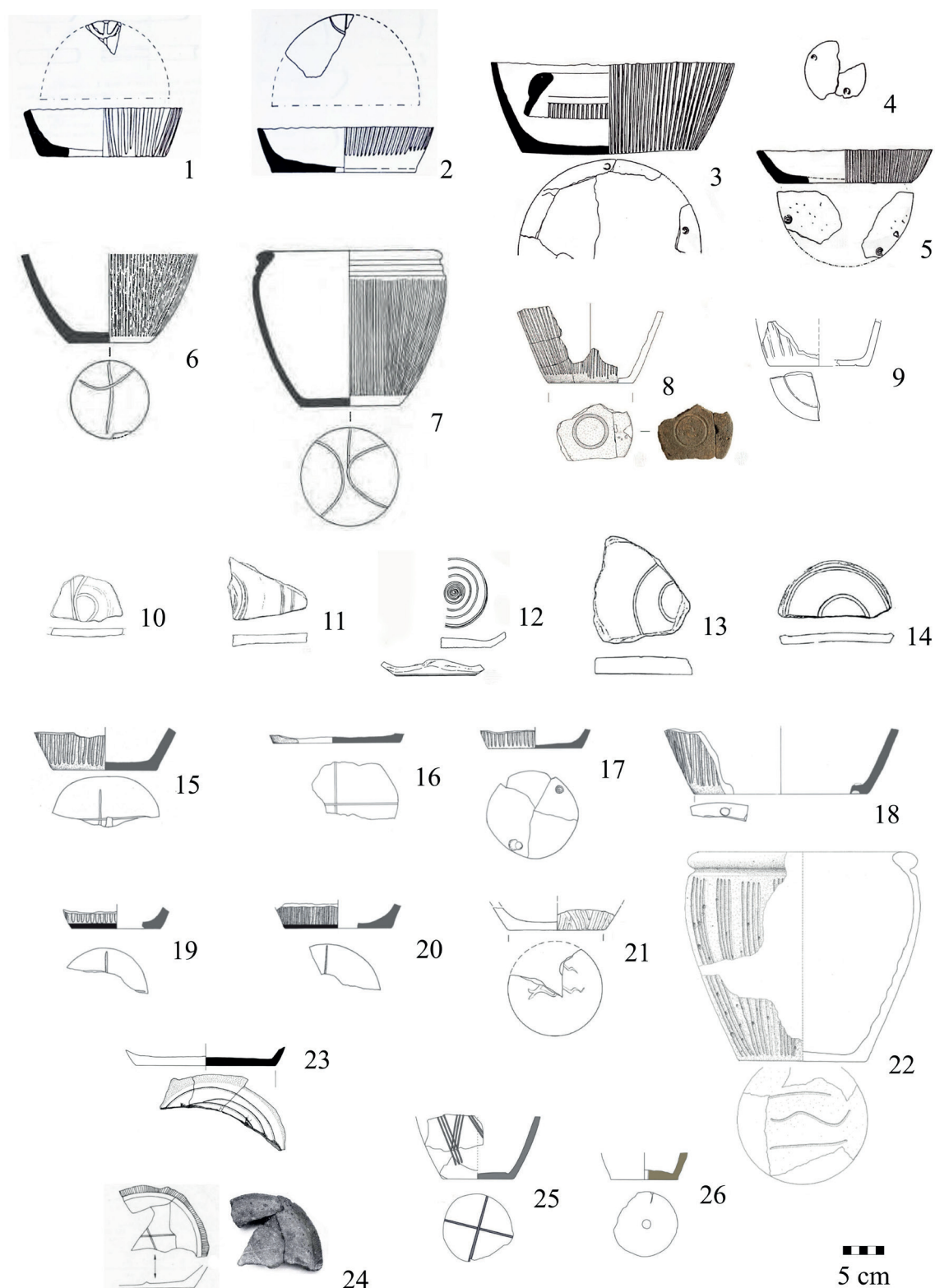


Fig. 6. *Situlae* with base marks from the Carpathian Basin (for references, see Tab. 1).

applied before firing, i.e. certainly as part of the vessels' creation. Their appearance may be linked to changes in graphite trade during the Late La Tène period, reflecting perhaps a decrease in accessibility and the resulting increase in the value of graphite. A few scattered examples date after the Roman conquest, as the phenomenon, along with the technology of graphite tempering, faded away by the end of the 1st century AD.

Tab. 1. Catalogue of base marks on *situlae* from the Carpathian Basin (Figs 5–6).

Figure	Site	Fabric	Type ⁸⁹	Bibliography
4.1	Bratislava-Partizánska ulica	graphitic	undeterminable	ZACHAR 1981, 42, obr. 9.2
4.2	Bratislava-Nálepkova ulica	graphitic	1	ZACHAR – REXA 1988, 50, Abb. 12.5
4.3	Bratislava-Nálepkova ulica	graphitic	1b/2	ZACHAR – REXA 1988, 50, Abb. 12.10
4.4	Bratislava-Nálepkova ulica	graphitic	1	ZACHAR – REXA 1988, 50, Abb. 12.12
4.5	Bratislava-Nálepkova ulica	graphitic	undeterminable	ZACHAR – REXA 1988, 50, Abb. 12:14
4.6	Bratislava-Staré mesto	?	undeterminable	PIETA – ZACHAR 1993, 166, obr. 88.2
4.7	Bratislava-Staré mesto	?	2	PIETA – ZACHAR 1993, 166, obr. 88.4
4.8	Bratislava-Staré mesto	?	inscription (?)/ additional type	PIETA – ZACHAR 1993, 166, obr. 88.5
4.9	Bratislava-Hlavné námestie 8	non-graphitic	1 (later turned into a spindle whorl)	RESUTÍK 2007, 108, Tab. 6.17
4.10	Bratislava-Hlavné námestie 8	?	1	RESUTÍK 2007, 108, Tab. 6.18
4.11	Bratislava-1. stor. pred n. l., Uršulínska ul., Františkánska záhrada	graphitic	2	VRTEL 2012, 170, obr. 248
4.12	Bratislava-1. stor. pred n. l., Bratislavský hrad, nádvorie paláca	non-graphitic	additional type	VRTEL 2012, 170, obr. 277
4.13	Bratislava-Vydrica	non-graphitic	irregular/ additional type	ČAMBAL – KOVÁR 2019, 181, Tab. 1.
4.14	Bratislava-Vydrica	non-graphitic	11	ČAMBAL – KOVÁR 2019, 181, Tab. 2.4
4.15	Bratislava-Vydrica	graphitic	1/6/8	ČAMBAL – KOVÁR 2019, 181, Tab. 3.1
4.16	Bratislava-Vydrica	graphitic	1/6/8	ČAMBAL – KOVÁR 2019, 181, Tab. 3.3
4.17	Bratislava-Vydrica	non-graphitic	1	ČAMBAL – KOVÁR 2019, 181, Tab. 2.1
4.18	Bratislava-Vydrica	non-graphitic	1b	ČAMBAL – KOVÁR 2019, 181, Tab. 2.2
4.19	Bratislava-Vydrica	non-graphitic	1/2/12	ČAMBAL – KOVÁR 2019, 181, Tab. 2.3

⁸⁹ According to the typology of Irene Kappel, adapted by Miloš Čižmář and Jiří Meduna (ČIŽMÁŘ – MEDUNA 1985).

► Figure	Site	Fabric	Type	Bibliography
4.20	Bratislava-Vydríca	non-graphitic	1b/2	ČAMBAL – KOVÁR 2019, 181, Tab. 3.2
5.1	Kúty-Čepangát	non-graphitic	1	ZACHAR 1976, 43, obr. 11.1
5.2	Kúty-Čepangát	non-graphitic	1	ZACHAR 1976, 43, obr. 11.2
5.3	Plavecké Podhradie-Pohanská	graphitic	12b	PAULÍK 1976, Tab. 18.5
5.4	Plavecké Podhradie-Pohanská	graphitic	12b	PAULÍK 1976, Tab. 15.9
5.5	Plavecké Podhradie-Pohanská	graphitic	12b	PAULÍK 1976, Tab. 29.5
5.6	Bratislava-Devín	graphitic	1a	KAPPEL 1969, 121, Abb. 48.6
5.7	Bratislava-Devín	graphitic	2	KAPPEL 1969, 121, Abb. 48.7
5.8	Bernolákovo-Triblavina	non-graphitic	5	ČAMBAL – BAZOVSKÝ 2017, 122, tab. 2.4
5.9	Sered'-Prúdy	graphitic	5 (?)	DAŇOVÁ – KISSOVÁ 2021, 87, Pl. 5.1
5.10	Šurany-Nitriansky Hrádok-Zámeček	non-graphitic	additional type	BŘEZINOVÁ 2010, tab. 5.14
5.11	Nitra-Šindolka	non-graphitic	5	BŘEZINOVÁ 2000, Taf. 52: 1
5.12	Nitra-Šindolka	non-graphitic	5	BŘEZINOVÁ 2000, Taf. 108.10
5.13	Nitra-Šindolka	non-graphitic	5	BŘEZINOVÁ 2000, Taf. 140.4
5.14	Nitra-Šindolka	non-graphitic	5	BŘEZINOVÁ 2000, Taf. 140.10
5.15	Iža-Dunaj, 1759 km	graphitic	6a	GERE 2017, 102, Obr. 1.1
5.16	Iža-Dunaj, 1759 km	graphitic	6a	GERE 2017, 102, Obr. 1.2
5.17	Iža-Dunaj, 1759 km	graphitic	12b	GERE 2017, 102, Obr. 1.3
5.18	Iža-Dunaj, 1759 km	graphitic	12b	GERE 2017, 102, Obr. 1.4
5.19	Komárno-Stará pevnosť	graphitic	6a	GERE 2017, 103, Obr. 1.5
5.20	Komárno-Nová pevnosť	graphitic	6a (?)	GERE 2017, 103, Obr. 1.6
5.21	Ormož-Hotel	graphitic	7	DULAR – TOMANIČ JEVRMOV 209, 172, T. 10.9
5.22	Jakopovec-Blizna	graphitic	11	BEKIĆ 2006, 115, 141, Tab. 20.1
5.23	Sárvár-Móka-dűlő	non-graphitic	5	SZILASI 2006, 236, 13. tábla 3.
5.24	Budapest-Tabán	graphitic	6b	B. BÓNIS 1969, 186, Abb. 50.14.
5.25	Divici-Grad	non-graphitic	6a	DRAGAN 2023, 289, Fig. 2.2.
5.26	Divici-Grad	non-graphitic	undeterminable/ additional type (later perforated)	DRAGAN 2023, 288, Fig. 2.1
—	Esztergom-Várhegy	graphitic	6	BALOGH 1927, 211, 110. kép l.d.
1.1	Perkáta-Nyúli-dűlő	graphitic	5	—

► Figure	Site	Fabric	Type	Bibliography
1.2	Perkáta-Nyúli-dűlő	graphitic	5	—
1.3	Perkáta-Nyúli-dűlő	graphitic	5	—
1.4	Perkáta-Nyúli-dűlő	non-graphitic	5	—
1.5	Báta-Öreghegy	graphitic	undeterminable	—

Currently, six sites (with five *oppida* amongst them) stand out as presumed centres of production, but the custom and technique of base marking were likely known and practised in most coeval pottery workshops across central Europe. The Bratislava *oppidum* is certainly unique amongst the related sites in the Carpathian Basin for the number and diversity of base-marked finds and for the presence of another graphite-tempered pottery type with geometric symbols, the *Dreifußschüsseln*.

Evidence remains sporadic and does not indicate that the phenomenon became widespread in the Carpathian Basin. Whether these vessels were produced at these sites or imported there and what they may have meant to the respective communities remain to be answered. Amongst the different ‘peoples’ of the Carpathian Basin, there seems to be a strong connection between the custom and the Boii, raising the possibility that they can be seen behind the appearance of such vessels as far away as the easternmost Dacian regions, and may have played a role in the emergence of similar signs on the bases of Scordiscan *kantharoi*.

Further research into this phenomenon would benefit from a closer examination and comparison of base marks with other symbols on Celtic pottery and other coeval Hellenistic, Dacian, Illyrian, and early Roman pottery objects with similar markings, graffiti, and stamps. Material composition analyses are also key to gleaning evidence of the possible role of such vessels in Celtic trade.

Funding

Supported by the EKÖP-25 University Research Scholarship Programme of the Ministry for Culture and Innovation from the source of the National Research, Development and Innovation Fund.

Acknowledgements

I thank my supervisors, Zoltán Czajlik and Dániel Szabó, for the possibility to process the finds from Perkáta and Báta and for their help with the analysis. I am also indebted to Zsófia F. Sörös, Erzsébet Jerem, Andreea Drăgan, and Peter Trebsche for sharing their ideas and thoughts on the subject.

References

- BALOGH, A. 1927: Az esztergomi múzeum bélyeges agyagedényeiről. *Archaeologiai Értesítő* 41, 209–217.
- BEKIĆ, L. 2006: *Zastitna Arheologija u Okolici Varazdina Arheoloska istrazivanja na autocesti Zagreb-Gorican i njezinim prilaznim cestama*. Zagreb.
- B. BÓNIS, É. 1969: *Die spätkeltische Siedlung Gellérthege-Tabán in Budapest*. Budapest.
- BŘEZINOVÁ, G. 2000: *Nitra-Šindolka. Siedlung aus der Latènezeit*. Nitra.
- BŘEZINOVÁ, G. 2010: Sídliisko z neskoroláténskej polohy Zámeček v Šuranoch, Nitrianskom Hrádku. In: Beljak, J. – Březinová, G. – Varsik, V. (eds): *Archeológia barbarov 2009. Hospodárstvo Germánov, sídliskové a ekonomické štruktúry od neskorej doby laténskej po včasný stredovek*. Nitra, 113–130.
- BŘEZINOVÁ, G. – GERE, M. 2021: Graphite, an attractive material of the La Tène period in the territory of Slovakia. *Anodos. Studies of the Ancient World* 15, 61–70.

- BRUKNER, O. 1995: Domoorodačka naselja [Native settlements]. In: Vapa, Z. (ed.): *Arheološka istraživanja duž autoputa kroz Srem* [Archaeological investigations along the highway route in Srem]. Novi Sad, 91–136.
- ČAMBAL, R. – BAZOVSKÝ, I. 2017: Neskoroláténske sídliskové objekty v Bernolákove, okres Senec. *Zborník Slovenského národného múzeu* 111, *Archeológia* 27, 109–131.
- ČAMBAL, R. – KOVÁR, B. 2019: Značky na nádobách Z doby laténskej na príklade lokality Bratislava-Vydrica. In: Bazovský, I. – Březinová, G. (eds): *Ľudia a hory – archeologická perspektíva. Interakcie ľudských spoločenstiev horských a podhorských oblastí západného Slovenska*. Bratislava–Nitra, 179–188.
- ČIŽMÁŘ, M. – MEDUNA, J. 1985: Značky na dnech laténské keramiky na Moravě. *Památky archeologické* 76:1, 78–100.
- DAŇOVÁ, K. – KISSOVÁ, M. 2021: New Settlement from the La Tène Period in Sereď. In: Robak, Z. – Ruttkay, M. (eds): *Celts – Germans – Slavs. A Tribute Anthology to Karol Pieta*. Slovenská archeológia – Supplementum 2. Nitra, 81–93. <https://doi.org/10.31577/slovarch.2021.suppl.2.7>
- DIMITROV, D. P. – ČIČIKOVA, M. – BALKANSKA, A. 1984: *Sevtopolis I. Bit i kultura*. Sofia.
- DRĂGAN, A. 2023: Semne grafice pe situlele ceramice ca dovadă a relațiilor interregionale. Un exemplu din aşezarea de a doua epocă a fierului de la Divici-Grad. In: Firea, C. – Rustoiu, A. (eds): *Sub semnul artei. Studii în onoarea academicianului Marius Porumb la 80 de ani*. Cluj-Napoca, 285–292.
- DULAR, J. – TOMANIČ JEVRMOV, M. 2009: Sledovi poznolatenške poselitve v Ormožu. *Arheološki vestnik* 60, 159–193.
- DUMA, Gy. 1980: Cserépedények grafitartalmának gyakorlati jelentősége. *Múzeumi Műtárgyvédelem* 7, 13–26.
- DUŠEK, M. 1960: Keltské pohrebisko vo Svätom Petri. *Slovenská archeológia* 8:2, 457–469.
- FILIPOWIAK, W. 1953: Późnolateńskie naczynie grafitowe z Januszkowa w pow. inowrocławskim. *Przegląd Archeologiczny* 9.27/28:2–3, 341–347.
- GARCZIK, Á. 2021: Dolia in the Middle La Tène Period of the Carpathian Basin in the light of new finds from Perkáta-Nyúli-dűlő. *Dissertationes Archaeologicae* 3.9, 121–134. <https://doi.org/10.17204/dissarch.2021.121>
- GERE, M. 2017: Značky na dnách grafitových nádob z doby laténskej v zbierke Podunajského múzea v Komárne. In: Csuthy, A. – Vanya, P. (eds): *Mérföldkövek – Mílniky 2015–2017*. Komárno, 100–107.
- GOODLOE, J. M. – SOULEK, J. 2023: Foreign bodies. In: Walls, R. M. (ed.): *Rosen's Emergency Medicine: Concepts and Clinical Practice*. Philadelphia, 674–689.
- HANÍK, D. 2010: Keltská grafitová keramika. In: Chovanec, M. – Sipko, J. (eds): *6. Študentská vedecká konferencia. Zborník príspevkov*. Prešov, 349–362.
- HELL, M. 1922: Bodenzeichen auf Gefäßen der Spätlatènezeit. *Wiener Prähistorische Zeitschrift* 9, 109.
- HELL, M. 1940: Zur Verbreitung der Bodenzeichen auf spätkeltischen Kammstrichgefäßen. *Germania* 24, 118–123.
- HLAVA, M. 2008: Grafit v době laténské na Moravě (Graphite in the Early La Tène period in Moravia: It's use and origin). *Památky archeologické* 99, 189–258.
- JEREM, E. 1983: Kelta fazekaskemencek Sopronban (Celtic pottery kilns in Sopron). In: Gömöri, J. (ed.): *Iparrégészeti - Égetőkernencék 2*. (Industrial Archaeology. Kilns and Furnaces 2). Veszprém, 83–103.
- JEREM, E. 1984: An early Celtic pottery workshop in north western Hungary: Some archaeological and technological evidence. *Oxford Journal of Archaeology* 3:1, 57–80. <https://doi.org/10.1111/j.1468-0092.1984.tb00116.x>
- JOVANOVIĆ, B. – JOVANOVIĆ, M. 1988: *Gomolava Naselje mladeg gvozdenog doba*. Beograd–Novi Sad.
- KAPPEL, I. 1969: *Die Graphittonkeramik von Manching*. Die Ausgrabungen in Manching 2. Wiesbaden.
- KOUČKÁ, A. – NOVÁK, M. 2016: Experimentální výroba laténské grafitové keramiky v Panské Lhotě. In: Měřinský, Z. – Klápště, J. (eds): *Workshopy ke středověké keramice*. Brno, 56–67.
- KREITER, A. – BARTUS-SZÖLLŐSI, Sz. – BAJNÓCZI, B. – HAVANCSÁK, I. A. – TÓTH, M. – SZAKMÁNY, Gy. 2016: Ceramic technology and the materiality of Celtic graphitic pottery. In: Alberti, M. E. – Sabatini, S. (eds): *Exchange Networks and Local Transformations: Interaction and local change in Europe and the Mediterranean from the Bronze Age to the Iron Age*. Oxford, 169–179. <https://doi.org/10.2307/j.ctvh1dm19.19>

- MAKYTA, F. 1971: Příspěvek k poznání technologie výroby laténské keramiky. *Sborník československé společnosti archeologické* 4, 97–98.
- MEDUNA, J. 1998: Zur Problematik der latènezeitlichen Graphittonkeramik. In: Kempke, T. – Kouřil, P. – Poláček, L. – Staňa, Č. (eds): *Frühmittelalterliche Graphittonkeramik in Mitteleuropa- Naturwissenschaftliche Keramikuntersuchungen*. Internationale Tagungen in Mikulčice 4. Brno, 11–15.
- NÉMETHI, J. 2009: Észak-nyugat Románia grafitos kerámijának kérdése és kapcsolattrendszere. In: Ilon, G. (ed.): *ΜΩΜΟΣ VI. Őskoros kutatók VI. összefoglaló konferenciakötete. Nyersanyagok és kereskedelem. Kőszeg, 2009. március 19–21. Szombathely*, 267–277.
- PARET, O. 1929: Der Graphit im vorgeschichtlichen Europa. *Sudeta. Zeitschrift für Vor- und Frühgeschichte* 5, 30–53.
- PAULÍK, J. 1976: *Keltské hradisko Pohanská v Plavecom Podhradí (Der keltische Burgwall Pohanská in Plavecké Podhradie)*. Bratislava.
- PIETA, K. – ZACHAR, L. 1993: Mladšia doba železná (laténska). In: Štefanovičová, T. (ed.): *Najstaršie dejiny Bratislavy*. Bratislava, 143–209.
- POTREBICA, H. – RAKVIN, M. 2019: Study of the Kaptol micro-region. In: Črešnar, M. – Mele, M. (eds): *Early Iron Age Landscapes of the Danube region*. Graz–Budapest, 141–160.
- RAMSL, P. C. 2011: *Das latènezeitliche Gräberfeld von Mannersdorf am Leithagebirge, Flur Reinthal Süd, Niederösterreich*. Mitteilungen der Prähistorischen Kommission der Österreichischen 74. Wien. https://doi.org/10.26530/OAPEN_420887
- RÉGI, T. 2019: *Hogyan gondolkodnak a „bennszülöttek”... például a turistákról? Kultúrák keresztútján*. Budapest.
- REPKA, D. 2020: *Laténska Keramika Ako Predmet Štúdia*. Nitra.
- RESUTÍK, B. 2007: Východné suburbium bratislavského oppida – archeologický výskum na Hlavnom námestí 8. *Zborník Slovenského Národného Múzea* 101 – Archeológia 17, 97–120.
- RUSTOIU, A. 1993: Observații privind ceramica Latene cu grafit în pastă din România. *Thraco-Dacica* 14, 131–142.
- RUSTOIU, A. – EGRI, M. 2010: Danubian Kantharoi – Almost Three Decades Later. In: Berecki, S. (eds): *Iron Age Communities in the Carpathian Basin, Proceedings of the International Colloquium from Târgu Mureș 9–11. 10. 2009*. Cluj-Napoca, 217–287.
- SZILASI, A. B. 2006: Kelta település részlete Sárvár határában (Parts of a Celtic settlement on the edge of Sárvár). *Savaria* 30, 231–290.
- SZÖLLÖSI, SZ. – HAVANCSÁK, I. A. – BAJNÓCZI, B. – KREITER, A. – SZAKMÁNY, Gy. – TÓTH, M. 2009: Archeometriai vizsgálatok szerepe a kelta grafitos kerámiák régészeti interpretációjában. In: Ilon, G. (ed.): *ΜΩΜΟΣ VI. Őskoros kutatók VI. Összefoglaló konferenciakötete. Kőszeg, 2009. március 19–21. Nyersanyagok és kereskedelem*. Budapest–Szombathely, 379–394.
- TREBSCH, P. 2011: Eisenzeitliche Graphittonkeramik im mittleren Donaauraum. In: Schmotz, K. (ed.): *Vorträge des 29. Niederbayerischen Archäologentage*. Deggendorf, 449–481.
- VRTEL, A. 2012: Keltské oppidum v Bratislave. In: Šedivý, J. – Štefanovičová, T. (eds): *Dejiny Bratislavy 1. Od počiatkov do prelomu 12. a 13. storočia: Brezalauspurc na križovatke kultúr*. Bratislava, 164–179.
- ZACHAR, L. 1976: Neskorolaténske sídlisko pri Kútoch. *Zborník Slovenského národného múzea* 70: História 16, 31–53.
- ZACHAR, L. 1981: Neskorolaténske vrstvy na Partizánskej ulici v Bratislave. *Zborník Slovenského Národného Múzea* 75: História 21, 35–54.
- ZACHAR, L. – REXA, D. 1988: Beitrag zur Problematik der spätlatènezeitlichen Siedlungshorizonte innerhalb des Bratislavaer Oppidums. *Zborník Slovenského Národného Múzea* 82: História 28, 27–72.
- ZEIDLER, J. 2003: A Celtic Script in the Eastern La Tène Culture? *Études celtiques* 35, 69–132. <https://doi.org/10.3406/ecelt.2003.2152>



