CAN BRICKS TELL US THE YEAR? HOBNAIL PRINTS ON TEGULAR MATERIAL FROM THE MITHRAEUM III AT APULUM AS EVIDENCE OF FOOTWEAR FASHION[1]

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Abstract: *Among the carefully collected finds during the excavations that took place at the Mithraeum III (2008, 2013–1026) in Apulum, Roman Dacia, were two bricks with hobnail prints of nailed footwear. One of the finds, in particular, showed the complete form of the sole, decorated with an elaborate hobnail pattern. A closer look at the published finds revealed that similar or even identical designs decorated shoes that have been discovered at a considerable distance on different sites in the North-Western provinces of the empire. Large sets of leather shoes found in humid environments of these provinces have shown that shoe soles were, equally to footwear upper parts, a fashionable object, having a chronological and social value in archaeology. In the context of limited interest given to hobnail prints in the publications about Roman Dacia, this paper argues for the revalorization of the subject in the archaeological literature.*

Keywords: *Roman footwear, hobnail prints, ceramic building material, Roman Dacia, Apulum.*

Introduction

This paper discusses two ceramic bricks with hobnail prints from the most recently identified *mithraeum* at Apulum (today Alba Iulia, Romania) in the province of Dacia, known as Mithraeum III. The subject is rather unusual for archaeological literature. This is not because hobnail prints on ceramic building materials are rare; quite the contrary. Hobnail prints are common on excavations but without being considered of any particular significance. After all, wearing shoes is self-understood and ceramic bricks are highly abundant on Roman archaeological sites. At the same time, iconographic representations or preserved leather footwear offer more comprehensive evidence about shoe forms. When it comes to ceramic building materials, these have been described mainly as elements of a whole, as part of a constructive technique. Rarely do they retain individual importance, particularly when these attain intentionally (e.g. graffiti, stamps, shaping) or by accident (e.g. impressions of animal paws, shoe nails) an additional archaeological value other than purely architectural. Only in this case are ceramic building materials conferred with individual importance given not by their primary function as building materials but by their role as physical support for intentional or accidental representations. By far, artistic and written depictions have enjoyed more interest. Detailed studies about other categories are isolated, particularly for Roman Dacia, where this type of evidence is almost entirely ignored. In the past years, however, well-documented, interdisciplinary methods revived the study, for example, of animal prints, as a source of information for the production process of ceramic building material and the faunal profile of a site[3].

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[3] BENNETT 2012. For Dacia, see GUDEA 2004.

Fig. 1 Map of sites mentioned in text (modified after the Digital Atlas of the Roman Empire, https://dh.gu.se/dare/)

In the case of hobnail prints, the published evidence is equally underrepresented, considering the common presence of such finds on excavations[4]. Under these circumstances, our direct knowledge about Roman shoes is mainly based on finds from several sites located in Western Europe, where humid conditions of particular contexts, e.g. wells, sealed wet levels in ditches, or rubbish dumps, have permitted the conservation of leather. These finds have confirmed and even completed the written and iconographic evidence, i.e. on funerary monuments, statuary, and walls, bringing a valuable contribution to the subject. Apart from the well-known case of Vindolanda[5], important sets of leather shoes have been published from Mainz/Mongotiacum[6] or the fountains of the forts at Saalburg[7], Zugmantel[8] and Kleiner Feldberg[9] (856 entries from all three sites together). Another set of 258 leather shoe fragments, of which 100 are complete, have been discovered inside Fountain no. 1 of the fort at Welzheim[10]. A large number of fragments from leather shoes have also been recovered from the ditches and refuse pits of the fort at Bar Hill (520 entries)[11] (Fig. 1).

Because of the limited availability of evidence at a local level, our study relies precisely on the above-mentioned finds from the North-Western provinces of the Roman Empire. Context-based studies at these sites have shown that shoes and shoe soles alike were very much fashion items, which changed with time according to taste, and often quite abruptly. Comparison of

4 For the Dacian provinces, the number of articles discussing this subject is very limited – see: GREC 1998 (Potaissa); TIMOC/TIMOC 1999 (Tibiscum).

5 VAN DRIEL-MURRAY 2001A (1447 leather footwear items have been counted between 1985 and 1988 alone).

6 GÖPFRICH 1986 – the finds were discovered in three contexts: Roman boat (FM 82–62), 2nd – 4th centuries AD, with rests/garbage from trade activities; construction pit of a boat (FM 82–37), 1st century AD, with rests from production activities; and third, on the ancient riverbed (FM 82–8a), early Roman, rests of military origin.

7 BUSCH 1965 – all from fountains, 48 of the 99 fountains on the site had rests of leather.

8 BUSCH 1965 – from fountains and the *thermae*, 13/14 of the 46 fountains contained rests of leather.

9 BUSCH 1965 – from the swamps.

10 VAN DRIEL-MURRAY 1999.

11 ROBERTSON ET AL. 1975, 59–83.

data between sites from different parts of the Roman Empire has even indicated the existence of contemporaneous empire-wide trends[12]. If this is the case, it is possible to use hobnail patterns on shoe soles as archaeological evidence with relevant chronological and social value. In provinces such as Dacia, where climatic conditions are not favourable for the conservation of organic materials, i.e. neither humid nor dry enough for leather to last, hobnail prints are almost the sole direct evidence of shoe fashion[13] – albeit limited to those shoes held together by hobnails (military boots – *caligae*, closed shoes – *calceii*, sandals – *soleae*, and wooden soles – *sculponeae*)[14] –, hence the usefulness of their study. The finds from the Mithraeum III form a small sample, but they are a good illustration of the positive outcome of this type of approach.

The site of discovery – Mithraeum III at Apulum

The urban and military complex at Apulum (today Alba Iulia, Romania), in the heart of Roman Dacia, certainly draw its prosperity from the presence of the most long-lasting legion of the Dacian provinces, Legio XIII Gemina, and the favourable conditions offered by the fertile valley of the Mureș, river that also functioned as a transportation artery. The vitality of the civilian quarters, which coagulated in two towns, *Colonia Aurelia Apulensis* on the Mureș river and *Municipium Septimium Apulense* near the legionary fort, coincides with evidence of a rich spiritual life. The exact number of *mithraea* at Apulum is still debatable. Monuments related to the cult of Mithras are mentioned from as early as the eighteenth century. The lack of a clear context of discovery makes it impossible to associate them with a securely located cult place, but it is currently accepted that these monuments originate from at least more than one site[15].

The bricks with hobnail prints discussed in this paper come from the first archaeologically researched *mithraeum* in Apulum, known as Mithraeum III. The *mithraeum* was discovered in 2008, after the plan to build a hotel at the western outskirts of the Vauban fortification offered the archaeologists of the National Union Museum from Alba Iulia the opportunity to excavate in the civil area at the margin of the Roman Municipium (Fig. 2). In the course of these excavations, the stone foundations of a building came to light, as well as several epigraphic monuments connected with

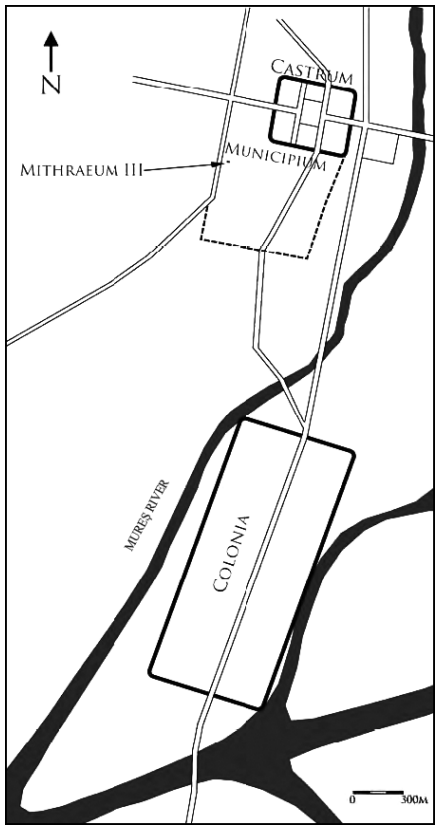

Fig. 2 Plan of Roman Apulum with the location of the Mithraeum III (after MCCARTY ET AL. fig. 12.1)

[12] VAN DRIEL-MURRAY 2001B, 342–343, fig. 10; also, see the observation in BUSCH 1965, 166, that the *carabatinae* from Saalburg, Zugmantel and Feldberg are in the majority of the same forms as those from Bar Hill.

[13] A small number of leather shoe soles have been discovered near the Dacian provinces, in south-eastern Romania (PANAITESCU 1977 – at Tomis, town Constanța; SIMION 1977 – at Niculițel-Bădila, jud. Tulcea). A rare case is the discovery *in situ* of shoe hobnails from an inhumation grave at Apulum, town Alba Iulia. The original arrangement of the hobnails on the shoe sole was found intact (CIUGUDEAN/TIMOFAN 2012).

[14] VAN DRIEL-MURRAY 2001B, 347: the author warns about using Latin terms for describing archaeological shoes, given the variety and dynamic development of Roman footwear. These should be replaced by a more descriptive classification of Roman shoes, for which we have also opted in the rest of the text.

[15] MCCARTY ET AL. 2020, 123–124, notes 6 and 7 with bibliography.

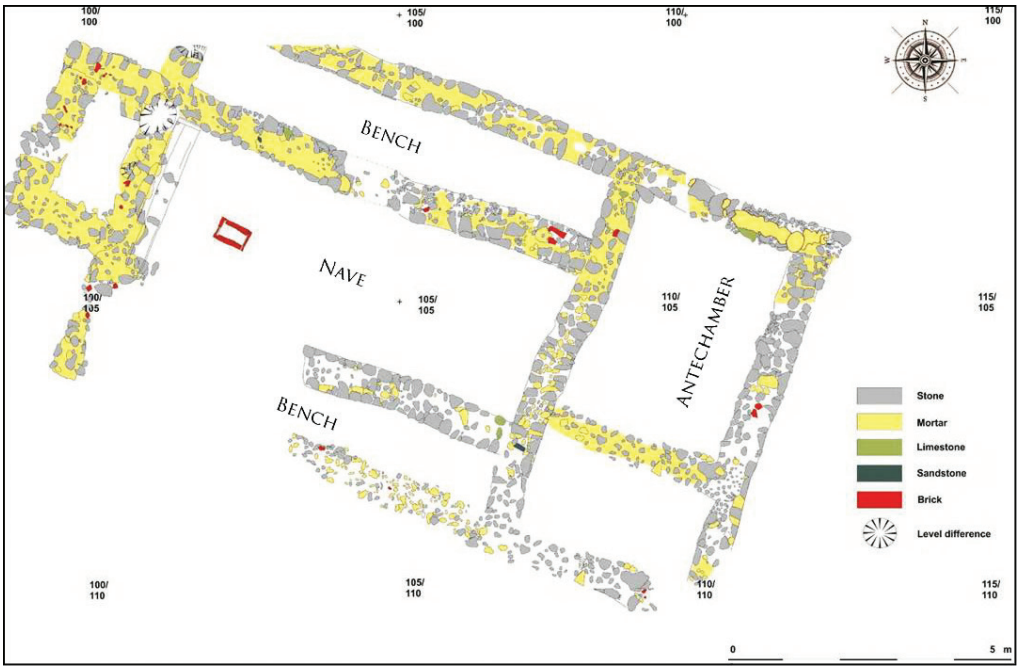

Fig. 3 Plan of the Mithraeum III (modified after MCCARTY ET AL. fig. 12.5)

the cult of Mithras[16]. The results of these initial excavations were completed by systematic research conducted between 2013 and 2016 by a team of archaeologists from Romania, The United States of America and Canada (as part of the Apulum Mithraeum III Project[17]), which unearthed the entire building with its surrounding annexes and surfaces.

The excavations established that the construction was built sometime around the middle of the 2nd century AD (*t.p.q*. AD 150–170) and suffered several adjustments until its collapse in the late 3rd or the 4th century AD. The configuration of the main building follows the general rules recorded for other *mithraea*, having a central nave with side benches, a cult niche and an antechamber, arranged on an east-west orientation (Fig. 3). There are no solid proofs of consistent use of ceramic building material for the walls[18], which were probably in 'some form of mud with timber framing' raised on stone and mortar foundations[19]. The vast majority of ceramic building elements are roof debris of tegulae and imbrices concentrated in several compact layers resulting from the collapse of the tile covering of the *mithraeum* and annexes. From one such layer of fragmentary roof tiles also originates at least one of the bricks with hobnail prints.

Description

By far, the most interesting ceramic building materials discovered at the Mithraeum III are three bricks with animal and, respectively, shoe prints, all made before firing. Two of the

[16] EGRI ET AL. 2018.

[17] The Apulum Mithraeum III Project is a collaboration between the National Union Museum (Alba Iulia), Babeş-Bolyai University (Cluj-Napoca) and the Institute of Archaeology and Art History of the Romanian Academy (Cluj-Napoca), Princeton University and the University of British Columbia (Vancouver), under the direction of Aurel Rustoiu, Mariana Egri, and Matthew McCarty – https://apm3.cnrs.ubc.ca/.

[18] With the exception of isolated brick finds, one showing traces of scoring. We note, at the same time, the absence of elevation, which was possibly removed from the site either during the reuse of the area in the medieval and modern periods or in more recent times.

[19] The results of the excavation are presented in MCCARTY ET AL. 2020.

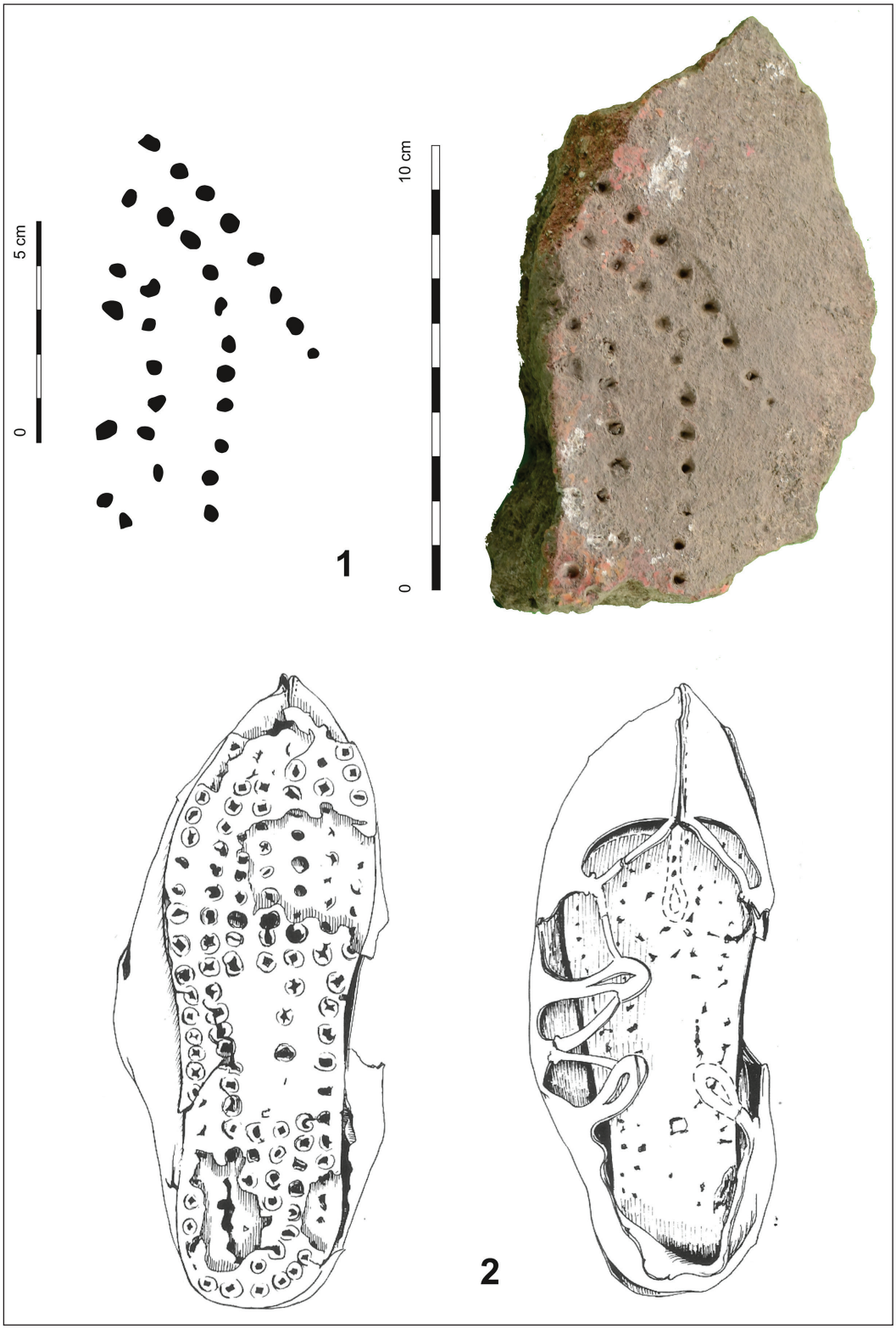

Fig. 4 Nailing patterns on Roman shoes soles: 1. Photo and drawing of a fragmentary brick with hobnail impressions found at the Mithraeum III (A. Drăgan); 2. Saalburg (after BUSCH 1965, Taf. 18/282).

bricks show impressions of hobnails from shoe soles. Although one of the prints is only partial, it can clearly be determined that the corresponding shoe soles were different in each case.

The first brick was found in a layer of tiles mixed with bricks formed outside the main building to the southeast (context 1205). The Roman time use of this annexe is confirmed by the presence of various Roman finds, including ceramic vessels (common ware, amphorae, import ware), ceramic lamps, glass vessels, iron or bone objects. The ceramic brick is fragmentary (14.5 × 9 × 4.7 cm). Only the hobnails of the upper half of the shoe sole (tread) can still be observed on the tegular fragment. The toe, waist and seat of the sole are missing[20]. In total, 29 impressions are preserved on four rows (10 × 5.7 cm). The complete shape of the sole cannot be determined, except for the observation that it comes from an adult sized, heavily nailed shoe (Fig. 4/1).

Fig. 5 Photo and drawing of a complete brick with hobnail impressions found at the Mithraeum III (A. Drăgan)

The second brick with hobnail prints is much better preserved. The brick size corresponds to a length of 1.35 pes and a width of 0.94 pes (40 × 28 × 4.5 cm) in Roman measurement units.

[20] The terms belong to the terminology established for Roman footwear in VAN DRIEL-MURRAY 2001B, 345, fig. 12: toe – tip of the sole; tread – the front part of the sole; waist – between the tread and the seat; seat – the rear part of the sole, corresponding to the heel.

The size is difficult to integrate into the ancient standard sizes of bricks described by Vitruvius, but it almost fits the dimensions of a *lydion* (1.5 × 1 pes). The bricks found on many sites of the Roman Empire show that, in reality, by-the-book standards did not always apply, as brick production adapted to local conditions and particular constructive requirements[21]. The brick from the Mithraeum III corresponds to the situation recorded, for example, in Gallia Narbonensis, with a general proportion between length and width of 4:3[22]. The impressions on the brick form the complete length of a shoe sole with a slender shape and a pointed toe. A row of 54 hobnail impressions ran almost continuously on the edges of the sole. In the middle, a number of 47 and, respectively, 27 impressions are arranged in an elaborated design covering the toe-tread-waist and the seat of the sole, no doubt having a decorative function (Fig. 5).

Based on the patterns formed by the hobnail impressions, an attempt was made to establish the shoe type, shape, and size in relation to other nailed shoe soles found in other parts of the Roman Empire.

Discussion

The hobnail patterns imprinted on the two bricks from the Mithraeum III are in no aspect unique. The general manner of arranging the hobnails has numerous parallels in the shoe soles conserved in the humid environments of the North-Western provinces of the Roman Empire. More easily recognizable, the comparison of the second, complete brick with the finds from the North-Western provinces proved more productive. The hobnail prints correspond to the general category of multi-layered shoes with complex construction held together by hobnails, which attached the multiple leather layers of the bottom unit and the upper part. The nailing pattern could be clearly associated with Type 1A – a single row of nails on the edge of the sole, with a relatively straight row of nails in the middle, arranged in a tendril pattern (Fig. 6)[23].

The row of nails running on the edge of the sole was at the same time the sole part of the nailing with an essential function. The nailing in the middle was optional for the construction of the sole. In the North-Western provinces, it has been observed that this part was highly susceptible to fashion changes, which in general happened quite abruptly and rapidly spread over large distances[24]. The shoe sole imprinted on the brick from the Mithraeum III provides a very illustrative example. The tendril design of the sole from the Mithraeum III has almost identical analogies on shoe soles from Welzheim[25], with

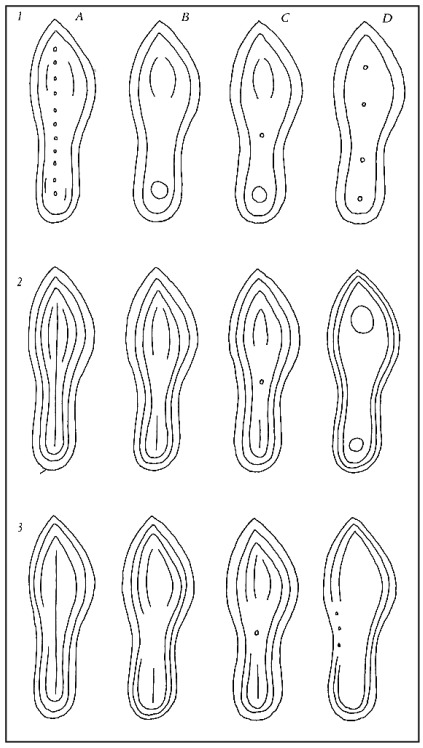

Fig. 6 Nailing patterns on Roman shoe soles found in the North-Western provinces (after VAN DRIEL-MURRAY 2001B, fig. 21)

[21] BRODRIBB 1989, 37–41.

[22] BOUET 1999, 124–128: the brick from the Mithraeum III is close to the size of a series of bricks from different sites in this province (28 × 42 cm).

[23] VAN DRIEL-MURRAY 2001B, 351 (Type 1A-T); see also VAN DRIEL-MURRAY 1999, 97–98 (Type 1Ae), which practically corresponds to the same description.

[24] VAN DRIEL-MURRAY 2001B, 350–351.

[25] VAN DRIEL-MURRAY 1999, Abb. 66/163, 183 – part of the same pair.

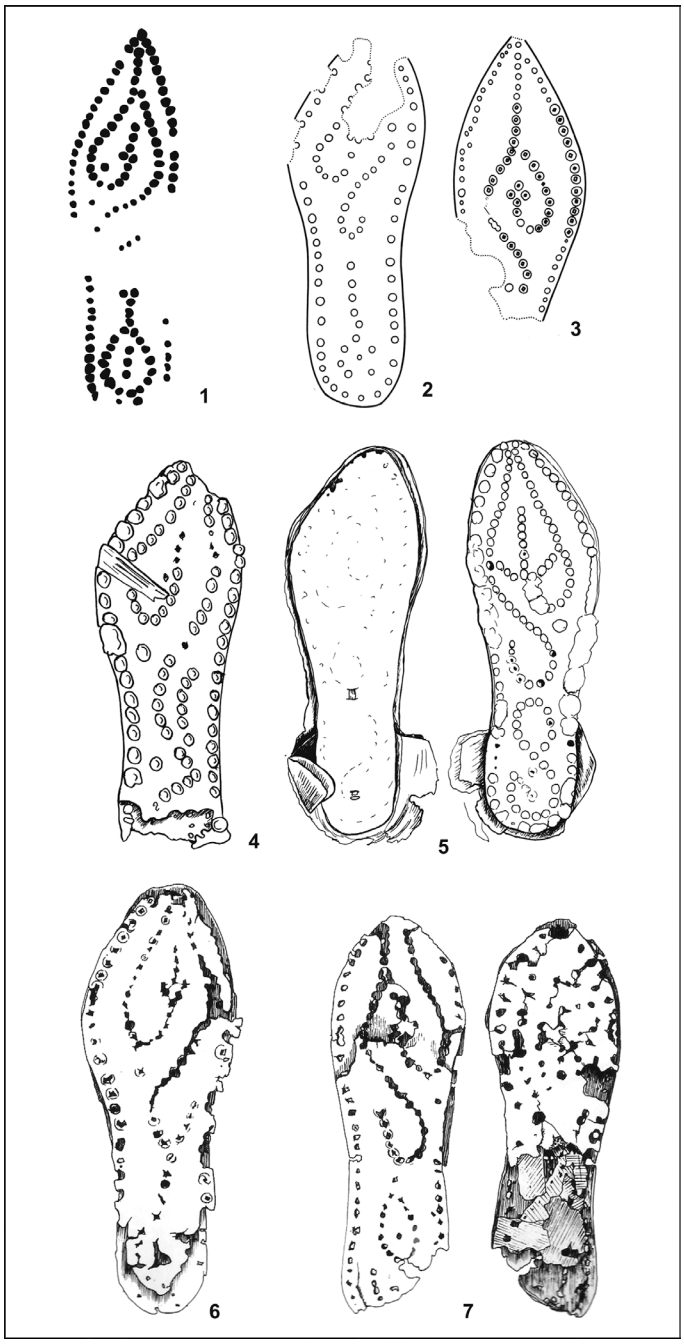

Fig. 7 Shoe nailing with tendril design: 1. Apulum, Mithraeum III; 2–3. Welzheim (after VAN DRIEL-MURRAY 1999, Abb. 66/163–164); 4–5. Mainz (after GÖPFRICH 1986, Abb.44/93–94); 6–7. Saalburg (after BUSCH 1965, Taf.. 15/223–224).

other similar arrangements of the nailing coming from Mainz[26] or Saalburg[27] (Fig. 7). These belong to swayed and pointed soles of closed shoes. Although this sole shape can already be dated to the second half of the 2nd century AD[28], the combination with the tendril design of the hobnails provides more important chronological information. The analysis of large sets of nailed shoe soles from the North-Western provinces has determined a rather abrupt coming into fashion of tendril patterns around AD 170 – often decorating larger sized shoes with swayed and pointed soles – which will last until the first quarter of the 3rd century AD[29].

The size of the shoe imprinted on the brick from the Mithraeum III correlates with the above. The actual size of shoes is difficult to determine exactly. Several aspects have to be considered. Firstly, the lower, walking sole is normally larger than the upper sole, which fits the actual size of the foot more accurately. The finds from Welzheim have shown a general difference of 1.5 cm between the two. Secondly, in the case of pointed shoes, the pointed part is normally not nailed. The actual size is thus expected to have been larger than the nailing. Additionally, the shrinkage of the leather in soil by approximately 10% can affect measurements – this, however, does not apply to our case. Considering the above, at sites such as Welzheim, size categories were preferred to using strict sizes for associating Roman shoes with age and gender

[26] GÖPFRICH 1986, 48, Abb. 47/3=44/94 – Kat. No. 94, Abb. 44/93 – Kat. No. 93: similar middle nailing, although with some differences, of closed shoes.

[27] BUSCH 1965, 187, nos. 223–224, Taf.. 15/223–224 – possibly a pair.

[28] VAN DRIEL-MURRAY 2001B, 350.

[29] VAN DRIEL-MURRAY 2001A, 350–351; see also pg. 373, fig. 83B (Netherlands), late 2nd century AD.

groups. Sizes over 26 cm were assigned to men, sizes between 20–26 cm to women and youth, and those under 20 cm to children[30]. For the complete hobnail print at the Mithraeum III, a length of 27 cm was calculated, which corresponds to today's continental size of 40.5. If we take that upper soles are actually around one or two numbers smaller[31], then the shoe should largely correspond to continental size 39.

The partial hobnail print found in context 1205 is too fragmentary for the exact form of the sole to be determined, but enough of the nailing pattern is preserved to be associated with the general category of multi-layered shoes with a double row of nails on the edge (Fig. 6, Types 2 or 3). More nails are visible in the middle, possibly arranged in two straight rows (Fig. 4/2). However, in the absence of the rest of the sole's hobnails, this loose classification has no relevance. At best, we can use the heavy nailing of the sole to guess the general type of shoe. Based on the observation of the shoes from Mainz, heavy nailing characterizes more the soles of closed and heavier shoes, often entirely nailed[32], in comparison to the sandals, which did not need nailing on the whole surface[33]. At Saalburg and Zugmantel, only two of 135 sandals were nailed[34]. One sandal with similar heavy nailing from Welzheim questions this interpretation, while it also appears to be an exception, in general, even at this site, heavy nailing being characteristic of closed shoes[35]. The size of the corresponding shoe is equally difficult to estimate. Based on the preserved part, the sole could have been between 26 and 30 cm long, equivalent to a continental size between 39 and 45. If the same criteria as before are applied, the shoe size must have been around 38–44.

Concluding remarks

The bricks with hobnail prints from the Mithraeum III are but a small piece of evidence about footwear fashion in Dacia. While limited conclusions can be drawn from the first, fragmentary brick, the second, complete brick correlates almost entirely with the more consistent discoveries from the North-Western provinces, here including sole shape, nailing design, and chronology, allowing a series of observations with relevant archaeological value. Firstly, the use period of parallel finds from the North-Western provinces (around AD 170-first quarter of the 3rd century AD) adds new elements to the early chronology of the Mithraeum III (*t.p.q.* AD 150–170). However, in the absence of an exact context of discovery for the find, it is not certain if the brick was used for the construction of the initial building or for ulterior modifications. Secondly, even if direct sources for shoe fashion in the Dacian provinces are very limited, the close resemblance between the nailing design on the brick from the Mithraeum III and soles found as far as Vindolanda[36] attests to the complete integration of the Dacian provinces in the empire-wide trends in shoe fashion[37].

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[30] VAN DRIEL-MURRAY 1999, 32–36; VAN DRIEL-MURRAY 2001, 360: after plotting the different shoe sizes, it has been discovered that men wore more often a continental size between 37–40, with larger shoes measuring up to 43, while women generally wore continental sizes around 35.

[31] The difference between each continental size is between 0.6 and 0.7 cm.

[32] BUSCH 1965: 169–173, *calceii* and *caliga* – they also form the majority of finds; GÖPFRICH 1986, 17–18 (*Caliga* Typ A), Abb. 35–37, with catalog at pg. 26–32; 22–25 (undefined closed shoes), Abb. 44–48, with catalog at pg. 42–48,.

[33] GÖPFRICH 1986, 15–16 – for sandals, see pg. 32–33, nos. 34, 36, Abb. 38/34, 36.

[34] BUSCH 1965, 168–181, Taf. 6/123 – one row of nails; 200, Taf. 33/729 – one row of nails.

[35] See a different opinion in VAN DRIEL-MURRAY 1999, 64 – the author concludes that sandals show the same type of nailing as closed shoes.

[36] https://www.vindolanda.com/blogs/blog/the-curators-favourite-shoes (last accessed on October 30th 2022).

[37] Similar conclusions can be reached for other more complete hobnail prints from Potaissa (GREC 1998, pl. IV/fig. 7 – similar to GÖPFRICH 1986, Abb. 45/103) or Tibiscum (TIMOC/TIMOC 1999, fig. 8 – similar to GÖPFRICH 1986, Abb. 47/12).

Another brick from the Mithraeum III shows prints of multiple animal feet from different species. The prints, made while the brick was not yet hardened, probably while it was laid outside to dry at the production place, were accidental. Such mishaps are, in fact, often encountered during the Roman time[38]. In Silchester, roughly a third of the bricks from the *civitas* capital of the Calleva Atrebatum showed animal impressions, which means that these were left to dry somewhere in more exposed areas, circulated by domestic species[39]. However, the accidental character of the hobnail prints from the Mithraeum III is doubtful, given that the prints show a uniform pressure on the entire length of the foot. Marking one's shoe sole into a brick could have served to test the bricks or as some sort of distraction, or both. The design of the shoe sole from the Mithraeum III is in no way ordinary and certainly had a decorative purpose. Just as clothing, the great variety and dynamic evolution of Roman footwear over time demonstrate that shoes were fashion items, with implications for the personal identity of the wearer. The almost artistic rendering of hobnails on shoe soles shows that nailing was very much part of the fashionable aspect of the shoe. In our case, the shoe wearer possibly wished to present his elaborated shoe sole to his peers at the production place of the bricks as a way to show off[40].

Although more limited as a source, compared to preserved leather shoes and iconographic representations, the hobnail prints on ceramic building material can still offer information about chronology, footwear fashion and aspects of brick production, which is why the finds should not be ignored both during collection on site and post-excavation processing of the material. The finds from the Mithraeum III highlight the fact that, provided a sufficient part of the footprint is preserved, the widespread and synchronous development of Roman footwear allows for the form and design of the sole to be linked to other finds that can give us all of the information enumerated at the beginning of this paragraph.

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[38] BRODRIBB 1989, 125–126; BENNETT 2012.

[39] CRAM/FULFORD 1979.

[40] From the examples of hobnail prints from Potaissa (Dacia) made on ceramic building material stamped with the legion mark, it is generally visible that in most cases the shoe prints did not affect the stamp (see GREC 1998).

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