Aspects of Characterisation of Stone Monuments from Southern Pannonia

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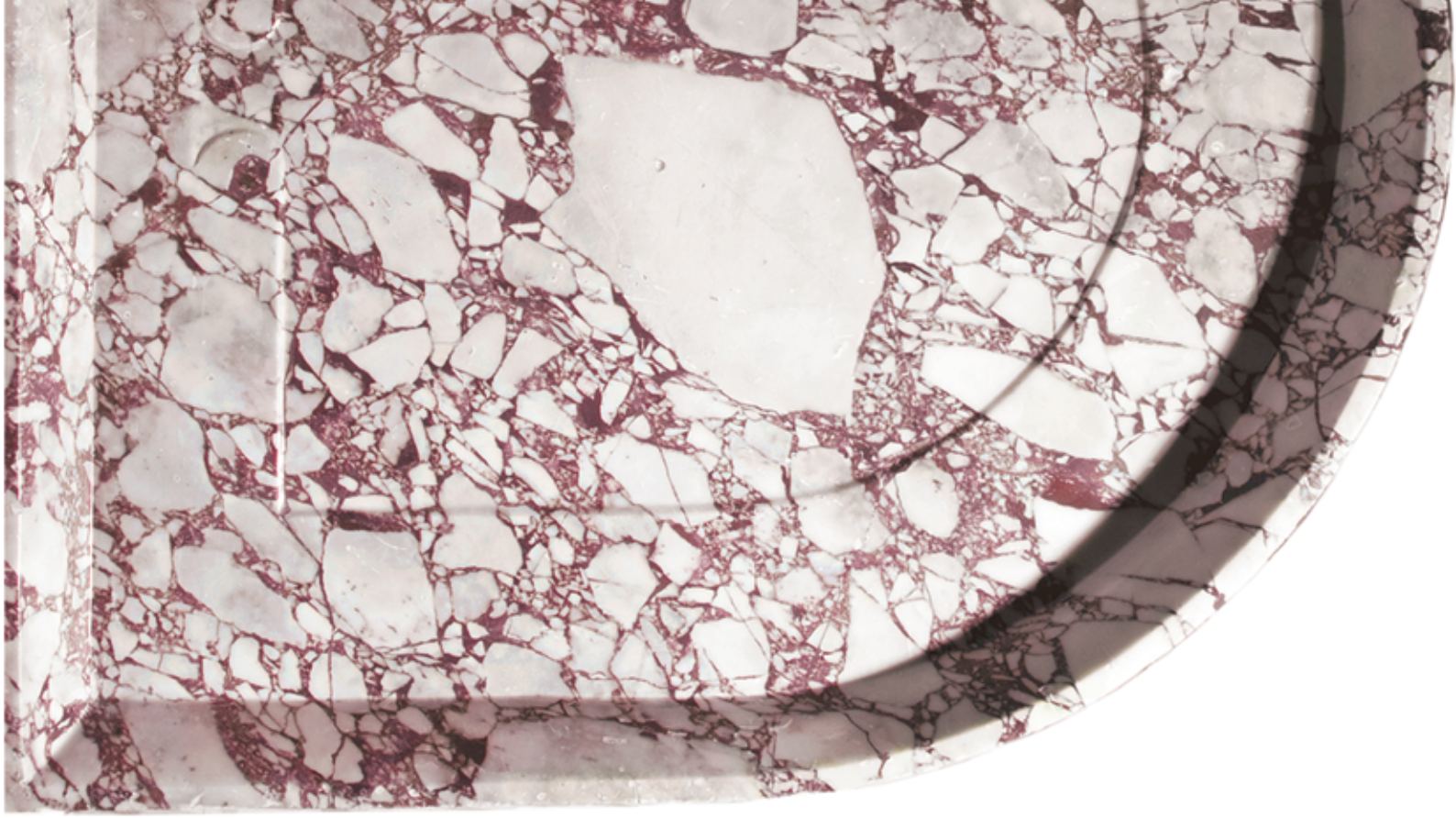

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ASPECTS OF CHARACTERISATION OF STONE MONUMENTS FROM SOUTHERN PANNONIA

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Abstract

Characterisations of stone material have been made for the majority of north-Croatian Roman marble monuments, in addition to for those made of other stones kept in the Museum of Slavonia in Osijek. Such characterisations have not yet been conducted on Roman stones from other parts of northern Croatia (southern Pannonia). In advance of such research, in this paper six cases will be presented, which in a special way illustrate the need for archaeometric stone analyses and the search for the quarry origin of the stones. Unlike the trade in marble, with other stones a seemingly logical conclusion appears, i.e., that exclusively rocks from the nearest quarry would be used. However, the characterisations of north-Croatian Roman stones conducted so far have demonstrated that the logic of trading follows its own specific rules, and that the "rule of the smallest distance" cannot be safely taken as the only starting point in such research.

Keywords
southern Pannonia, stone characterisation

Characterisations of stone material for a great deal of north-Croatian Roman marble monuments, as well as for those made of other stones from the Museum of Slavonia in Osijek, have been carried out by Bojan Djurić and his team.[1] On the other hand, non-marble Roman funerary monuments from other north-Croatian museums, holding material from south-western Pannonia, have not yet been characterised. In advance of such research, scheduled for 2016,[2] in this paper several cases will be discussed that in a special way illustrate the need for archaeometric analyses of stone and for the search for the quarry origin of stone monuments. The purpose of the discussion is to show that stone characterisations and tracing of the quarry origin not only contribute research into the trading aspect of the production and distribution of monuments, but can also be of use in their formal and iconographical contextualisation within regional and supra-regional production. In particular cases, such research can even contribute to a better insight into geopolitical issues, that is, the establishment of town territories and provincial borders. In areas lacking their own marble sources, such as Pannonia, marble monuments evidently travelled from more or less afar, in this case mostly from the quarries of Pohorje and various Norican towns.[3] With other stones the most logical conclusion would imply the use of rocks from the nearest distance. However, the characterisations of north-Croatian Roman funerary stones conducted to date has demonstrated that in some cases trading follows its own specific rules, and that the "logic of the smallest distance" cannot be safely taken for granted, or considered as the only starting point in such research.[4] This paper was mostly instigated by the recent research of Bojan Djurić and his interdisciplinary team, in which they established that stone monuments made of travertine travelled all the way from northern Pannonia via the Danube, to reach southern Pannonia, notably the area of *Mursa* / the modern town of Osijek in north-east

1 DJURIĆ 2013; DJURIĆ, MÜLLER, FILIPOVIĆ 2010. Sampling of monuments made of stone other than marble in the Muzej Slavonije (Museum of Slavonia) in Osijek were conducted in 2015, but the results in terms of quarry origin have not yet been completed (B. Djurić, pers. comm.).

2 Characterisations of stone monuments from north-western Croatia have been anticipated as part of the protocol of the project *Roman funerary monuments of south-western Pannonia in their material, social and religious context* (no. IP-2014-09-4632), funded by the Croatian Science Foundation.

3 The Pohorje quarries were in the territory of *Poetovio*, situated close to the border between the provinces of Pannonia and Noricum. *Poetovio* was a Pannonian town until the beginning of the 4th century, when it became part of the province of Noricum (*cf.* HORVAT *et al.* 2003, 157).

4 The fact that neither ancient nor modern commerce always conforms to economic logic has also been duly observed in the literature discussing the trade in stone. *cf.* Pearson 2006, 92.

Fig. 1. Child sarcophagus from Sisak, AMZ (*Lupa* 573, photo: O. Harl)

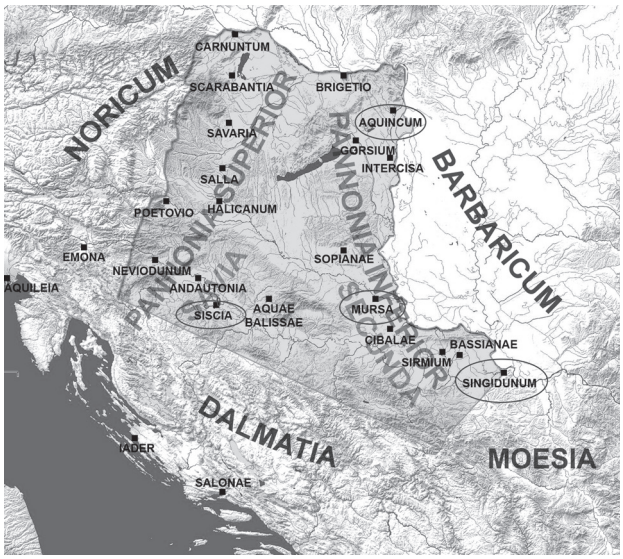

Fig. 2. Map of Pannonia (readjusted after MIGOTTI 2012, p. 2)

Croatia (Djurić *et al.*, in this volume). In view of this fact, the present paper addresses two travertine monuments that have already been characterised (a child's sarcophagus from *Siscia* / the modern town of Sisak in north-west Croatia, and a stela from the *ager* of *Mursa*), while the core of the discussion rests with the remaining four, not yet analysed, pieces (an ash chest and three stelae, all from Sisak). They will be discussed as cases in point to illustrate and preliminarily verify the importance of the characterisation of monuments made of stone other than marble.

1. A child's sarcophagus[5] with a motif of peltae, probably dating from the 3rd century, stems from Sisak (Fig. 1). When I first discussed it, the stone had not yet been characterised. Therefore, on realising that the ash chest was made of limestone, and not yet knowing that it was a specific variant of limestone – travertine, I suggested, in spite of some hesitation, a local production for it, for a couple of reasons. While the peltate motif is ubiquitous in Roman art, surprisingly it turned out that the lid of the sarcophagus, with its specifically shaped *acroteria*, was the only one of its kind in southern Pannonia; the fact that the only true analogies to this piece stem from the area of Aquincum and Brigetio in north Hungary was even more unexpected. In spite of this, I still maintained that only the model for this piece came from northern Pannonia, discarding the possibility that it was brought to Siscia from a distance of some 400 km (Budapest – Osijek – Sisak) as the crow flies.[6] Now that it has been established beyond doubt that this piece was imported and can be considered as the western-most travertine example in the south-Pannonian territory, it remains to wonder about the economic rationale behind such commerce.[7] The question to be asked is why anyone would want to import a limestone piece from a large distance, and iconographically quite unassuming at that, when there was enough quality limestone closer to the place of purchase. Was river transport really that cheap, or was it an individual undertaking, making use of some unknown opportunity? As for the river transport, the piece intended for Siscia either needed to be transported from *Mursa* to *Siscia* without a direct water route, that is, by using a land transport between the Drava and Sava Rivers, or it needed to be taken all the way to *Singidunum* in *Moesia Superior* via the Danube, and then via the Sava to *Siscia* (Fig. 2). In the latter case, we should probably reckon with additional provincial customs duties.[8] In any case, the commercial logic behind this purchase remains obscure.

5 The fact that a 9-cm-thick stone bolster at the right bottom of the chest was reported (now inaccessible for inspection because of the lid) suggests that the piece is a sarcophagus and not an ash chest. *cf.* MIGOTTI 2013, 181, 194.

6 MIGOTTI 2007, 16; MIGOTTI 2013, 194-195.

7 Immediately before the ASMOSIA Conference in Split, I was kindly informed by Bojan Djurić that the stone from which the ash chest in question was made could be recognised as travertine even by the naked eye; the characterisation which has proved such identification was conducted in November of 2015.

8 Commentators are mostly vague about whether the *portorium* was due on crossing the border between any two provinces. Some of them agree with this presumption (e. g. WHITTAKER 1994, 112, *passim*; STARAC 1999, 99), while others claim that taxes were only levied on the borders between lands of different legal status, as claimed by legal sources (ØRSTED 1985, 251; TOMAS 2007, 35).

Fig. 3. Funerary stela from Aljmaš, AMZ (*Lupa* 4308, photo: O. Harl)

Fig. 4. Funerary stela from Sisak, Gradski muzej Sisak (photo: B. Suntešić)

2. A fragment of the funerary stela of the army veteran Tiberius Claudius Vindicianus from the 2nd century derives from the village of Aljmaš in the ager of *Mursa* (Fig. 3).[9] As in the previous example, the stone (travertine) is discernible by visual examination, but was further corroborated by mesoscopic characterisation carried out within the same research as mentioned in fn. 7. Given the abovementioned regular trade in stone monuments between *Aquincum* and *Mursa* along the Danube in the Roman period, the cost of transportation is not the issue here. The curiosity of this piece lies in its iconography, or, rather, in an incongruity between the distribution of this type of stela and the customary position of its main motif in Pannonian funerary iconography. The stela can be tentatively reconstructed as comprising four parts: a pedimental section, a main relief niche, an inscription field, and a socle, with possible variations in the presence (or absence) of decorative bands dividing the main relief panels, as well as the height of the base (*cf. Lupa* 685, 3105, 3330, 3401). The architectonic relief niche of the fragment from Aljmaš features a tripod and the lower bodies of a male and a female servant, which is part of the so-called reduced meal scene, typical of Pannonian funerary iconography.[10] The core area of the distribution of marble specimens of this type is Noricum and western Pannonia. It should be noted, however, that the main relief scene on such stelae is never the reduced meal; instead, portraits of the deceased are most often represented, and sometimes also mythological motifs, Erotes, and the like (*cf. Lupa* 685, 3105, 3330, 3401). On the other hand, the motif of the reduced meal is very often depicted on Pannonian funerary stelae, but never as the main scene; it is always submitted to or even merged with the portrait of the deceased (*cf. Lupa* 691, 2750, 2756, etc.). On balance, the stela from Aljmaš was of the type designed in Norican marble workshops, but it was decorated in a way different from Norico-Pannonian marble pieces of the same type, as well as from north-Pannonian travertine stelae. Therefore, the stone material of the stela from Aljmaš proves its north-Pannonian origin, suggesting at the same time that stone monuments travelled from *Aquincum* to *Mursa* as half-products, to be decorated according to individual tastes, manifestly different from those typical of other Pannonian and Norican stonemasonry workshops.

3. The stela of Gaius Antonius Sentinus, veteran of the 14th legion, was found in 2009 in Sisak (Fig. 4). It should be dated to the Flavian period on account of the iconography, and yet its epigraphy and prosopography allow for a date at the turn of the 1st and 2nd centuries.[11] It was made of yellowish sandstone, which was by visual examination estimated to be of local origin. Much as this assumption sounds logical, the final conclusion should be postponed until a proper archaeometric analysis. This is additionally advisable on account of the stela's iconography, which is typical of the military tombstones of the army of *Germania Superior* and *Germania Inferior*,

9 DAUTOVA-RUŠEVLJAN 1983, 25. no. 148.

10 DJURIĆ 2015, 96-97; ŠKRGULJA, MIGOTTI 2015, 30-31.

11 ŠKRGULJA, MIGOTTI 2015.

Fig. 5. Ash chest from Sisak, AMZ
(photo: I. Krajcar)

produced mainly in the legionary stonemasons' workshop of *Mogontiacum* (Mainz) and *Colonia Agrippina* (Köln). In spite of a scanty remnant of the figural relief, the scene represented on the stela from Sisak can be restored as featuring the deceased in a half-reclining position on a couch a (*klinē*) and a servant turning towards him. Placed centrally in front of the klinē is a tripod with a kantharos and with large vessels by the side of it on the floor – a jug on the left and a bottle on the right side. This scene was typical of the *Mogontiacum* army workshops in the Flavian period, and was produced for a prolonged time in *Colonia Agrippina*. The chronological frame for the Siscian piece is given by the fact that the 14th legion was stationed in *Mogontiacum* probably till about the end of the 1st century, and this type of stela was used neither by the 14th legion after its relocation to *Carnuntum* in Pannonia, nor by the army units that came to *Mogontiacum* to relieve this legion.[12] The fact that this type of stela, except the example from Sisak, is not found west of the limes in the *Germaniae* and *Raetia*, raises a suspicion about the origin of the stone and the place of production. Either Sentinus came to *Siscia* as a veteran with the draft of his funerary stone on the paper or in his mind, to have it carved in Siscia, or he had it imported all the way from Mogontiacum, if by any chance he died before the legion moved to *Carnuntum*. Curiously, the nearest parallel to the Siscian stela, found in Klein-Winterheim, is made of sandstone (*Lupa* 15873); a forthcoming characterisation of the Siscian stela will show if this fact is a pure coincidence or not. Admittedly, a local origin for the stela is more probable in view of the distance between *Mogontiacum* and *Siscia* (some 800 km as the crow flies), and the lack of a direct water route, but the final conclusion should still be based on an archaeometric analysis.

4. The ash chest of a former *beneficiarius* Marcus Aurelius Glabrio and his wife, dated to the 3rd century, stems from Sisak, and was in the earlier literature referred to as a marble piece (Fig. 5).[13] Nevertheless, in 2003 the chest alone (the lid being a mismatch) was characterised microscopically, and two possibilities for the origin of the stone were suggested: a – the area of Kordun around the town of Slunj in the Dinara mountain range, some 100 km south of Sisak; b – the peninsula of Istria in the northern Adriatic. The characterisation was conducted for the need of a comprehensive reconsideration of the monument in question.[14] As author of that study I readily accepted the first possibility for two reasons: the proximity of the Kordun area to Siscia, and the fact that the former was a well-known centre of Roman stonemasonry and a presumed source of stone for some of the Siscian monuments.[15] On the other hand, Istria as a source of stone for Siscian stonecutting did not sound convincing, especially not if compared to the Kordun. Therefore, before the fact of the trade in stone from Aquincum to Siscia has been established, I discarded without hesitation the possibility of Istria as a source of stone in this case.[16] It was probably a correct assumption, supported on various grounds: the lack of direct waterways between Istria and *Siscia*, the customs duties to be paid on passing from Italy to the province of Pannonia,[17] and, most importantly, the formal and iconographical congruencies between the Siscian ash chest and the Pannonian evidence of similar funerary receptacles. Nevertheless, in the light of new knowledge on the trade in stone in Pannonia, the theoretical possibility that the ash chest of Glabrio originated in Istria should still be allowed, and this should be finally verified through a supplementary chemical analysis of the stone.

5. The last but one case in the evidence is the most illustrative of the importance of typology in assessing the origin of stone monuments in some cases, although at first glance this argument sounds hardly decisive in the light of broadly uniform typological frames in Roman art. As a matter of fact, the stela of Titus Tullius Tertius from *Tergeste* (Fig. 6) was instrumental in spurring my suspicion of the initially established origin of the stone for the ash chest of M. Aurelius Glabrio (no. 4). The tombstone of Tertius, dating from the 1st half of the 1st century, derives from the immediate vicinity of Sisak, and is the earliest funerary stone known so far from *Siscia*.[18] There

12 ŠKRGULJA, MIGOTTI 2015, 36.

13 HOFFILLER, SARIA 1938, 262-262, no. 566.

14 MIGOTTI 2005.

15 PERKIĆ 2012, 157-216.

16 MIGOTTI 2005, 371.

17 See fn. 8.

18 KLEMENC 1935.

Fig. 6. Stela from Sisak, AMZ
(*Lupa* 3807, photo: O. Harl)

Fig. 7. Stela from Sisak AMZ
(photo: I. Krajcar)

is no knowing exactly what kind of stone analysis was made at the time of its publishing, but the article says that the Directorate of the Museum of Mineralogy and Petrography in Zagreb informed the author (J. Klemenc) that the stela was made of a kind of limestone that originated from the quarry of Hrastovica nearby the town of Petrinja, some 10 km south-west of Sisak. For quite a time I did not doubt this claim, until I gave it another thought and found it suspicious on a couple of grounds. The first was the structural typology of the monument, which has no sound parallels in Norico-Pannonian evidence, while the opposite is true of northern Italy and Istria; both regions furnish evidence for this type of stela from the turn of the 1st century BC to the 1st century AD.[19] Another reason for a suspicion about the provenance of the stone of Tertius' stela in the surroundings of Siscia is topographical; the stela was found during reinforcement of the embankment of the River Sava, some 20 metres from the riverbank. For one thing, no traces of a Roman cemetery or any other Roman finds have been established in the surroundings, and for another, the stela was found broken and, most probably, unusable. Both facts suggest that the stela arrived via the river, cracked during the unloading, and was finally left there never to be used. However, Petrinja does not lie on the Sava River, and the nearest navigable river in its vicinity is the Kupa. Both rivers surround the town of Sisak, but no load would come to Sisak from the direction of Petrinja via the River Sava; it would travel via the Kupa. On the other hand, the Sava River makes an important link on the route from *Siscia* to northern Italy and Istra. Thus, it seems that a north-Italian or Istrian provenance of the stela of Titus Tullius Tertius is much more likely than local Pannonian provenance; this uncertainty will hopefully be resolved through a new archaeometric analysis.

6. The last example connects immediately to the previous one, as it implies the assessment of the origin on the basis of structural typology and iconography. A limestone stela of Lucius Egnatuleius Florentinus from the early 2nd century probably stems from the village of

19 PFLUG 1989, 31, 35, Typus I b; STARAC 2002, 63-66, tip 1c; *Lupa* 14483 (Aquileia). Further broad comparisons, grounded in the Greco-Hellenistic forms, are found in Dalmatia (CAMBI 2005, 11-12, figs. 5 and 6). Some tentative Norico-Pannonian parallels, rare as they are, differ from the Siscian piece in that they take a moulded inscription field (*cf. Lupa* 2708 – Aquincum, 2508 – Virunum).

Ščitarjevo, Roman *Andautonia*, 12 km south-east of Zagreb (Fig. 7).[20] No stone characterisation has been made for it, so its local origin can tentatively be questioned on the ground of the lack of Pannonian parallels for its structural type or, partly, for its decoration. The detail that makes it different from the rest of the Pannonian evidence is its columns which span the height of both the portrait niche and inscription panel. Contrary to this, in Norico-Pannonian stelae of the architectonic type two pairs of columns, divided by a decorative band or panel, are employed separately, that is, one for the portrait niche and another for the inscription panel; the portrait niche and the inscription panel are also individually framed when only one of them is architecturally designed.[21] On the other hand, the arrangement of columns as in Florentinus' stela is typical of northern Italy, Istria, and Dalmatia.[22] A slight tip of the balance towards Italy is suggested by the fact that the column decoration (longish scaled leaves tied with a ribbon) applied to the stela in question is found in Italy but is lacking in Dalmatia, at least as far as my knowledge goes.[23] Thus, only stone characterisation would show whether the design of Florentinus' stela results from an artistic influence of one of the mentioned three regions, or whether it was actually carved outside Pannonia.

To conclude: it is to be hoped that the above examples were illustrative enough of the necessity for proper characterisations not only for marble monuments, but equally for those made of other stone. This is because in some cases the latter turn out to be less predictable than expected, thus provoking the search for economic (or other) reasons for the import of stones other than marble in areas possessing their own resources.

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ABBREVIATIONS

AMZ – The Archaeological Museum in Zagreb
Lupa = UBI ERAT LUPA – Roman Stone Monuments (Service provider: CHC – Archäometrie und Cultural Heritage Computing, Universität Salzburg). http://www.ubi-erat-lupa.org [last checked 2016-01-11].

20 HOFFILLER, SARIA 1938, 216, no. 481.

21 Eg. *Lupa* 674, 857, 2390, etc. (Noricum); *Lupa* 3096, 3104, 3106, 3334, 3337, 3770, 3812, 4305, 4308, 8816, etc. (Pannonia).

22 PFLUG 1989, Kat. 10 (Taf. 2: 3), ff; STARAC 2002, 68-69, IId1, IId3, Karta 11, Karta 13; CAMBI 2005, 38, fig. 45, 52, fig. 68.

23 The evidence for Istra available to me (STARAC 2002) remains inconclusive, as the stelae are illustrated only through very small drawings.

BIBILIOGRAPHY

CAMBI N. 2005: Kiparstvo rimske Dalmacije. Književni krug, Split.

DAUTOVA-RUŠEVLJAN V. 1983: Rimska kamena plastika u jugoslovenskom delu provincije Donje Panonije. Vojvođanski muzej, Novi Sad.

DJURIĆ B. 2013: Zagreb, Arheološki muzej: Proben der Steinmonumente (unpublished project report), Ljubljana.

DJURIĆ B. 2015: "A Late Roman Convivium Sarcophagus from Ptuj", in B. POROD, G. KOINER (eds.): Römische Sarkophage. Akten des Internationalen Werkstattgesprächs 11. – 13. Oktober 2012 (Graz), Schield von Steier, Beiheft 5, Veröffentlichungen des Instituts für Archäologie der Karl-Franzens-Universität Graz 12, Graz, 91-101.

DJURIĆ B., MÜLLER H., FILIPOVIĆ S. 2010: „Karakteriziranje mramornih spomenika Murse", Osječki zbornik 29, Osijek, 9-18.

HOFFILLER, SARIA 1938: Antike Inschriften aus Jugoslavien, Heft 1: Noricum und Pannonia Superior. Internationaler Verband der Akademien, Zagreb.

HORVAT *et al*. 2003: "Poetovio. Development and Topography", in M. ŠAŠEL KOS, P. SCHERRER (eds.), The Autonomous Towns of Noricum and Pannonia, Situla 41, Ljubljana, 153–189.

MIGOTTI B. 2005: "The Ash-chest of Marcus Aurelius Glabrio from Siscia Reconsidered", in: Illyrica Antiqua. Ob honorem Duje Rendić-Miočević. Filozofski fakultet u Zagrebu, Arheološki muzej u Zagrebu, Zagreb, 367-384.

MIGOTTI B. 2007: "Rimski sarkofazi Siscije", Godišnjak Gradskog muzeja Sisak 7, Sisak, 7-30.

MIGOTTI B. (ed.) 2012: The Archaeology of Roman Southern Pannonia. British Archaeological Reports, Intern. Ser. 2393.

MIGOTTI B. 2013: "The Roman Sarcophagi of Siscia", Arheološki radovi i rasprave 17, Zagreb, 181-226.

ØRSTED P. 1985: Roman Imperial Economy and Romanization. Museum Tusculanum Press, Copenhagen.

PEARSON A. 2006: The Works of Giants. Stone and Quarring in Roman Britain. Tempus, Stroud.

PERKIĆ D. 2012: Antičke nekropole u speleološkim objektima u kontekstu ostalih antičkih nalazišta na području Korduna (unpulished PhD). Filozofski fakultet Sveučilišta u Zagrebu, Zagreb.

PFLUG H. 1989: Römische Porträtstelen in Oberitalien. Untersuchungen zur Chronologie, Typologie und Ikonographie. Verlag Philipp von Zabern, Maniz am Rhein.

STARAC A. 1999: Rimsko vladanje u Histriji i Liburniji I. Monografije i katalozi 10/1. Arheološki muzej Istre, Pula.

STARAC, A. 2002: „Rimske stele u Histriji", Histria archaeologica 31, Pula, 61-132.

ŠKRGULJA R., MIGOTTI B. 2015: "Stele of the Veteran of the 14th legion Gaius Antonius Sentinus from Siscia", Vjesnik Arheološkog muzeja u Zagrebu 48, Zagreb, 19-49.

TOMAS A. 2007: "Inter Moesos et Thraces. A Contribution to the Studies on the Rural Hinterland of Novae in Lower Moesia", Archeologia 58, Warsaw, 31-47.

WHITTAKER C. R. 1994: Frontiers of the Roman Empire. A Social and Economic Study. The Johns Hopkins University Press, Baltimore and London.