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MARMORA AND OTHER STONES IN THE ARCHITECTURAL DECORATION OF EARLY IMPERIAL BARCINO (BARCELONA, SPAIN)*

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Abstract

The aim of this paper is to present the results of a research project recently conducted into the architectural decoration of Barcino (modern Barcelona, Spain) during the Early Imperial period. The study includes a review of previously known architectural elements, as well as the new finds from recent archaeological excavations, exhibited or stored now at the Barcelona Museum of History (MUHBA) and the Archaeological Museum of Catalonia (MAC). The comprehensive typological, stylistic and chronological analysis of these elements has allowed, in specific cases, to propose a hypothetical reconstruction of the original monuments, which is of interest for the understanding of the architecture and town planning of Barcino. A complementary part of this study has been the petrographic and cathodoluminescence analyses of a representative group of these elements, which have enabled to identify some of the marble used in the architectural decoration of the town.

Keywords

Marmora, Montjuïc sandstone, architectural decoration, Barcino (Spain), petrography

Introduction

The town of Barcino, present-day Barcelona (Spain), was founded *ex novo* in about 10 BC. A recent study of the architectural decoration of the *colonia* from its founding to the 4th century has expanded our knowledge of its architecture and town planning in the Early Imperial period, especially of funerary architecture (GARRIDO 2011a).

For this study an exhaustive catalogue has been compiled, with a typological, stylistic and chronological study of the pieces, as well as associating them according to their place of origin. It includes a total of 430 pieces: 62 bases, 131 column shafts, 69 capitals, 10 architraves, 20 friezes, 37 cornices, 4 acroteria, 9 bases and crown mouldings, 68 *pulvini*, 7 funerary corners and 13 funerary relief figures.

Most of them were found inside the wall and towers of

the northern part of the second wall of Barcino, dated about 300 AD (RAVOTTO 2007, 221-222; 2012, 108-111), between Plaça Nova gate and the gate in Regomir Street, specially in the 23, 24 and 25 towers (Fig. 1A). The work at these towers was carried out in the 1950s and 60s and provided a wealth of finds relating to architectural ornamentation, sculpture, epigraphy, etc. (DURAN I SANPERE 1969, 51-67; 1973; SERRA RÀFOLS 1959, 129-141; 1964, 5-65; 1967, 129-148; BALIL 1961; PUIG & RODÀ 2007; 2010). Another very large group came from the demolition mid-19th century of the Convent de l'Ensenyança, which was located in the section of wall between the Avinyó and Ferran Streets (Fig. 1B) (ELÍAS DE MOLINS 1888; ALBERTINI 1913, 323-474; RICHMOND 1931; BALIL 1961).

There are also Roman buildings preserved in situ that retain part of their original architectural decoration. These include the imperial cult temple (GUTIÉRREZ BEHEMERID 1990, 71-78; 1993, 95-105) and the Regomir Gate (PUIG & RODÀ 2007, 611ff; MAR *et al.* 2010). Certain Roman materials are still visible today reused outside the Late Imperial walls or in medieval buildings.

Those pieces located inside the Late Imperial walls or reused outside the Roman town perimeter have been associated with funerary monuments, among which, at least 25 monumental altars and 19 turriiform-type structures have been identified. With regards to the second group, the study proposes a hypothetical reconstruction of two of these buildings (GARRIDO 2011a, 349ff; 2011b, 357-359 and 362-363; GARRIDO & RODÀ 2012-2013, 131-147).

As previously stated, it is worth of mention that in the majority of cases the original location of the artefacts was lost with the consequent lack of stratigraphic dating. Therefore, the chronology proposed is based on the stylistic criteria and, as far as possible, through the comparison with pieces from other areas of the Iberian Peninsula or regions of the Roman Empire, basically from the western provinces.

Brief Barcino's building history

The study of the architectural decoration of Barcino

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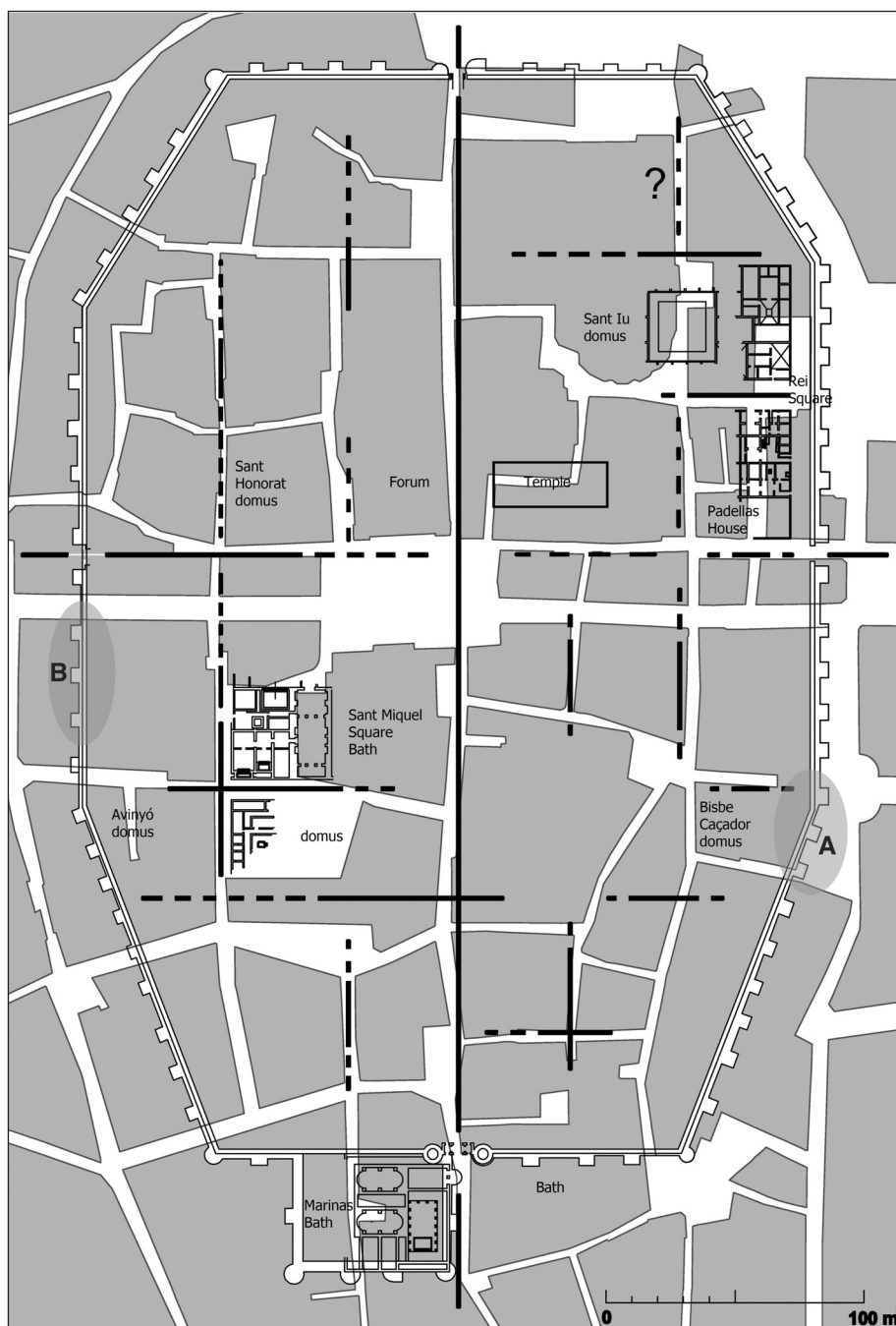


Fig. 1. Plan of Barcino, with indication of the wall sections (A, B) with a higher density of architectural findings (Mar, Garrido, Beltrán-Caballero 2011).

shows an initial period of expansion in the founding era, with large public works such as the defensive walls and the temple (Fig. 1). It would also be logical to assume that the other buildings typical of a Roman city forum were also present, although only the existence of the basilica can be deduced from the discover of a reused capital in the foundations of the Visigothic church in Plaça del Rei (no. 240)¹. Alongside these buildings, different funerary monuments have been documented, such as a monumental altar shaped ones and turriform type ones. These would have reached their maximum splendour during the Julio-Claudian dynasty, with some remaining in the first half of the 2nd century AD.

From the Flavian dynasty and the beginning of the 2nd century AD, the epigraphy indicates that this was an important period for the city (Fabre *et al.* 2007, 28) and some archaeological excavations confirm the construction of a maritime thermae (HERNÁNDEZ 2006, 81-83; MAR *et al.* 2013) as well as the baths in Plaça Sant Miquel (MIRÓ & PUIG 2000, 173). However, the finds of architectural decoration from these buildings are very scarce. From the former, only one column base and part of a shaft were located in situ in Regomir Street, as well as a Corinthian capital with plain leaves (no. 251) and a fragment of cornice (no. 308) now in the MAC. For the latter, a single marble Attic base (no. 56) was found,

1. The numbers used for the pieces are the same as those in the doctoral thesis catalogue, Garrido 2011a. This work is available in TDX (Tesis Doctorales en Red) <http://www.tdx.cat/handle/10803/48641>.

List of samples analyzed:

Sample code	Material	Inventory number	Catalogue number	Observations	Letter in Fig. 1
BCN-0646	Marble	19831 MAC	249	Corinthian Asiatic capital	E
BCN-0647	Marble	27935 MAC	328	Cornice	B
BCN-0648	Marble	30999 MAC	261	Pseudo Corinthian capital	D
BCN-0649	Marble	s.no. MUHBA	56	Attic base	A
BCN-0650	Marble	7884 MUHBA	202	Ionic capital	C

now stored at the MUBHA's Centre for the Conservation of Movable Cultural Heritage.

The same applies for the 3rd and 4th centuries AD, when the archaeological record shows a continued use of intramural and suburban spaces. The *garum* and salted fish factory (BELTRÁN DE HEREDIA 2001a, 58-63; 2005, 191-197) and the winery (BELTRÁN DE HEREDIA 1988, 277-288; 2001b, 66-71) in Plaça del Rei were built during this period. Likewise, most of the tombs in the Vila de Madrid necropolis date from the late 2nd and early 3rd centuries AD (RODÀ 2007, 114-123; BELTRÁN DE HEREDIA & RODÀ 2011, 77-110).

During the last 3th century AD, Barcino was still a thriving and dynamic city, capable of undertaking such a major project as the construction of a new defensive wall (PUIG & RODÀ 2007, 597-630; 2010), which was built against the external face of the earlier wall, leaving the public and private spaces and the sewage system unaffected. From this time, new buildings are documented, including a private *domus* in Sant Honorat Street (FLORENÇA & GAMARRA 2006, 189-209; CORTÈS 2011, 46-56), as well as renovations of existing houses. The Avinyó *domus* was decorated with paintings and mosaics (AA.VV. in press), and the one in Bisbe Caçador Street had a private baths complex added (MARTÍN *et al.* 2000, 283-288, CORTÈS 2014, 101-131). This phenomenon also seems to take place in the Plaça de Sant Miquel *domus* in which a private baths that encroached over part of a road were installed (MIRÓ & PUIG 2000, 175). Although the archaeological record displays this continuity in the town's buildings, the information from architectural decoration decreases from the 2nd century AD and the decline is particularly marked in the 3rd and 4th centuries AD.

The study of the material

Local Montjuïc stone was extensively used to build Barcino in the Early Imperial period (BLANCH *et al.* 1993,

129-137; GUTIÉRREZ GARCIA M. 2009, 93ff). Other materials, such as marble and limestone, seem to be very scarce in the architecture of the *colonia*. Out of a total of 430 studied pieces, only 21 are made of marble. Among them 7 bases, 9 column shafts, 3 capitals, 1 moulding and 1 *pulvinus* have been identified (Fig. 2). Although they are not very significant in number, they allow us to make an initial approximation of the use of marble in Barcino and to identify the workshops operating in the town during this period.

A first macroscopic identification of these elements was undertaken at the MUBHA's Centre for the Conservation of Movable Cultural Heritage.² Even though their location in this Center made it difficult to closely examine some of them, it was possible to assess their macroscopic features and even to identify some of the *marmora*, such as *giallo antico* or *marmor Numidicum* (column shaft no. 191), granito del foro or *marmor Claudianum* (column shafts nos. 81, 110, 111, 112), local limestone (capital no. 247) and Montjuïc sandstone (capital no. 23, and others).

Petrological features

Five artefacts representative of the whole assemblage of white marble pieces were selected for sampling. They were macroscopically and microscopically observed in order to know their original quarry.

The characterisation and provenance study of these pieces were carried out at the Unitat d'Estudis Arqueomètrics (UEA) of the Institut Català d'Arqueologia Clàssica (ICAC),³ in Tarragona. The equipment used to perform the macroscopic observation was a binocular microscope ZEISS Stem 2000-C equipped with a light arm ZEISS KL1500LCD. The thin sections were prepared at the Laboratori de Làmines Prime del Departament de Geologia at the Universitat Autònoma de Barcelona (UAB)⁴. To perform the microscopic observations and

2. That is, the Centre de Conservació de Béns Mobles del Museu d'Història de Barcelona. We would like to thank the directors and Curators of both the Museum and the Conservation Center for their kind help in allowing access and authorising for the sampling of some of them.

3. Archaeometric Studies Unit, of the Catalan Institut of Classical Archaeology.

4. Thin Section Laboratory, Department of Geology, Autonomous University of Barcelona.



Fig. 2. Marble and other stone artefacts from Barcino referenced in this study. A: base no. 56 (18x52x52 cm); B: cornice no. 328 (36x50x54 cm); C: Ionic capital no. 202 (18x44x38 cm); D: Pseudo Corinthian capital no. 261 (29,5x45x26 cm); E: Corinthian Asiatic capital no. 249 (60x48 cm); F: column shaft no. 191 (35x28 cm); G: Corinthian capital no. 247 (56x42 cm); H: figure capital no. 233 (47x50x38 cm) (photo: A. Garrido)

descriptions, a polarized light microscope NIKON Eclipse 50iPOL was used, and a coupled device CL8200 Mk5-1 was used to look at the Cathodoluminescence (CL). The microphotographs were taken with a NIKON COOLPIX5400 camera coupled to the previously mentioned microscope via a NIKON COOLPIX MDC adapter lens.

As reference materials, the collection of classical marbles and other ornamental stones assembled at the Laboratori per l'Estudi dels Materials Lapidis a l'Antiquitat (LEMLA)⁵ of the UAB as well as those at the UEA's Laboratory at the ICAC, were used.

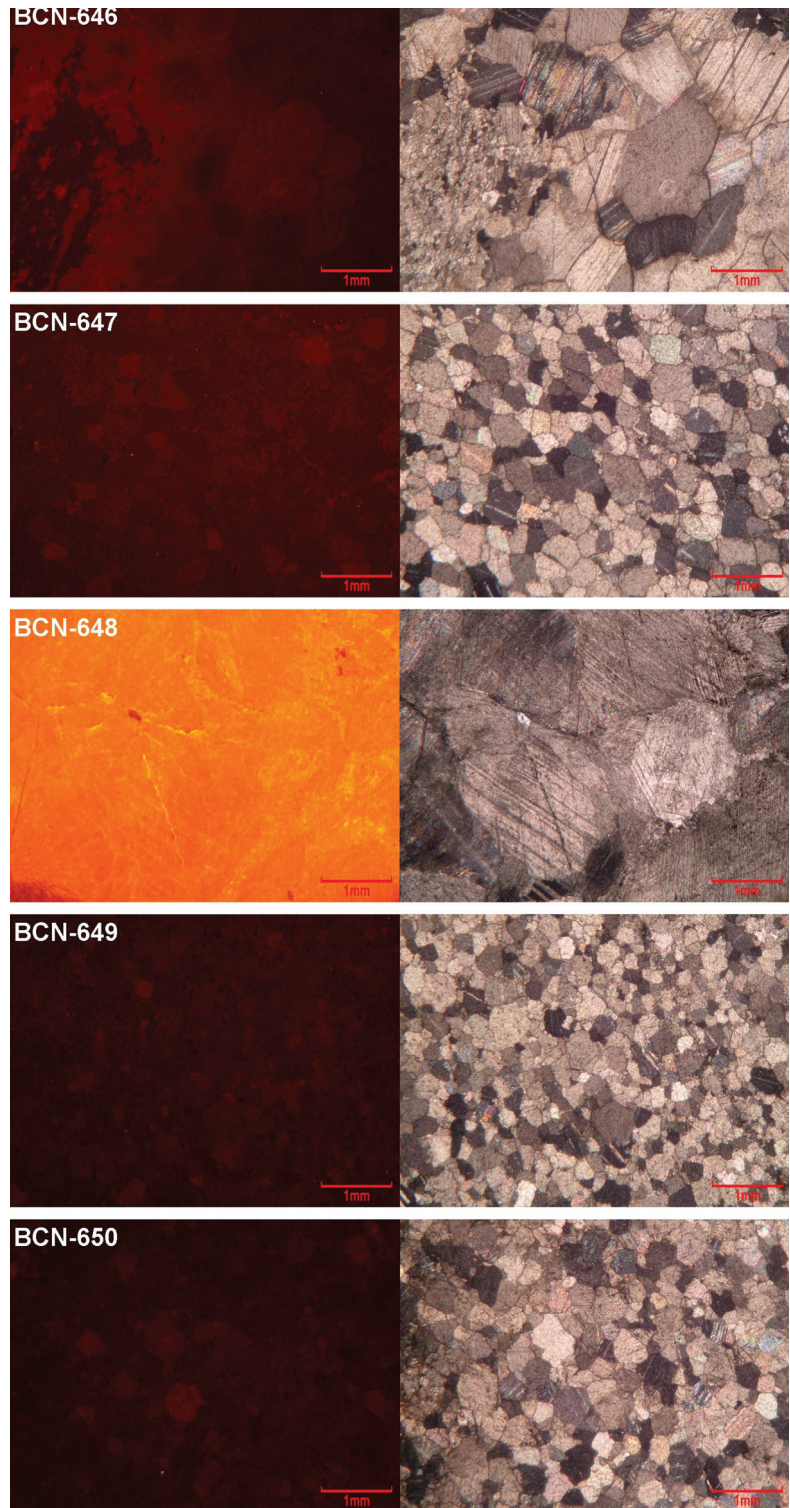
The macroscopic features of all the sandstones perfectly match those of Montjuïc stone, which is not surprising as it was the local stone most commonly used in

Barcino. As described by Almera (1880), Montjuïc sandstone is formed by silicic clasts that came from granitic rocks from the Catalan Coastal Range (Serralada Litoral). Microscopically, it is a Miocene terrigenous clastic rock composed mainly of a sand grain size fabric, that can be classified as a well-sorted to moderately-sorted litharenite -principal components are quartz, rock fragments (plutonic rocks, phyllites, quartzites and microcrystalline limestones often ferruginized) and K-feldspar- with a remarkable silicification; the reddish varieties show iron oxides associated to the siliceous cement and around feldspar and phyllite fragments (ÁLVAREZ *et al.* 2009).

Marbles, on the other hand, show different macroscopic features. While BCN-0647, BCN-0649, BCN-

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Fig. 3: Microphotographs of samples BCN-0646, BCN-0647, BCN-0648, BCN-0649 and BCN-0650 under cathodoluminescence (right) and crossed polars (left) (photo: UEA/ICAC).



0650 present a quite homogeneous white colour, BCN-0646 has a white and grey banded aspect, and BCN-0648 has a marked greyish hue.

Microscopic description of the samples

Samples BCN-0647, BCN-0649, BCN-0650 (Fig. 3) present very similar features. They have monophasic composition and present an isoblastic fabric formed by

a mosaic of polygonal calcite crystals with many triple points. The polysynthetic twins and exfoliations are not deformed. The calcite grain size is rather homogeneous (0.3- 0.8 mm) and quite equidimensional. The stone shows a granoblastic and isotropic texture. Cathodoluminescence characteristics are low and homogeneous intensity of dark red color. All these petrographic and CL features are typical of marbles from the quarries of Carrara (Italy), near the ancient town of *Luna*.

Sample BCN-0646 (Fig 3) has a mortar fabric. It

shows many small calcite crystals surrounding some, medium-size to large individuals. The crystal boundaries range from more or less irregular to sutured. The grain size is very heterogeneous (1.3-3.5 mm). All these features, as well as its banded macroscopic aspect, point to the island of Proconessos (Greece) as the possible provenance of this marble. However, CL analyses absolutely discard this possibility, as it shows a low intensity, dark red which is incompatible with typical Proconessos signal -extremely low and dark, or even of some blue hue (BARBIN *et al.* 1992). On the other hand, the combination of the traits shown by this sample allow us to relate it with some varieties of Pyrenean marble used in Roman times, such as the banded type extracted from Saint-Béat quarries (France). Even so, it is not possible to confirm this provenance without the support of geochemical analysis and a Pyrenean origin remains a probable hypothesis until further analysis can be performed.

Sample BCN-0648 (Fig. 3) has a slightly milonitic fabric with inequigranular texture. Calcite crystals show a maximum grain size of 8,0 mm, sutured boundaries and intracrystalline deformation (deformation twinning and undulose extinction). Its cathodoluminescence has a yellowish orange, very high intensity. These features do not match any of the known Iberian or classical marbles. Yet some eastern Pyrenees marble samples of the LEMLA collection show some petrographic and cathodoluminescent resemblance to this marble. Unfortunately, the lack of a complete analytic reference database for quarries of this section of the Pyrenees mountain range that could have been used in antiquity⁶ prevents us to venture a provenance for this sample.

Conclusions

The study of the material used in architectural decoration of Barcino shows the great importance of Montjuïc stone in early empire period and especially during foundation time and throughout the first century AD. However, it has also documented the use of some marbles for the construction of monuments that are currently difficult to identify because the number of remaining pieces is very small and the original context is ignored.

The petrographic analysis suggest that the predominant marble at Barcino is that of *Luni-Carrara* (GUTIÉRREZ GARCÍA-M. & RODÀ 2012, 294-295; RODÀ 1984, 83-86) (Ionic capital no. 202, cornice no. 328, base from the Sant Miquel baths no. 56, and some pieces from the Episcopal Hall nos. 57-62). However, other *marmora* were also employed at the *colonia*, such as *giallo antico* from Numidia used for a fluted column shaft (no. 91); two different undetermined Pyrenean marbles in an

Asiatic Corinthian capital (no. 249) and pseudo Corinthian capital (no. 261) as well as probably even for some of the bases from the Episcopal Hall (nos. 57-62); *granito del foro* from Mons Claudianus, in Egypt, for some smooth column shafts reused in Late Roman or medieval structures in Plaça del Rei (nos. 81, 110, 111, 112) and other stones that are difficult to identify macroscopically (a column shaft from the Episcopal Hall nos. 82, 83, 84 and 183 and a *pulvinus* front no. 362).

In addition to Montjuïc stone and marble, other stones of probably local origin local have been documented in the architectural elements of Barcino. An unidentified limestone is attested by Corinthian capital no. 247 as well as by other elements such as a set of column shafts some of which were reused in the Episcopal Hall (nos. 70, 73, 85), or others of unknown origin (nos. 107, 108, 109).

With regard to the chronology, marble use is documented from the beginning of the Julio-Claudian dynasty with an Ionic capital (no. 202) and continued in the Flavian period (cornice no. 328). However, it is during the 2nd century that we find most of the pieces: an Asiatic capital⁷ (no. 249) a *pulvinus* (no. 362) an attic base (no. 56) and other bases from the Episcopal Hall (nos. 57-62). A final artefact, a Pseudo Corinthian capital, is dated to the 4th-5th centuries.

So far, the first use of Luni-Carrara in Barcino has been documented in an inscription, dated to the foundation period, referring to the magistrate *C. Aemilius Antonianus* (GRANADOS & RODÀ 1993, 13; IRC IV 46, 257), although the first marble use in Barcino's architectural decoration is from the Julio-Claudian dynasty. However, these conclusions have been drawn solely from a single piece from this period and more data should be taking into account to achieve further considerations.

The material studied, most of which was Montjuïc stone, leaves no doubt about the important role played by local workshops during the different building phases of the town. However, other noble stones have been identified. Among them, a cornice soffit (no. 328) stands out. It was made of Luni-Carrara marble and presents stylistic similarities with the buildings of the *Urbs*, such as, for example, the Forum of Nerva, the Flavian palace on the Palatine Hill and the Domitian theatre and villa in Castel Gandolfo (LEON 1971, Pl. 127, 1-3; 39, 2-3; MATTERN 2001, Pl. 21, 2; 22, 1; 26, 1-2; 27, 1; 61, 1-2). The type of material used and the mentioned parallels from Rome, could indicate the existence of an imperial or possibly an Italic workshop in Barcino during Flavian period or slightly later (GARRIDO 2011a, 297-299)⁸.

6. This reference database is being developed in the laboratory of the Archaeometry Studies Unit (ICAC) to complete the characterization of LEMLA samples.

7. This capital could be dated probably between second half of the 2nd century and first half of 3rd century (Garrido 2011a, 252-254).

8. For the study of Barcino portraits see Rodà 1980, 41-52, and for the local workshops circulation see Rodà 2009, 513-529.

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