Stone for a Provincial Capital – Procurement and Transport Logistics for the Monumentalization of Roman Tarraco

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Tarraco and Its Stones

In early Roman times, Tarraco (a small colony developed from a *praesidium* – or military camp – established in the northeast coast of Spain shortly after 218 BC during the Second Punic War) became the capital town of the largest Roman province in the western Mediterranean.[1] This change of status involved also a significant change of the town landscape and was achieved after an intense building activity that totally modified its architecture and urbanism. This process took place since the late Republican–Augustan period, but was especially important during the following centuries. During the last decades, the understanding of this Roman capital town has leapt forward thanks to the several archaeological excavations and research programs carried out.[2] As a result, we know now that the Julio-Claudian period witnessed the beginning of large-scale works that continued during the 1st century AD, with extensive renovation works at the colonial forum and, most significantly, the construction of a monumental complex, the provincial forum, at the upper part of the town[3] where three enormous spaces were built: a circus, a large terrace with political and administrative functions for the whole province, and a religious area with a temple dedicated to Augustus enclosed by a portico. This building program was finished in Flavian times and saw an important restoration under Emperor Hadrian's reign.

In parallel, the studies undertaken on Tarraco's territory concerning local stone resources allow for a more precise and comprehensive picture of the first steps of the constructive process, and together with those concerning the imported marbles and other ornamental stones found at the town shed light on the mechanisms that enabled to complete the large building ventures that shaped Roman Tarraco's image. These studies are part of a growing research trend in Spain whose results not only have broadened our understanding of local stone exploitation and industry in Roman times, but has also changed the previous conceptions that relegated local ornamental stones of the Iberian Peninsula to mere 'substitutes' of the most prized imported ones.[4]

Unlike other regions of Spain,[5] the area around Tarraco is not especially renowned for its decorative stones. The only two ornamental stones found in the *conventus Tarraconensis* are Santa Tecla stone, a yellow/pinkish well-recrystallised Cretaceous limestone cropping out just about 1 km northeast from the urban center, and the

Published in: Jari Pakkanen – Ann Brysbaert (Eds.), Building BIG – Constructing Economies: from Design to Long-Term Impact of Large-Scale Building Projects, Panel 3.6, Archaeology and Economy in the Ancient World 10 (Heidelberg, Propylaeum 2021) 81–93.
DOI: *https://doi.org/10.11588/propylaeum.850.c10938*

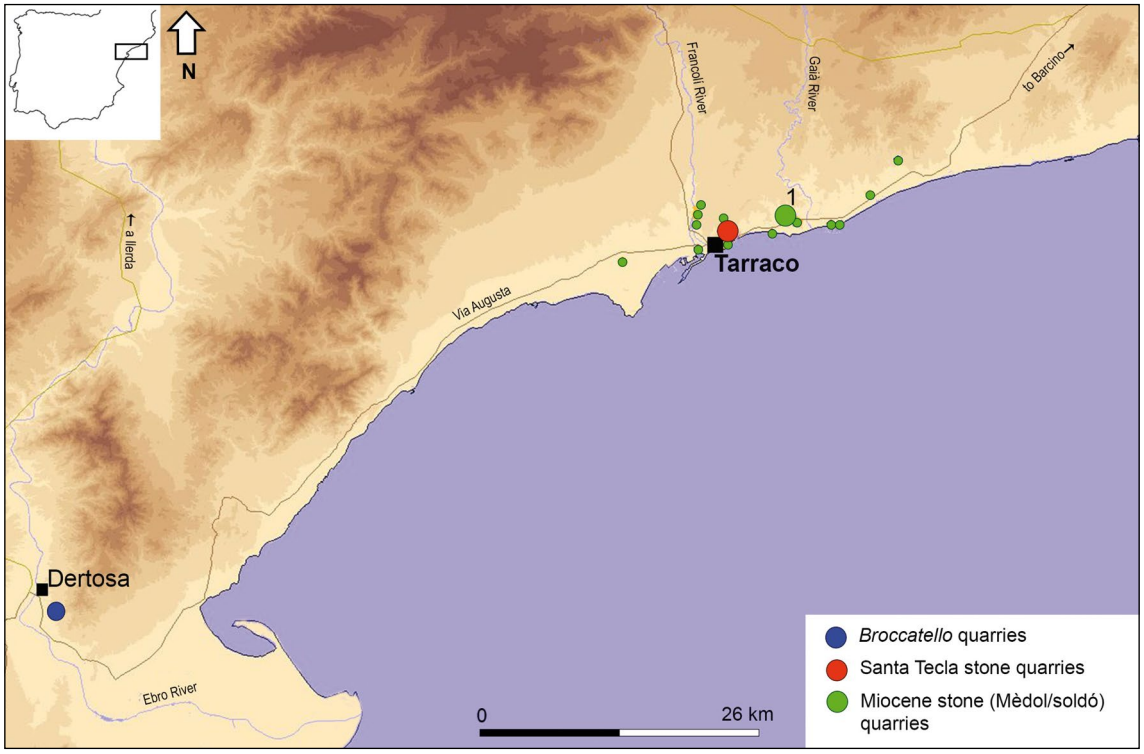

Fig. 1: Map showing the quarries on the territory of Tarraco, grouped according to the type of stone they provide; 1- El Mèdol quarry.

famed *broccatello di Spagna*, a golden/purple shelly limestone from about 80 km south from Tarraco and on the Ebro river banks (fig. 1). The first was extensively used to embellish the major buildings and public spaces of Tarraco, while the second one was used next to the best, most prized *marmora* imported from all corners of the Roman Empire and even had a significant distribution within and outside the Iberian Peninsula.[6] Yet the geological panorama of Tarraco's territory is clearly dominated by a shelly, Miocene limestone outcrop from which different types of stones were obtained. Among them, the most predominant and used were El Mèdol/soldó stone, two varieties of the same stone type (fig. 1).[7] Although they were also supplied as raw material for other types of works (sculpture, epigraphy, sarcophagi production), these local stones were primarily used for building purposes.

The long periods of extensive building activity at Tarraco meant that the economic factors and the dynamics directly related with the construction processes were strongly at play in the town. Large-scale projects obviously involved a massive amount of materials, people, resources and money.[8] Many of them were sourced as close as possible, so they were provided by the town itself or came from its immediate territory.

Building Stone Procurement: Local Stone and the Quarry of El Mèdol

Among the different sorts of building materials needed for any construction project, stone has a key role. Indeed, stone was ubiquitously used in antiquity and at the same time, it is the material most largely preserved in the archaeological record due to its own physical properties. Tarraco is not an exception. Large quantities needed to be located, selected, extracted, transformed and transported from the source to the town to be used in the Colonial and Provincial forums of Tarraco from their creation and throughout all the reform phases. Yet it was also used for non-public buildings both in urban contexts and outside the town walls, as well as for the several infrastructures (water-supply system and road network) implemented for the smooth functioning of the urban life at Tarraco.

Numerous quarries were opened on the Miocene formation outcropping mostly north from the town to obtain the local Miocene shelly limestone, a strong yet easy to cut material, which is perfect for building purposes and became the main source of bulk material.[9] The case of the Roman aqueduct quarries highlights the strong link between some of these quarry sites and specific nearby monuments or villas, as well as the intensive search for stone sources as close as possible. Yet among all the quarry sites of Tarraco's territory El Mèdol quarry stands out. This deep, opencast quarry was, by far, the largest single exploitation in whole northeastern Hispania. It has been recently object of an in-depth study including a field survey of its surroundings, the detailed recording of the fronts, debris heaps and other quarrying-related features as well as some archaeological excavations at particularly interesting points. They consisted in eight test pits, two of which were opened on the eastern sector of the quarry and shed light on the extraction process (fig. 2) and the other six on the central area called El Clot, this area consists on a large, 20 meters deep pit with a monolithic pinnacle standing on its center (fig. 3). The results of all these actions provided, among others:

- a comprehensive, detailed plan of all the quarry sections (including a new small area of extraction unknown until now),
- a substantial increase on the estimated volume of extraction at this site, which was in fact far larger than previously thought (from 66,000 to ca. 150,000 cubic meters, i.e. 350,000 tons of stone), and
- the identification of large debris humps, especially on the western section of the whole quarrying site.

All these observations have increased our knowledge of this site, which is thus confirmed as the first and foremost supplier of the stone for the colonial and provincial forums (as well as, other buildings and infrastructures of Tarraco),[10] as well as the phases of the building of Tarraco.

Indeed, the archaeological excavations provided solid evidence to date the main period of extraction to an earlier era and not in the Flavian period as has been assumed

Fig. 2: Detail of the group of semi-detached blocks located at the test pit 1 in the eastern sector of El Mèdol quarry.

until now. The evidence consists on a Roman denarius found in stratigraphic context and minted under Tiberius (RIC I, 30, dated 36/37 AD) and a C^{14} analysis for a charred wood dating from between the years 27 BC to 19 AD uncovered at the base of the pinnacle during the archaeological excavations of 2013.[11] Indeed, we can assume that the quarry was already supplying stone for the first main construction of the town, the late Republican walls, and that the exploitation continued in full in the Augustan period since the southeastern area of El Clot already reached its full depth of 20 m at the bottom of the pinnacle in the early Imperial period.

Another important aspect is the discovery of what seems to be a point of control of the production at the entrance of the pit; it is located mid-way of the ramp descending towards the lower part of the extraction area and one of the already mentioned coins was found there. Near this spot and right in front of the quarry entrance, a large deposit of discarded blocks existed until very recently.[12] A large collection of ephemeral inscriptions on these abandoned blocks has been discovered and its study, which is still in progress but from which some observations have been presented, provides an extremely interesting insight on the complexity of the organization of the supply.[13]

Fig. 3: View of El Clot area with the central pinnacle, at El Mèdol quarry.

The huge impact of stone extraction at El Mèdol can be explained by the size of the outcrop, the quality of the stone and its location relatively near the seashore, which was the easiest way to ensure a constant supply of blocks to the town. The discovery of a loading dock on a nearby beach provided the most interesting evidence. This infrastructure is of about 40 m long and 11 m wide and takes advantage of the natural features of the rock, in which it is carved to provide a flat platform acting as a natural breakwater (fig. 4). The sea level has risen here since Roman times, but the presence of square post-holes near the rectilinear channel, together with the location of this dock in relation to the sea currents, strongly point to this being the place from which the blocks were sent to the town by coastal shipping.[14] The effort of cutting this infrastructure means that it was to be intensively used, and the existence of a nearby small Roman site where pottery of the second third of the 1st century AD has surfaced suggests that it was in use when the provincial forum was under construction.

The comprehensive consideration of the quarry and this infrastructure has, thus, shed new light on the extent, chronology and dynamics of the local resource exploitation directly engaged in this phase of great constructive activity and urban renovation.

Decorative Stone Procurement: Local and Distant Materials

On the other hand, the increasing studies on marble and other ornamental stone remains and the advances on Tarraco's harbor's help to understand the various-scale dynamics that provided the decorative stone and sculptures needed to give these public buildings the dignity or *decorum* to befit its status as capital of the largest province of the western

Fig. 4: View of the loading dock (channel and rocky flat platform acting as a natural breakwater) at Roca Plana, near El Mèdol quarry.

Roman Empire (*Provincia Hispania Citerior* or *Tarraconensis*). Marbles and other decorative stones were used in the monumental building programmes of early Roman period as a means to display political authority, economic strength and social prominence, and they played a key role in establishing a self-image of the provincial elites.[15]

The decoration of Tarraco's public buildings and spaces also put in motion an extensive network linking Tarraco with the rest of the province and even more distant territories. They were mostly used at the highly symbolic provincial forum where marbles and other decorative stones from exotic origin were employed. Examples include the numerous columns shafts in Troad granite from Turkey[16] and the decorative elements in marble from Luni, modern Carrara, well-attested in Tarraco's architectural decoration since Julio-Claudian times,[17] but also giallo antico or *marmor Numidicum,* pavonnazzetto or *marmor Docimium*, Africano of *marmor luculleum* and cipollino or *marmor Carystium*[18] and less frequent pieces of other non-Spanish marbles[19] as well as the already mentioned broccatello and vast quantities of the local decorative limestone already mentioned (i.e. Santa Tecla stone). The latter arrived directly from the nearby quarries, but the marbles intended for the provincial forum most likely had a specific arrival point on the nearby area of El Miracle beach, right below the upper part of Tarraco. Not only is it closer to the final destination and mooring there would have avoided disrupting the harbor and the town's traffic, which was indeed a main problem,[20] but it is also attested by

Fig. 5: Location of the quarries of Santa Tecla stone and of El Mèdol, with the nearby loading dock and the most likely arrival point at El Miracle area as well as the direction of the transport routes towards Tarraco.

the discovery of granite column shafts lying underwater just in front of the Punta del Miracle promontory,[21] nearby the homonymous beach. This more convenient point would probably have been used to offload the stones supplied by El Mèdol quarry for the provincial forum construction site, while the blocks intended for the colonial forum were probably brought to the harbour (fig. 5).

The scattered location of the marble finds and the lack of detailed quantification studies render it difficult to have a global estimate of the use of each type of marble[22] and to determine to which part/phase of the complex they belonged, but is seems nevertheless clear that Carrara marble was extensively used[23] at the provincial forum and the forum's large-scale and position on top of the hill – as sort of an acropolis presided over by the temple of Augustus – ensured an outstanding scenographic effect within Tarraco's urban landscape.

Acknowledgments

The research here presented has been undertaken within the framework of the research projects *Marmora et Lapides Hispaniae: Exploitation, usages et distribution des ressources*

lithiques de l'Espagne romaine and *Graver dans le marbre: Routes et Origine des Marbres Antiques d'Aquitaine et d'Espagne (ROMAE)* of the LabEx Sciences Archéologiques de Bordeaux (LaScArBx), funded by the ANR-n°ANR-10-LABX-52, as well as the I+D projects HAR2015-65319-P, RYC-2017-22936 and PGC2018-099851-A-I00 (MINECO/FEDER) funded by the Ministerio de Economía y Competitividad and the Regional Development European Fund (FEDER). I wish to express my thanks to J. López (ICAC) and the team participating in the Roca Plana survey and the excavations at El Mèdol, as well as to S. Vinci (Ausonius UMR 5607), D. Gorostidi (ICAC/URV) and G. Martí (Museu d'Història de Cambrils).

Notes

[1] The *Provincia Hispania Citerior* at first, and *Hispania Tarraconensis* province after Augustus' administrative reorganisation.

[2] For an overview of the archaeological work until 2015, see Macias – Rodà 2015, and a short, updated summary is provided in Gutiérrez Garcia-M. – Vinci 2018.

[3] Tarraco was founded on a small hill located of up to 80 masl located on the seashore and the Tulcis (modern Francolí) river mouth; the slope between its harbour and lower town, and the upper part is, thus, significant and played a key role in the urban scenography of Tarraco's landscape.

[4] Rodà de Llanza 2012 provides an summary of research undertaken up to 2012, and the later ones have been presented in several scientific forums: see in particular, the Proceedings of the Association for the Study of Marbles and Other Stones (ASMOSIA) Conferences (Schvoever 1999; Herrmann et al. 2002; Lazzarini 2002; Maniatis 2009; Jockey 2011; Gutiérrez Garcia-M. et al. 2012; Pensabene – Gasparini 2015) and the Arqueología de la Construcción meetings (Camporeale et al. 2010; Camporeale et al. 2012; Bonetto et al. 2014). See also, Gutiérrez Garcia-M. 2020.

[5] Such as the south (ancient Baetica and Lusitania provinces) which are rich in high-quality marbles (Àlvarez et al. 2009), or even the NW, where small outcrops of marbles used in Roman times have been located (Gutiérrez Garcia-M. et al. 2016; González Soutelo – Gutiérrez Garcia-M. 2020).

[6] Àlvarez et al. 2009; Àlvarez Pérez et al. 2009; Álvarez i Pérez et al. 2010; Gutiérrez Garcia-M. 2014.

[7] They basically differ on the bioclastic content and can usually be found in one same quarry (Gutiérrez Garcia-M. 2009, 106–108, 112; Gutiérrez Garcia-M. 2011, 325).

[8] See, just to mention one example, the ground-breaking work of J. DeLaine concerning the Baths of Caracalla (DeLaine 1997).

[9] As demonstrated by its continuous use and re-use of already-cut standard-sized dimension stones and ashlars over the following centuries (Menchon – Pastor 2015).

[10] Since El Mèdol stone was also employed for a wide variety of products other than building material, as shown by the several examples of sarcophagi, inscriptions, sculptures and even portraits – some of which still present traces of stucco – found in the town (Gutiérrez Garcia-M. 2009, 112, table 5).

[11] López Vilar – Gutiérrez Garcia-M. 2016, 185, 191.

[12] Located between two main roads, the AP-7 and the A-7 motorways, it was object of a series of

archaeological excavations due to the enlargement of the second one carried out between 2007 and 2009 (Roig Pérez et al. 2011).

[13] Gutiérrez Garcia-M. – Vinci 2018; Vinci 2019.

[14] López Vilar – Gutiérrez Garcia-M. 2017.

[15] See Pensabene 2004 for a summary on the specific case of Hispania.

[16] Rodà de Llanza et al. 2012.

[17] Pensabene 1993; Pensabene – Mar 2004.

[18] From Simmithus (modern Chemtou, in Tunisia), Docimium or Docimeium (modern Iscehisar, Turkey), Teos (near modern Sigacik, Turkey) and Carystus or Karystos (on the Greek island of Euboea), respectively.

[19] They are marbles from Greece (portasanta/*marmor Chium*, rosso antico/*marmor Taenarium*, porfido verde/*lapis Lacedemonius*, verde antico/*marmor Thessalicum* and breccia di Settebasi/*marmor Skyrum*), Asia Minor (breccia corallina/*marmor Sagarium* and occhio di Pavone/*marmor Triponticum* – as recently identified in Lazzarini 2004, 90 f.) and North Africa (Egyptian red porphyry, porfido rosso/*lapis Porphyrites* and greco scritto).

[20] Pensabene – Domingo Magaña 2017.

[21] Pérez 2007.

[22] Most of them were not found in situ and assembled to be reuse/re-cutting in workshops, either probably related to the Hadrianic reform or to later phases (Àlvarez et al. 2012; Arola et al. 2012; Gutiérrez Garcia-M. – López Vilar 2012).

[23] Pensabene 1993; Gutiérrez Garcia-M. – Rodà de Llanza 2012. About 4,000 m^3 are estimated to have been employed only for the temple of Augustus and the upper terrace (Mar – Pensabene 2010, 528–531).

Image Credits

Figs. 1–4: A. Gutiérrez Garcia-M. – Fig. 5: GoogleEarth, with modifications by the author.

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