COLUMNS AND *ROTAE* IN TARRACO MADE WITH GRANITE FROM THE TROAD

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Abstract
A large number of granite shafts from the Troad are preserved in Tarraco. Many of them belong to a very similar typology and size, meaning that they must have come from the same building. We propose that this was the *porticus in summa cavea* of the amphitheatre or more probably the portico of the representational square in the provincial forum. Furthermore, the presence of *rotae* from the paving of the worship hall of that forum allows us to document a restoration of this area at the same time as we attest the architectural and decorative similarities to the *Templum Pacis* in Rome. Analysis of these pieces also allows us to study their reuse in the early Christian and Visigothic periods, as well as the probable export of some shafts to other towns during the mediaeval period.

Keywords
Tarraco, granite, Troad, shaft, imports.

Introduction

Granite columns from the Troad are among the most commonly found architectural elements in the Mediterranean area, along with cipollino, Sienite, Proconnesus and Thassos stone shafts. Shafts exported from the Troad were often accompanied by Corinthian capitals from Proconnesus, indicating that standard measurements were used. Even more important is the fact that the transportation of a product of this type would have involved a considerable organisational and financial effort; this is worth analysing, as the presence in the West of columns imported from the East is in itself a warning that up to now it has not been sufficiently valued and taken into account by researchers. To date there has been a lack of quantitative data that would have allowed progress to be made in this line of study.

Our aim here is to provide an inventory of the Troad shafts in Tarraco, which, as a port city, would have had plenty of possibilities for receiving large items of imported stone, such as monolithic column shafts. Given the importance, the high cost and the widespread dissemination of polychrome marble in Roman architecture, it would be useful if researchers at different archaeological sites began to circulate more comprehensive and detailed information that also includes column shafts, either imported or made locally and with or without an archaeological context. This would be a notable contribution to the historical reconstruction of the impact of the ruling classes, both in terms of their respective levels of wealth and their ability to understand and transmit the official architectural language of the Empire as an instrument of high propagandistic, symbolic and economic value.

Tarraco

The abundance of Troad granite shafts documented in Tarraco (Tarragona), with forty-five either complete or fragmented examples, is surprising. Most of them are shafts of a similar size, which leads us to believe that they were imported for the same building project. In this case we should consider that they may have been imported directly from the quarries and not necessarily through the port of Rome, as this would not have been a two-way cargo carried in vessels designed for other types of product as in that case there would only have been room for a few shafts (two or three perhaps, with a maximum of four)[1].

The provenance of these shafts varies, probably as a consequence of their reuse over the centuries. For example, thanks to various early documents we know that some of them were used to build a church dedicated to Saint Peter that once stood in the Sescelades area, a few kilometres to the north of the city. In the sixteenth century the shafts were taken from this church for use in other buildings; in 1563 some were reused in the church of Sant Pere in Reus (Tarragona)[2], in 1582 two were used on the entrance to the Santíssim chapel in Tarragona cathedral and in 1598 four were placed on the façade of

1. The marble-transporting vessel found off Camarina was carrying only two large columns of giallo antico (length 6.25 m, approx. diameter 65 cm, approx. weight 18 tons) and some very small blocks of sandstone (perhaps to stabilise the columns). It also contained items of craftwork, including a decorated metal vessel, a group of amphorae produced in Africa (Ostia 59 and Ostia 23, Africana I types, for the wine or *garum* from Proconsular Africa, the location of the giallo antico quarries) and terracotta and bronze tableware. The amphorae have allowed the wreck to be dated to the second century AD, a date further confirmed by the coins from between the middle and the third quarter of that century. The columns were lying almost in parallel on the vessel's decking (Di Stefano 1992, 175-206; Di Stefano 2002, 627-641; Tortorella 1981, 362; Parker 1976, 25-31; Parker 1992, 94, no. 163).

2. In 1562 work began on building the choir of this church and according to the minutes of the chapter meeting on 9 August 1562 a request was made to the see of Tarragona for a column from the church of Sant Pere de Sescelades, which at that time was in ruins: "*…sup quodam pilare lapidis ex illis que sunt in ecclesia Sancti Petri de Cessalatis pettito per iuratos ville de Reddis pro fabricatione sue ecclesie...",* Tomás Ávila

the Palau de la Generalitat (the Regional Autonomous Government) in Barcelona[3].

The most homogeneous collection of shafts comes from the excavations of the amphitheatre; they were used, as we will see below, to build the Visigothic church in the arena. Tarragona's Archaeological Promenade also has numerous shafts, twenty-three in total from diverse origins; some were recovered from the sea, leading us to believe that there must have been a shipwreck, while five or six of them may have come from those found in the "old fish market" that, at an undetermined time, were buried in front of the town hall to preserve them, until they were disinterred in 1887[4]. However, as these are old finds and information, there is practically no documentation and we can only attest their presence and attempt to reconstruct complexes based on their sizes and modules, with an average diameter of around 40-55 cm and with the flares and top tori of the shafts superficially carved.

Use and reuse of Troad granite in Tarraco

We know of more than forty shafts made with this type of granite in Tarraco, some of whose whereabouts are currently unknown (nos. 40, 41 and 43). Most can be attributed to a single building complex as they have similar features: an identical type of shaft flare and top torus and very similar measurements, a height of between 4.42 and 4.62 m (the fully preserved shafts are nos. 1, 5, 31 and 32 and the almost complete shafts are nos. 33 to 36 with a height of 4.11 to 4.12 m), a flare diameter of 58 to 65 cm, a lower diameter of 51 to 58 cm, a top torus shaft diameter of 52-58 cm and an upper diameter of 45 to 50 cm.

Among the examples that cannot be attributed to this typology, a fragment preserved in the Diocesan Museum (no. 45) stands out. We know virtually nothing about the examples we have not been able to find (nos. 40, 41 and 43) and the shaft buried in Rovellat Square (no. 42), which has one of its ends fractured and the other embedded below the walls of the present-day houses (Berges 1974, Fig. 10). These can only be hypothetically attributed to the Troad typology, as we have been unable to observe them directly.

As far as the large group of shafts of a similar typology (nos. 1 to 39) is concerned, we know very little about where they were found. In these cases they had been reused; some appeared in excavations in the amphitheatre (nos. 2, 20, 24-29, and 37-39, and examples 40 and 41, whose whereabouts are currently unknown, also came from the amphitheatre and can therefore be attributed to the same typology), whereas others were Found in the sea off the Milagro Beach near the amphitheatre (nos. 15, 16, 17, 19, 21 and 23).

There are many indications that the examples found in the amphitheatre actually came from the Visigothic basilica built in the arena in the second half of the 6th century AD (TED'A 1990, 234). All the shafts had been cut down from a height of 4.42-4.62 m to 3.45-3.55 m (nos. 2, 37-38). In addition, some were found inside the basilica or in its immediate vicinity and cannot be linked to the Romanesque church built over the Visigothic basilica, as that had engaged rather than detached columns made of El Mèdol stone (TED'A 1990, 227). The shafts were placed inside the Visigothic basilica separating the naves, as the Roman pedestals reused as bases for these columns have a circular recess on the upper face, the diameter of which coincides with that of the granite shafts that must therefore have fitted into it. Moreover, the presence of a chancel pier from between the late 6th century and the early 7th century AD (Macias *et al.* 1999, 226, nº 4), with a curved inflection on one of its sides based on which we can reconstruct a diameter of 55 cm, is proof that it adjoined one of the granite shafts whose lower diameters range from 55 to 60 cm (Domingo 2011, 817).

There are major doubts with respect to the original source of these shafts and many varying hypotheses have been put forward since the nineteenth century (Arco 1894, 2). The most plausible are those that link them to a hypothetical portico *in summa cavea* in the amphitheatre (Ventura 1954, 277) or with the portico in the "square of representation" in the provincial forum (Gimeno 1991, 350; Pensabene 1993, 67; Güell *et al.* 1993, 190). This latter hypothesis was put forward by B. Hernández Sanahuja in 1877, in one of the earliest mentions of these shafts[5].

With respect to the first hypothesis, the state of conservation of the amphitheatre does not allow us to confirm whether this portico *in summa cavea* actually existed. Furthermore, in the seating area, which is preserved

1963. The minutes of the *Consell Municipal de Reus* of 22 August 1563 tell us that one of the council members "és anat a Tarragona per a la colutna y diu lo mestre ne vol vn dobló y que la colutna astaria en VII lliures VIII sous". The *Consell* determined that "que sia remes als senyors de jurats ab alguns promens que miren la pedra sia millor", Liaño 1992, 143. This column does not exist. Nowadays, one column supports and divides the vault of the choir, yet it is not of granite but white limestone; it consists of several tambours and rests on a simple quadrangular base with a single torus. A similar column is embedded in the side wall supporting the choir. In fact, E. Liaño, when referring to the work carried out by Domingo Sarobé in the priory church of Sant Pere between 1561 and 1566, including the bell tower and the choir supported on vaults, notes the presence of various columns brought from Tarragona, Liaño 1992, 45. We are grateful to Jaume Massó for this information.

3. Sánchez Real 1994, 79-83. The shafts reused in the doorway of the Santísimo chapel were found abandoned in the square in front of the church of San Pedro de Sescelades. On 24 August 1582 the Tarragona Municipal Council granted Archbishop Antonio Agustín permission to transfer them to the cathedral, Morera 1904, 51.

4. *La Provincia de Tarragona* (30-IX-1887), 2; *Diario de Tarragona* (26-XI-1887), 2.

5. We have to thank Jordi López Vilar for pointing this reference out to us: Hernández Sanahuja 1877, folio 5: *"...*on the four sides of this immense square ran a portico or covered gallery (peristylum) supported by a granite colonnade..." / (note): "This portico measured 5.43 metres from the vault or roof to the pavement. It was of the Doric order and the columns that supported it were of blue granite, 3.75 m

to the beginning of the *summa cavea*, as well as on the base of the exterior façade wall, there is no perimeter wall that from the base of the building could have served as a support for the columns of an upper portico, as is found in the amphitheatres that have this structure (Golvin 1988). Moreover, it is not common to find porticos in Hispanic amphitheatres[6] and the height of the shafts, 4.5 m, appears excessive.

Neither does the financing of the building appear to fit in with this possibility. Based on the inscription that decorated one of the *aditus*, it has been interpreted that the cost was met by a single private individual, a *flamen* of the imperial cult (Alföldy 1997, 62-67, 96-97) in the time of Trajan or Hadrian (TED'A 1990, 196-198). It seems unlikely that this person would have been able to pay the high cost of importing such a large number of columns of this type. Neither is it likely that these columns would have been brought in for the restoration of the amphitheatre commissioned by Emperor Heliogabalus in 221, according to an inscription on the upper part of the podium that surrounded the arena (Alföldy 1975, nos. 84; 1997, 68-92, 96-97; 2011, 921). This inscription lists the restored sections (gates, tribune of the authorities, seating, podium and arena) and there is no mention of any portico.

With respect to the second hypothesis, neither is there any firm evidence that these shafts came from the portico of the so-called "square of representation" in the provincial forum. In fact, none of the shafts whose provenance we know of was found in the vicinity of this building complex. However, the shaft measurements fit in quite well with the portico columns of the forum square. The rear wall of this podium was decorated with a succession of El Mèdol stone Tuscan pilasters 3.2-3.5 metres apart. Together with the capital, these pilasters were 4.8 m high, to which we have to add an architrave of 51 cm (Güell *et al.* 1993, 188-190)[7]. This size is only slightly less than that of the columns whose granite shafts measured 4.42-4.62 m (to which we have to add the base and the capital). This difference in height between the pilasters and the columns could be resolved if we assume that the beams that supported the roof of the portico, whose sockets in the rear wall are just above the pilaster architraves, were embedded inside the architraves corresponding to the columns on the portico façade, whose width of 14 m could also suggest the presence of a twin colonnade. Moreover, the width of the pilasters, 70 cm, is quite a good match for the diameter of these shafts.

In any event, the granite shafts cannot be from earlier than the 2nd century AD, when granite from the Troad began to be exported all over the Mediterranean (Lazzarini 2004, 108)[8], whereas the provincial forum was built in the Flavian period (Mar 1993, 111-113; Pensabene and Mar 2010, 243-307). Moreover, the diameter of these shafts fits perfectly that of two Proconnesus marble capitals from the time of Hadrian; they have a lower diameter of 54-55 cm and may have been part of a renovation of the provincial complex[9]. Therefore, if the granite shafts and Proconnesus capitals are from the forum portico, we would probably be looking at a completion of the construction at that time or a Hadrianic restoration (Pensabene 1993, 67).

With respect to the shafts recovered from the sea off the Miracle Beach near the amphitheatre (Sánchez Real 1951, 144) (nos. 15, 16, 17, 19, 21 and 23) –those of an unknown origin that have marine concretions (nos. 8-13) could be identified with the columns we know were «embedded in the Llevant Wharf (…), that serve to tie up the cables of the vessels» (*Tarragona*…1923, 54; TED'A 1990, 227)– all show signs of reworking. They have been cut down, two of them obliquely, turning the originally monolithic shafts into tambours with a height of 1-1.2 m, except for the last two which are 0.64-0.66 m high; no. 15 also has a hole in the cut surface and no. 19 a circular fissure in one of its sides. Therefore the ship that sank while transporting these shafts was probably not sailing to Tarraco, but taking them for reuse in another town in the Middle Ages.

We have some evidence that suggests the plundering of Tarraco's monuments in the Middle Ages. This, for

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high, in a single piece. The width of this gallery was 3.70 m, and the distance between columns was 3.40 m. The general foundation, as well as that of the columns, and that of the corresponding pilasters, embedded in the wall, were of white Italian marble". Hernández Sanahuja 1877, Folios 62-63: "The columns that supported this peristylum were of blue granite, of a single piece, whose shaft measured 3.75, of which all over Tarragona can be seen fragments, more or less large, in addition to those that are preserved whole, one of them in the Museum; its diameter is 0.60, like that of the pilasters. (...) the width of the peristylum or gallery was 3.70 (...). Of this gallery there is no other vestige, if we exclude the interior wall of the abattoir (...), that today forms the foundations of the façade of the house of Don Cayetano Martí, and on which said columns rested, leading us to believe that the width of Santa Ana Street occupies the place of the mentioned gallery".

6. The amphitheatre in Itálica may have had one (Corzo 1995, 198). Such important amphitheatres as those of Nîmes, Cumas, Casino, Arles, Mérida, etc. do not have a portico *in summa cavea* (Golvin 1988).

7. These pilasters rested on an Attic base and a marble-lined pedestal, elements that have been completely lost (Hernández 1877, 61). The Tuscan capitals are 48 cm tall, a considerable height for this order, which J. Gimeno justifies as the aesthetic need to compensate or standardise the norms required by the predominance of the Corinthian order (Gimeno 1989, 125-126), whereas P. Pensabene believes that it was conditioned by the height of the rows of blocks of which the capitals formed part (Pensabene 1993, 67).

8. For granite from the Troad, see Ponti 1995, 291-320, and for its distribution throughout the Mediterranean, see Pensabene, Bruno 1998, 20, Fig. 19.

9. The measurements of these capitals have recently been revised and differ slightly from those published previously (Pensabene 1993, no. 1-2, 33-35). The first capital (MNAT-34251) presents a height of 79.5 cm, a reduced lower diameter, probably for reuse, of 50 cm, and a reconstructed lower diameter of 54 cm. The second capital (MNAT-34252) presents a height of 81 cm, a reduced lower diameter, probably for reuse, of 49 cm, and a reconstructed lower diameter of 55 cm.

example, is the explanation given for the total lack of shafts and capitals among the remains of the two early Christian basilicas next to the River Francolí (López Vilar 2006, 120). Moreover, if we take into account the fact that the city was almost completely abandoned at the beginning of the eight century AD, following the Arabic occupation of the area, and only repopulated in the twelfth century AD (Menchon *et al.* 1994, 229-230), and that the use of *spolia* is barely documented in it's mediaeval buildings, it becomes obvious that such spoliation was used to supply other areas. A city that remained virtually abandoned for four centuries could easily have become a giant quarry for the supply of all types of building material (Domingo 2011, 815).

Finally, in Tarragona we also document three large *rotae* made of granite from the Troad that have been reused in different parts of the cathedral (nos. 46-48)[10]. These consist of four large semicircular plaques 203-208 cm in diameter and 18.5 cm thick. One was reused as a tympanum at the entrance to the thirteenth-century Santa Tecla la Vella chapel (no. 46) (Serra Vilaró 1960, 26-27), another is preserved in the garden in front of that chapel (no. 47) and two more have been reused in the floor of the presbytery of the Corpus Christi chapel in the cathedral (no. 48)[11].

These large *rotae* would originally have come from the paving of a large Roman public building, probably the hall of worship that presided over the upper terrace of the city's provincial forum. The structure of this square shows notable similarities to the Forum Pacis in Rome (Pensabene and Mar 2010, 243-307), in which the Severan-period paving of the hall of worship was decorated with an *opus sectile* consisting of large *rotae* 2.54 m in diameter and made with various types of marble: pavonazzetto, granito del Foro (6 cm thick) and red porphyry (4 cm thick), framed by small strips of red porphyry set inside giallo antico squares that are in turn set in a reticulate pattern of rectangular pavonazzetto plaques (Fogagnolo 2007, 267-278; Meneghini 2009, 84). It is therefore plausible to consider that these *rotae* came from the paving of the hall of worship that presided over the upper terrace of Tarraco's provincial forum, an imitation of that of the Templum Pacis[12], although chronologically they must belong to a phase later than the construction of the building, the fruit of a restoration probably carried out in the second century AD. The floor of this hall was repaved, at least partially, with reused marble plaques around the first half of the fifth century AD (Serra Vilaró 1960, 63-65; Sánchez Real 1969, 281-293; Sánchez Real 1988-89, 92). However, we do not know enough about the true extent of this repaving to be able to discern whether the *rotae* were extracted at that time or whether they may have remained in situ.

Baetica

The case of Baetica may be different as the volume of olive oil exported to Rome in Dressel 20 amphorae was so huge that it would have justified a return cargo of column shafts from Porto, without completely ruling out orders sent directly to the quarries in the Troad, given the great wealth of the province and its senatorial class. Many Baetican senators were *curatores operum publicorum* and as such were able to enter into contact with the trade circuits of the Empire's main marble producers (Caballos 1990, 54). In this way we can account for the presence of granite shafts from the Troad in Corduba, Astigi, Itálica and Hispalis[13].

In Corduba (Córdoba) we find shafts made of this material in the mosque; they have been studied by A. Peña (Peña 2009, 247-272; Peña 2010, 120-127)[14], who added to the earlier study carried out by C. Ewert and J.-P. Wisshak (Ewert and Wisshak 1981). Other recently discovered granite shafts, which cannot be definitely attributed to the Troad, were found in an indeterminate building dating from between the mid-fifth and seventh centuries AD[15].

Of the 32 known granite shafts found in Astigi (Écija), 11 are from the Troad (Felipe 2008, 117-128; Williams-Thorpe and Potts 2002, 182-184, Table 3); they have all been reused or are of unknown provenance and their lower diameters allow them to be grouped into five examples of 85-90 cm and two of 64-66 cm. Also in Astigi fragments of imported granite shafts from the Hadrianic phase of the temple in Galindo Street have been found, although we do not know if they can be attributed to the Troad type (Buzón 2009, 112-113).

In Hispalis (Seville) there are five known shafts reused in the building in Mármoles Street; they are all of a similar size of around 8.68 metres, approximately 30 feet (Márquez 2003, 138-139). There are also three shafts

10. We are grateful to Cris Salom for telling us about these pieces.

11. J. Serra Vilaró attributed these pieces to a hypothetical late-Roman building in the area, forming the tympana of its doors (Serra Vilaró 1960, 88-109). However, we have no archaeological evidence of this building.

12. The Tarraco *rotae* are slightly smaller in diameter. Other examples of floors with this type of decoration can be found in various public buildings in Rome: the paving of the exedra in Trajan's Forum, with a diameter of 1.89-2.35 m; the southern portico of Caesar's Forum, with a diameter of 2.4 m; the temple of Venus and Roma, with a diameter of 2.4 m; and the Pantheon, with a diameter of 1.95-2.44 m.

13. For the use of imported and local granite in Hispania see Williams-Thorpe and Potts 2002, 167-194.

14. There are in fact six shafts, concerning two of which there are doubts as to their attribution to granite from the Troad (Peña 2010, 126-127, 231-236, no. 5: max. height. 277 and diam. 45; no. 122: max. height. 294 and diam. 41; no. 130: max. height. 294 and diam. 42; no. 200: max. height. 307 and diam. 42-43; no. 201?: max. height. 317 and diam. 44; no. 212?: max. height. 279 and diam. 40). The diameter of the shafts reused in the Córdoba mosque therefore have a slightly smaller diameter than those of Tarragona.

15. This building has a hypostyle structure with several naves defined by reused shafts, some of white and greyish marble and others of grey granite. These shafts have various differing heights and diameters. León and Murillo 2009, 410.

made with Troad granite on the exterior of Seville cathedral. Finally, in Itálica we know of three Troad granite shafts from the so-called "Casa de los Pájaros" (House of the Birds) (Williams-Thorpe and Potts 2002, 182-184, Table 3). The use of the shafts in these Baetican towns dates from the reign of Hadrian.

General considerations

there are a large number of granite shafts from the Troad in Tarraco, although the fact that they are almost all of a similar size (approximately 15-16 feet high) suggests they came from the same building complex, probably of a public nature given the high cost of the material. In this respect, it should also be remembered that series of standard-sized shafts are still found next to the point of extraction in the granite quarries of the Troad and although their measurements do not correspond exactly to the ideal sizes (16, 20 and 40 feet), they are close to them. That is to say, shafts often have measurements that are slightly smaller or larger than the standard series, depending on whether the granite vein from which they were extracted allowed precise measurements to be obtained.

There are two buildings in Tarraco in which these shafts may have been used: the portico *in summa cavea* of the Roman amphitheatre and the portico of the "square of representation" in the provincial forum. In the amphitheatre there is no firm evidence of the existence of a portico, although it was built in the time of Trajan or Hadrian when this type of granite was being exported all over the Mediterranean. The second complex, the provincial forum, was built in the Flavian period, before granite began to be exported from the Troad. Nevertheless, the shafts may have been added during a later renovation, perhaps in the time of Hadrian. There are several indications that reinforce this hypothesis:

1) The coincidence between the diameter of the granite shafts and that of two Proconnesus marble Corinthian capitals manufactured in the Hadrianic period in workshops in the *Urbs* (Pensabene 1993, 33-35, nos. 1-2). The likely, although not definite, origin of these capitals in the provincial forum could be evidence of a renovation or the completion of this building complex in that period, in which capitals from Proconnesus and shafts from the Troad would have formed part of the same columns.

2) Hadrian's restoration of the temple of Augustus in Tarraco (*Hist. Aug.*, V, *Adr.*, 12,3), which would probably have presided over the upper terrace of the provincial forum (Casas *et al.* 2009, 277-283; Macias *et al.* 2011, 187-200). This restoration carried out during the emperor's residence in the city in the winter of 122-123 AD shows how at least part of this complex was remodelled at that time.

In fact, it is interesting to consider that the granite shafts arrived in the city due to the Emperor Hadrian's stay. However, the fact that the provenance of the majority of the preserved shafts is unknown means that we cannot identify with any certainty the building they were originally used in.

Annex. Catalogue of shafts and *rotae* from the Troad found in Tarraco

No. 1. On the Archaeological Promenade. Unknown provenance. Total height 455; flare diam. 65; lower diam. 57; top torus diam. 58; upper diam. 50. The flare and top torus are preserved; the former has a convex section and the latter, which is very tall, has a slightly convex section and a flat fillet below. Figs. I, 1 and V, 1.

Bibl.: Gimeno 1991, 348, no. 409.

No. 2. On the Archaeological Promenade. Found in the south-western sector of the amphitheatre arena, although we cannot rule out that it was placed there during an archaeological excavation. Max. height 345; lower diam. 53; top torus diam. 52; lower diam. 49. Only the top torus is preserved; it is very tall and has a slightly convex section. On the lower part there is evidence of a much eroded fillet. Figs. I, 2 and V, 2.

Bibl.: TED'A 1990, 228, no. 25, probably; Gimeno 1991, 348, no. 410.

No. 3. on the Archaeological Promenade. Unknown provenance. Max. height 203; flare diam. 61; lower diam. 55; upper diam. 49. Only the convex-section flare is preserved. Figs. I, 3 and V, 3.

Bibl.: Gimeno 1991, 348-349, no. 411.

No. 4. On the Archaeological Promenade. Unknown provenance. Max. height 357; flare diam. 56; lower diam. 51; upper diam. 46. Only the convex-section flare is preserved. Figs. I, 4 and V, 4.

No. 5. On the Archaeological Promenade. Unknown provenance. Total height 462; flare height 63; lower height 58; top torus diam. 58; lower diam. 51. The flare and the top torus are preserved; the former has a convex section and the latter consists of a small fillet followed by a high torus with a slightly convex section. Figs. I, 5 and V, 5.

Bibl.: Gimeno 1991, 347, no. 407.

No. 6. On the Archaeological Promenade. Unknown provenance. Max. height 440; lower diam. 52; top torus diam. 56; upper diam. 49. Only the top torus is preserved; it consists of a small fillet with a flat section and a very high torus with a slightly convex section. Figs. I, 6 and V, 6.

Bibl.: Gimeno 1991, 348, no. 408.

No. 7. On the Archaeological Promenade. Unknown provenance. Max. height 316; lower diam. 52; upper diam. 46. Neither the flare nor the top torus are preserved. Figs. I, 7 and V, 7.

Bibl.: Gimeno 1991, 349, no. 412, probably.

No. 8. On the Archaeological Promenade. Unknown provenance. Max. height 103; lower diam. 47; upper diam. 48. Neither the flare nor the top torus are preserved. The surface presents marine concretions. Figs. II, 8 and VI, 8.

No. 9. On the Archaeological Promenade. Unknown provenance. Max. height 213; lower diam. 47; upper diam.

45. Neither the flare nor the top torus are preserved. The surface presents marine concretions. Figs. II, 9 and VI, 9.

Bibl.: Gimeno 1991, 350, no. 416.

No. 10. On the Archaeological Promenade. Unknown provenance. Max. height 266; flare diam. 60; lower diam. 52; upper diam. 52. Only the convex-section flare is preserved. The surface presents marine concretions. Figs. II, 10 and VI, 10.

Bibl.: Gimeno 1991, 350, no. 416.

No. 11. On the Archaeological Promenade. Unknown provenance. Max. height 133; flare diam. 51; lower diam. 49; upper diam. 48. The beginning of the convex-section flare is preserved. The surface presents marine concretions. Figs. II, 11 and VI, 11.

Bibl.: Gimeno 1991, 350, no. 416.

No. 12. On the Archaeological Promenade. Unknown provenance. Max. height 116; lower diam. 48; upper diam. 47. Neither the flare nor the top torus are preserved. The surface presents marine concretions. Figs. II, 12 and VI, 12.

Bibl.: Gimeno 1991, 350, no. 415.

No. 13. On the Archaeological Promenade. Unknown provenance. Max. height 100; flare diam. 53; lower diam. 49; upper diam. 48. Only the convex-section flare is preserved. The surface presents marine concretions. Figs. II, 13 and VI, 13.

Bibl.: Gimeno 1991, 350, no. 416.

No. 14. On the Archaeological Promenade. Unknown provenance. Max. height 177; flare diam. 58; lower diam. 53; upper diam. 50. Only the convex-section flare is preserved. The surface presents marine concretions. Figs. II, 14 d VI, 14

No. 15. On the Archaeological Promenade. Found in the sea off the Milagro Beach. Max. height 121; lower diam. 54; upper diam. 56. Neither the flare nor the top torus are preserved. The shaft has been cut down and has a rectangular-shaped hole in one of its surfaces. Figs. II, 15nd VI, 15.

Bibl.: Gimeno 1991, 352, no. 420.

No. 16. On the Archaeological Promenade. Found in the sea off the Milagro Beach. Max. height 125; lower diam. 66; upper diam. 63. Neither the flare nor the top torus are preserved. The shaft has been cut down. Figs. II, 16 and VII, 16.

Bibl.: Gimeno 1991, 352, no. 420.

No. 17. On the Archaeological Promenade. Found in the sea off the Milagro Beach. Max. height 104; lower diam. 40; upper diam. 36. Neither the flare nor the top torus are preserved. Figs. II, 17 and VII, 17.

Bibl.: Gimeno 1991, 352, no. 420.

No. 18. On the Archaeological Promenade. Unknown provenance. Max. height 84; flare diam. 55; lower diam. 50; upper diam. 50. Only the convex-section flare is preserved. Figs. II, 18 and VII, 18.

No. 19. On the Archaeological Promenade. Found in the sea off the Milagro Beach. Max. height 125; lower diam. 44; upper diam. 43. Neither the flare nor the top torus are preserved. It has a large circular fissure on one side. Figs. II, 19 and VII, 19.

Bibl.: Gimeno 1991, 352, no. 420.

No. 20. On the Archaeological Promenade. Found fallen next to the pit in the amphitheatre in 1933. Max. height 154; lower diam. 47; upper diam. 47. Neither the flare nor the top torus are preserved. Figs. II, 20 and VII, 20.

Bibl.: Gimeno 1991, 351, no. 419, probably.

No. 21. On the Archaeological Promenade. Found in the sea off the Milagro Beach. Max. height 66; lower diam. 46; upper diam. 44. Neither the flare nor the top torus are preserved. Figs. II, 21 and VII, 21.

Bibl.: Gimeno 1991, 352, no. 420.

No. 22. On the Archaeological Promenade. Max. height 127; lower diam. 44; upper diam. 41. Neither the flare nor the top torus are preserved. Figs. II, 22 and VII, 22.

No. 23. On the Archaeological Promenade. Found in the sea off the Milagro Beach. Max. height 64; lower diam. 45; upper diam. 47. Neither the flare nor the top torus are preserved. Figs. II, 23 and VII, 23.

Bibl.: Gimeno 1991, 352, no. 420.

No. 24. In the Amphitheatre. Found inside the Visigothic basilica in the amphitheatre. Max. height 128; lower diam. 48; upper diam. 47. Neither the flare nor the top torus are preserved. Figs. III, 24 and VIII, 24.

Bibl.: TED'A 1990, 228, no. 26, probably; Ventura 1954, 277.

No. 25. In the Amphitheatre. Found in the south-western sector of the amphitheatre arena. Max. height 155; lower diam. 55; upper diam. 50. Only the convex-section flare is preserved. Figs. III, 25 and VIII, 25.

Bibl.: TED'A 1990, 229, no. 31; Gimeno 1991, 351, no. 419, probably.

No. 26. In the Amphitheatre. Found inside the Visigothic basilica in the amphitheatre attached to the southern enclosing wall of the Romanesque church. Max. height 226; lower diam. 50; top torus diam. 48; lower diam. 44.5. Only the top torus is preserved; it has a flat section and a cavetto at the bottom. The height of the top torus appears to be lower than that of the rest of the catalogued examples. Figs. III, 25 and VIII, 25.

Bibl.: TED'A 1990, 228, no. 27; Ventura 1954, 277.

No. 27. On the roundabout of the Vía Augusta. Found in the south-western sector of the amphitheatre arena. Max. height 195; lower diam. 51; upper diam. 48. Neither the flare nor the top torus are preserved. Figs. III, 27 and VIII, 27.

Bibl.: TED'A 1990, 229, no. 30, probably.

No. 28. On the roundabout of the Via Augusta. Found in the north-western sector of the amphitheatre. Max. height 180; flare diam. 57; lower diam. 53; upper diam. 53. Only the convex-section flare is preserved. Figs. III, 28 and VIII, 28.

Bibl.: TED'A 1990, 228-229, no. 28; Gimeno 1991, 349-350, no. 414.

No. 29. On the roundabout of the Via Augusta. Found in the north-western sector of the amphitheatre arena. Max. height 170; lower diam. 58; upper diam. 55. Neither the flare nor the top torus are preserved. Figs. III, 29 and VIII, 29.

Bibl.: TED'A 1990, 229, no. 29.

No. 30. On the roundabout of the Via Augusta. Unknown provenance. Max. height 270; lower diam. 56; upper diam. 53. Neither the flare nor the top torus are preserved. Figs. III, 30 and VIII, 30.

No. 31. In the Santíssim chapel of the cathedral. From the Sescelades area to the north of the city. Max. height 444; flare diam. 56; lower diam. 54; top torus diam. 42; lower diam. 39. Preserves the flare and the top torus turned into a small torus. Figs. III, 31 and IX, 31.

No. 32. In the Santíssim chapel of the cathedral. From the Sescelades area to the north of the city. Max. height 442; flare diam. 56; lower diam. 54; top torus diam. 48; upper diam. 45. Preserves the flare and the top torus turned into a small torus. Figs. III, 32 and IX, 32.

No. 33. On the façade of the Palau de la Generalitat in Barcelona. From the Sescelades area, to the north of the city. Max. height 412; lower diam. 51; top torus diam. 53; upper diam. 44. It has been slightly trimmed at the bottom and the shaft is broken into two pieces. The top torus consists of a small torus followed by a narrow fillet of flat section. Figs. IV, 33 and IX, 33.

No. 34. On the façade of the Palau de la Generalitat in Barcelona. From the Sescelades area, to the north of the city. Max. height 412; lower diam. 51; top torus diam. 53; upper diam. 44. It has been slightly trimmed at the bottom and the shaft is broken into two pieces. The top torus consists of a small torus followed by a narrow fillet of flat section. Figs. IV, 34 and IX, 34.

No. 35. On the façade of the Palau de la Generalitat in Barcelona. From the Sescelades area, to the north of the city. Max. height 412; lower diam. 51; top torus diam. 53; upper diam. 44. It has been slightly trimmed at the bottom. The top torus consists of a small torus followed by a narrow fillet of flat section. Figs. IV, 35 and IX, 35.

No. 36. On the façade of the Palau de la Generalitat in Barcelona. From the Sescelades area, to the north of the city. Max. height 411.50; lower diam. 48; top torus diam. 53; upper diam. 44. It has been slightly trimmed at the bottom. The top torus consists of a small torus followed by a narrow fillet of flat section. Figs. IV, 35 and IX, 35.

No. 37. National Archaeological Museum, no. inv. 102. From the excavations of the amphitheatre in the 1950s. Max. height 355; lower diam. 53; top torus diam. 56; upper diam. 49. The flare has not been preserved and the top torus consists of an astragal of slightly convex section. An incision separates this astragal from another which is in the normal fillet position; the latter of these is too large and has a convex curve meaning it cannot be considered to be a traditional fillet. Figs. IV, 37 and IX, 37.

Bibl.: TED'A 1990, 228, no. 24, Fig. 240; Gimeno 1991, 346-347, no. 405.

No. 38. National Archaeological Museum, no. inv. 101. From the excavations of the amphitheatre in the 1950s. Max. height 355; flare diam. 63; lower diam. 58; upper diam. 52. Missing the top torus. Consists of a single monolithic shaft broken into two pieces that fit together perfectly. Figs. IV, 38 and IX, 38.

Bibl.: TED'A 1990, 228, no. 23, Fig. 240; Gimeno 1991, 347, no. 406.

No. 39. In the amphitheatre. Found in the longitudinal pit of the amphitheatre forming part of the surface stratum. Max. height 48; diam. 42. Probably preserves the flare, although this is much worn and was most likely semicircular.

Bibl.: TED'A 1990, 229, no. 32.

No. 40. Whereabouts unknown. Found in the 1936-37 excavation of the amphitheatre in the surface stratum covering the arena and the fill of the pit. Max. height 150; diam. 55. Both in dimensions and typology it can probably be associated with the rest of the shafts found in the amphitheatre.

Bibl.: TED'A 1990, 229, no. 33; Nogués 1942, 144.

No. 41. Whereabouts unknown. Found in the 1936-37 excavation of the amphitheatre in the surface stratum covering the arena and the fill of the pit. Max. height 150; diam. 55. Both in dimensions and typology it can probably be associated with the rest of the shafts found in the amphitheatre.

Bibl.: TED'A 1990, 229, no. 34; Nogués 1942, 144.

No. 42. In the subsoil of Rovellat Square. Found where it had fallen on the Roman floor, below the fifth-century-AD building found in this square and associated with building structures from the third and fourth centuries AD. We have not been able to observe this granite shaft fragment directly and therefore its attribution to the Troad type is hypothetical.

Bibl.: Berges 1974, 162, Fig. 10; Gimeno 1991, 350-351, no. 417; Domingo 2011, 807.

No. 43. Whereabouts unknown. Various fragments of a granite shaft found in Gasòmetre Street between the forum of the *colonia* and the theatre. Its attribution to the Troad type is hypothetical.

Bibl.: Gimeno 1991, 351, no. 418.

No. 44. In the Diocesan Museum, in the garden in front of the Santa Tecla chapel in the cathedral. Unknown provenance. It preserves the flare but not the top torus. Typologically it can be compared to the examples preserved on the Archaeological Promenade.

No. 45. In the Diocesan Museum, in the garden in front of the Santa Tecla chapel in the cathedral. Max. height 67, diam. 76.8.

No. 46. Reused as a tympanum in the gate to the Santa Tecla chapel in the cathedral. Unknown provenance. Total diam. 208, total width 18.5. A large semicircle carved in a stone block. The two surfaces are completely smooth. It was probably part of a giant floor *rota*.

Bibl.: Serra Vilaró 1950, 156-167; Serra Vilaró 1960, 88-109.

No. 47. In the Diocesan Museum, in the garden in front of the Santa Tecla chapel in the cathedral. Probably from the tympanum of the doorway between the cathedral cloister and the Corpus Christi chapel which was removed when the door was rebuilt. Total diam. 204, total width 18.5. Identical to no. 46 above. In the profile

there are two longitudinal incisions. It was probably part of giant floor *rota*.

Bibl.: Serra Vilaró 1950, 156-167; Serra Vilaró 1960, 88-109.

No. 48. Reused in the floor of the presbytery of the Corpus Christi chapel in the cathedral. Unknown provenance. Total diam. 203. A large *rota* consisting of two semicircular blocks, one of which is broken. Identical to nos. 46 and 47 above.

Bibl.: Serra Vilaró 1950, 156-167; Serra Vilaró 1960, 88-109.

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