Cuadernos de Arqueología **DOI: 10.15581/012.24.006**
Universidad de Navarra 24, 2016

MONUMENTALITY IN HISPANOROMAN CITIES: A SOCIAL NETWORK APPROACH

MONUMENTALIDAD DE LAS CIUDADES HISPANOROMANAS: UN ESTUDIO DESDE LA CONECTIVIDAD

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RESUMEN: El objetivo de este artículo es investigar la relación entre monumentalidad y conectividad de las ciudades en la Península Ibérica durante el alto imperio romano, aplicando los análisis espaciales y de redes sociales. En primer lugar, la presencia de los monumentos investigados (anfiteatro, circo y teatro) será tratada en un análisis crítico de diferentes fuentes. En segundo lugar, un análisis de redes será utilizado para iluminar la relación entre la Centralidad y el nivel de la monumentalidad de las ciudades. Naturalmente, la historia de las ciudades individuales puede explicar su propia situación. No obstante, los patrones largos no se pueden entender a través de los estudios individuales de las ciudades.

PALABRAS CLAVE: Estatus jurídico; edificios de espectáculos; análisis de redes; SIG; Hispania.

ABSTRACT: The aim of this paper is to examine the relation between monumentality and connectivity of the cities on the Iberian Peninsula during the High Empire, using spatial and social network analyses. Firstly, the presence of the monuments under scrutiny (amphitheatre, circus and theatre) will be treated by a critical analysis of the different sources. Secondly, a social network analysis will be used to illuminate the role of Centrality in relation to the monumentality of cities. Naturally, the history of specific cities can explain their individual situation. However, large patterns cannot be understood by the individual study of cities.

KEYWORDS: Juridical status; spectacle buildings; network analysis; GIS; Hispania.

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1. INTRODUCTION

The explanation for the monumentalisation of urban centres is a subject which has been under the attention from scholars for quite some time (Andreu Pintado, 2004; Curchin, 2012; Pfanner, 1990; Trillmich & Zanker, 1987). Different factors have been put forward to explain the degree of monumentalisation, for example: status (Goffaux, 2003), integration (Aktüre, 2007), location (Aktüre, 2007; Espinosa Espinosa, 2015). Laurence *et alii* have put forward that multiple factors may have played a role at the same time (Laurence *et al.*, 2011: 67). In their work they state that the random process of monumentalisation cannot be explained by single changes, such as a juridical promotion, but must be seen within the context of the whole of cultural changes.

One of the factors put forward to explain the differences in monumentalisation is the location of the urban centre within the urban network (Aktüre, 2007: 20; Espinosa Espinosa, 2015: 228). However, for the provinces of Hispania this possible relation has not been tested by a social network analysis. This paper will make a first effort to see whether the centrality of a city can be used to explain monumentality. Firstly, the monumentality of cities has to be asserted. In this paper the focus will be on presence of spectacle buildings (amphitheatre, circus and theatre). This will be attested by a critical review of the available sources. Several catalogues and compendia will be used and checked with archaeological and epigraphic evidence. Subsequently for all three the spectacle buildings new compendia will be created where the presence is defined as 'certain', 'probable' and 'doubted'. Thereafter, a network for a social network analysis has to be created. This network will be based on the cities as defined within the research currently done for the ERC-funded "An Empire of 2000 Cities".[2] Within this project one of the main goals is defining and locating the urban centres during the High Empire. The urban centres defined in the will be used for this network analysis. Lastly, in order to create a working network the connections between the cities have to be established. This network is based on mapping projects and other network analysis based on the Roman road network. Since the focus of the paper and the final project is not on road, river and maritime networks, the network used in this paper will be based mainly on secondary sources.

Since this paper is an early publication of ongoing research the conclusions will be preliminary and a further development of this paper will be included in the final publication.

[2] This paper is part of the doctoral research done into the provinces of Hispania within the ERC-funded program "An Empire of 2000 Cities" at the University of Leiden. The overarching project "An Empire of 2000 Cities" is an ERC-funded project set out to investigate the urban hierarchies existing in the provinces of the Roman Empire. See: www.epireof2000cities.org

2. MONUMENTAL CITIES

Although the largest part of archaeological record still has to be disclosed, as many cities have not been or only partially excavated, we can start analysing the data for their first results. The cities under scrutiny are those with spectacle buildings. The choice for this specific kind of monumental building is based on three aspects of this building type:

Firstly, it is seen, amongst others, as part of the 'urban' monuments. Within the project "An Empire of 2000 Cities" we consider the several buildings as possible indicators for an urban function: fortification walls, aqueducts, *thermae*, *forum* and the spectacle buildings.[3] Although by themselves they are not necessarily only found in urban settlements. Walls are quite common for non-urban settlements, especially in the north-western part of the Iberian Peninsula where the *castreño* culture is found (Padin Nogueira, 1999). Similarly, aqueducts and baths can be found in the non-urban context (Noguera Celdrán, 1993). Although, spectacle buildings are found in non-urban contexts in several provinces of the Roman empire (Bouley, 1983; Sear, 2006), in the Hispaniae all but one of the spectacle buildings is found in an urban context. The choice for spectacle buildings is based on their relation to civic status (Goffaux, 2003). Spectacle buildings were prime targets for acts of *euergetism* relating them to the elite (Mingoia, 2004: 220; Rodríguez Neila & Melchor Gil, 2003: 216). Although, some might have been paid (partially) by public money (Sear, 2006: 11), they still provided the possibility to redecorate or give *ludi* or *munera* as acts of *euergetism*. Above all, the spectacle buildings yielded the possibility to show a newly acquired civic status, since the organization of the urban population in different ranks was portrayed in the seating order at the theatre and amphitheatre (Edmondson, 2002: 45; Sear, 2006: 3), also treated in the *Lex Ursonensis* (Ch. 125 lines 11-13) and *Lex Irnitana* (Ch. 81).

Secondly, spectacle buildings are very recognizable public buildings. Whereas the earlier mentioned *thermae* pose another problem, those in the urban context are not necessarily public, they can well be private belonging to a *domus* (García-Entero, 2005). Clearly private baths should not be taken in account as part of the monumentality of a city. To avoid the problems posed these have been left out in this analysis. The *fora* pose a another problem, based on the idea that each city must have had a *forum* (Laurence *et al.*, 2011: 170), there are several assumed *fora*, located at the supposed crossing of the *cardo* and *decumanus maximus*, leading to a complicated dataset.

Lastly, next to the actual buildings we have the epigraphic evidence. Spectacle buildings have the added advantage of multiple benefactions. At first glance one

[3] Following many others in doing so: Vaquerizo & Murillo (2010) *Ciudad y Suburbia en Corduba: una visión diacrónica (siglos II a.C. – VII d.C.)* 486; Laurence *et al.* (2011) *The City in the Roman West* 137.

might think of reforms or additions, such as the case in the theatres of *Tarraco* and *Italica* (Ramallo Asensio, 2002: 117). However, several benefactions of *ludi* and *munera* have been recorded in epigraphy. The evidence for these activities can be added to the list of monumental cities and create a broader picture to analyse. Indeed, there are some inscriptions referring to *euergetic* activities concerning the forum or baths, nonetheless, the number of inscriptions on the spectacles outnumber those referring to the other building categories (Mingoia, 2004: 220).

As argued the research has focussed on three different monuments: theatre, amphitheatre and circus. The data collected is based on three different kinds of evidence, leading to three degrees of probability for the existence of a spectacle building: 'certain', 'probable' and 'doubted'.

Firstly, we have the buildings attested in archaeology. Clearly these fall within the 'certain' category. The extensive collection of the different spectacle buildings was facilitated by a first inquiry into compendia (Ceballos Hornero & Ceballos Hornero, 2003; Nogales Basarrate & Sánchez Palencia, 2001; Sear, 2006: 260ff.). In addition to the archaeologically attested buildings we can turn to epigraphy, primary or secondary sources for evidence. Here we enter the area of deciding whether a building was certainly there, such as the case of Gades where the amphitheatre has not been found yet. However, the combination of the depiction by Wyngaerde, the passage from Cicero and possible elliptical foundations found at the Porta de Torre strongly suggests that there might have been an amphitheatre rather than games held in the forum (Wyngaerde, 1567; Cic. Ad. Fam 10.32.2-3; Fear, 1996: 199). Hence the amphitheatre of *Gades* is considered certain. Similarly, we find certain buildings, although not attested archaeologically, in epigraphy. Such as the case for the circus of *Contributa Iulia* which is mentioned in CIL II 984.

The group of 'probable' spectacle buildings is based on epigraphic evidence for *ludi* or *munera* not mentioning the actual building as such. Although, these could have been held in a proper spectacle building we cannot exclude the possibility of the use of a temporary building or another building or even outside the urban context (Humphrey, 1986: 1). Nonetheless, those *ludi* or *munera* found in epigraphy do not belong to the regular games held, as stated in the *Lex Ursonensis*, but fall apart from the original agenda making these extraordinary (Ceballos Hornero & Ceballos Hornero, 2003: 61; Rodríguez Neila & Melchor Gil, 2003: 214). Clearly, these events were of such importance to the magistrate, and possibly to the community, that an inscription was made to record it for eternity.

The last category is the 'doubted, in this case either artistic expressions are taken as evidence or secondary literature suggests the presence of spectacle buildings. However, the evidence is not backed by direct archaeological, epigraphic or other ancient sources. For example, the case of *Asturica Augusta* where González Fernández states that a theatre is to be expected in the city (González Fernández, 2012). In the artistic category we place the discovery of a mosaic with the depiction of

a circus, such as the case for *Italica* (Humphrey, 1986: 233), or the depiction of gladiatorial fights on fine ware for *Calagurris* (González Blanco, 1998). An interesting case is that of *Balsa* where Fraga da Silva uses several techniques, amongst which topological survey, to find a theatre, an amphitheatre and two circuses (Fraga da Silva, 2007). The doubted category is collected to point out possible additions if more evidence is found. Although collected they will not be part of the analysis.

After asserting the different buildings researched in this paper and categories of evidence the actual lists are drawn.

2.1. Amphitheatres[4]

The evidence for certain amphitheatres on the Iberian Peninsula is found mostly in the works by Ramallo Asensio on all the spectacle buildings and specifically on amphitheatres by the two Ceballos Hornero (Ceballos Hornero & Ceballos Hornero, 2003: 59; Ramallo Asensio, 2002). In addition, epigraphy has been searched leading to the inclusion of certainly the amphitheatre of *Castulo* as mentioned by epigraphy (CILA III 84). Moreover, two amphitheatres can be added based on the *loca spectaculorum,* it has been argued that this should be read as an early form of reference to the actual amphitheatre (Ceballos Hornero & Ceballos Hornero, 2003: 59). This leads to the inclusion of *Siarum* (CILA II 946) and the one in *Aurgi* (CIL II^2 5,31).[5]

Based on the epigraphic evidence only mentioning the games, without reference to the actual building we can add three to the probable category: *Aquae Flaviae,* where an inscription refers to the *gladiatorum muneris* (CIL II 2473); the *IIIIvir* of *Ceret* provided twenty pairs of gladiators (CIL II 1305); finally *Urso* which is added on the basis of its references to the *munera*. (*Lex Ursonensis* Ch. 71). Although, these attestations of *munera* are solid, we cannot base the construction of an amphitheatre on this, games could be held in the forum, as stated in the *Lex Ursonensis*, circus or a temporary wooden construction (Ceballos Hornero & Ceballos Hornero, 2003: 60; Humphrey, 1986: 1).

Among the 'doubted' category we find several cities of which it has been argued in secondary literature they had an amphitheatre. However, as far as I know these buildings have not been excavated or established with certainty. Although the cities *Hispalis* and *Calagurris Iulia* appear in the list by Ceballos Hornero as places with amphitheatres, I deem them doubted. In the case of *Calagurris* the existence of

[4] See Table 4.

[5] The one in Aurgi is according to Ceballos Hornero & Ceballos Hornero located in Los Villares (Jaén), however, the inscription reads: *L(ucius) Manilius Gallus et L(ucius) Man[i]lius Alexander Aurg(itani) ob hono/rem VI(vi)r(atus) secundum petitionem m(unicipii) optimi patroni loca spectacul(orum) / numero CC singuli ex duplici pecunia / decreto optimi ordinis municipib(us) m(unicipii)* ***Aurgita/ni*** *dederunt donaverunt*. According to Sear (2006: 101) the inscription refers to the theatre.

the amphitheatre is based on 19th century references and images of gladiatorial fights on fine ware (González Blanco, 1998), however it is not yet located (Andrés Hurtado, 2002: 71). The case of *Hispalis* the sole reference to an amphitheatre is a reference to the martyrdom of Justa and Rufina in the late third, early forth century (Beltrán Fortes *et al*., 2005: 77). Thouvenot mentions the amphitheatres of *Acinippo* and *Ucubi* in both cases the evidence is rather slim. The picture shown of the amphitheatre of *Acinippo* seems to belong to the theatre (Thouvenot, 1940: 458). The existence of the amphitheatre of *Ucubi* has not been proven by archaeology (Roldán Gómez, 1992: 252). In addition we find two doubted amphitheatres with a size indication: *Barcino* and *Olisipo*. In these cases the topography of the modern city has been used, based on the argument that the foundations of ancient buildings can be fossilized within the city plan. In the case of *Barcino* the curvature of the *Calle Cardenal Casañas* and on the opposite the curvature of the *Calle Cecs de la Boqueria* have been used to identify a possible amphitheatre (Conde Moragues, 2013). Similarly the argument of the possible amphitheatre for *Olisipo* is made, located at the curvature of the *Rua de São Miguel* (Vasco de Melo Martins, 2014). A third case based on topography is the amphitheatre of *Balsa*, in this case the evidence is based on deviations in the natural terrain. However, the book on *Balsa* by Fraga da Silva does not explain on what basis the amphitheatre is located (Fraga da Silva, 2007). Notwithstanding, the possibility of amphitheatres in these cities is not ruled out at all.

2.2. Circus[6]

For the circus the proceedings of the international conference held in 2001 on the circus in Hispania proves very useful, in addition, the book by Humphrey on circuses and again the collection of spectacle buildings by Ramallo Asensio are useful compendia (Humphrey, 1986; Nogales Basarrate & Sánchez Palencia, 2001; Ramallo Asensio, 2002).

Although *ludi circensibus* were the oldest and most popular games in the city of Rome (Bell, 2013: 493), the circus is often the last spectacle building to be erected (Ramallo Asensio, 2002: 113). Subsequently we find only two out of the thirteen certain circuses as the sole spectacle building. Especially in the case of *Valentia* one might expect to find other spectacle buildings, the modern city still covers large parts of the archaeological record. Clearly, the same approach has been used to create the list of circuses on the Iberian Peninsula, next to the collections the epigraphic evidence has been searched for evidence of *ludi circensibus.* This has led to the inclusion of fifteen possible locations for circuses. The number of inscriptions commemorating the *ludi circensibus* support the idea that this was a rather popular game (Humphrey,

[6] See Table 5.

1986: 382). Once more we have to keep in mind that also circus games could well have been held on a field with temporary constructions (Humphrey, 1986: 3).

Within the certain category we find two circuses which have not been excavated, but their existence has been proven by epigraphy. Firstly, the circus of *Contributa Iulia*, of which the podium has been attested in CIL II 984. Similarly we find the case of *Balsa*, where two inscriptions mention the dedication of 100 pedes of the podium in CIL II 5165-5166. In addition to this evidence, proving the existence of a circus, Fraga da Silva has identified a possible second circus (Fraga da Silva, 2007: 102). Again the book is mainly descriptive and leaves out the actual arguments to identify the circus. Nonetheless, the epigraphic evidence supports that the construction of at least one of these is certain.

Within the doubted category are the circuses mentioned in secondary literature but not archaeologically attested as such. Again these have been included to point towards the possibility of future discoveries and the necessity to further investigate these cases.

2.3. Theatres[7]

Lastly, the theatres of the Iberian Peninsula are collected. Although treated here last, it was one of the most important buildings for benefactions, possibly due to its careful segregation of the spectators (Sear, 2006: 13).

A major contribution to create this is list is the catalogue of theatres by Sear, his work contains an architectural study of the theatres in the Roman Empire (Sear, 2006: 261). In addition, to this catalogue the general work on spectacle buildings by Ramallo Asensio and two articles on theatres by Aktüre and by Noguera Giménez *et alii* yielded extra information (Aktüre, 2007; Noguera Giménez *et al.*, 2011-2012; Ramallo Asensio, 2002). Despite these rather extensive lists of theatres in Hispania one certain theatre could still be added: the theatre of *Bracara Augusta* which has been discovered and excavated form 1999 onwards and has escaped the attention (Martins *et al.*, 2013; 2014).

Epigraphy gives us ten cities where *ludi scaenici* have been given. Several of these are also mentioned in the compendia. Nonetheless, one could be added, a probable theatre at *Oducia*, the very fragmented inscription still reads '*scaenic*' leading to the inclusion of this theatre (CIL II2/5, 1330). Amongst the "probable" category we also find those only attested in secondary literature. Again Balsa appears, the argument is similar as above for the second circus and the amphitheatre thus based on topography. Nonetheless, the evidence for the theatre, treated more extensively, seems to indicate a possible theatre (Fraga da Silva, 2007). For the case of

[7] See Table 6.

Segisamo the evidence put forward by Abásolo is based on thorough research and the conclusion that the presence of a theatre is very likely is thereby accepted as such (Abásolo, 1999: 596). The theatre of *Hispalis* is considered certain by Sear, however, the theatre is known via *Philostratos* whom refers to *ludi scaenici* and therefore it is included into the probable category.

Among the doubted we find one with an epigraphic reference. The attestation of the "theatre" of *Urgavo* is based on a partial inscription found only reading *ludis*. Since the theatre is the most common building it follows that the *ludi* most probably were *ludi scaenici.* The theatre of *Astigi* keeps returning as a doubted theatre. Thouvenot mentioned this possible theatre with some doubt (Thouvenot, 1940: 426), Sear mentions that the possible theatre has been attested to be the amphitheatre (Sear, 2006: 101). A new thesis for its location has been formed by Carrasco and Jiménez (Carrasco Gómez & Jiménez Hernández, 2008). Obviously, the doubted theatres are being listed for a complete list. Hopefully these will be archaeologically attested in the future.

3. URBAN NETWORK[8]

Aktüre points out that the geographic dispersion of theatres can be explained by their history (Aktüre, 2007: 19). Indeed, we can observe a concentration of theatres in port cities at the Mediterranean coast and in the two major fluvial basins, the Guadalquivir and Ebro, the areas incorporated rather early into the Roman sphere. Although the concentration of buildings is higher in Aktüre's research, due to his positive approach admitting theatres, which in this research are doubted. Nonetheless, the appearance of the quite strongly monumentalized cities of *Segobriga* and *Toletum*, following Aktüre and taking its probable buildings in account, cannot be explained by ports or the fluvial axis. Nor the idea of a possible early incorporation of these communities (Segobriga: Abascal *et al.*, 2006; Toletum: Mangas Manjarrés, 2012) does not explain their high degree of monumentalisation. One would expect cities like *Ercavica* and *Valeria*, not far from *Segobriga,* to have a similar degree of monumentalisation, since they are incorporated at the same time or even earlier (Carrasco Serrano, 1999: 317; Espinosa Espinosa, 2015: 229) Cases like *Segobriga* and *Toletum*, amongst others, need another explanation.

Especially, the case of *Segobriga* a *municipium i.L.* (Abascal *et al.*, 2006) with evidence for all three buildings, positioning itself with among the ranks of the provin-

[8] The creation of the urban network is a major part of final thesis expected in 2017, here this will be treated more extensively and concisely in several chapters including appendices with all places and the evidence.

cial capitals, *Emerita Augusta*, *Corduba* and *Tarraco,* needs to be understood. The explanation for its extraordinary rich monumentalisation might be found in the role it played as a mining city for *lapis specularis* (Plin. *NH*. XXXVI 160-162). The mining operation had to be overseen by a procurator of the mines send by Rome from other parts of the empire (Abascal & Alföldy, 1998), he might have strengthened his position in the local community by *euergetic* activities. However, the lack of monumentality in the north western region, extremely rich in precious metal mines, undermines this theory.

Another explanation, next to the elite send to the city, might be found in the connection *Segobriga* had with *Carthago Nova*, a major port city. Due to the mining of *lapis specularis* in *Segobriga* a direct connection between *Segobriga* and *Carthago Nova* was needed, there is the possibility that the carts transporting *lapis specularis* were used not only to bring goods from *Segobriga* to *Carthago Nova* but also the other way round.[9] This direct link *Segobriga* has with the port of *Carthago Nova* and further into the Mediterranean, might explain the architectural richness of *Segobriga* as well as the less monumental north western region as it is not as closely connected to the Mediterranean. Based on this principle of connectivity it would be interesting to regard the other cases and see if there is a relation between the architectural prowess of a city and the position within the network.

In order to investigate this relation the network of the Roman cities on the Iberian Peninsula has to be defined and created. The first inquiries into network analysis for Roman cities on the Iberian Peninsula were done using the *Antonine Itinerary* and the *Ravenna Cosmography* (Graham, 2006; Isaksen, 2007).[10] An analysis based on these sources seems at its place. However, putting the connections mentioned in these two sources into Gephi[11] for analysis, led to a graph with a strong focus on the places: *Caesaraugusta*, *Complutum*, *Bilbilis*, *Arcobriga* and *Caesada*. These settlements are located on the Antonine Itinerary routes A24, A25, A26 and A29. Due to the settings of the network each appearance of a connection between places is taken to be a separate connection. Hence the repeated appearance of a stretch, such as the one mentioned above, puts the focus of the network quite strongly on this stretch. In addition to this strange focus on a certain stretch is the incompleteness of the itineraries. Firstly, one of the major modes of transport has been omitted: waterways such as rivers and maritime connections. Moreover, the focus on the roads and the places along these roads has included *mutationes* and *mansiones*, shifting the focus away

[9] Professor Noguera Celdrán mentioned this possibility during the I Deutsch-Spanische Fieldschool in Segóbriga/Trier.

[10] Clearly there are some major problems with these sources, firstly the date of the Antonine Itinerary is uncertain, probably it was based on a third century source. The Ravenna Cosmography is a seventh century source based on fourth century material. The major problems here are the copying errors, which make the distances unreliable. Here and there one can find in the edition the variations of distances, showing that the copyists were read the numbers, mistakes as fourteen (Quattuordecim, XIV) and forty (Quadraginta XL) or fourteen XIV and sixteen XVI are made often.

[11] Gephi is a free open source program available at http://www.gephi.org

from cities. And lastly, the road network of the Antonine Itinerary and Ravenna Cosmography is far from complete.

In order to create a complete urban network we have to decide which settlements are considered urban and which are omitted, such as the *mutationes* and *mansiones*. The definition of the urban centre is part of the project *"An Empire of 2000 Cities"* in order understand the urban hierarchies in provinces of the Roman Empire during the High Empire. This definition is threefold: self-governing, functional and demographic.[12] In the case of the self-governing places the definition is based on the following evidence: a juridical status, magistrates, *termini augustales* and the right to mint coins under the emperors. Within the juridical status category we find the all settlements as mentioned by Pliny by name and included among the colonia or the oppida or populi with the range of statuses from *civium Romanorum* to *stipendiaria*, which are not contributed or attributed to other places. In addition, the epigraphic record has been searched for inscriptions leading to the identification of the status in inscriptions. Similarly, the magistracies have been searched for in epigraphy. The magistracies leading to the definition as self-governing are: *aedilis*; *duumvir*; *praefectus caesaris*; *praefectus iure dicundo*; *quaestor*; *quattorvir*; *quinquennialis* and *omnibus honoribus functus*. These magistracies are related directly to the Roman civic organization (Curchin, 1990; 2015: 5-14; Melchor Gil, 2011: 151ff.). Communities are also considered self-governing when *termini augustales* or municipal coins mention the name of the city or community are found. This is based on the fact that erection of *termini augustales* (Cortés Bárcena, 2013; Gómez Pantoja, 2011: 296; Le Roux, 2014: 133) and the minting of municipal coins (Burnett *et al.*, 1992: 2) was only allowed under the auspices of the emperor. The presence of one of these evidence categories within the period of the High Empire will lead to the predicate self-governing community.

In addition the nature of the communities has to be defined. The communities under scrutiny are the cities with an agglomerated centre, contrary to the dispersed civitas which were un-urbanised (See on this subject Oller Guzmán, 2011; Oller Guzmán, 2014). The latter case is being omitted from this research since they have not been urbanised. Furthermore, other places which can be considered urban based on their function must be added. This is one of the most difficult processes of the analysis and ties in very closely with locating the settlements. In order to collect these centres we must turn to the archaeological reports on different places and assert their function based on the archaeological evidence for an agglomerated centre.

After the collection and definition of the cities the location, exact or approximate has to be established in order to be able to locate them within the network. The primary source for the location of settlements is the Pleiades database.[13] This database is a collection of all ancient places from the Hellenistic period up to Late

[12] An extensive treatise of the threefold definition and the application of it will be published in the final dissertation.

[13] Pleiades is a gazetteer and graph of ancient places openly available at http://pleiades.stoa.org/

Antiquity in the Ancient World and allows for a download of its data. This data is then linked with the cities found following the method as described above. In addition, some by Pleiades unlocated places could be located using archaeological reports.[14] Finally, we can turn to the earlier mentioned itineraries and other sources to define an approximate position for some unlocated urban places. Such as the case for *Tarraca* which is most probably located on the route between *Cara* (Santacara) and *Segia* (Ejea de los Caballeros) following the Ravenna Cosmography (R4). These indications are enough for the network analysis as it does not use the exact position of places. Admittedly, several urban centres have not been located or even found as they have been lost within the historical or archaeological record. The least certain places are those with little to no archaeological evidence, just a few buildings or only literary references. These are assumed to be self-governing based on their appearance in several ancient sources, such as *Egelasta*.

Egelasta is taken as an example of a problematic city and the procedure for its admission to the list of cities and its location within the network. The acceptance of *Egelasta* as a self-governing city is based on the references in Pliny as an *oppidum stipendiarium* and source for medicinal salt (Plin. *NH* III 25; *NH* XXXI 80), the reference as an *origo* in CIL II 5091 and the possibly appearance as *Ἐγελέστα* in Ptolemy (Ptol. II 6,57; García Alonso, 2003).[15] Unfortunately this place is unlocated by the Pleiades project. Although the location is uncertain, the place can be roughly located between *Saguntum* and *Castulo* on an inland route following Strabo's description (Str. III 4.9). This rough indication gives the possibility to further investigate its possible locations. The TIR J-29 gives Iniesta as one of the most probable locations based on the vicinity of salt mines of Minglanilla.[16] Based on the location of Iniesta and the vicinity of salt mines this location is accepted as probable. Admittedly, this is a very positive approach to locate places; however, this is one of the most extreme cases of uncertainty. The definition as a self-governing city and the location is in the majority of the places certain. In the end for 374 places their urban character and location has been established with a degree of certainty between as uncertain as *Egelasta* and that of the well-known places such as the provincial capitals: *Corduba*, *Tarraco* and *Emerita Augusta*.

After the establishment of the cities within the network we have to turn to the connections over land and over water to create a complete urban network for analysis. For this we have to turn to other sources to improve the routes known from the

[14] A complete and critical treatise of this process is impossible within this paper and will be presented in the final publication of the thesis.

[15] The link between *Egelasta* and *Ἐγελέστα* is based on the rather similar names, however, Ptolemy locates this city among the *Carpetani* whereas its location in Pliny as one of the Carthaginian cities should be in *Bastetania*, according to Tovar (1989) *Die Völker und Die Städte des Antiken Hispanien, Bd. III Tarraconensis* 234.

[16] See the entry for *Egelasta* and Iniesta *TIR J-30: Valencia, Corduba, Hispalis* for *Egelasta* p. 171; for Iniesta p. 206.

ancient itineraries mentioned above. Firstly several mapping projects, such as the *Tabula Imperii Romani* and *Barrington Atlas* have been consulted for their road networks (Alarcão *et al.*, 1995; Álvarez Martínez *et al.*, 2001; Balil Illana *et al.*, 1991; Cepas Palanca *et al.*, 1997; Fatás Cabeza *et al.*, 1993; Talbert, 2000). The *TIR*, the main source for the *Barrington Atlas*, based its road network on ancient sources and archaeological remains (Alarcão *et al.*, 1995: 9). They have differentiated between certain and uncertain traces. The latter are for the roads based on variations in the ancient sources on the routes between cities. In the case of archaeological attested traces of roads, these are fragmentary finds, such as a milestone or a bridge, allowing for the assumption two places were connected via a road. For the network analysis the exact trace of the road network is insignificant, the significant part is whether places were connected or not. Hence the edges between the nodes, as shown in map 2, do not follow the roads and rivers but are represented as a straight line.

Finally these have been compared with the map of Roman roads as published in the book on the history of mobility on the Iberian Peninsula by Carreras and De Soto (Carreras Monfort & De Soto, 2010: fig. 1 p. 25 and fig. 2 p. 31). Admittedly we encounter a flaw in the approach; most mapping projects use the, above mentioned problematic, itineraries for their road network. Clearly, because these are one of the few sources on the ancient road network. Fortunately, all projects turn to archaeological evidence to ratify and complement the road network. Unfortunately, the *TIR*, *Barrington Atlas* and the maps as presented in Carreras & De Soto do not give any chronological depth, but show a complete system. Carreras & De Soto date the network as presented in their book to the period of the second and third century (Carreras Monfort & De Soto, 2010: 19). Despite of these problems with the creation of a chronologically correct road network, we must continue on the assumption that these roads were all present and in use at one time during the High Empire, in order to be able to do a network analysis based on a road network.

In addition to the roads, the fluvial and maritime connections have been added. The maritime connections have been added based on the appearance of the self-governing city as a port city or having a harbour in modern scholarly research (Graauw, 2014; Mantas, 1990; Mantas, 2004; Mantas, 2010; Pinheiro Blot, 2003).[17] For the fluvial connections the navigability of the rivers has to be asserted. A major source for the rivers towards the Atlantic is Curchin (2004: 455ff). He based the navigable stretches on ancient sources, archaeology and geography. Taking for example the Guadiana the archaeological evidence such as bridges (e.g. the bridge crossing the Guadiana at *Emerita* does not allow for ships to pass), and geological evidence, (the Guadiana has a waterfall at 78 kilometres). Hence the Guadiana can only be traversed for 78 kilometres from the Atlantic. Again the work by Carreras & De Soto

[17] Although it was possible ships skipped ports to connect immediately with another port, the network analysis has been set up to connect to neighbouring ports.

can be used for comparison and add the navigability of the Ebro (Carreras Monfort & De Soto, 2010: 28ff.).

After the definition of the network, it has to be transformed to fit a social network analysis. The newly, positively, created network based on the self-governing cities and road network of the High Empire can contains 374 nodes, which are the places recognised as cities, and 724 edges, or connections between the nodes via the roads, rivers and sea. This network now has to be weighted, the ease by which an edge, or connection, is traversed.

An earlier work by De Soto and Carreras (2009) gives a very useful insight for a network analysis. Their approach to grant cities a weight based on the way they are connected, following the principle of 1 point for a secondary road connecting to the city, 2 for major, 3 for river and 4 for sea, creates the possibility to of a heat map (De Soto & Carreras Monfort, 2009: fig. 3 p. 310). Although this approach creates a very strong image, it does not allow for network analysis on and comparison of the different parameters of such an analysis.

Following the approach by De Soto & Carreras the edges have been given a weight, the higher the weight the more likely a route is taken. Thus the edges have been weighted 1 point for a secondary road, 2 for major and 4 for sea, in the case of rivers a difference between up (weight 1) and down river (weight 3) has been defined (De Soto & Carreras Monfort, 2009: 307). However, in the case of multiple edges between the same nodes the edge with the highest weight is entered, instead of the sum. One would only be able to take one edge at a time and most likely one would take the fastest route. This new approach gives a slightly different picture than the heat map in De Soto and Carreras, where all different connections were summed to a total count for a city. The new network has been entered into Gephi for analysis.

4. CONNECTIVITY

Using Gephi the network can be analysed further for different properties, such as Weighted Degree (WD), Closeness Centrality (CC) and Betweenness (BC). The Weighted Degree is the number of edges (connections) leading in or out a node (city), weighted by the weight allotted to the edge. In this research the approach by De Soto and Carreras has slightly been adapted: 1 point for a secondary road; 2 for a major road; 1 for up river; 3 for down river and 4 for sea. The first parameter, the Closeness Centrality represents the mean length of all shortest path routes from a node to all other nodes, in other words the accessibility to all other nodes in the network (Isaksen, 2007: 78). If normalized it is between 0 (inaccessible) and 1 (directly connected to all nodes). On the other hand, Betweenness Centrality is based on the number of shortest paths that run through the node divided by all shortest paths in

the network. In other words, it gives the probability a node is part of the shortest route. The higher the BC the most important the node is to avoid fragmentation (Isaksen, 2007: 78). In the case of cities, these have a major control over the network.

Firstly, the network needs to be evaluated and checked for mistakes. The likelihood of mistakes in these networks is rather big since the urban network, as defined by this research, contains 374 nodes and 724 edges. The Geo Layout visualization allows for an analysis of the network in a familiar presentation, in this overview the position of the nodes and the edges, connecting the different nodes can be evaluated and the mistakes corrected.[18] In this network the nodes have been coloured according to their number of spectacle buildings, this to highlight those with monuments amongst all those without, in total 88% of all nodes has no spectacle buildings attested. The edges are darker as their weight is higher, ranging from weight 1, which is represented in light grey, to weight 4 (maritime connections) as the black edges.

After a thorough scan of all nodes and edges and the needed corrections, the network can be used for analysis. The first parameter to take in account is the Weighted Degree; this is the number of edges lead into a node, weighted by the weight of the edges. As already stated the edges have been weighted according to the principle of 1 point for secondary road and down river, 2 for major, 3 for up river and 4 for sea. The weighted degree has been categorized into five categories following the simple division 0 to 5, 6 to 10 et cetera. These have been set out to the cities categorized on the amount of certain spectacle buildings (0, 1, 2, and 3). Per category the absolute number and the percentage are given. For example, in the highest WD we find no places without spectacle buildings, one place with 1 monument (which is 3.13% of all cities with one monument) and 2 cities with three monuments (half of all with three monuments).

[18] See Map 2: Network of cities in Hispania.

WD	0	%	1	%	2	%	3	%	Sum
> 20	0	0%	2	6%	0	0%	3	75%	5
16-20	9	3%	2	6%	1	11%	0	0%	12
11-15	32	10%	7	22%	3	33%	0	0%	42
6-10	93	28%	12	38%	5	56%	1	25%	111
0-5	195	59%	9	28%	0	0%	0	0%	204
Sum	329		32		9		4		

Table 1

Weighted Degree vs. certain spectacle buildings

The monumentally rich cities are found mostly within the highest Weighted Degree: Emerita Augusta (26) and Tarraco (25). The city with one monument is Caesaraugusta (23). In this analysis the position of the node is not taken in account but the number of edges leading to the node. By this the WD shows the importance of cities based on the amount of road, river and sea connections leading into these nodes or cities. Especially the appearance of Caesaraugusta among these cities is rather interesting, since Corduba follows. With the provincial capitals as the replacement of Rome, the idea of "all roads lead to Rome" seems in place, as the provincial capitals have many roads leading towards them. However, the weighted degree is a rather simplistic tool to define the importance of nodes as it does not take in account the whole network.

As already stated, Gephi allows for the calculation of several statistical parameters, amongst which the Closeness Centrality, one of the parameters for nodes taking the whole network in account. The CC is a node's mean length of the shortest paths to all other nodes. After calculating and normalizing the CC for the individual nodes, the values range between 0.077 and 0.194. Again the values have been set out to the cities categorized on the amount of certain spectacle buildings (0, 1, 2, and 3). Obviously, nodes located at the centre of the map would turn up rather high, since they are located in the centre. This follows the fact that from their central position fewer nodes have to be passed to reach other nodes.

CC	0	%	1	%	2	%	3	%	Sum
0.18 up to 0.2	1	0.3%	1	3%	0		2	50%	4
0.17 up to 0.18	7	2%	0		0		0		7
0.16 up to 0.17	18	5%	1	3%	2	22%	0		21
0.15 up to 0.16	16	5%	2	6%	2	22%	1	25%	21
0.14 up to 0.15	29	9%	1	3%	3	33%	0		33
0.13 up to 0.14	52	16%	8	25%	0		1	25%	61
0.12 up to 0.13	59	18%	6	19%	1	11%	0		66
0.11 up to 0.12	65	20%	5	16%	1	11%	0		71
0.1 up to 0.11	45	14%	3	9%	0		0		48
0.09 up to 0.1	27	8%	4	13%	0		0		31
0 up to 0.09	10	3%	2	6%	0		0		12
Total	329		32		9		4		

Table 2

Closeness Centrality vs. certain spectacle buildings

Unsurprisingly, we find the nodes located at the central Meseta in the higher echelons of the CC. Looking at the three cities, which stand out regarding the CC, we see that *Emerita Augusta* (0.183) and *Segobriga* (0.186) indeed have all three monumental buildings. For *Toletum* (0.194) it has been argued that next to its circus there will have been an amphitheatre and theatre. The only place high up without spectacle buildings is *Augustobriga Vettonum*. Obviously, finding one of the many nodes without spectacle buildings high up is not very surprising if we take in account 88% of the total has no spectacle buildings at all. The location of these cities in at the centre might explain the monumentality, but the CC clearly does not give the answer as we observe most buildings are located within the lower CC values.

Similarly to the CC Gephi will calculate and normalize the Betweenness Centrality, the values range from 0 (no shortest paths going through a node) to 0.332 (33,2% chance a short route passes this node). Again the absolute number and the percentage are given per category. The BC is calculated again as a value for an individual node. However, contrary to the CC the route is not from the node to all other but the likelihood it would be passed when travelling from a node towards another. This value shows the importance of a node to avoid fragmentation. In other words, the number of shortest routes lost when the node and its edges are deleted. It gives the control a city has over the entire network as it controls, for example 33.2% of all shortest routes on the Iberian Peninsula traverse past *Toletum*.

BC	0	%	1	%	2	%	3	%	Sum	%
0.315 up to 0.35	0		1	3%	0		0		1	0.27
0.28 up to 0.315	0		0		0		1	25%	1	0.27
0.245 up to 0.28	0		0		0		1	25%	1	0.27
0.21 up to 0.245	0		0		0		0		0	0.00
0.175 up to 0.21	0		0		0		0		0	0.00
0.14 up to 0.175	1	0.3%	0		0		0		1	0.27
0.105 up to 0.14	4	1%	1	3%	1	11%	0		6	1.60
0.07 up to 0.105	12	4%	0		2	22%	2	50%	16	4.28
0.035 up to 0.07	18	5%	3	9%	4	44%	0		25	6.68
0 up to 0.035	294	89%	27	84%	2	22%	0		323	86.36
Total	329		31		9		4		374	

Table 3

Betweenness Centrality vs. certain spectacle buildings

These highest three cities in BC are: *Toletum* (0.332), *Emerita Augusta* (0.299) and *Segobriga* (0.270) followed much later by *Salmantica* (0.148). So far the BC and CC show a similar picture handing the same cities the highest value. However, looking at the whole the BC also supports the theory that connectivity might explain a rich monumental urban layout. We find the vast majority (86.4%) of the cities in the lowest BC category. Interestingly we find only two cities with multiple monuments

in this category; the remaining 10 cities are among the higher echelons of the BC. The monumentality of these two cases can be explained by their history and location. *Olisipo* is the only *municipium civium Romanorum* in Lusitania, possibly explaining the high monumentality (Goffaux, 2003: 142). Its low BC can be explained by the peripheral position and the few connections it has, its WD is 16. Similarly, *Carmo* has a WD of only 6 and is located in a very well connected area: the *Baetis*-valley. Due to the position in this well-connected area it is likely that the easier routes, on the river, would be followed than the inland route. Regarding the BC of the cities with one monument, we observe they roughly follow the pattern of the vast number of cities without monuments. Regarding the whole set the relation between having multiple monuments and a higher BC seems to hold.

Connectivity would not only facilitate the possibility of bringing the needed material to a city, such as the case for *Segobriga,* in addition a passing road allows for displaying the wealth, as is the case for *Bilbilis* (Espinosa Espinosa, 2015: 228; Pfanner, 1990: 74). This interaction with by passing people would lead to a need to show wealth. As the by passers continue to the next city they will bring the idea of the last city they visited. This could have led to an interaction between neighbouring cities via these by passers. For example, passing the magnificent *Emerita Augusta* the next city would look like a small backward place, unless the smaller place competes with Emerita Augusta by creating its own monumental centre. This intercity competition could explain the monumentality of the *municipium i.L. Contributa Iulia* which is on the route between *Emerita Augusta* and *Hispalis*. Similarly, the high monumentality of *Carmo* can be explained, it is located on the road between the conventus capitals and *coloniae Hispalis* and *Astigi*. In addition, we can explain the presence of an amphitheatre and theatre in the *municipia i.L. Ebora* and *Capera*. *Ebora* is an old *oppidum Latinum* which controls the road network between *Olisipo*, the Atlantic coasts and *Emerita Augusta*. *Capera* is located in the *Meseta Central*, thus central within the network, but also on the *Via Plata* a major route between *Hispalis* and the mines in the north, passing *Emerita Augusta*.

5. CONCLUSIONS

In conclusion, connectivity, seems promising, it has yielded a possible explanation for the high monumentality of *Segobriga* and the possible high monumentality of *Toletum*, both holding very central positions in the urban network. In addition, the relation between multiple buildings and a central position within the urban network is present, since we find the other highly monumentalized cities among the higher degrees of centrality. This relation had been put forward as a possibility by Aktüre considering mainly the fluvial and maritime network. Admittedly, their function as provincial capital ties in with the monumentality and high degree of centrality.

Espinosa has put the civic rivalry forward in relation to status; it seems that this could explain the monumentalisation of some places linked directly to major urban centres such as *Contributa Iulia* and *Ebora*, both linked to *Emerita Augusta*. This relation seems possible, but needs more attention

The conclusions of this paper are preliminary as the research will be extended and improved as part of the final thesis. Major flaws, pointed out by the peer reviewers, on the approach in this paper are the historical chronology and the positive approach concerning the creation of the network. Indeed, the chronology of the monumentalisation is ignored and the different monuments are all considered as existing in the period of the High Empire. This positive approach is needed to be able to place them within the network, which cannot be dated very precisely.

Admittedly, this is still work in progress; the network analysis has to and will be improved in the course of the dissertation. Further analysis of the role of connectivity in relation to monumentality can be extended to the presence of fora and other monumental expressions. In addition, other factors will be taken in account such as juridical status and the date of the promotion. Clearly, in the future the network has to be developed further. If possible in a chronological order to show the changes over time. Although not very likely for the network itself, it must be possible to show the differences over time regarding the construction of monuments.

5.1. Acknowledgement

The idea of this paper was presented at the *I Encuentro de Jóvenes Investigadores en Arqueología Clásica* in Pamplona; the comments of participants were very helpful. Special thanks to B.L. Noordervliet, R. Willet and S.F.C. Cremers for their comments on earlier drafts of this paper. Finally, I want to thank the reviewers for their comments on the paper. As a result I was able to improve the methodology and clarity of this paper. All remaining errors are my own responsibility.

City	Degree	Dimensions	Arena	Foundation	Capacity	Source
Astigi	C	133*106?	73*45	High Empire		[1]; [2]
Aurgi	C			II		CIL II^2/5,31
Capera	C	69*51	59*43	Flavian?		[1]; [2]
Carmo	C		58.8*39	I		[1]; [2]; [3]
Carthago Nova	C	96.6*77.8	55.5*37	Augustan	10000-11000	[1]; [2]
Castulo	C					[2]
Conimbriga	C	98*86	48*36	Claudian-Nero	4000	[1]; [2]
Contributa Iulia	C					[A]
Corduba	C			Augustan	30000-50000	[1]; [2]
Ebora	C	80*65	45*30	I-II		[1]
Elbocoris	C		49.5*39.5	I	1500-2000	[1]; [2]
Emerita Augusta	C	126.3*102.65	64.5*41.2	-8	15000-20225	[1]; [2]
Emporiae	C		74*44.4	Claudio-Neron	3000-3500	[1]; [2]
Gades	C			Pre-Augustan?		[1]
Italica	C	152.8*130.6	70.6*47.3	Hadrian	20000-35000	[1]; [2]; [3]
Legio VII Gemina	C					[1]
Segobriga	C	74*66.2	41.7*34	Claudian-Vespasian	5000-7000	[1]; [2]
Siarum	C			II		[2]; CILA II 946
Tarraco	C	109.5*86.5	61.5*38.5	II	12000-14000	[1]; [2]
Vergi	C			Augustan		[2]
Aquae Flaviae	P					[1]; CIL II 2473
Ceret	P					[1]; [2]; CIL II 1305
Urso	P					[2]; CIL II^2/5, 1022
Acinippo	D					[3]
Balsa	D					[B]
Barcino	D	117*93	60*35			[C]
Bracara Augusta	D					[D]
Caesaraugusta	D					[E]
Calagurris Iulia	D					[2]
Hispalis	D					[2]
Olisipo	D	86*70				[F]
Toletum	D			High Empire		[2]
Ucubi	D					[3]

Table 4
Amphitheatres in Hispania[19]

[19] [1]: Ramallo Asensio (2002) *La arquitectura del espectáculo en Hispania: teatros, anfiteatros y circos*.
[2]: Ceballos Hornero & Ceballos Hornero (2003) *Los espectáculos del anfiteatro en Hispania*.
[3]: Thouvenot (1940) *Essai sur la province romaine de Bétique*.
[A]: Mateos Cruz *et al.* (2014) *El paisaje urbano de Contributa Iulia Ugultunia (Medina de las Torres, Badajoz)*.
[B]: Fraga da Silva (2007) *Balsa, cidade Perdida*.
[C]: Conde Moragues (2013) *Hipótesis sobre la posible identificación del anfiteatro de Barcino*.
[D]: Diarte Blasco (2012) *La configuración urbana de la Hispania tardoantigua* 81.
[E]: Galve *et al.* (2005) *Las ciudades romanas del valle medio del Ebro en época julio-claudia* 181.

City	Degree	Dimensions	Arena	size (ha)	Foundation	Capacity	Source
Astigi	C						[A]; [B]; CIL II 1471/9
Balsa	C	375*80			II		CIL II 5165-5166; [D]; [3]
Calagurris Iulia	C	400*75		3	I (first half)		[1]; [3]
Contributa Iulia	C				Imperial		CIL II 984; [3]
Corduba	C			3	?		[1];[2]; [3]
Emerita Augusta	C	433*144	403*96	6.2	Julio-Claudian	30000	[1];[2]; [3]
Mirobriga Celtici	C	360*76		2.7	125		[1];[2]; [3]
Olisipo	C						[2]; [I]
Saguntum	C	354*73		2.6	II		[1];[2]; [3]
Segobriga	C				II		[C]
Tarraco	C	325*115	290*77	3.7	Domitian	23000	[1];[2]; [3]
Toletum	C	423*101	408*85	4.3	I (first half)	13000	[1];[2]; [3]
Valentia	C				Imperial		[1];[2]
Arunda	P						CIL 1360
Augusta Gemella	P						CIL II 1663/1685
Batora	P						CIL II^2/5,59
Castulo	P						CILA III 80/91/101; [3]
Ilipoula	P						CIL II 954
Iliturgi	P						CIL II 2100
Murgi	P						CIL II 5490
Oretum	P						CIL II 3221; [3]
Ostippo	P						CIL II 1441
Segida Restituta Iulia	P						CIL II 5354
Seria Fama Iulia	P						CIL II 5354
Singilia Barba	P						CIL II^2/5,785
Tagili	P						AE (1979) 352
Ulia Fidentia	P						CIL II 1532
Urso	P				-44		CIL II^2/5,1022
Capera	D						[3]
Carmo	D						[E]
Gades	D						[F]; [G]; [3]
Hispalis	D						[3]
Italica	D						[H]; [3]

Table 5
Circuses in Hispania[20]

[F]: Vasco de Melo Martins (2014) *O Anfiteatro Romano de Lisboa. Hipótese de localização através de uma leitura Tipo-Morfológica do Tecido Urbano*.

[20] [1]: Ramallo Asensio (2002).
[2]: Nogales Basarrate & Sánchez Palencia (2001) *El circo en Hispania Romana*.
[3]: Humphrey (1986) *Roman Circuses: Arenas for Chariot Racing*.
[A]: García-Dils de la Vega (2012) *Colonia Augusta Frima Astigi (Écija, Sevilla): La estructura urbana de una fundación Romana en la Baetica*.
[B]: Diarte Blasco (2012) 81.

Canon name	Degree	Cavea	Proscena	Date	Capacity	Source
Acci	C					[2]
Acinippo	C	62	42	59-53 BCE	3400	[1]; [2]; [3]; [4]
Arcobriga	C					[3]; [4]
Baelo Claudia	C	70	34	Claudius-Nero		[1]; [2]; [3]; [4]
Baetulo	C					[1]; [2]; [3]; [4]
Bilbilis	C	78.2	36.5	Augustus-Tiberius	4600	[1]; [2]; [3]; [4]
Bracara Augusta	C					[A]
Caesaraugusta	C	105	64	Tiberian	6000	[1]; [2]; [3]; [4]
Capera	C					[3]; [4]
Carmo	C			I		[4]; [B]; [C]
Carteia	C			Augustus-Tiberius		[1]; [2]; [3]; [4]
Carthago Nova	C	87.2	47	I BCE (end) - Augustan	7000	[1]; [2]; [3]; [4]
Celsa	C					[3]; [4]
Clunia	C	96	49.5	Tiberian-Flavian	10000	[1]; [2]; [3]; [4]
Corduba	C	125		Augustus-Tiberius		[1]; [2]; [3]; [4]
Ebora	C					[3]; [4]
Emerita Augusta	C	86.63		16-15 BCE	6250	[1]; [2]; [3]; [4]
Gades	C	85		Late Republican		[1]; [2]; [3]; [4]
Italica	C	75.76	40.5	13 BCE	4200	[1]; [2]; [3]
Malaca	C	64.5	45	Augustan		[1]; [2]; [3]; [4]
Metellinum	C	63		Augustus-Flavian		[1]; [2]; [3]; [4]
Olisipo	C	80		Augustus		[1]; [2]; [3]; [4]; CIL II 183
Osca	C					[3]; [4]
Pollentia	C	31	32	Julio-Claudian		[1]; [2]; [3]; [4]
Regina	C	64	38	Tiberian-Flavian		[1]; [2]; [3]; [4]
Saguntum	C	85	44	Julio-Claudian	6000	[1]; [2]; [3]; [4]
Segobriga	C	65	42	Claudian-Flavian	2050	[1]; [2]; [3]; [4]
Singilia Barba	C	52	30	Augustus		[3]; [4]
Tarraco	C	70.8	41	Augustus-Flavian	4750	[1]; [2]; [3]; [4]
Urso	C	32.5		Augustus		[3]; [4]
Augusta Gemella	P					[3]; [4]; CIL II 1663-1685
Balsa	P	52				[D]
Barcino	P			Augustus		[4]; [3]; CIL II 4514
Canama	P					[3]; [4]; CIL II 1074
Cartima	P					[3]; [4]; CIL II 1956
Castulo	P			I-III		[3]; [4]; CIL II 3270
Celti	P			Imperial		CILA II 167

[C]: Abascal & Cebrián (2010) *El Paisaje suburbano de Segobriga*.
[D]: Fraga da Silva (2007).
[E]: Anglada Curado (2012) *Arqueología urbana en Carmona: la ciudad Romana*.
[F]: Fear (1996) *Rome and Baetica: urbanization in Southern Spain c. 50 BC- 150 AD*.
[G]: Ramírez Delgado (1982) *Los Primitivos Núcleos de Asentanmiento en la Ciudad de Cádiz*.
[H]: Canto (1986) *Nemesis y la localización del circo de Itálica*. Hidalgo Prieto (2003) *En torno a la imagen urbana de Italica*.
[I]: Osland (2006) *The early Roman cities of Lusitania*.

Hispalis	P		II-III	[3]; [E]
Isturgi	P			[3]; [4]; CIL II 2121
Lucurgentum	P			[3]; [4]; CILA II 1209
Mago	P		I	[3]; [4]; CIL II 6001b
Munigua	P		II	CILA II 1094
Oducia	P			CIL II^2/5, 1330
Osset	P			[3]; [4]; CIL II 1255
Segisamo	P	110		[F]
Astigi	D			[4]; [L]
Asturica Augusta	D			[G]
Aurgi	D			[4]; [H]
Begastri	D			[4]
Lacippo	D			[I]
Lucus Augusti	D			[F]
Orippo	D			[J]
Palma	D			[2]; [4]
Termes	D			[4]
Toletum	D			[3]; [4]
Tongobriga	D			[K]
Urgavo	D			CIL II 2113
Uxama Argaela	D			[4]

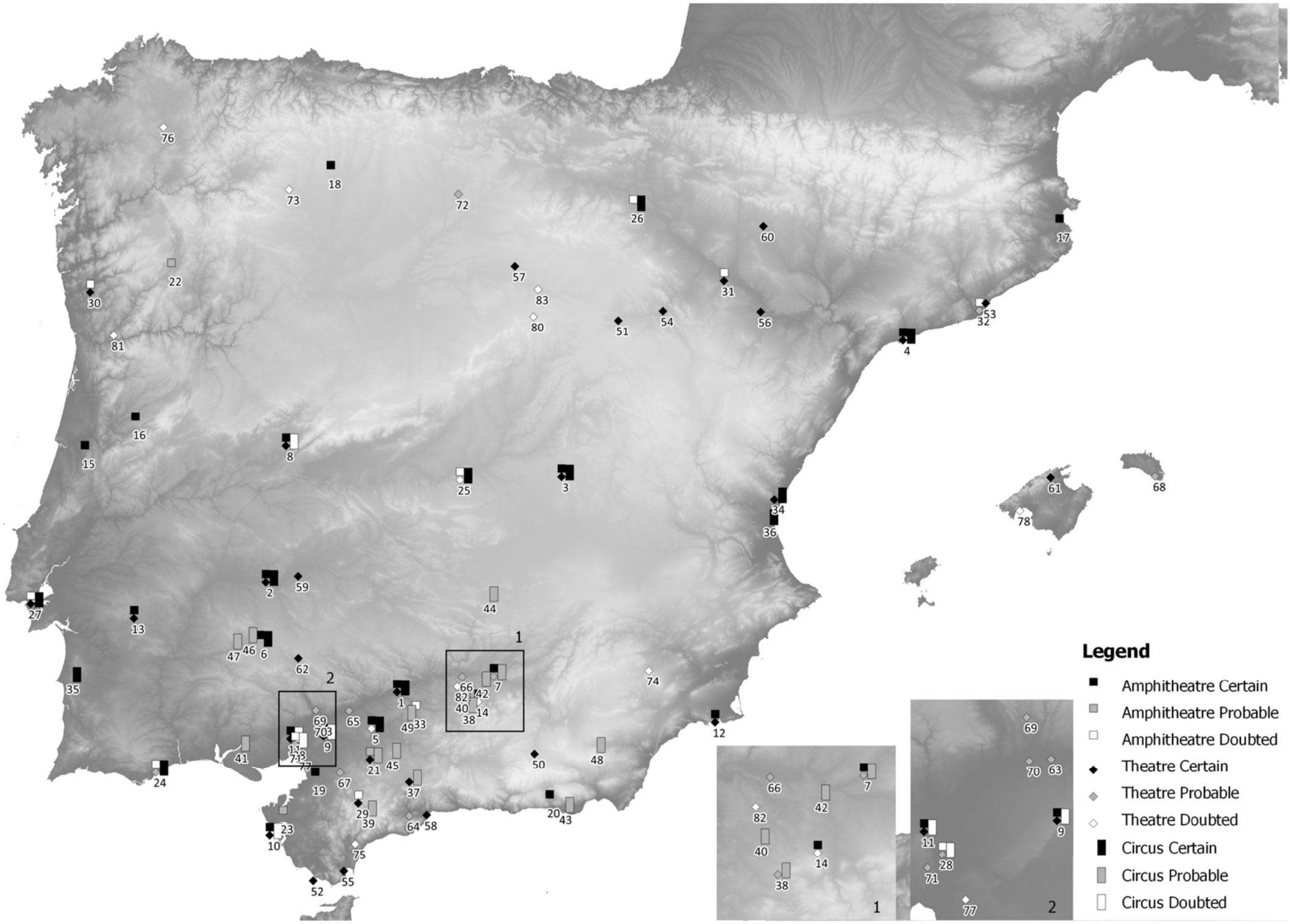
Table 6
Theatres in Hispania[21]

[21] [1]: Ramallo Asensio (2002).
[2]: Noguera Giménez *et al.* (2011-2012) *Teatros romanos de Hispania; introducción a su estado de conservación y criterios de restauración*.
[3]: Sear (2006) *Roman Theatres: An Architectural Study*.
[4]: Aktüre (2007) *Geographic Distribution and Architectural Characteristics of the Ancient Theatres in Modern Spain: A Structuralist Interpretation*.
[A]: Martins *et al.* (2013) *A construção do teatro romano de Bracara Augusta*.
[B]: Caballos Rufino (2001) *Carmona Romana*.
[C]: Anglada Curado (2012).
[D]: Fraga da Silva (2007).
[E]: Philostratus *Vit. Apol.* 5.9
[F]: Abásolo (1999) *La ciudad de Segisamo*.
[G]: González Fernández (2012) *Origen militar y desarrollo urbano de Asturica Augusta*.
[H]: Serrano Peña (2004) *Las fortificationes de Orongis/Aurgi*.
[I]: Fear (1996).
[J]: Carreño Gascón & Rodríguez Colmenero (2012) *La trama urbanística de Lucus Augusti: Génesis y evolución*.
[K]: Dias (1997) *Tongobriga*.
[L]: Carrasco Gómez & Jiménez Hernández (2008) *Acerca de los edificios de espectáculos en Colonia Augusta Firma Astigi (Écija, Sevilla)*.

Map 1

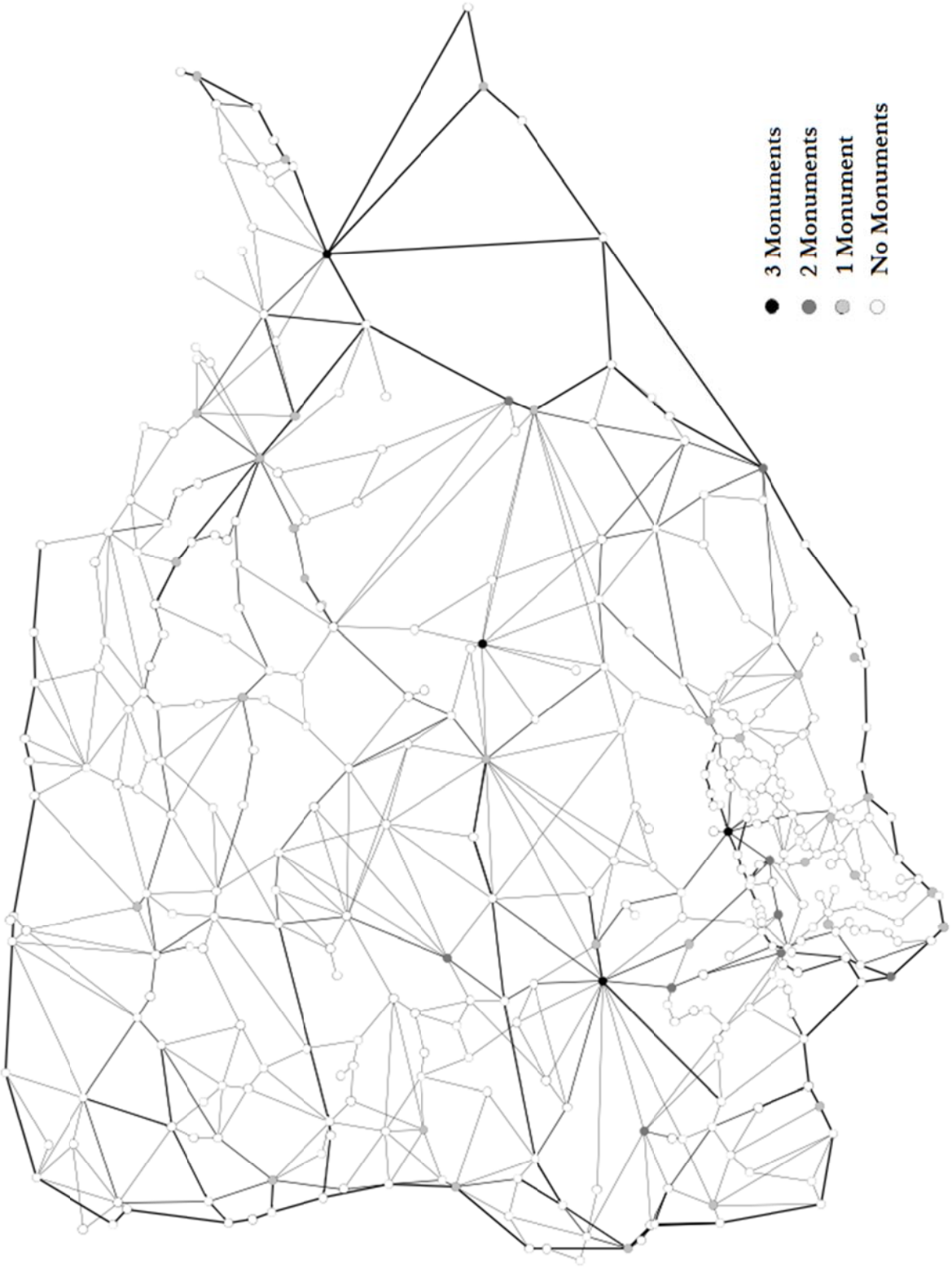
Geographic dispersion of the spectacle buildings

1 Corduba
2 Emerita Augusta
3 Segobriga
4 Tarraco
5 Astigi
6 Contributa Iulia
7 Castulo
8 Capera
9 Carmo
10 Gades
11 Italica
12 Carthago Nova
13 Ebora
14 Aurgi
15 Conimbriga
16 Elbocoris
17 Emporiae
18 Legio VII Gemina
19 Siarum
20 Vergi
21 Urso
22 Aquae Flaviae
23 Ceret
24 Balsa
25 Toletum
26 Calagurris Iulia
27 Olisipo
28 Hispalis
29 Acinippo
30 Bracara Augusta
31 Caesaraugusta
32 Barcino
33 Ucubi
34 Saguntum
35 Mirobriga Celtici
36 Valentia
37 Singilia Barba
38 Augusta Gemella
39 Arunda
40 Batora
41 Ilipoula
42 Iliturgi
43 Murgi
44 Oretum
45 Ostippo
46 Segida Restituta Iulia
47 Seria Fama Iulia
48 Tagili
49 Ulia Fidentia
50 Acci
51 Arcobriga
52 Baelo Claudia
53 Baetulo
54 Bilbilis
55 Carteia
56 Celsa
57 Clunia
58 Malaca
59 Metellinum
60 Osca
61 Pollentia
62 Regina
63 Canama
64 Cartima
65 Celti
66 Isturgi
67 Lucurgentum
68 Mago
69 Munigua
70 Oducia
71 Osset
72 Segisamo
73 Asturica Augusta
74 Begastri
75 Lacippo
76 Lucus Augusti
77 Orippo
78 Palma
79 Termes
80 Termes
81 Tongobriga
82 Urgavo
83 Uxama Argaela


Legend
Amphitheatre Certain
Amphitheatre Probable
Amphitheatre Doubted
Theatre Certain
Theatre Probable
Theatre Doubted
Circus Certain
Circus Probable
Circus Doubted
1
2

Map 2

Network of cities in Hispania. Geo Layout, coloured by monuments



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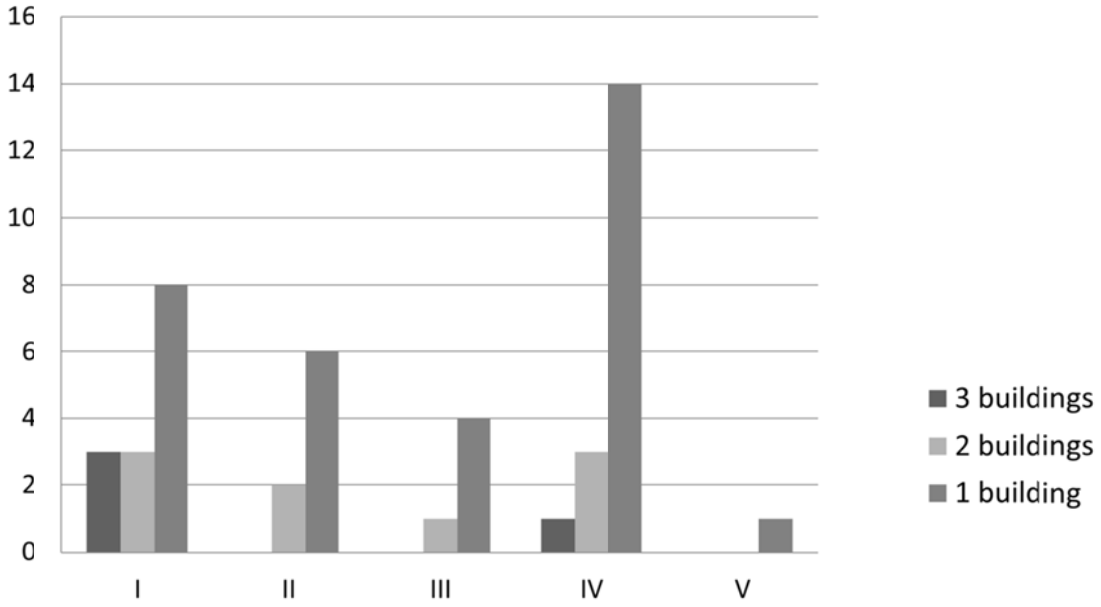

Fig. 1: Juridical status and monuments
I: Colonia (n=30), II: Municipium c.R. (n=24), III: Municipium, IV: Municipium i.L. (n=345), V: no status

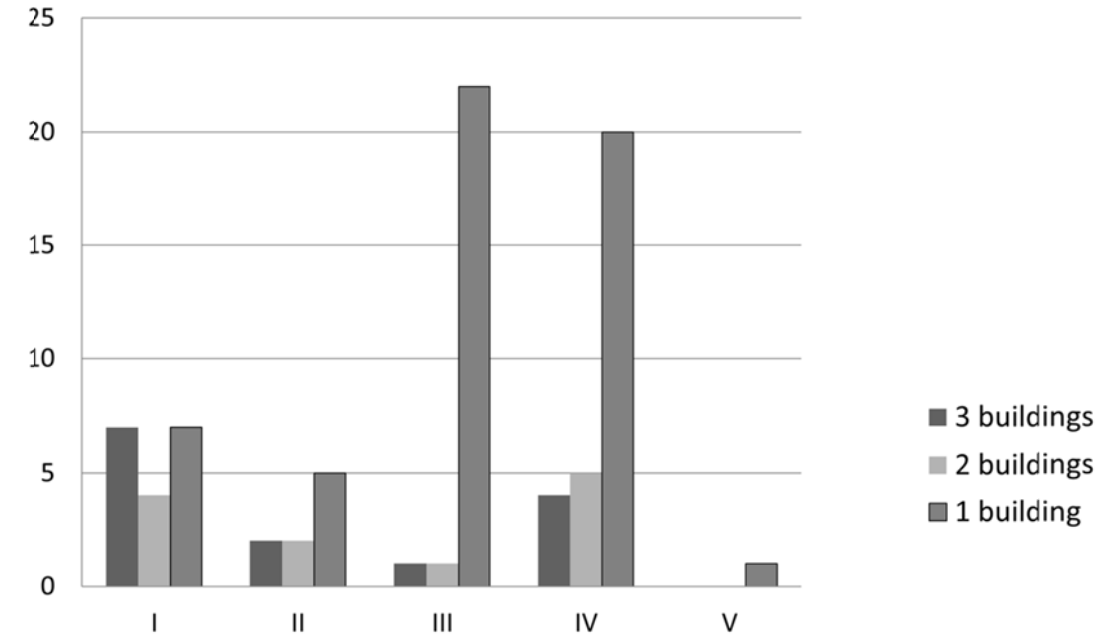

Fig. 2: Certain, probable and doubted buildings
I: Colonia (n=30), II: Municipium c.R. (n=24), III: Municipium, IV: Municipium i.L. (n=345), V: no status