Article

Cognitive Accessibility in Rural Heritage: A New Proposal for the Archaeological Landscape of Castulo

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Abstract: The long-lost Ibero-Roman citadel of *Castŭlō*, or Castulo as it is known today, has been revealed to be one of the most important centers of the southern Iberian Peninsula due to its size and its geographical position. The ancient walled holdfast occupies an area of about 50 hectares, with overlapping vestiges from different historical stages. During the last intervention in the northwest city walls, a set of important findings was revealed, notably a Roman high-quality relief depicting a lion which holds a human head between its paws. This article, in addition to contextualizing and presenting the archaeological site, focuses on the latest work carried out in the northern area of the city's Punic wall. Based on the data obtained, an urban interpretation is also provided on the use and function of this walled city area and how it was attuned to the surroundings to configure a new kind of landscape project. Relevant endeavours have been undertaken by the authors in order to render the restoration feasible, and prominently to introduce a more innovative issue of cognitive accessibility for the visitors who are allowed to enjoy this significant piece of heritage despite the hindrances of the terrain. This is the fundamental objective of a former research project by the authors, and it was extended to offer a key to sustainable archaeology, establishing design criteria for the planning of spaces that fulfil the experience of visiting heritage for groups of people with cognitive problems: among them, those with Alzheimer's disease. By addressing these pending requirements, the sustainable qualities of the archaeological sites would be significantly enhanced.

Keywords: sustainable interventions for heritage; sustainable archaeology; cognitive accessibility; heritage adapted to Alzheimer's outpatients; cognitive architectural design; Castulo's rural landscape

1. Introduction

The international Treaty on Civil and Political Rights, together with the International Convention on the Avoidance of Racial Discrimination, establishes the right of "each person under the law without distinction of race, colour, origin and national or ethnic provenance and particularly the enjoyment among other liberties to the access to every service and place of public use." Accessibility is thus a precondition in order for people with functional, sensitive or cognitive impairment to be able to live in an independent fashion and completely participate in society without any inequalities. Accessibility should be considered a reaffirmation of the social logic of the access rights of each person.

Universal accessibility is univocal, but it presents variants such as cognitive accessibility on which there exists an ample technical and academic consensus to define it as a feature of environments, processes, activities, products, tools goods and services that provide user-friendly comprehension and communication.

People with comprehensive and communicational issues still face today environments with access difficulties featuring technical and physical handicaps, barriers which are paradoxically under the total control of society. Current legislation is not sufficiently explicit because, in practice, cognitive accessibility has not been considered from the starting point of developments and settlement of actions related with universal accession [1,2].

The International Treaty of Civil and Political Rights, together with the International Convention on Avoidance of Racial Discrimination, establishes the right of each person under the law without distinction of race, colour, origin and national or ethnic provenance, and particularly establishes the enjoyment—among other liberties—of the access to every service and place of public use.

Accessibility is thus a precondition for people with functional, sensitive or cognitive needs to be able to live in an independent fashion and participate completely in society without any inequalities. Accessibility should be considered to be a reaffirmation of the social logic of the access rights of each and every person [3].

Cognitive accessibility does not stay here but goes beyond to achieve an ample repertoire in order to satisfy its requirement for techniques and systems such as means and formats for communication. Among them is the adequate signalling and proceeding in spaces which allows us to interpret and understand the different built environments and their interactions under a more suitable approach [4].

The international conference on the rights of persons with handicaps—endorsed on December 2006 by the General Assembly of the United Nations—establishes in article 9 that the undersigned States are obliged to adopt the required measures to guarantee the accession of persons with disabilities under equal conditions with everyone else to "information and communications . . . information technologies included". Such measures will apply among other issues to "provide buildings and other facilities open to the public with signalling easy to follow and understand."

Likewise, it establishes the "need to promote other adequate means of support and assistance to people with disabilities to ensure their access to information" [5].

At the same time, "both information and communication should be available in augmented and alternative ways for those in need of such modulation".

The committee on the right of persons with disabilities of the United Nations determined that accessibility must be guaranteed in all domains and throughout the country, including private spaces open to the public and buildings and public facilities such as transportation, information and communication. This committee recommends that spaces which are open to the public should incorporate appropriate signalling and information in easy-to-follow formats in order to facilitate accessibility to these buildings and facilities, and specifically to all people with intellectual functional diversity.

Today, people with comprehensive and communicational issues still face environments with access difficulties featuring technical and physical handicaps, barriers which are paradoxically under the total control of society. Current legislation is not sufficiently explicit because, in practice, cognitive accessibility has not been considered from the starting point of developments and the settlement of actions related with universal accession.

It is clear that insufficient regulation on cognitive accessibility should be restored by means of legal modifications that give a new status to this inalienable dimension of universal accessibility. Such underdevelopment has grave consequences in the lives of these people, as it impedes or hinders an independent lifestyle and complete participation in society without further inequalities for the people with functional cognitive diversity.

Thus, it is necessary to guarantee in an effective manner the cognitive accessibility of all people with communication or comprehension difficulties of the physical environment to the services and facilities of public use, not merely in urban areas but also and especially in a rural context [6].

The present intervention realized in the northern wall of the citadel of Castulo has intended to answer the demands of this group in an experimental way, as there are few current regulations to adapt heritage enclaves to people with cognitive issues; in in this manner, the project and its subsequent enforcement bear a pioneering feature to strengthen the rights and community participation of this particular group of people with functional diversity.

In the long term, these kinds of intervention transcend the social sector to which they are addressed, as they extend their beneficial effects and collective improvement to other

cohorts of the population like elderly people, those with chronic disorders, and visitors or residents with insufficient knowledge of the language or a reduced literacy index.

In order to organise the access and route of visitors to the remains of the Castulo walls, with the principles of universal design, and focusing on cognitive accessibility, a project of area action and consolidation was carried out. In order to explain it, in this paper, the Castulo urban nucleus' historical importance in antiquity is contextualised; later, its renewed value is revised following the excavations of recent years; the discovery of the Roman high relief of the lion is presented, and the possible function of the enclosure, or monument, superimposed on the Punic wall is pointed out. In order to achieve the former, the three archaeological surveys that were carried out on the north wall during the intervention project are described, extracting a series of data that, once interpreted, yield unpublished results that provide a new vision of the urban configuration of this part of the walled city.

In addition, the discovery of the high relief is related to examples of similar sculptures that have been discovered in the Roman world, both in the Iberian Peninsula and in Italy, as well as southern France. Using various studies, written documentary sources and a rigorous-scale photogrammetric survey of the lion sculpture, such a singular finding is presented in an easily transmitted form for its study, analysis, comparison, and public diffusion with other similar examples. From these analyses, a wealth of information was obtained on the layout of this sector, nestled in northeast Castulo, relating to the general topography of the area. Finally, an interpretation of this area of the wall will be provided.

This intervention realized in the northern wall of the citadel of Castulum, or more properly Castulo, was intended to answer to the demands of this group in an experimental way, as there are no current regulations to adapt heritage enclaves to people with cognitive issues in in this manner the project and its subsequent enforcement bear a pioneering feature to strengthen the rights and community participation for this particular group of people.

Regarding cognitive accessibility, it could be argued for example that organizing a cultural visit of past vestiges for Alzheimer's patients would be meaningless, simply because it would be doomed to forgetfulness due to the damage of recent memory. However, as Henry Snell [7] pointed out, enjoyment is an instant perception.

We know that such a disease progresses with the deterioration of past memories and a lack of projection for the future. Because Alzheimer's reduces life to a specific and unique present moment, architectural projection must be transformed into a "trajective" phenomenological activity, in order to provide therapeutic cognitive stimulation against the deterioration of the brain and a positive improvement of the quality of life. Such is the underlying objective of our archaeological rehabilitation proposal.

On the other hand, we expect to connect it in the short term with other retrofit and conservation initiatives that have been developed, especially in the United Kingdom; in this sense, the preservation procedures for the famed Hadrian's Wall have come into our attention and scope [8].

2. Historical Context

The ancient city of Castulo (from the Iberian *Kastilo*; in classical Greek $Καστ αλῶν$, *Kastalōn*; and from the Latin *Castŭlō*) is located in the south of the Iberian Peninsula, in the province of Jaen. This city stood out in antiquity as a main junction in the road network in the Iberian and Roman eras, constituting an important location for the exploitation of copper, silver, and lead in the nearby Sierra Morena. The ancient city was located on a raised promontory approximately 335 metres above sea level on the right bank of the Guadalimar River, a tributary of the Guadalquivir River (*Tago*, *Tagus* or *Tugio*). In this place, multiple forms of occupation and city use are evinced by the remains of necropolises, factories, infrastructure, public buildings, and other facilities related to the old Ibero-Roman city. The archaeological site comprises a vast area of land that covers 3230 hectares, in which multiple vestiges of different historical stages overlap, as showcased by the important

findings that have been unearthed over the last few years: the Mosaico de los Amores (2012), the high relief of the lion (2013), and the paleo-Christian paten (2014).

The first stable settlements documented here date approximately from the third millennium BCE, during the Copper Age. The urban structure and the city fortifications date from the eighth century BCE. In the so-called Poblado de la Muela, located in the vicinity of Castulo, a series of buildings are found that could be a temple or a Phoenician sanctuary due to their similarity to the Ninni-Zaza temple in Mari (Syria). Castulo began to stand out as an important centre for livestock and agricultural activities, but especially—given the rich metallic mineral ores in the Sierra Morena—for mining and metallurgical works that have been carried out, almost without interruption, during the last four millennia. The mining industry evolved alongside the city, and contributed to Castulo's growing importance throughout the seventh century BCE, and its importance increased after its inhabitants established contact with the Eastern peoples who had settled in the Iberian Peninsula [9].

The influence of other oriental civilizations, such as the Phoenicians and the Greeks, led to the incorporation of new technologies and social transformations by the Iberians; this, in turn, resulted in important developments in the city. Abundant information describes the social organisation and city politics in this period, especially Diodorus Siculus' *Bibliotheca historica* (Sic 25.12) and Appian's *Historia Romana* (Hisp. 16). These sources depict an organised society based on laws and governed by formal hierarchies with leaders who controlled this region.

Castulo was part of a region the Greco-Roman geographers called Oretania, referring to a geographic and cultural area located in the current Sierra Morena and that occupied part of the current provinces of Ciudad Real and Jaén (Figure 1). Thanks to its geostrategic location, this region was a crossroads between the Iberian world and other Mediterranean cultures. Strabo's *Geographica* (Geog. 3.152), referring to Artemidoros, stated that Castulo was the 'head' of Oretania, which surrounded Turdetania. Pliny's *Naturalis Historia* (N.H. 3) also made constant reference to Oretania. Both authors highlighted its fertile lands and the highly productive mining industry [9,10].

Figure 1. Distribution of peoples in the Iberian Peninsula before the Carthaginian conquest (300 BC).

The city's prosperity was based on metallurgy and trade with the Phoenicians, Tartessians, and Greeks, as revealed by the numerous pieces of Attic pottery that were found in 1973 and 1976 during excavations in the area called El Estacar de Robarinas, west of the walled enclosure of Castulo [11]. Castulo was an important commercial centre for other reasons, as well. On the one hand, the proximity of the navigable Guadalimar River, an affluent of the Guadalquivir River, facilitated sea-faring commerce. On the other hand, its

strategic location made it an important land link along the old roads of the central, eastern, and southern parts of the Iberian Peninsula.

Some necropolises of the Iberian period of Castulo, such as Los Patos, La Muela, and Casablanca, are well-known. They are located outside the city, and date from between the end of the seventh century BCE to the middle of the fourth century BCE [12]. However, no element from that era is visible within the walled enclosure of Castulo due to later construction. However, relevant written sources describe the historical events that took place in the city and its surroundings due to the interest from different civilizations in dominating one of the Iberian Peninsula's regions which was richest in natural resources.

Once the First Punic War ended in 237 BCE, the Bárcida dynasty focused its attention on the Iberian Peninsula in order to reduce the losses suffered during the conflict, and to exploit the region's agricultural and mineral resources. For this reason, Carthage was interested in Castulo's argentiferous galena minerals, which were extremely necessary to their economy, and which had been severely depleted after the defeat of the First Punic War and the taxes imposed by Rome. After a year of war, the city was occupied by the Carthaginians in 228 BCE, becoming, from then on, an important place in the western Mediterranean due to the fact that two rival powers bid for control over it during the Punic Wars. The conquest of Castulo led to the expansion of the Carthaginian Republic into the centre and north of the Iberian Peninsula (Figure 2).
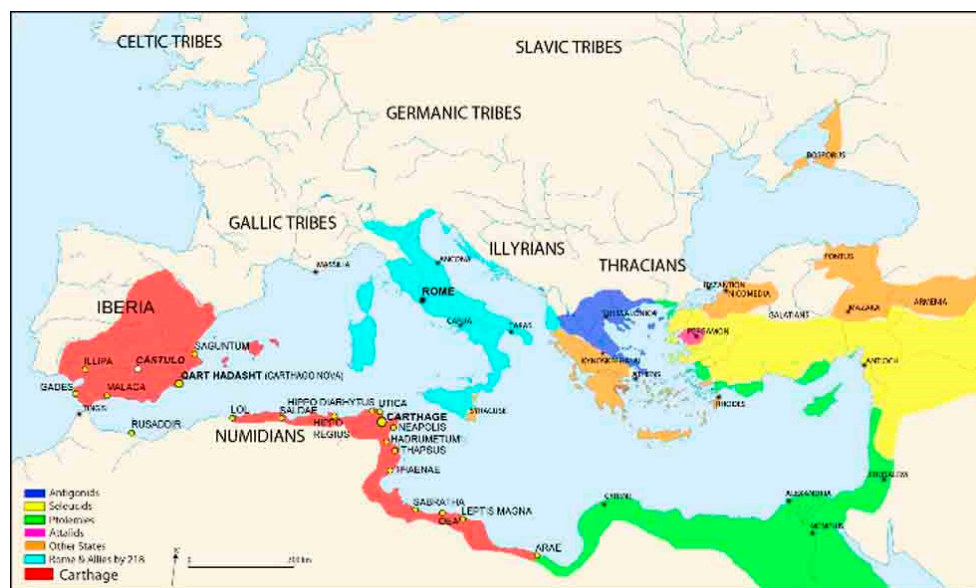

Figure 2. Castulo in relationship to other important Mediterranean cities and peoples between the First (264–241 BC) and the Second Punic Wars (218–201 BC).

The relations between the Punic occupants and the Oretanian inhabitants ranged from maximum hostility—with the death of Hamilcar Barca at the hands of the Iberian king Orisio in 228 BCE—to mutual friendship years later, during Hasdrubal's rule. The favourable circumstance brought about by friendship implied a better distribution of natural resources and, thereafter, the Carthaginians established—as two important nuclei—the cities of Castulo and Carthago Nova, which were essential for the control of the eastern Iberian Peninsula. The Carthaginian general Hannibal understood that in addition to military conquest, in order to effectively manage Oretania he had to propose a policy of loyalty with local elites. Therefore, he pledged himself to Himilce, daughter of a Castulo nobleman, a gesture that brought some stability by establishing friendship ties with the city and the consequent access to its mining resources. After Castulo's alliance with the new Carthaginian power, the Punic buildings began to beautify the city.

During the Second Punic War, Castulo supported and financed the Carthaginian army. However, in 214 BCE, Castulo and Iliturgi broke their pact with the Carthaginians and became allies with the Romans, according to Titus Livius' *Ab Urbe condita* [13,14]). In 211 BCE, the Carthaginian commanders Mago Barca and Hasdrubal Gisco attacked and conquered Castulo again, killing Publius Cornelius Scipio. In 209 BCE, Scipio Africanus took Carthago Nova and defeated the Carthaginians in Ilipa and Baecula (now Baeza, not far from Castulo), managing to definitively expel them from the Iberian Peninsula. Three years later, in 206 BCE, Castulo surrendered to the son of Publius Cornelius Scipio in order to avoid repression and a slaughter similar to that suffered by his neighbours in Iliturgi. From that moment on, the city was Romanised (Figure 3). The classical authors granted special recognition to Castulo as a Roman municipality, and it became one of the most preeminent cities of Tarraconense. The city was one of the most important stations of the Via Augusta (also known as Via Herculea or Via Exterior), as it appears in the itinerary of Antoninus and in the Vicarello Cups.
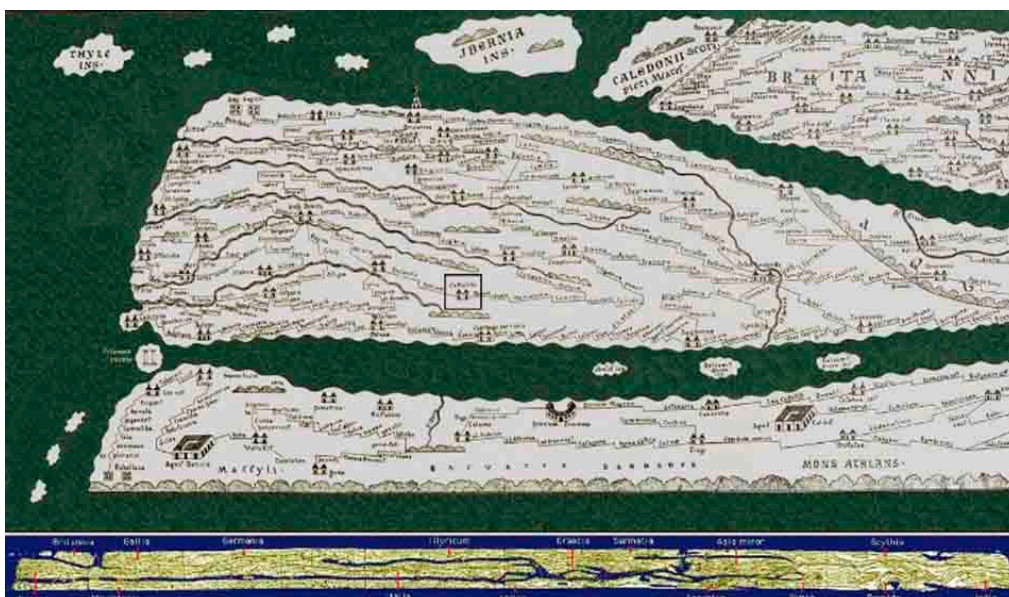

Figure 3. Cástulo on the *Itinerarium Pictum* or *Tabula Peutingeriana*, also Hadrian's Wall is shown in Caledonia (fourth century; redrawn in the thirteenth century).

In the first administrative division of Hispania into two provinces—Ulterior and Citerior—in 197 BCE, the Saltus Castulonensis remained on the boundary of both. With the new internal organisation of the Empire implemented by Augustus in 27 BCE, the Iberian Peninsula was divided into three provinces: Baetica, Lusitania, and Tarraconensis, with Castulo belonging to the latter (Figure 4). In the subsequent Iberian reorganisation into five provinces by Diocletian in 298 CE, the city was located within the Conventus Carthaginensis.

Castulo's dynamism and magnificence began to decline during the third century CE due to repeated urban regressions and crises, which led to a general decrease in wealth. The reasons for this decline were not only economic but also political and social; this was happening throughout the Roman Empire, and was characterised by military anarchy and economic problems caused by currency devaluation, a lack of resources, invasions, and the looting of cities [15,16]. The enclave was affected by the exhaustion of the mines' profitability, the lack of wealth generation, and the consequent lack of work, in addition to suffering other problems, such as the absence of leadership, the lack of security, and its abandonment as a capital, all of which led to decay.

Figure 4. Castulo's location in the Iberian Peninsula during the time of the Roman Republic's domain, relative to the Sierra Morena and the communication routes. (Below) Roman provinces and borders at the time of Augustus (31 BC–14 AD).

After the crisis of the third century CE, periods of prosperity certainly existed, although these did not last as long as the previous ones. During the first half of the fourth century CE, a new boom period occurred in the city, and the hypocaust—a former site of thermal baths—was repurposed as a warehouse. It is known that the remodelling of the house called El Olivar was also carried out in that century [17]. Urban life recovered slightly under Diocletian, and new buildings were constructed. In the fourth century CE, various neighbourhoods were rebuilt, along with the city walls, with materials from other buildings.

Castulo was still inhabited during the Visigothic period (415–711), and the Council of Toledo even had an episcopal branch there. The last phase of city occupation was during the time of al-Andalus, around the hill of Santa Eufemia and outside the old Roman city's enclosure. In the eighth century, the governor of Toledo faced ʿAbd al-Raḥmān I (عبد الرحمن) in the battle of *Qasṭulūna*, which took place near the city. Its loss of geostrategic importance in the Middle Ages is evidenced by the fact that it was not represented in Muslim graphic documents, such as the map of Al-Andalus created by Muhammad al-Idrīsī (محمد الإدريسي) (ca. 1154). After the Christian conquest of the city in 1227, it was renamed Cazlona. The last known mention of Castulo was a claim on its ruins after it passed into Christian hands, as it had become a nest of bandits and looters; after this, the ancient city fell into a long and silent period of inactivity.

The city was ultimately abandoned in the fifteenth century, although interest in its ruins has remained alive. As existing buildings were demolished for material reuse in mansion construction for neighbouring cities, some scholars began to conduct studies on the remains of the ancient city. The Italian Andrea Navagero was its first scholarly visitor, and he initiated a tradition of categorizing the area's remains [18].

3. The Latest Findings in the Walls of Castulo: Rediscovering the Lost City

The recovery and contemporary appreciation of this archaeological site has occurred only in the last decade, especially after the creation of the Archaeological Site of Castulo in 2011 and the excavation campaigns carried out in different sectors of this *oppidum* (Figure 5). The current enclave is an institution of the Ministry of Culture of the Andalusian Government which was designed to manage the Ibero-Roman vestiges in a joint venture with the Archaeological Museum of Linares, which was also reinstated in 2011. Since 1968, the Spanish administration has decreed the expropriations, which ended in 1972. The museum was reopened in 1982. The first cycle of archaeological excavations was completed, and the initial stage concluded with the transfer of state competences to the regional administration in 1984. The second stage began with the declaration of Castulo as a national monument in 1985, and ended with the re-inauguration.
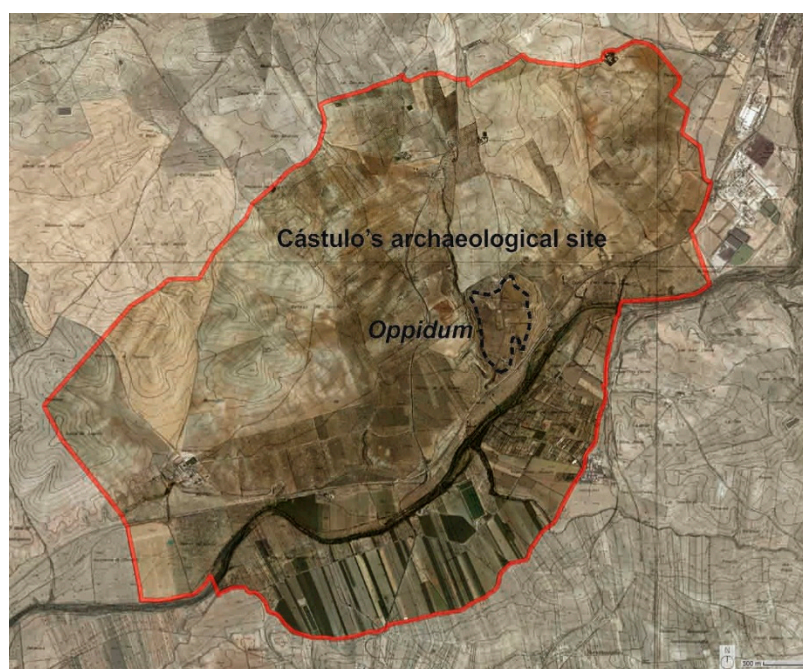

Figure 5. Ortho-photograph of the area covered by the archaeological site (3.230 ha). The *oppidum*—or fortified settlement (50 ha)—is to the northeast, next to the river.

The diverse archaeological interventions in the site locations have led to the discovery of evidence of several settlements and phases of urbanisation, bringing to light the remains of necropolises, factories, public infrastructure, and other suburban buildings related to the Iberian and Roman eras of the city. Thus, it was discovered that Castulo possessed an aqueduct, a sewage system, thermal baths, a theatre, a circus, and a port, which is now buried under the Guadalimar River channel.

The archaeological interest in Castulo resumed in the last third of the twentieth century. Despite this fact, only 2% of the area of the walled city (50 hectares) has been excavated since then. Therefore, the accumulation of detailed knowledge of the city is still in its early stages, and not enough information exists to describe the urban structure of Castulo in the different periods in which it was inhabited (Figure 6).

Figure 6. Aerial photograph of the site of Cástulo before the recent works were carried out. Photographer: Manuel Martínez García (2011), published in the blog, http://linaresyjaenavistadepajaro.blogspot.com.es/ (accessed on 24 July 2021).

Castulo's urban nucleus was originally surrounded by a defensive walled system that was reinforced at different points by massive elements—likely towers or bastions. Currently, the most visible part of the old wall is in its northern zone, which was excavated for the first time in the 1970s. The first archaeological intervention on the walls dates back to 1971, with an excavation directed by the archaeologist José María Blázquez on the northern slope of the enclosure [19]. This campaign brought to light 90 linear metres of a fortified structure composed of irregular masonry and belonging to the lower imperial wall, which was used as a foundation in later Roman eras. Other parts of the wall were built in the high imperial period, using reused ashlars. The excavation revealed different defensive elements. The main part is a wall of variable thickness with a minimum width of 1.4 m. In the excavation, two towers were found that acted as wall reinforcements; the first tower protrudes 2.5 m from the wall line and is 7.5 m wide, and the second tower, located at the north end, protrudes almost 6 m from the main front. Another bastion was also found in the southernmost part of the wall, built with large-scale masonry that dates back to Roman times.

After the first archaeological campaign in the 1970s, these remains were abandoned and were heavily damaged by weather. This circumstance caused several failures, breaks, and cracks in the wall, as well as a significant collapse, occurring in 1997, which destroyed the outer section of the wall and part of the interior filling; thus, a series of measures was taken to consolidate and preserve the wall. This was the objective of one of the first intervention-and-consolidation projects carried out on the north wall of Castulo recently. As part of these consolidation projects, several wall samples were taken, new archaeological excavations were carried out, and a series of stratigraphic surveys was conducted in order to analyse the structure of the wall.

In 2005, a new phase of archaeological work was carried out on the north wall [20]. The excavations confirmed the existence of several overlapping sections belonging to different historical phases from the eighth century BCE and later. New parts of the wall came to light, as well as some houses dating back to around the fourth century BCE. This circumstance has led to the hypothesis, as yet unproven, that a door to the city was located here [21]. This hypothesis is questioned and refuted in this text.

The archaeological excavations carried out during the last few years in Castulo have revealed important public buildings from the first and second centuries CE inside the walled enclosure, as well as a Jewish quarter. In 2012, the so-called *Mosaico de Los Amores* was discovered, excavated, and found to be in a magnificent state of conservation. In the same area, in a Christian religious building of the late imperial era, a glass Christian pattern appeared in 2014 that contained one of the first existing images of 'Christ in Majesty', dated to the fourth century CE (Figure 7).
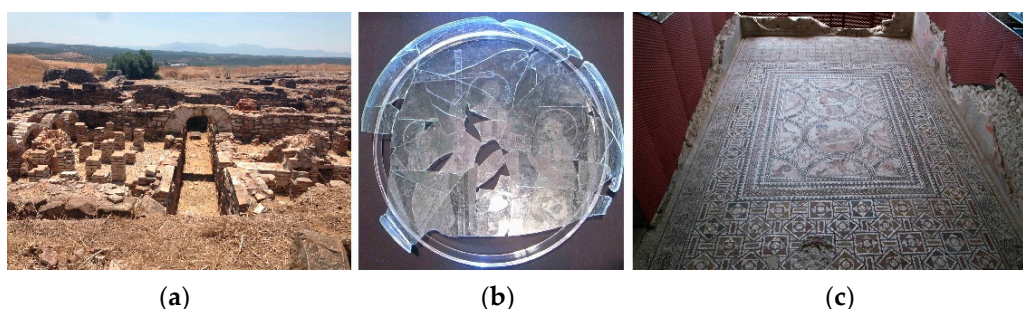

| (**a**) | (**b**) | (**c**) |

Figure 7. Hypocaust associated with a thermal area (**a**) and recent findings in the archaeological site of Cástulo: Early Christian pattern (**b**) and the *Mosaico de los Amores* (**c**).

More recently, some excavations have been carried out on a Punic tower from the late third century, called Torre Alba because of the white coating of its wall. It is a singular tower at which the urban wall is connected to the wall of the acropolis and, furthermore, it was the base of a temple or sanctuary, which was located on its terrace. The Torre Alba is linked to the fortifications of Qart Hadast, the Carthaginian Iberian capital that the Romans called Carthargo Nova. Some conclusions on Carthago Nova were published regarding the configuration of the royal palaces built by Hasdrubal Barca during the middle of the second century BCE [22].

The unearthed walled remains deteriorated with exposure to atmospheric inclemency and with the passing of time, such that in 2013 they were the subject of a combined consolidation project by the author's article and archaeological excavation in which a set of very important findings appeared. This intervention project incorporated the latest archaeological campaign carried out in the area. The excavation work unearthed new wall remains that showed various phases of historical overlap, uncovered a terraced enclosure that had been superimposed on the wall, and, above all, brought to light a magnificently carved and preserved ashlar bearing the high relief of a lion.

The topographic configuration of the city shows that the Iberian fortification structure is an important organisational element of the urban space. With the excavations carried out on the north wall, it has been possible to establish a new definition of the exterior spaces of the city in this area, and to study an evolutionary sequence of the construction of the walls in relation to other *oppida* in this region. The Carthaginians' method of reinforcing the walls of the allied city of Castulo in order to adapt them to new war machines and techniques can be observed. These reinforcements involved the construction of towers or buttresses at close range, as well as several overlapping layers that acted as reinforcements.

During the archaeological excavation, three surveys, differentiated by strata located at different places, and to which their corresponding surface planes had been related, were carried out (Figure 8).

The first archaeological survey (20.25 m × 4.25 m) was carried out in the northwest zone in the same area as the archaeological work that was carried out in 1971 and 2005, but it did not provide any new information. The second excavation (8 m × 7 m) was carried out in one of the towers located in the northeast part of the wall, in a flat area that had also been excavated in previous campaigns. The survey ended in a stratum in which archaeologists discovered a huge stone pavement, laid on a previous base of laminated stones that had been part of the construction process of the tower. Near this survey, a beautiful large ashlar

with very elegant and stylised Ionic scrolls with vegetal motifs was found; it is a carved stone that could have been a lintel of a door or, more likely, a window of some Punic monument. The third archaeological survey (17.5 m × 5 m) was carried out on the eastern side of the previous tower, and this was the survey that provided the most information and contained the most important findings.
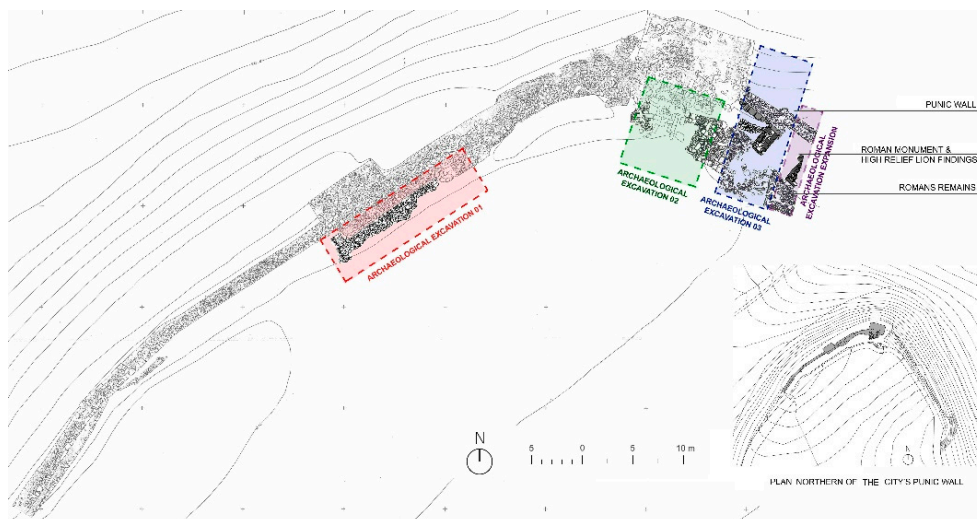

Figure 8. Plan of the archaeological area with the survey locations and walls discovered (2013–2014).

In the central area of the survey, a new wall was uncovered, built with irregular stones and masonry; a series of small stones was also discovered, among which diverse associated material was found, and among which a chandelier with the representation of Mercury was prominent. It was assumed that this foot of the wall was part of the primitive Iberian wall.

In order to characterise and document the walls that were beginning to be unearthed, and in view of the quality of the discovered walls, it was decided to widen and extend this excavation by 3 m more than was planned towards the eastern area of the excavation. In this extension, the structures found have revealed an enclosure in which, from the composition and arrangement of the ashlars, two different elements were detected.

In the northeast corner, the first element was found, resting directly on a geological substrate that could be the foundation of the superior ashlar wall, and built of irregular masonry with an interior filling of stones and earth. In this wall, some earth elements—in which 22 *macalón*-type bronze arrow points were found embedded—should be highlighted. This significant finding confirmed either the Carthaginian siege of the city in 228 BCE or its 'reconquest' in 211 BCE, at which time Castulo had allied with Rome.

The second element that appeared was three ashlar walls behind the aforementioned masonry walls and, between them, a Punic wall. These three walls form a single space or enclosure that opens outwards from the city, protruding from the wall. This is a Roman structure that does not fit the linear layout of the original wall, such that this Roman site probably had other functions or uses that were non-military, and were probably symbolic or funerary; for example, it could have been a type of monument. At this point, the continuous line of the wall is modified with alterations and constructions with a logic that is not strictly defensive, and that does not confirm the possible location of a door in that place. This hypothesis is reinforced by the fact that the section is located on the highest level of the eastern walled enclosure, and therefore it is quite inadequate as an access point to the walled enclosure. The sketch of the fortified area of the city by Gregorio López Pinto does not show any door in this area of the city (Figure 9) [23].
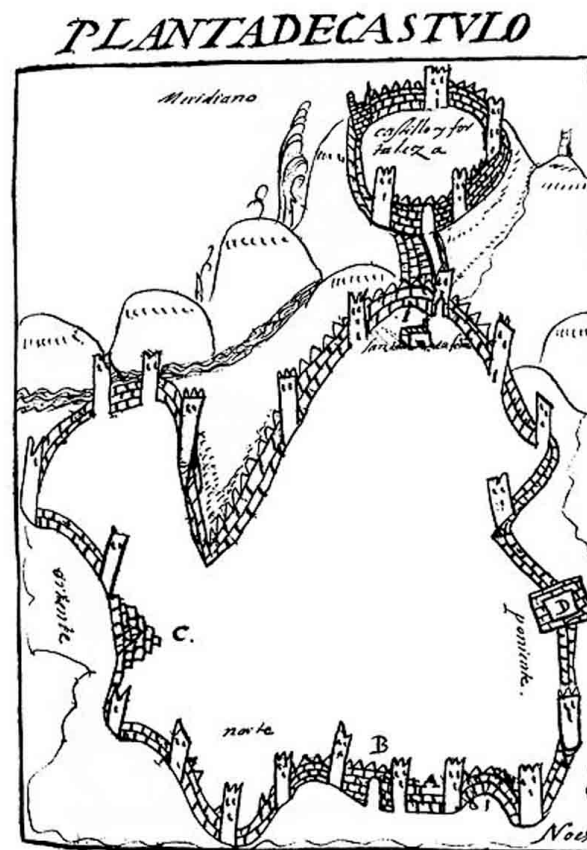
Figure 9. Sketch of Cástulo's fortified enclosure by Gregorio Lopez Pinto, published in *Historia apologética que escriuia el maestro Gregorio Lopez Pinto... de la muy antiquissima ciudad de Castulo . . . , (16–?)*, p. 74. MS 1251 Biblioteca Nacional de España.

The longest wall structure appears behind the Iberian wall, and has a width of 0.65 m, a length of 5.7 m, and a height of 1.52 m. It contains four irregular rows of ashlars of great dimensions, some of them of up to 1.58 m in length, in which the brackets can be seen in the form of a double T. Each piece does not coincide with the piece placed next to it, which is further proof that all of these blocks originated from a pillage. The stones are mounted without bonding mortar. At the eastern end of the wall, the two lower courses of ashlars are extended, and in the lower of the two, a circular carved hinge imprint is found, topped by two small aligned segments. Perpendicular to the previous element, another ashlar wall appears, pointed in the northeast–southwest direction, with a width of 1.51 m, a length of 2.76 m, and a conserved height of 2.04 m. It is also a wall composed of five courses of irregular large ashlars formed of reused pieces, without bonding mortar and with an interior filling of small stones and earth (Figure 10).

Opposing these two perpendicular walls, and at a distance of about 3.5 m, more irregularly positioned ashlars are located on the east profile of the excavation sector, and are oriented in the northeast–southwest direction. They build a wall with the following dimensions: 1.99 m in length, 1.5 m wide, and 2.09 m high from the base of their foundations; it consists of three rows of irregular, large ashlars without mortar [24,25], which are defined by large stone elements. A unique aspect is that the rear faces of these blocks have carved silhouettes and mouldings of cornices of great dimensions, which is a clear indication that they are reused pieces of a pre-existing building. All of these walls are characterised by the reuse of construction materials of great importance; these building materials are identified by their dimensions and material types (Figure 11). This is a key fact, because this Roman monument is constructed from material looted from Punic buildings.

Figure 10. Photograph of the Roman-style wall, with five layers composed of large, irregular ashlars made from reused pieces.
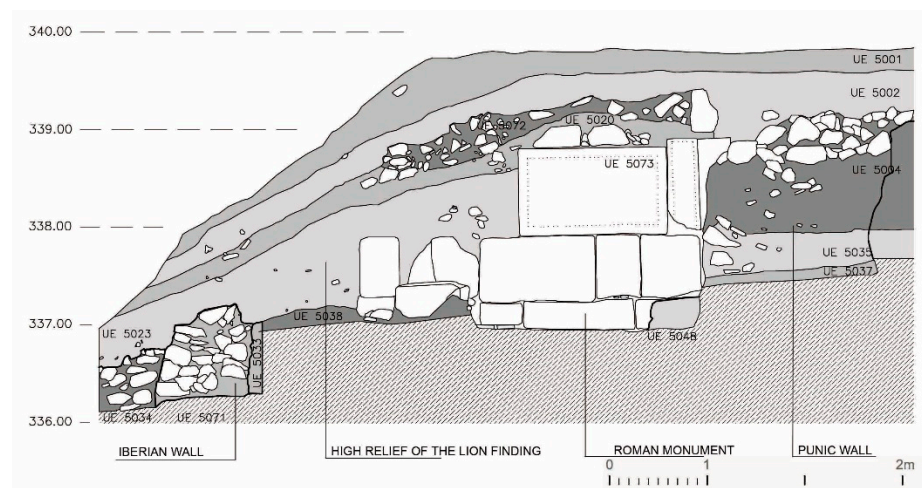

Figure 11. Stratigraphic section of the extent of the third archaeological excavation, including the location at which the high relief of the lion was discovered (redrawn by the authors from the *Memoria de intervención arqueológica en Muralla Norte de Cástulo* [20]).

In the lower corner of the northern front, a projecting ashlar also stands with a circular hinge footprint that is somewhat smaller than the one found on the opposite face. The finding that both hinges face each other on both walls can be linked to the existence of a span of 3.5 m in width, which would suggest that this is an entrance or threshold to a possible enclosure or singular space located outside the city walls that had a certain monumental character. This is apparent not only from the magnitude of the stones found but also from the appearance, on the left flank of the door, of an ashlar with a considerable high relief.

The enclosure delimited by these walls is 3.2 m deep, and is accessed by a 3.5-m-wide threshold. In its entirety, it is a space that is built with large, well-carved, well-finished blocks. It is a structure located in the highest part of the city, standing on the outer face of the wall and opening out towards the exterior of the enclosure.

The construction of these Roman walls, in which large reused ashlars were employed, could have parallels and precedents with occurrences in other cities such as Carthargo

Nova (Cartagena) and Obulco (Porcuna). In fact, Carthago Nova is the city in which the highest number of inscriptions linked to the Roman wall have been found, letting us know that some magistrates of the city and even a provincial governor of Hispania Citerior took charge of its reconstruction during the last quarter of the first century BC. These were refortified during the civil wars between Pompey the Great and Julius Caesar (ca. first century BCE). In the time of Augustus, the walls were reinforced beyond their mere defensive function, showing a symbolism that was associated with power through the decorative enrichment of doors and other places. It is in this context that the first Roman funerary monument in Castulo would appear.

In this area of the enclosure, several ceramics, glass, and lead containers, organic elements, and a variety of building materials—such as fragments of *tegulae* and *imbricae* scattered near the excavation—have been found. The origin of these remains could lie in the collapse and abandonment of the area, which was caused by different historical and natural events.

However, the main finding in the excavation at this point has been the discovery of a high relief featuring the representation of a lion holding a human head with Nubian features under its claws (Figure 12). It is an exceptional sculpture, skilfully carved, and one of the best preserved in the Iberian Peninsula. The piece could be dated to between the second and first centuries BCE, and remained visible at least until the second century CE.

Figure 12. The moment the high relief of the lion was discovered during the 2014 archaeological digs, and an image of it once it had been unearthed.

4. The Finding of the Relief of the Lion

Due to its transcendence, we would like to devote a few lines to this important vestige that we unearthed in the procedures to rehabilitate the site.

The figure of the feline, which is 1.2 m long, is lying on its front legs in a defiant attitude, suggesting that it is about to get up. The face seems to express the gesture of roaring, with the mouth open and the tongue out. It stands out for the realistic treatment of its features; the mane is represented with wavy tufts, arranged in successive layers with fairly defined geometry. The high relief is sculpted as part of an ashlar that was part of a wall, from which the body and head of the lion would protrude, along with the human head in its claws. The carving is of remarkable quality, and a very realistic representation.

It is likely that another similar high relief was placed on the western wall that delimits this threshold, which can be referred to in a schematic drawing created by hand by Ximena Jurado in 1639 in the manuscript *Antiguedades del reino de Jaén* [Antiques of the Kingdom of Jaen], in which it states: "The following stone and statues were brought from the ruins of Cazlona and are found next to Jaén the Garden that belonged to the Lord Bishop Don Sancho and now belongs to the company of Jesus" [26]. In the drawing, the motif of a human head appears under the lion's claws, although, in this case, the lion seems to

be in a more relaxed position (Figure 13). However, the most important fact is that the drawing represents a sculpture that is of equal size but is symmetrical with respect to the one that was found in the last excavation. Unfortunately, this other lion carving drawn in the seventeenth century is now missing.
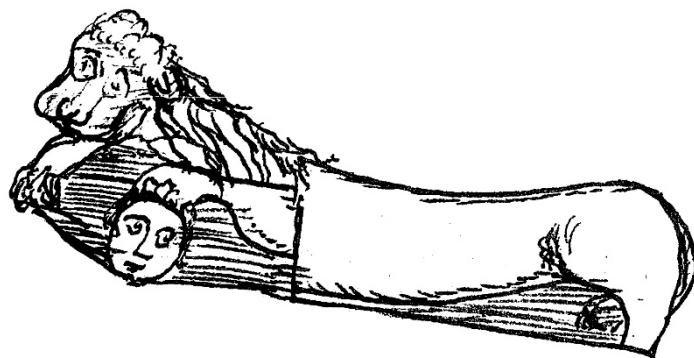

Figure 13. Schematic diagram of a piece of sculpture from Cástulo, the whereabouts of which are currently unknown, which shows a lion with a human head, published in 1639 in the work *Antigüedades del reino de Jaén* by Martín de Ximena Jurado (MS 1180 Biblioteca Nacional, fol. 32r°).

Several sculptures of lions are known to exist from the Iberian period, such as those found in Bocairent (Valencia, fourth century BCE), Coy (Murcia, fourth century BCE), and Baena (Córdoba, late sixth century BCE), but their characteristics are less realistic, and the style or motif of the figures differ markedly from the piece found in Castulo [27]. Very few lions like this one have been preserved from Roman times, some of which have even been found in the Castulo archaeological site, but none of them has the relevance and the realism of this latest finding (Figure 14).

Figure 14. Sculptures of funerary lions from Cástulo (Museo Arqueológico de Linares).

These figures of lions with human heads between their claws arrived in Hispania along with the settlers from northern Italy, where they seem to have their origin. They are distributed throughout the entire Mediterranean basin, covering disconnected areas of Provence and the Iberian Peninsula (in different necropolises of the provinces of Jaén, Cuenca, Albacete, Córdoba, and Seville). It has been suggested that the presence of the funeral lion is generally related to the monumental tombs built between 75 BCE and the Early Middle Ages [28,29].

The fact that a large number of these lions have been found in Castulo and in the Alto Guadalquivir region in general means that the influence of these Latin settlers had to be important in this city and its geographical area. In other Hispanic cities, the series of lions

associated with human heads are funerary in character, and are usually linked to tombs or mausoleums on which the face of the deceased could also be represented. The example shown in Castulo bears some resemblance to the lion found in the Roman city of Arva (Alcolea del Río, Seville), which has also been related to the elements brought by the Latin settlers in the first century BCE. In these cases, the character with Nubian features that appears under the lion could represent an ideal combat, a memorial, or an allegory that represents death or something against which one must fight [30]. A simpler interpretation could be that they symbolise Rome's dominion over Africa, and especially over Carthage.

The relief discovered in Castulo is one of the best sculptures of a long series of Roman burial lions found in the Italian and Iberian peninsulas (Figure 15). In order to aid in its study and rigorous comparison, a careful digital survey and photo modelling of this statue was carried out, based on data taken at the time of its appearance in the excavation, which is presented for the first time in this article.

Figure 15. (**Above**) Figure that compares the lions from Cástulo (1), Arva (Alcolea del Río) (2), the ones which most resemble each other, and two of the lions found in Italy. (**Below**) Distribution of lions associated with human heads in the Iberian and Italian peninsulas.

These drawings are one of the contributions of this paper, because they provide easily distributed documentation that will allow the main characteristics of this carving to be studied in relation to other known examples (Figure 16).
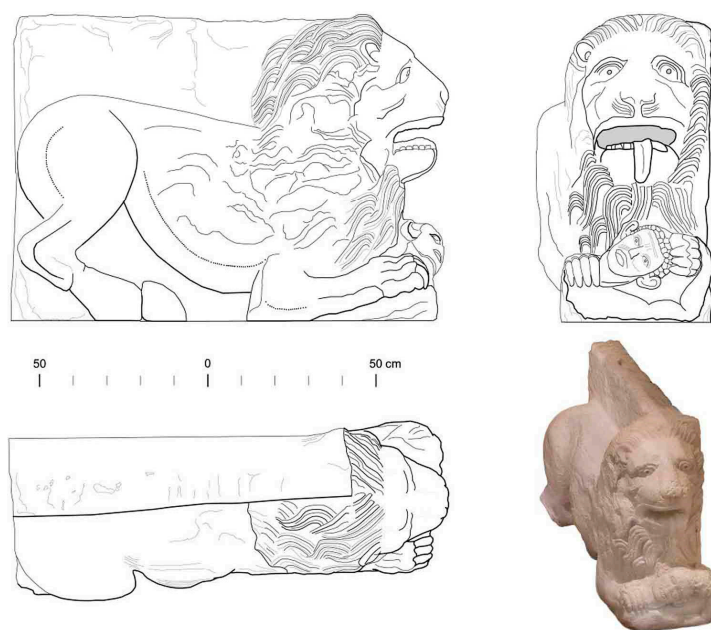
Figure 16. Photogrammetry of the lion that was unearthed during the excavation, drawn by Santiago Quesada architects assoc.

This important finding and the possibility that this high relief could be integrated as an ashlar into one of the walls support the hypothesis that this enclosure could hold not simply an access door but a 'funerary monument', or cenotaph. In addition, the analysis of the topography of the surroundings does not show any remains of a route, access road, or any of the typical spaces that precede and accompany the entrances to a city. The intervention on the north wall of the city has brought to light various processes of the forming, using, and restructuring of this part of the walled perimeter. Moreover, from the different records of the stratigraphic analysis carried out, it is possible to present certain conclusions that provide a new definition and greater knowledge of the layout of the northeast sector of Castulo, in which the Iberian fortified structure and the topography of the land are determining elements. It is not uncommon to find the same pattern in the foundation of ancient cities and settlements [31].

The analysis of the remains of the north wall has shown different morphologies: the lower western front is made up of regular-cut stone, and on top of it is another wall built using dry masonry. Towards the eastern area, the masonry becomes more irregular, and in a particular spot, the masonry differs from the previous examples, perhaps related to some repair work. Due to its structural characteristics and its position, this element could be a buttress or reinforcement to contain possible landslides on the slope on which the wall rests. The location of bronze arrows embedded in earth elements of the wall is a significant finding because it suggests a siege of the city.

The most important discoveries are the Roman constructions that appeared during the last excavation. These are not adapted to the layout of the primitive Iberian wall; several important modifications to the conventional linear wall layout were made. These Roman remains make up an enclosure designed for non-defensive purposes. This rectangular space does not match the layout of access to the door of a city because no traces of roads, access trails, or common articulation spaces in this possible city access location can be seen, which seems to rule out the hypothesis that these walls defined the possible location of a door in that place.

The Roman enclosure is delimited by walls built with large ashlars—well-carved, facing each other externally, and arranged on an old Iberian wall; they are walls made by reusing materials and ashlars from pillage or from other previous buildings, and were probably built during the Punic or Roman Republican period (second century BCE). This

form of construction, using materials originating from other buildings, is one of the most illuminating findings of this excavation, because it means that the Romans were building their own monuments out of the destruction and pillage of the buildings of the subject peoples.

This singular space is also characterised by its location, being on the north-eastern end of Cerro de la Muela, in one of the highest points of Castulo, visually overlooking the east and the north—towards the necropolises of Cerrillo los Gordos and Los Higuerones, respectively. It is a monumental Roman construction that changes the meaning and use of this area with respect to the previous Iberian period; this is a fundamental fact that supports the hypothesis that this location consisted of a mausoleum or monument outside the city precisely positioned on the wall. The appearance of an ashlar with a remarkable high relief representing a lion with a human head under its paws has provoked the naming of it as the 'monument of the lion'.

5. A Sustainable and Inclusive Procedure—Results

The significant amount of knowledge derived from the extensive historic and archaeological research performed, which has led us to a deep understanding of the situation and circumstances of this rural heritage, enabled us to develop a sustainable procedure for the urbanisation and consolidation of the surroundings of the north wall of Castulo, under suitable project considerations, which were deemed necessary in order to retrieve the lost features without neglecting those still extant (Figure 17), which give the distinctive character to the vestiges and also enhance the attraction of the site to all kinds of visitors.
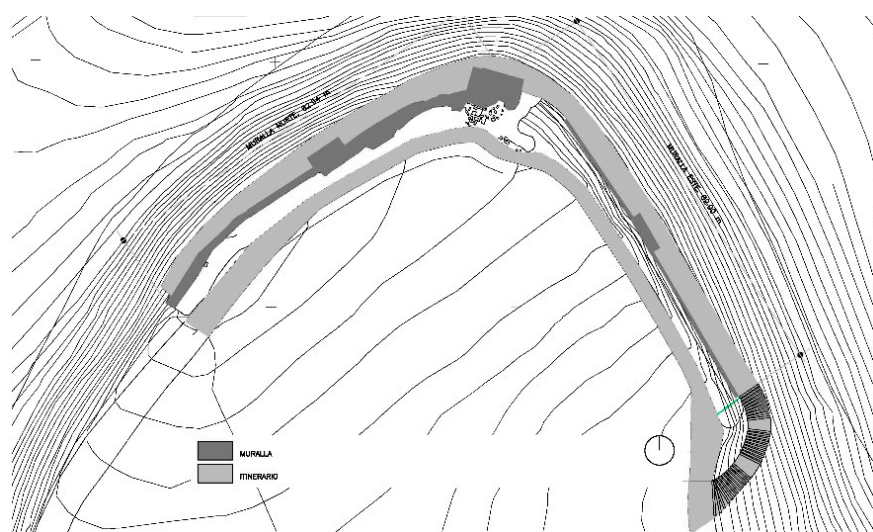

Figure 17. Proposed project for a cognitive accessibility path encircling the walls.

All of the procedures have been driven to stay the destructive process that the vestiges of the wall have suffered. The procedure's fundamental rule was to accept the deformations and irregularities presented by the monument without correcting them. In this sense, the interventions were:

The removal of invasive plants and microflora by means of a cleansing sterile treatment, in order to consolidate and protect.

The drainage of the excess water under the wall. In order to avoid the progress of the deformations of wall sections and the damage induced by continuous stresses in the ashlars and other structures, we have created alternate supports. To this aim, we will proceed with an archaeological excavation of the inner side of the wall in which we place drainage and filling systems to eliminate the strains due to accumulated water.

Behind the sections of wall a vegetable berth was built in a kind of "green batter", so as to contain the earth that remains in the other side. To this aim, stretches of geotextile will

be placed in the direction of the slope extending them down the grade. In order to improve the fastening of the superficial layers, native plants will be sown after carefully moistening the surface, and later this will be covered with a mantle of soil over the geotextile along the slope from the upper to the lower side, with the help of appropriate machinery.

The main procedure is the creation of an accessible itinerary in the perimeter, both in the upper and lower sections of the wall, so that it would be possible to walk around with a clear orientation and perception at all times, without which it was not possible to reach or enjoy the most important parts of the vestiges. To this aim, a levelled and reinforced path was built to allow for the passage of wheelchairs. Such a path is sustainable in conception and of a reduced carbonfootprint, as it is composed of a base of natural gravel in batches of a thickness of 0.2 m. The finishing layer amounts to 0.25 metres of lime.

Special staircases were also designed to improve accessibility and the recognition of the particulars of the newly unearthed vestiges.

Finally, a mandatory element to increase cognitive accessibility is to display adequate and readable signals that offer easy understanding of the surroundings of the heritage facility. In this regard, the directions of the norm ISO-9186 and the Spanish norm UNE-153101 EX were enhanced. Specially designed plaques were incorporated into the itinerary; they are intended for the collectives with functional or sensorial diversity (Figure 18). The recommendations are enforced from the following norm: ISO/PW1 TS 5727 "Accessibility of immovable cultural heritage. General criteria and methodology".

Figure 18. Aerial view and digital model from the north-eastern walled enclosure sector of Cástulo after the intervention, published on the official website of the Excmo. Ayto. de Linares, Área de Turismo (http.castulolinares.com5-muralla-norte (accessed on 29 October 2021)).

6. A Contribution to the Cognitive Accessibility of Rural Heritage in Southern Spain—Conclusions

In 2007, the World Health Organization published "Global age-friendly cities: a guide" [32]. It was estimated in it that by 2050, the significant ageing and deterioration of the physical and mental conditions of the population will require city planners to consider how urban conglomerates and surrounding enclaves should evolve to guarantee the well-being of their elder people. In this fashion, we would sustain that this intervention procedure that we have completed, well and thoughtfully extended in time, although suffering from many hindrances, has as its main objective not only to facilitate cognitive accessibility for rural heritage but also to connect a specific group of people with their environment in the form of archaeological and artistic findings. These people share a functional diversity sometimes aggravated by Alzheimer's disease; subsequently, it is deemed important to reconnect them with their environmental past. At the same time, we would like to enhance the sustainable features of this archaeological site and others which are being revamped in Southern Spain, like for instance the Roman city of Munigua [33,34].

Following the experiments started by the MoMA in New York between the years 2007 and 2014, financed by MetLife Foundation, and more recent ones introduced at Hadrian's Wall in Northern England in 2018 [8], especially those regulated by the council of Newcastle and surrounding neighbourhoods, the adaptation of the paths and tours in the north wall of Castulo (Figure 19) provide a rewarding experience which may allow for an increasing connection with the preserved and natural heritage. In this way, relevant benefits can be expected for such outpatients and their caretakers. We would like to remark that a person with Alzheimer's and related diseases, through connection with heritage, may be offered the relevant opportunity to:

- explore and trade ideas about common history, landscape and findings;
- beckon intellectual stimuli in time;
- establish the required neuronal connections between personal reminiscences and the surrounding spiritual realm;
- evocate personal experiences and distant mythical memories; and
- participate in a relevant activity that promotes personal betterment.

Figure 19. A wooden stairway which makes the visit user-friendly.

In addition to these benefits, the helpers are also enriched with the experiences that may amuse or interest them in accordance with people who are taken care of, and at the same time enjoy instantly a safe and controlled environment. We firmly believe that the adaptation of a specific environment permits the sharing of experiences of social multi-scale interaction in which physical and spiritual relaxation is attained. This should also be effected by means of architectural and urban design in other cases like museums as well [5,35,36]. Likewise, the programs for visiting open-air heritage facilities, such as the one described in this article, give way to singular opportunities for communication and connection. Eventually, the participants learn from each other in a new context; mutual interests and notions are thus cultivated, and perhaps their spirits are lifted in search of new boundaries [37].

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