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Carteia: Reconstitution and immersive simulation of multiple identities through data collection of archaeological urbanisation remains in the Pillars of Hercules.

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Carteia: Reconstitution and immersive simulation of multiple identities through data collection of archaeological urbanisation remains in the Pillars of Hercules.

Revised version

A dissertation submitted to the University of São Paulo and the University of Bristol by the requirements for the dual degree of Doctor of Philosophy in the Faculty of Arts, School of Arts. Concentration area: Archaeology. Supervisors: Maria Cristina Nicolau Kormikiari (São Paulo), Tamar Lucas Hodos (Bristol), Romero Tori (São Paulo)

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Abstract

The region of the Pillars of Herakles (the present area of the Strait of Gibraltar) serves as a crucible for intense cultural contact. Within this circuit, the city of Carteia (present-day San Roque, Spain) is situated in an ideal landscape for delving into themes related to the interactions among its diverse inhabitants (Iberians, Phoenicians, Punic, Greeks, and Romans). However, Archaeology in this area has only superficially explored cultural contacts, often neglecting the analysis of the results of ethnic interactions and their material responses.

The hypothesis of this study posits that it is possible to identify new identities resulting from cultural interactions in Carteia during the Iron Age. Therefore, this project aims to discover markers of entanglement in this settlement. To achieve this goal, the study employs the Globalisation theory applied in the Ancient Mediterranean and the support of Entanglement concepts and theories related to ethnicity and identity between the Mediterranean and the Atlantic communities.

For educational purposes and with theoretical support from Digital Humanities, the final considerations of this study will be virtualised in Virtual Augmented Reality (VAR). This product will present five prototypes of exceptional places within the site to showcase and explore the entanglement markers in Carteia's landscape, aiming to demonstrate that it is not possible to essentialise the Mediterranean communities into just one pattern. This research will analyse the Roman Forum and the Punic Walls of Carteia through cultural contact and diffusion.

Keywords: Entanglement, Globalisation, Virtual Augmented Reality, Prototypes, Strait of Gibraltar, Carteia

Resumo

Como um local de intensos contatos culturais, a região das Colunas de Hércules (área atual do Estreito de Gibraltar) forma um caldeirão de interações culturais. Dentro desse cenário, a cidade de Carteia (atual San Roque, Espanha) está inserida em uma paisagem ideal para aprofundar temas que envolvem o contato entre seus diversos habitantes (ibéricos, fenícios, púnicos, gregos e romanos). No entanto, a Arqueologia nesta área abordou os contatos culturais de maneira muito incipiente, sem analisar o resultado das interações étnicas e suas respostas na materialidade.

A hipótese do presente estudo postula que é possível identificar novas identidades resultantes das interações culturais em Carteia durante a Idade do Ferro, sendo assim, este projeto tem como objetivo encontrar indicadores de entrelaçamento nessa fundação. Para isso, com a teoria da Globalização aplicada no Mediterrâneo Antigo, bem como com o suporte dos conceitos de

Entrelaçamento e das teorias que envolvem etnicidade e identidade entre as comunidades do Mediterrâneo e do Atlântico.

Com fins educativos e com o suporte teórico das Humanidades Digitais, as considerações finais desse debate serão virtualizadas em uma Realidade Aumentada Virtual (VAR). Esse produto apresentará cinco protótipos de locais excepcionais do sítio para mostrar e explorar os indicadores de entrelaçamento na paisagem de Carteia, visando demonstrar que não é possível essencializar as comunidades do Mediterrâneo em apenas um padrão. Nesta pesquisa, o fórum romano e as Muralhas Púnicas de Carteia serão analisados sob a ótica do contato e da difusão culturais.

Palavras-chave: Emaranhamento, Globalização, Realidade Aumentada Virtual, Protótipos, Estreito de Gibraltar, Carteia

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Glossary

Adyton = The innermost place in a temple where generally house the cult image of the venerated deity.

Adobe = (See also *Mudbrick*). An unfired clay and straw brick, dried in the sun rather than baked.

Allae = The space between the pillars and the temple wall.

Altar = An elevated table, slab, or structure, often of stone, rectangular or round, for religious rites, sacrifices, or offerings.

Apse/Apsidal = A semi-circular-shaped area on one side (e.g., commonly forming the eastern end of the choir in numerous churches).

Anta (pl. *antae*) = A pilaster or a rectangular pier formed by a thickening at the end of a wall, usually projecting into a façade or portico. Usually antae occur in pairs, with one on each side of the portico. If columns were within the portico, they are said to be in antis.

Apadana = The columnar audience hall in a Persian palace.

Ashlar = Type of a large masonry with an exposed worked side of square or rectangular stones.

Baetyl = A rounded or oval stone that, among ancient Semitic cultures, was considered the material embodiment of a deity's presence.

Bagnarola = Term in Italian to define a Bathtub or basin.

Basin = a large circular container used especially for holding water for washing.

Bastion = A work projection outwards from the main walls of a defensive *enceinte* (the main enclosure), designed to enable the garrison to see and defend the adjacent perimeter together with the area in front of the ramparts.

Battlement: = 1. A fortified parapet with alternate solid parts and openings, termed respectively "merlons" and "embrasures" or "crenels" (hence crenulation). Generally, for defence, but employed also as a decorative motif. 2. A roof or platform serving as battle post. 3. A decorative motif having the general shape of a battlement.

Beitraum = A building with a large hall where the altar is situated in the centre of one side of the *cella.*

Bent-entry = A technique where entrances were designed to have a sharp-angled recess or a curve. This allowed the defenders to have a tactical advantage over the invaders. The bent entrance served as an additional security measure to slow down or halt the progress of the invaders. The curved entrance made it difficult for battering rams to be used to break down the doors or walls, as the ram would need to make a turn before reaching the entrance. Additionally, the defenders could shoot arrows, throw stones, and launch other projectiles at the vulnerable invaders within the curve or recess.

Blocausse = A type of casemate.

Bocel (See also Torus) = 1. Refers to a rounded or elliptical convex moulding at the base of columns, located between the plinth and the shaft. 2. It can also refer to the projection of a step above the riser in a staircase. It is also commonly known as a "torus."

Bossage: In masonry, projecting, rough-finished stone left during construction for carving later in final decorative form.

Bothros (pl. *bothroi*) = Hole; cavity; pit; trench for libations and offering of sacrifices.

Caponnière = A defensive passage along a moat of a fort or cutting through the glacis, connecting the outer works to the main building; in some cases, it is also used for attacking enemy flanks along the moat.

Casemate wall = A city or fortress enclosure consisting of an outer and inner masonry wall braced by transverse masonry partitions, which divide the interstitial space into a series of chambers for fill or storage.

Casemate = A vault or chamber in a bastion, having openings for the firing of weapons.

Cella = (See also *Naos*).

Chemin de ronde = A walkway or path positioned atop a defensive wall or fortification. It allows sentries or guards to patrol along the wall, providing a vantage point for surveillance and defence (Also known as *allure).*

Colonnade = A number of columns arranged in order, at intervals called intercolumniation, supporting an entablature and usually one side of a roof.

Column = (See also *Pillar*).

Contraforte = Counterfort. A supporting structure built behind the wall to strengthen it.

Cocciopesto = (See also *Opus Signinum*).

Corbel = Corbel is an ornamental element that serve the purpose of supporting a cornice, which serves as a channel for water runoff. They are designed to protrude from the wall and provide both decorative and structural support for the cornice, while facilitating the drainage of water.

Cortijo = Spanish farmhouse.

Crenulation = (See also *Battlement*).

Curtain wall = 1. In ancient fortifications, an enclosing wall or rampart connecting two bastions or towers. 2. In ancient fortifications, an enclosing wall or rampart connecting two bastions or towers.

Curtain = The main wall of a defensive work, usually the length of a rampart between two bastions.

Cyma reversa = The cyma reversa, is a projecting moulding that is essentially a reversed cyma rectum (moulding concave in its upper part and convex in its lower part), and with *ovolo* (or *echinus is a* convex moulding profile used in architecture to soften edges and corners of various elements like columns) above a *cavetto* (see *cavetto*) is used for a crown or n the base of the column.

Flèche (See also *Lunette*) = A construction in the shape of an arrow, similar to a redan.

Fortress = A fortified military establishment a fortress without a city.

Frieze = 1. In Classical architecture and derivatives, the middle horizontal member of three main divisions on an entablature, above the architrave and below the cornice. 2. A decoration band at or near the top of an interior wall below the cornice. 3. In house construction a horizontal member connecting the top row of the siding with the underside of the cornice.

Cavetto = (See also *Gorge*) A concave moulding used in architecture and other objects.

Glacis = 1. A sloped embankment in front of a fortification, so raised as to bring an advancing enemy into the most direct line of fire. 2. Pressed sand and plaster barrier; a structure composed of a combination of compacted sand and plaster or aggregate materials.

Header = A masonry unit, laid so that its ends are exposed, overlapping two or more adjacent withes of masonry and tying them together; a bond stone; a bonder.

Hypethral = A building which is open, or partly open, to the sky.

Hypostyle = 1. A large space with a flat roof supported by rows of columns. Prevalent in ancient Egyptian and Achaemenid architecture. 2. A structure whose roofing was supported, within the perimeter, by groups of columns or piers of more than one height.

In Antis = Is a typology of temple in which the frontal columns are embedded into the side walls, creating an entrance with columns positioned between the antae, the protruding parts of the walls. This architectural arrangement generates an aesthetic effect of framing the entrance. Such temples were commonly found in ancient Greece and the Roman Empire. These temples may exhibit various architectural styles, but they all share the characteristic of placing the columns between the walls.

Kurkar = A regional modern Hebrew and Palestinian Arabic name for an aeolian sandstone with carbonate cement, marine molluscs, shell fragments, mammals, reptiles, bees and squires. 2. Fossilised dune sandstone.

Langraum = Long room.

Lunette (See also *Flèche*) = A crescent-shaped construction connected to the main structure by a covered passage, similar to a ravelin.

Masonry = The stonework or brickwork of a building or wall.

Mastaba = A rectangular superstructure of ancient Egyptian tombs, built of mud brick or stone, with sloping walls and a flat roof. A deep shaft descended to the underground burial chamber.

Merlon = In an embattled parapet, one of the solid alternates between the embrasures.

Metrology = the science of weights and measures or of measurement.

Moat = A wide and deep trench surrounding the walls of a fortress or castle, usually filled with water.

Mortar = A plastic mixture of cementitious materials (such as plaster, cement, or lime) with water and a fine aggregate (such as sand); can be trowelled in the plastic state; hardens in place. When used in masonry construction, the mixture may contain masonry cement or hydraulic cement (more durable) with lime (and often other admixtures) to increase its plasticity and durability.

Mundus = A pit in the ground dedicated to sacred libations.

Naos = The sanctuary of Classical temple, containing the cult status or place of the god.

Opus Africanum = 1. A type of masonry used in North Africa. 2. A framework of dressed stone is infilled with panels of mud brick or rubble

Opus Caementicium = *Opus caementicium* is a type of concrete that was widely used in ancient Rome for the construction of buildings, walls, and other structures. The term "opus caementicium" comes from the Latin words "*opus*", meaning "work", and "*caementum*", meaning "rough stone" or "rubble".

Opus Isodomum = A construction technique for building walls that utilizes perfectly carved and completely regular ashlars in stone blocks of equal weight and size.

Opus Pseudoisodomum = A construction technique where the ashlars have different measurements.

Opus signinum = The Latin term for hydraulic concrete, partially composed of crushed brick, that was used for covering walls and floors. This opus was waterproof.

Orthostate = 1. A stone taller than wide. 2. A stone in the lower course of a wall, higher than the regular blocks of the courses above, sometimes serving as a high base for a wall of sun-dried brick.

Peribolos = A sacred enclosure surrounding an ancient Classical temple.

Peristyle = A covered and surrounding corridor, open on the sides with columns, forming a kind of gallery around or in front of a building.

Pier-and-rubble masonry = Rubble masonry.

Pfeilertempel = Pillars temple

Pillar = 1. A column, pier, pilaster, or post that is capable of providing major vertical support. 2. As in pilaster; an upright shaft that supports an overhead structure.

Platform = A raised floor or terrace, open or roofed.

Plinth = 1. A square or rectangular base for column, pilaster, or door framing. 2. A solid monumental base, often ornamented with mouldings, bas reliefs or inscriptions. 3. A recognizable base of an external wall, or the base courses of a building collectively, if so treated as to give the appearance of a platform.

Plinth = A square or rectangular base so designed to give the appearance of a platform.

Podium = The high platform in an early Roman temple.

Poliorcertica (*Poliorceticon*) = the art of conducting and resisting sieges.

Pool = a small and rather deep body of usually fresh water.

Portico = 1. A covered entrance whose roof is supported by a series of columns or piers, commonly placed at the front entrance to a building.

Postern = A sally port: a vaulted stone tunnel under the ramparts leading to an inconspicuous rear gate used for the sorties in war; a small door near a larger one.

Pro-cella = (See also *Pronaos)*

Pronao = The inner portico in front of the *naos*, or *cella* of a temple.

Propylaeum = A vestibule or entrance of architectural importance before a building or enclosure.

Protome = In Classical architecture and derivatives, a projecting half figure, animal or human, used in a decorative scheme.

Ramleh = Regional Lebanse name (See also *Kurkar*).

Ramp = A sloped surface connecting two or more planes at different levels.

Rampart = A thick wall of earth or masonry that formed the main defence of a fortress. Typically, the rampart could reinforce the rear of the defensive system in conjunction with the terreplein.

Ravelin = In fortifications, a projecting outwork forming a salient angle.

Raw brick = (See also Adobe)

Redan = A triangular structure placed on the exterior of a fortification wall, facing towards a potential offensive direction. In coastal areas, the *redan* is constructed with embrasures and connected to a blockhouse.

Roca ostionera = Porous sedimentary rock composed of a conglomerate of sandstone and fossilised marine shell remains (*Glycymeris* sp., *Ostrea edulis*, and *Pecten* sp.) along with eroded sea stones. Additionally, it exhibits a lustrous brownish coloration.

Sanctum sanctorum (pl. Sancta Sanctorum) = 1. An inner chamber within a temple reserved only to High Priests. 2. Holy of the Holies.

Slab = A flat thick slice or plate of material such as stone, wood, concrete, etc.

Socket = A hollow or curved part into which something fits.

Spolia = (sg. *Spolium*) Derived from Latin, is a modern term used in art history to describe the reuse of materials or decorative elements from older constructions in new monuments.

Stretcher = A masonry unit laid horizontally with its length in the direction of the face of the wall.

Temenos =Term in English derived from the Greek *τέμενος*. A sacred enclosure surrounding a temple or other holy spot.

Terrace = 1. An embankment with level top, often paved, planted, and adorned for leisure use. 2. A flat roof or a raised space or platform adjoining a building, paved or planted.

Terreplein = An earth embankment, flattened at the top.

Torus = (See also *Bocel*).

Uraeus = (pl. Uraei) Upright symbol of a rearing Egyptian cobra *(N. haje).* Symbol of the goddess Wadjet, royalty and sovereignty. It can be found in amulets, jewellery and architectural elements beyond Egypt.

Wall-Tower = A tower built as part of a rampart of a castle, usually projecting outwards from the main curtain wall.

Introduction

The current research is structured into twelve chapters along with their respective appendixes. The focal theme of this study revolves around the domain of identifying instances of cultural entanglements during the Phoenician-Punic expansion across the Mediterranean. For the purpose of this research, the constructive techniques within Phoenician-Punic architecture have been selected as a potential indicator of these intricate interconnections. Stemming from these considerations, the underlying analytical challenge can be succinctly framed as an inquiry into "how this entanglement between Phoenician-Punic entities and indigenous communities is (or is not) presented to the public."

The chosen chronology spans from the 8th century BCE to the 1st century BCE. Despite this specific temporal demarcation, it is imperative to encompass a broader temporal scope, particularly within the Levant (Chapter 2). This is essential to comprehensively contextualize the architectural developments within the Phoenician-Punic context. Such contextualisation necessitates an examination of the advancements during both the Bronze Age (approximately 3000-1200 BCE) and the Iron Age. Notably, it is within the Bronze Age that the most significant strides in construction techniques occurred—a legacy that resonated across subsequent epochs and was adopted not only by the Phoenician-Punic communities but also by other Mediterranean entities in much later periods.

The utilisation of this extended temporal framework serves the dual purpose of enhancing the understanding of the lineage of architectural practices and acknowledging the pervasive influence of foundational techniques. This inclusivity enriches the interpretative spectrum, facilitating the identification of continuities that transcend the artificially demarcated historical divisions. It is in this holistic examination that the developmental trajectory of architectural techniques can be

apprehended as a continuum, from their inception during the Bronze Age to their enduring utilisation within the Phoenician-Punic and beyond, reverberating amongst various Mediterranean communities over the course of subsequent centuries. The chronology of the period referred to as 'Iron Age Iia' is problematic due to the existence of several different chronologies. Here, the maximum (c. 1000 BCE) and minimum (c. 800/780 BCE) dates were used to reference this period (for further references, see Hodos 2020, 50). The designated case study narrows its focus onto the archaeological site of Carteia—an ancient Phoenician-Punic foundation that bears a Roman occupation deeply interwoven within its architectural elements. The discourse on entanglement and its portrayal to the public assumes paramount significance due to the necessity of representing Mediterranean contacts as interactions that yielded outcomes aligned with the exigencies of their architects. Often, such "entangled innovations" have been erroneously categorised as "Roman" or "Greek" productions, or attributed to the processes of Romanisation and Hellenisation. This vantage point obfuscates the presence of non-Greek and non-Roman elements, rendering them imperceptible to contemporary societies, thereby misaligned with the trajectory of current research endeavours concerning the Ancient Mediterranean.

In an attempt to mitigate this process of "invisibilisation" in relation to the public sphere, the present study introduces the concept of Virtual Augmented Reality (VAR). The purpose of this prototype is to elucidate means of presenting cultural heritage characterised by a manifold identity.

Regarding the organisation of the chapters, the composition thereof adheres to the subsequent arrangement:

Chapter 1: Theoretical Underpinnings and Cultural Discourses

The first chapter delves into the realm of theoretical considerations underpinning the discourse. It engages with pivotal concepts such as culture, ethnicity, and identity, and further addresses

theoretical frameworks tailored to the nuanced exploration of cultural interaction. Among these, an exploration of antiquity's globalisation and the intricate notion of entanglement assumes prominence, both of which serve as overarching themes that intersect with the thematic focal points of this research.

Chapters 2 to 4: Formative Elements of Phoenician Architecture Across the Mediterranean

The ensuing chapters (2, 3, and 4) systematically present the formative attributes characterising Phoenician defensive and religious architecture. These chapters undertake a comprehensive survey of the Phoenician presence within the Mediterranean context. Chapter 2 undertakes an analysis of religious and defensive architectural paradigms in the Eastern Mediterranean, while Chapter 3 extends this purview to the Central Mediterranean—a pivotal crossroads fostering exchanges and innovations within Phoenician defensive architecture. Concluding this architectural analysis, Chapter 4 scrutinizes the nuanced facets reverberating within the Western Mediterranean, explicating their reception amongst indigenous communities, particularly within the Iberian Peninsula.

Chapter 5: Case Study - Carteia: Phoenician-Punic Heritage and Its Transformative Trajectory

Chapter 5 showcases a comprehensive examination of the selected case study, the city of Carteia. This focal point occupies a pivotal position within the research and is accompanied by extensive supplementary material within the appended sections of the present study. The strategic selection of Carteia is anchored in its dual identity as a Phoenician-Punic foundation imprinted by local communities and subsequently transformed during the Republican Roman era. This chapter sets

the stage for an in-depth exploration that traverses through the intricate interplay of local influences and emergent complexities within the context of architectural transformation.

Chapter 6: Architectural developments in Carteia – a comparative

The sixth chapter navigates the architectural trajectory of Carteia, with a discerning focus on the intricate landscape of defensive and religious structures. This comprehensive appraisal elucidates these architectural manifestations' developmental nuances and contextual significance, laying the groundwork for the ensuing analytical discourse. The chapter establishes the analytical backdrop upon which the subsequent discussions unfold.

Chapter 7: Evolution of Cultural Heritage Presentation and Digital Humanities

The seventh chapter undertakes a historical survey of the evolving methods of cultural heritage presentation, mainly through tools and devices designed to enhance its visual accessibility. This exposition provides a stepping stone to contemplation of Digital Humanities and their contemporary applications within Archaeology, thereby unearthing a spectrum of possibilities that they offer.

Chapter 8: Plural Identities and Cultural Heritage Representation

Chapter 8 engages itself in the discourse of plural identities, elucidating their archaeological remnants and their representation as cultural heritage within the public sphere. This chapter navigates the complexities surrounding the valorisation of certain communities, such as the Greek and Roman, potentially at the expense of other Mediterranean counterparts. Through this

exploration, the chapter probes the challenges intrinsic to deconstructing narratives that exclude the "other" from their public presentation.

Chapter 9: Methodological framework and fevelopment of Virtual Augmented Reality (VAR)

The ninth chapter delineates the methodological framework employed in creating the tool mentioned above, referred to as Virtual Augmented Reality (VAR). This chapter meticulously outlines the developmental trajectory, commencing from on-site data collection employing photogrammetry, three-dimensional modelling, and programming techniques. The detailed exposition encompasses the systematic progression from raw data acquisition to the sophisticated implementation of the VAR tool, thereby affording an insightful understanding of the technological process.

Chapter 10: Database organisation

Chapter 10 undertakes the exposition of the produced database, derived from the comprehensive aggregation of excavation reports conducted within Carteia. This segment enumerates the constituent elements that comprise the database and expounds upon the organisational schema that facilitated its coherent arrangement. The presentation underscores the meticulous curation of archaeological data, encapsulating a repository substantiating the research's empirical foundation.

Chapter 11: Final Discussion

The culminating eleventh chapter synthesises the diverse array of data, discussions, and insights amassed throughout the research journey. Anchored in the holistic examination of architectural

transformations, archaeological discoveries, and entanglements, this chapter culminates in a nuanced and comprehensive final discussion. This conclusive discourse reflects upon the thematic underpinnings of the research, offering a synthesised assessment of the overarching inquiry. It encompasses an intricate fusion of empirical findings, methodological rigour, and theoretical insights, culminating in a holistic understanding of the research's central theme and its consequential outcomes.

Appendixes 1 and 2

In order to enrich the debate about Carteia, the first appendix aims to present the archaeological site in the long term and the types of archaeological methodology applied for its understanding. The second appendix, on the other hand, presents the organized database that provided us with the means to better comprehend the locations chosen for the study of Carteia. Through this database, it was possible to get an idea of how the site appeared in different periods and how architectural techniques intermingled with each other.

Beforehand, it is necessary to clarify that no ancient "guide" on Phoenician-Punic architecture has survived until nowadays. There are also no mentions of authors from Antiquity who dealt with the subject. However, this chronic lack of textual sources does not mean that no specific traces regulated the construction methods of Phoenician communities. Thus, to a great extent, archaeological findings and continuous excavations, mainly in Iberian soil, have been demonstrating some standardisations of Phoenician-Punic constructions (e.g. Anglada Curado *et al.*, 1993; Mata, 1999; Díes Cusí, 2001; Arteaga and Roos, 2002; Roldán *et al.*, 2006; Gener Basallote *et al.*, 2014; María Gener and Martínez, 2015).

Studies conducted within the Iberian territory have provided a fertile ground for the advancement of knowledge concerning the configuration of a Phoenician city and its architectural framework. The

interplay between indigenous Iberian communities and Phoenician settlers has facilitated a conduit for the evolution of local construction techniques, notably influenced by Semitic paradigms. This dynamic interchange has engendered a symbiotic relationship, fostering the assimilation and adaptation of architectural practices imbued with pronounced Phoenician inspirations (e.g. Anglada Curado *et al.*, 1993; Díes Cusí, 1994, 2001).

The data emerging from these Mediterranean locales still remains incipient, posing limitations on the execution of comprehensive comparisons. (Sharon, 1987; with the strong exception of Díes Cusí, 2001).

Despite the presence of concise comparative commentaries, these narratives fall short in providing the requisite depth necessary to underpin the establishment of adequate comparands. Consequently, the endeavour to elucidate the expansive trajectory of Phoenician-Punic construction techniques is beset by opacity, rendering this thematic terrain intricate for scholars who aspire to undertake investigations capable of tracing the evolution of Semitic construction practices and their intricate interplay with other communities as they navigate the expanse of the Mediterranean Sea. This complexity imparts a level of ambiguity that underscores the challenges inherent in deciphering the intricate dynamics of architectural diffusion within this multifaceted milieu.

Thus, it becomes evident that a more comprehensive exploration of the emerging data is imperative to unravel the intricacies of the subject matter at hand. An additional factor complicating research within this domain pertains to the selective preservation of specific sites and the sustained existence of numerous Phoenician cities in contemporary times. The scarcity of instances where archaeological sites have been abandoned and remained unoccupied presents a significant challenge.

A prime illustration of this challenge is the emblematic case of Kerkouane. This Punic-Berber city has been remarkably preserved to a large extent, as expounded in the section 3.3.1). The continued human habitation in these locales has engendered stratigraphic layers spanning diverse periods. This scenario is further compounded by the prevailing proclivity to emphasise pivotal epochs in human history, notably the Hellenistic expansion and the Roman Imperial era. This predilection engenders a heightened valorisation of these specific historical junctures while inadvertently placing earlier periods, such as the Phoenician-Punic architectural milieu, at a lower stratum — oftentimes beneath Greek and Roman layers. Moreover, the subsequent historical periods, including the Byzantine and Crusader occupations, further obscure the accessibility to the vestiges of Phoenician-Punic architecture. This intricate stratigraphic and historical context significantly complicates the pursuit of research endeavours pertaining to the Phoenician-Punic architectural legacy.

1. Chapter 1 – Theoretical approaches to cultural diffusion in the Ancient Mediterranean

1.1. Introduction

This chapter will present the reference concepts that will guide the present research. Initially, the ideas of culture, ethnicity, and identity will be discussed. Secondly, the concepts of globalisation and entanglement will be addressed. To initiate the discussion, it is necessary to begin by presenting the definitions that will be applied in this research regarding the concepts of "culture", "ethnicity", and "identity" and their associated terms. The set of these approaches are considered to be necessary for the interpretation of our data.

1.2. Applied theories

1.2.1. Culture

Culture can be defined as follows:

> A set of beliefs, *practices, rituals, and traditions shared by a group of people with at least one point of common identity (such as their ethnicity, race, or nationality). [...] Culture has thus come to stand for "weak" rather than "strong" ties between people within a given collectively. The types of cultures that are now said to exist are innumerable – there is making culture, work culture, music culture, sports culture, and so on (Buchanan, 2010, p. 312).

Recent interpretations have revived the debate over "what is culture" and shed light on a problem that was previously assumed to have been resolved during the Historical-Culturalist (and Processualism) period in Archaeology. Causadias (2020, p. 310) mentioned that culture was a fuzzy concept in a long and constant reviewing (e.g. Kroeber and Kluckhohn, 1952 where the authors

make a deep analysis from the ethymology of the word until its manifestation phenomenom; Durham, 1991; Lonner and Malpass, 1994). These interpretations such as made by Tobby (2015, pp. 531–532) go hard on the concept considering it as a protoplasm and a black box. Another harsh comment over the term comes from Betzig (2005, p. 527) who equated it in a seven-letter word that stands for god. However, it is important to consider all formative aspects of a culture in order to gain a comprehensive understanding of it and the actual view on it. For example, let us consider the famous passage in which Gordon Childe (1930, 41-42), as exponent of the Historical-Cultural period, defines culture as "distinct mortuary practices from one group to another, as well as architecture, art, their types of tools, weapons, containers, and ornaments." In another passage, he mentions that "distinct metals, bones, and ceramic types (artefacts), regularly found associated with burials and settlements over a given geographical area, along with the peculiarities of domestic and funerary structures, constitute what is called culture" (Childe 1930, 42).

Later, Lewis Binford, the most prominent representative of Processualism, following the steps of the anthropologist Leslie White (1959, pp. 227–228), stated the methodical formula that "culture means the extrassomatic or adaptive" (Binford, 1962, p. 62). Following Binford, processualism archaeologists tended to view culture in terms of systemic adaptiveness (Phillips and Willey, 1953; e.g., Clarke, 1968; Flannery, 1972; Dunnell, 1980) with respect to the environment, treating culture as a mechanism fuelled by feedback processes (Hall 2005, 20).

From the 1970s onwards, a new generation of researchers (e.g. Hodder, 1982; Shanks, 2008) contested the Processualism. The main disagreement was the functional explanation of the archaeological record (Hodder, 1982, p. 48). Due this, a new approach so-called *Post-Processualism* opened a new path to understanding Archaeology as discipline. One of the first post-processualists or contextual archaeologists were Ian Hodder (1982, pp. 119–122) who questioned the Processualists assumptions that could "calculate human behaviour. For him the material cultural was not just an ecological adaptation or socio-politics organisation (Trigger, 2004, p. 338). Ian

Hodder defines culture as a set of symbols whose meanings are derived from content and association (1982, pp. 9–10).

Within the contextual archaeological, according to Cristopher Ulf (2014), an important research on the cultural studies, the term "culture" when not confused as a synonym for "ethnicity", often assumes certain romantic nuances. (cf. West 1997, 1, where the author compares culture to a gas that dissipates in the air). Ulf suggests that the essentialisation of the term "culture" is inadequate when analysing the context. According to Ulf, it is necessary to understand the transmission line of culture in detail. Even not defining the term "culture", Ulf suggest a detailed analysis of how some techniques are transfer from one group to another.

A problem arises from the use of "culture" as a solid set of traits that can be transferred from one group to another. Culture then becomes a label that can be applied to complex social groups. This labelling becomes even more pronounced when a particular "culture" begins to "spread" into another or vice versa, thus generating the issue of "acculturation". According to the *Oxford English Dictionary* the term "acculturation" *per se* emerges during the 1880s by John Powell (1880) to describe the changes in the indigenous North American languages due the contact with the Europeans immigrants. At the same period, Alexander Chamberlain (1891) tried to understand how Indigenous communities and black Africans contribute for the formation of the United States (for a further discussion see Rudmin, 2003).

The two examples provided (i.e., Powell and Chamberlain) are just a few among numerous studies conducted to understand the so-called phenomenon of acculturation. This type of understanding among Indigenous communities, Blacks, and Whites has permeated and continues to permeate the current scientific literature (e.g. Härke, 2003; Berry, 2005; Leal, 2011; Chen, 2015). Nevertheless, some researchers have embarked on a task to reconsider the notion of "acculturation". One of these authors is Hall (2000, 108) that from the study of the complexity of Hellenicity (i.e. the shared heritage between Greeks and indigenous communities in different parts of the Mediterranean) noted the need for a deepening of this issue (2000, 108-109). To recalibrated the understanding of

the concept of "acculturation", Hall (2000, 108-109) point some considerations as the: 1) theory of acculturation and the presumption of monolithic cultural entities and, 2) the assumption that one of the two cultures would be passive in receiving elements from the other. This term, by itself, not only assumes that cultures petrify, as distinct phenomena, but also infers that one of these entities (generally the one considered less developed) as a passive recipient of a more advanced one ((Ulf, 2014, p. 509).

According to Ulf (2014, pp. 510–511), it is necessary to guide studies on cultural contact in the Ancient World beyond the concept of "acculturation" it is need taking into account three considerations made by the author: i) the inquiry into ethnicity and culture cannot be based on essentialist views; ii) the communication channels between producer and recipient should receive greater attention in order to understand, in fact, how the diffusion of a certain technology to other areas occurred; iii) the means of use and adaptation of imported objects and ideals need to be considered taking into account their recipients, not as passive agents, but on an equal basis with the nucleus from which the phenomenon originated (Ulf, 2014, p. 510).

1.2.2. Ethnicity and Identity

The concept of ethnicity has varied widely within the field of Archaeology. During the period of Historical-Culturalism, a view prevailed in which ethnicity was strongly linked to Nation-States (e.g. for Denmark Nyerup, 1807; Thomsen, 1836; for Germany see Kossinna, 1911, 1926). The utilisation of the concept fuelled the nationalism of several European countries. During the 19th century, Gustav Kossinna (1858-1931) (1911) was one of the proponents who believed in the ethnic paradigm, which he referred to as "Settlement Archaeology" (Kossinna, 1911; Jones, 1997, pp. 2–3). The premise of this type of analysis consisted of characterizing different types of artefacts. Kossinna employed as a fundamental premise the notion that various types of artefacts can be utilised for the identification of cultures within a particular region. Their persistence in a specific site led to the conclusion that an

ethnic continuity had taken place. Kossinna believed it was feasible to identify larger ethnic groups in prehistory, such as the Germans or Celts. Other distinct cultural groups would correspond to tribes, such as the case of the Vandals (Jones, 1997, p. 16). Through this interpretation, it would be possible to distinguish cultural provinces and settlements among populations, thus identifying the ethnicity based on material culture. This approach fails to identify the nuances that exist among different communities, as it assumes that differences between artefacts would imply a new culture. However, it is important to note that this approach is deeply problematic and has been discredited also due to its association with nationalist and racist ideologies. Modern archaeology recognizes that ethnicity is a complex social construct that cannot be accurately determined solely based on material culture. Archaeologists today employ more nuanced and contextual approaches to understand past societies, taking into account multiple factors such as social, economic, and political dynamics, rather than relying solely on the identification of artefacts (cf. Kossinna, 1911, 1926).

Kossinna attempted to create a technique for analysing the descent of Germanic peoples. His analysis classified their ancestors as descendants of the Indo-European Aryans, a perceived "superior race" to other human groups that expanded throughout Europe. Kossinna's classification provided a foundation that, starting in the 1940s, allowed the Nazi Party in Germany to exploit this narrative to justify their acts of mass extermination against Jewish communities, which they considered impure. This misuse of Kossinna's ideas by the Nazis exemplifies the dangerous consequences that can arise from the manipulation of archaeological theories and concepts to serve racist ideologies (see Klejn, 1974).

During the period of debate on the descriptive methods of Historical-Culturalist Archaeology, the New Archaeology (Processual Archaeology) emerged, shifting the focus away from ethnicity as a significant factor for interpreting material culture. Understanding ethnic groups and ethnicity became less important for archaeologists in this approach, as they aimed to firmly rely on the scientific notion of objectivity (Jones, 1997, p. 5).

In contrast to Kossinna's approach, New Archaeology sought to understand cultural changes over time by the interactions between human societies and the environment in which they lived. It considered material culture as a reflection of adaptive strategies and choices made by human groups to cope with environmental and social challenges. This new perspective brought a more scientific approach to archaeology, incorporating advanced methods and techniques such as chemical analyses, paleoenvironmental reconstruction studies, and absolute dating using radiocarbon. These advancements allowed processualism archaeologists to gain a more precise and detailed understanding of past societies.

Another element that contributed to the abandonment of the debate on ethnicity was precisely the attempts of Historical-Cultural Archaeology to establish connections between biologically and culturally defined human communities and some ancestral prehistoric ethnic group. (Olsen and Kobylinski, 1991, pp. 9–10).

Later, with the criticisms raised by Ian Hodder (1978) and others to the *New Archaeology*. And others towards New Archaeology, the concept of ethnicity regained strength for interpreting the archaeological record, material culture, and its context. Ethnicity became an effective component for understanding cultures beyond the functionalist paradigm but as a criterion of identification (cf. McGuire, 1982). However, the concept underwent a revitalisation to ensure it did not flirt with the racist theoretical developments of the past century.

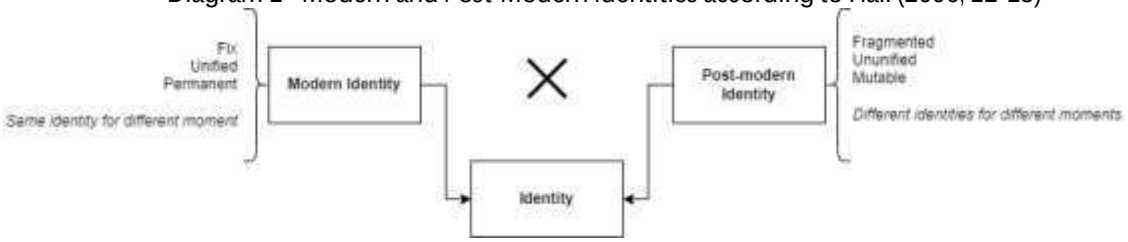
An example of this is the interpretation conducted by Carol Dougherty and Leslie Kurke (2003). Despite these authors belonging to Classical Studies and being more aligned with a historical-culturalist approach to understanding the Ancient Mediterranean, they drew heavily from the revitalisation that the concept underwent through contextual theoretical developments.

Based on the argument made by Dougherty and Kurke (2003, 6), ethnicity is considered to be one of the key formative elements of a culture. However, if other formative elements are not taken into consideration, discussions about culture become meaningless.

Carla Antonaccio (2009, 32) notes that the concept of ethnicity is a highly contested field in current studies. The author also argues that "Classical Studies are an active agent in the construction of modern ideologies" (Antonaccio 2009, 32). Indeed, if we trace back the origins of the nation-state, the idea of "us" versus "them" was being constructed in Europe and the United States. Considering national cultures as "imagined communities" as suggested by Stuart Hall (2006, 47), leads us to the initial moments of nation-state formation and attempts to construct unique cultural characteristics for each political entity. The modern world and its national cultures constitute part of national identity, which often defines its inhabitants by their nationality (e.g., Brazilians, English, French, Italians, Indians, and Chinese, among others). However, according to Hall, the use of the adjective "national" is metaphorical since identities are not inscribed in each individual's genetic code (Hall, 2006, p. 47).

Hall (2006, 16-38) reminds us that the modern individual (or rather, the white man in relation to other minorities) would have relied on this essentialisation to form their own identity. From the 1960s onwards, this ideology was increasingly contested and decentralised. This decentralisation (Diagram 1) would be seen as a threat to the position of this subject who, for centuries, had been in a dominant position within a cultural formation that legitimised them. (Antonaccio, 2009, p. 32) However, with the progress of countercultural movements, identity came to be understood as a continuous movement formed over time and through unconscious processes. (Hall, 2006, 16-38; Díaz-Andreu 2005, 2).

Diagram 1 - Modern and Post-Modern Identities according to Hall (2006, 12-13)

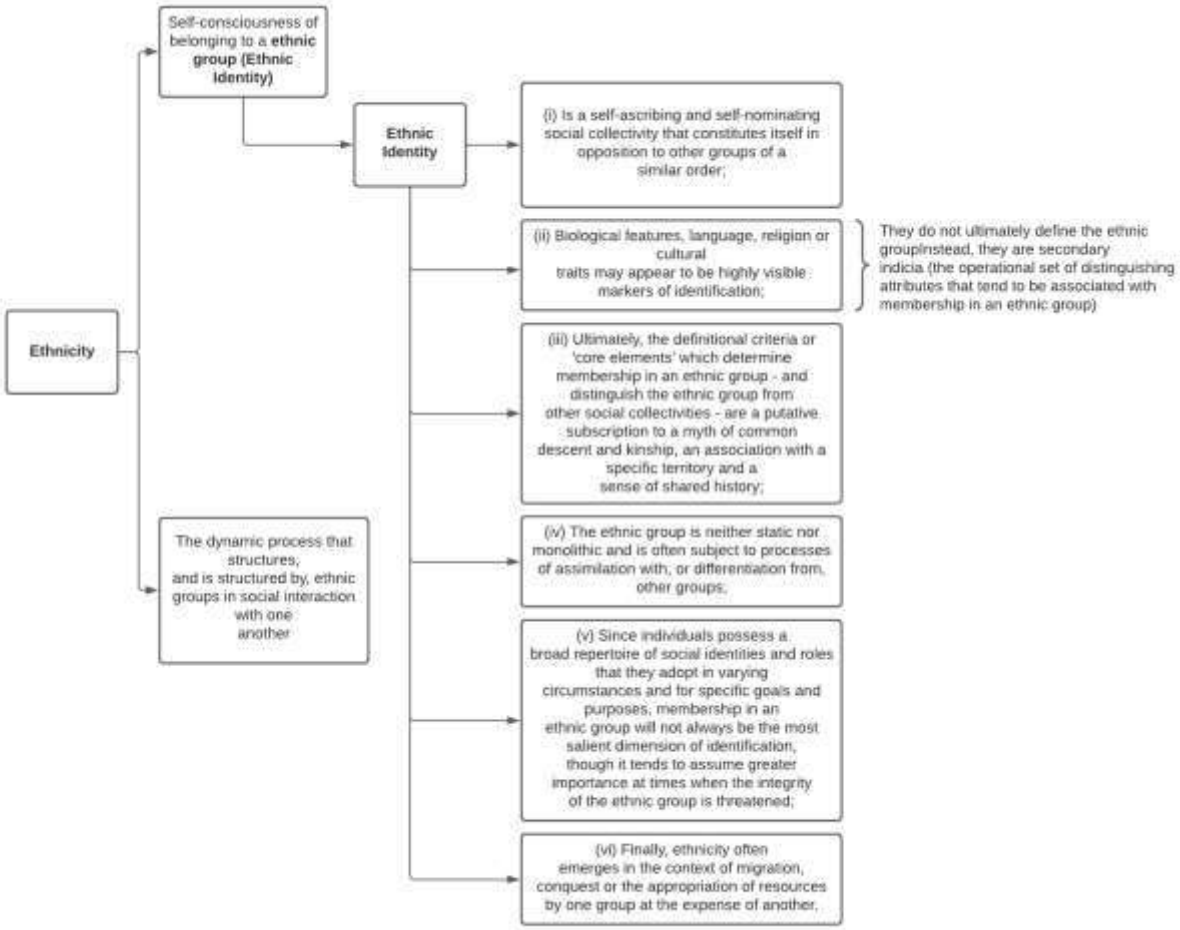


Source: Created by the author (2023)

Jonathan Hall (Diagram 1) situates identity within the concept of ethnicity. By defining "ethnicity" and "ethnic groups," Hall (2005, p. 9) considers the former as a process of self-awareness of

belonging to an ethnic group. The dynamics of this process would be structured and would structure the ethnic group in social interactions. (Hall 2005, p. 9)

Diagram 2 - Ethnicity according to Hall (2005)



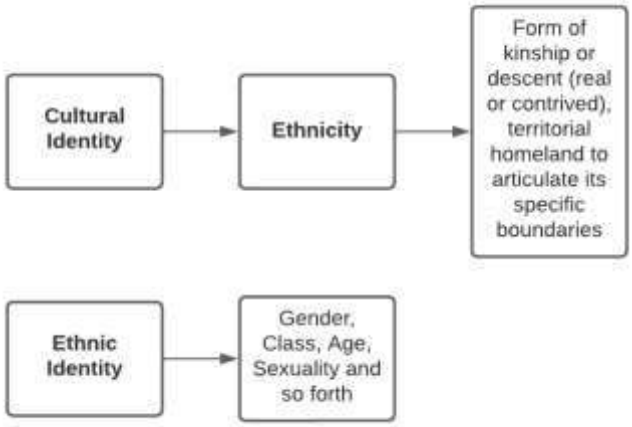
Source: Created by the author (2023)

The author understands “ethnic groups” as an “ethnic identity” (Hall, 2005, p. 9). Therefore, Hall (2005, p. 9) summarises seven understandings about it: (i) ethnic groups generate their own self-attribution and self-naming; (ii) biological, linguistic, and religious traits appear as the most prominent characteristics, without being exclusively the decisive criterion for defining the ethnic group; (iii) the defining criteria that determine membership in an ethnic group and its distinction from other social collectives are assumptions based on myths of common origin, descent, and

consanguinity in an association located in a specific territory and a sense of shared history; (iv) the ethnic group as a collective is not static but constantly changing; (v) membership is not the only criterion for identification since its members have a wide repertoire of social identities, but it assumes primacy in moments of threat to the group's integrity; and (vi) ethnicity emerges from contexts of migration, conquest or appropriation of one group at the expense of another (Hall, 2005, p. 9).

Antonaccio (Diagram 2) distinguishes cultural identity from ethnic identity, as it "goes beyond characteristics such as gender, social class, age, sexuality, and so on" (Antonaccio 2009, 33). According to the author, within an identity, there is also "ethnicity", which is nothing more than an identity with criteria based on "forms of kinship, descent (real or artificial), and territorial homeland that articulate specific boundaries". According to the author, ethnicity would be a specific type of identity (Antonaccio 2009, 32-33).

Diagram 3 - Cultural Identity and Ethnic Identity according Antonaccio (2006)

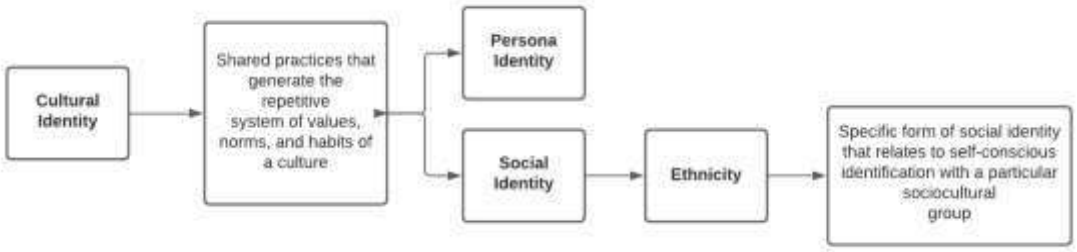


Source: Created by the author (2023)

According to Tamar Hodos (Diagram 3), "cultural identity" can be seen in the use of shared practices that are passed down through generations. Cultural identity is generated through this repetition of practices, values, social norms, and cultural habits. The author also acknowledges other forms of

identity, such as individual and social identity, which complement each other in terms of the "I" and "we" (Hodos 2010, 4).

Diagram 4 - Cultural Identity and Ethnicity according to Hodos (2010)



Source: Created by the uthor (2023)

As it can be perceived, there are several conceptualisations for the study of identity, culture, and ethnicity. In order to proceed with our study, I will take extracts from the definitions of Hall (2005), Antonaccio (2006), and Hodos (2010), as previously presented. It should be noted that these definitions were chosen for their flexibility and for being part of a recent post-processual bibliography that reflects on the trajectory of culture and its modes of materialisation. Thus, they can be better harmonised with our object of study (in this case, the diffusion of Phoenician construction techniques), given the recent literary review through which the Semitic communities, labelled as Phoenicians, have been undergoing.

1.2.3. Globalisation

There is no consensus on the definition of *globalisation*. John Tomlinson (1999, p. 2) considers globalisation as "complex connectivity". From this concept, he defines globalisation as a fast developing and densification of networks. Nederveen Pieterse (2012, pp. 15–17) noticed that the phenomenon of globalisation are based in presentism (i.e. focused on the development of the it from the 1970s onwards), fact that hide the possibility to analyse it in the past. According Pieterse, there are not just one globalisation that encompass everything, but regional "globalisations", where

the connectivity accelerates (e.g., the Arab-Muslim and the so-called "Graeco-Roman" world). Still, it is mostly asserted that the defining aspect of this process is the increase in connectivity and sharing of cultural customs, civil society, practices, and the environment. Therefore, it is possible to identify different types of globalisations, such as financial, commercial, economic, or political. Many also agree that globalisation is asymmetrical in pace, scope, and impact (Hodos 2017, 4).

According to Hodos, "globalisation" is one of the most powerful theoretical frameworks at the moment as it highlights the sociocultural connectivity to the networks through which these connections are maintained and developed (Hodos 2017, 3).

Justin Jennings (2017) considers globalisation as "complex connectivity" which means the development of a "dense network of intense interactions and interdependencies" between individuals goods, ideas and (Jennings, 2017, pp. 13–14).

Firstly, it is important to emphasise that globalisation is not a "global" phenomenon, as the very word suggests. Globalisation should be understood as a phenomenon that does not affect all communities. The concept, per se, is not intended to refer to a sense of comprehensiveness but rather to a particular scale (Hodos, 2015, p. 240; Knappett, 2017, p. 28).

Hodos asserts that the term "globalisation" is merely a descriptor of enhanced connectivity processes that occur with the increasing intensity in the economic, political, social, and cultural spheres. However, there are two key elements discussed by the author (Hodos, 2015, p. 242), that account for understanding the essence of globalisation. These are:

- Incorporation of loosely shared practices or knowledge that go beyond national or cultural ideals;
- Intensification of communication and collaboration at a global level, among different groups and individuals. Regarding the latter, the author asserts that paradoxically, instead of promoting homogeneity, the opposite occurs. There may be a reinforcement of cultural heterogeneities, not necessarily conscious, but active during global interaction (Hodos, 2015, p. 242).

Hodos asserts that there is a problem in dating the phenomenon of globalisation. Some claim that it is a phenomenon that emerged after the 16th century. Other researchers (e.g. Ghemawat, 2011) see it as equivalent to the term "Westernisation." For others, it implies homogenisation, standardisation, and uniformity that obscure variations and differences (Hopkins, 2002; see Ritzer and Ryan, 2002; Beck, 2003; Jennings, 2017). While exploring the potentiality of cultural contact theories such as globalisation, Hein (2022, p. 579) encourage the discussion of the topic beyond the "Euro-American" sphere to give voice to indigenous communities at the same pace in which raise issues around the Eurocentrism, colonial appropriations and racism. To this author the field of the topics which involve cultural contacts are promising ways to deliver a multi-voiced understanding of the human and even non-human-past (2022, p. 579).

The outcome of the globalisation process cannot be considered solely as the fusion of cultural practices. As culture is an ever-changing process, globalisation would entail blending cultural practices. However, although the origins may be visible, it does not necessarily mean that their social significance has remained the same (Hodos, 2015, p. 242).

Regarding the longevity of globalisation, Hodos argues that some scholars consider it a recent phenomenon, while others see it as a long-standing one (Hodos, 2015, p. 243).

There is also the issue of *glocalisation* within *globalisation*. This concept explains how social practices evolve to facilitate a global understanding. Often, these practices are adapted to directly or explicitly engage with local groups to foster communication and understanding between different cultures (Hodos, 2017, p. 6).

Another aspect of globalisation that is often discussed is *grobalisation*, which highlights the homogenising effect of globalisation. This perspective seeks to understand issues related to imperialism, and focuses on how international organisations, nations or corporations seek to increase their influence over other geographical areas. The prefix "*gro*" comes from the word "grow". These entities focus on finding new markets and expanding their reach, without necessarily

considering the cultural impact or local variations that may be present due to glocalisation. The result is often a more uniform approach that can undermine cultural diversity and local practices (Hodos, 2017, p. 7).

In this way, the concept of globalisation seeks to balance all processes of competition and response. The aim is to create a framework in which interrelated relationships such as culture, power, economy, and other actions can be considered. It is an attempt to understand the complexities of globalisation and its impact on various aspects of society and to develop strategies to help mitigate negative consequences while promoting positive outcomes. By considering the interconnections between multiple factors, it is possible to create a more nuanced understanding of globalisation and its effects (Hodos, 2017, pp. 8–7).

From this point, it is possible to conduct a more detailed analysis to identify the actors involved in the process, their intentions, and the local responses to these changes. The actors involved may include governments, international organisations, corporations, and other entities with a stake in the global economy. Through careful examination, it is possible to understand better the dynamics of globalisation, including how different actors interact with one another, the extent to which they can influence outcomes, and the consequences of their actions for local communities and societies.

1.2.4. Entanglement

The theory of entanglement is also one of the most potent theoretical approaches for understanding the relationship between things and humans from the perspective of Archaeology. Ian Hodder (2012, p. 2) argues that understanding a particular object in a specific context goes beyond simply knowing its use in that community. He provides an example of the painting of a piano in the Mesolithic period at the archaeological site of Lepenski Vir (Figure 1). Hodder (2012, 2) argues for interdependence between things and humans. By placing a grand piano in the reconstruction of a site based on the discovery of stone tools in the Danube area dating back 8000

years, we are immediately forced to analyse the absurdity of the scene carefully. This deeper analysis leads to obvious truths, such as: 1) that piano belongs in grand concert halls; 2) a well-developed skill is required for its manipulation; 3) it is based on 12 specific tones of the Western system; 4) its manufacture requires great precision in its iron structure and high-tension wires, which were only available after the Industrial Revolution (Hodder 2012, 3).

Figure 1 - A piano at the site mesolithic of Lepenski Vir

Source: Hodder (2012, 2, fig. 1.1)

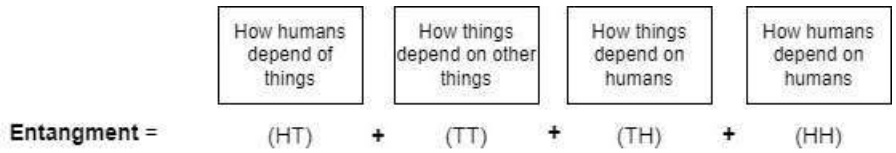
From these truths and the shift in perspective, Hodder argues that the focus moves away from society towards the analysis of the thing itself. This allows for a deeper examination of the multiple relationships between that thing and the world (Hodder, 2012, p. 3).

The concept of entanglement is necessary to explain how relationships between "things" and humans occur. But what exactly does Hodder mention the "things"? According to the author, "things" are understood as "an entity that has presence, by which I mean it has a configuration that endures, however briefly." However, this classification also applies to the term "object."

However, Hodder (2012, 7) points out that the term "object" is much more commonly used to define things that are more stable in their form (e.g. We can call a cloud a "thing", but it is less likely that we would call it an "object") (Hodder, 2012, p. 7).

After clarifying what "things" are, Hodder presents the concept of "entanglement" using the following formula (Diagram 5).

Diagram 5 - Hodder's formula on entanglement



Source: Author (2023)

Philipp Wolfgang Stockhammer is another author who understands the term "entanglement" as a better way to understand the phenomenon of cultural exchanges and their material results (2012). According to Stockhammer (2012a, p. 47):

> In order to avoid the preoccupations of a biological metaphor, I would like to switch to a different term, which is "entanglement" in English and "Getlecht" and "Yerflechtung" in German. Both terms comprise the aspects of agency, processuality and the creation of something new, which is more than just an addition of its origins. "Entanglement" and "Getlecht/Yerflechtung" avoid the notion of text – and therefore culture as a text – which is connected with terms like "texture" or "Gewebe", and point rather to the unstructuredness of human creativity.

The term "entanglement" has been used in-depth by archaeologists (e.g. Hodder, 2012; Stockhammer, 2012a; Burke, 2014; Silliman, 2016 and others) to understand the process of cultural contact and absorption. This concept can also be applied to antiquity instead of other theories that seek to identify the phenomenon of communication and exchange as "hybridisation." The term "hybridisation" per se is highly problematic because it evokes echoes of recent colonial history

(Stockhammer, 2012a, pp. 46–47, 2012b, pp. 1–2). Even when applied to antiquity, this idea can fall into dangerous territory, such as racist or xenophobic arguments, by evoking a pure and idealised past that must be preserved. One result of this problem is the spread of conspiracy theories, such as the Great Replacement theory, which claims that a white genocide led by non-white immigrants is underway. Such arguments victimize non-white communities in the Americas and Europe every year. As a result, the term "hybridisation" assumes that something is pure. "Entanglement" would therefore be an ideal term to describe the phenomenon of cultural contact and exchange. Changing the terminology is an important step in stopping current racist movements that rely on a romantic past.

1.3. Conclusion

This chapter aimed to serve as a guide for the subsequent reading of this research. Throughout the discussion, it became clear that it is not possible to dissociate the concepts of culture, ethnicity, and identity into separate categories. Based on the presented authors, these conceptualisations blend and complement each other. In general terms, culture is understood as a concept formed by non-monolithic elements that transform according to the context of their times and through processes that are not always conscious. Inevitably, culture uses tools such as traditions to create a "we" and "others" (Antonaccio 2009, 32). It is important to emphasise here that culture is not imprinted in an individual's genetic code but is transmitted within a particular society, forming a truly imagined community (Hall 2006, 47).

Regarding the issue of identities, Antonaccio points out the existence of a difference between cultural identity, related to natural or artificial forms of association within a territory, and ethnic identity, which is based on gender, social class, age, sexuality, and so on. This chapter aimed to serve as a guide to guide the subsequent reading of this research.

In line with previous considerations, Hodos (2010, 4) comments on verifying cultural identity through the analysis of intergenerational shared practices. These practices are repeated to create values, social norms, and cultural habits. Cultural identity is formed by personal (individual) and social identity directly related to ethnicity. The latter is a specific form that connects self-identification with a particular cultural group. Regarding the phenomenon of globalisation, Hodos considers it a process with multiple definitions that converge on increased connectivity, sharing of ideas, customs and practices, dialogue among different civil societies, and debates that cross-national borders. However, it must be noted that other types of globalisation vary in terms of pace, scope, and impact.

In the following chapters (2, 3, and 4), the formative elements of Phoenician defensive and religious architecture will be presented. To provide an overview of the Phoenicians in the Mediterranean, the three next chapters are organised as follows. Chapter 2 attempts to comprehend the religious and defensive architecture in the Eastern Mediterranean. Chapter 3 does the same for the Central Mediterranean, an important meeting point where exchanges and innovations in Phoenician defensive architecture occur. Finally, Chapter 4 presents the nuances that reached the Western Mediterranean and how they were received by indigenous populations, particularly in Iberia.

2. Chapter 2 – Phoenician defensive and religious architecture in Eastern Mediterranean

2.1. Introduction

The aim of this chapter is to analyse how some constructive techniques from the Levantine Bronze Age and how they became a "Phoenician" pattern for defensive and religious architecture. To debate over the "Phoenicians" Initialling it will be discussed about what is considered Phoenician and the Greek origin of the term. There is an academic consensus which agree that we can speak about "Phoenicians" just after the 1200 BCE (Stieglitz, 1990, p. 9; Bondì, 1999, p. 23; Ciasca, 1999, p. 168; Moscati, 1999, p. 20; Aubet, 2001, p. 12; Edrey, 2019b; Kormikiari, 2019, p. 42; Killebrew, 2022, p. 39). Before it the Levant, the area of study in this chapter, was inhabited by Levantine communities. The reason of this is the "Phoenician" survival after the Invasion of the Sea People, a not well-known phenomenon that destroyed several cities in the Near East. Several cities (e.g., Byblos, Tyre, Sidon, Sarepta, Arwad, Tel Kazel, Kition and son on) survived and developed distinct characteristics while sharing common elements such as construction techniques, language, and religion. This chapter presents samples as examples from various archaeological sites in the Near East to demonstrate that the "Phoenicians" maintained a significant cultural continuity with the preceding "Levantine" societies of the Bronze Age. In order to trace changes in architecture over time, it is essential to examine the Bronze Age period (approximately 3000-1200 BCE) and determine if any continuity exists. Therefore, this study will utilize the Bronze Age as a comparative reference point. The chapter is divided into three parts: 1) Initial considerations on the topic; 2) Defensive architecture – similarities, differences, and concluding remarks; and 3) Religious architecture – similarities, differences, and concluding remarks.

Figure 2 - Archaeological sites and cites commented on the text

Source: Created by the author (2023)

2.2. Defensive architecture

2.2.1. What is similar at different archaeological sites?

Defining the Phoenician architecture in the east requires attention to its formative aspects. Its origins date back to the Neolithic; however, it will be in the late of the half 2nd millennium BCE with the site of Ugarit (present-day Ram-Shamra) as a prime exemplar of inspiration to other Levantine communities. This critical centre has its roots in the Neolithic period, but it will be only in the 2nd millennium that it will prosper and extend its influence towards the Levant (Van Beek and Van Beek, 1981, p. 71).

The Levantine defensive systems that surrounded the urban centres consist almost exclusively of a construction of a two parallel lines of wall filled with rubble, a technique known as pier-and-rubble (Sader, 2019, p. 126). Each carved stone is 1-2 m high and, in some cases, 0.5 m, cut into blocks. The first wall is ~ 0.6-2 m away from the second, the most common distance being 0.8-2 m (Van Beek and Van Beek 1981, 70). The void between these walls is then filled with fieldstones collected from riverbeds or even rubble such as ceramic fragments, dirt and other stones to construct a robust part of the curtain wall. From the Iron Age onwards, it expanded intensively along the Levantine coast, as can be attested at Bethel, Ai and Tell Abu Hawan and Beth Shemesh. Thus, pier-and-rubble use seems to have become a technical Levantine standard. (Van Beek and Van Beek, 1981, p. 71; Sharon, 1987; Edrey, 2019a, p. 74).

Van Beek and Van Beek (1981, pp. 75–76) argue that the pier-and-rubble technique would be Phoenician in origin arguing that the technique appeared in the Levant (in coastal Phoenicia and Israel) where the canon was developed and followed (i.e. the header-stretcher bond). From there, it

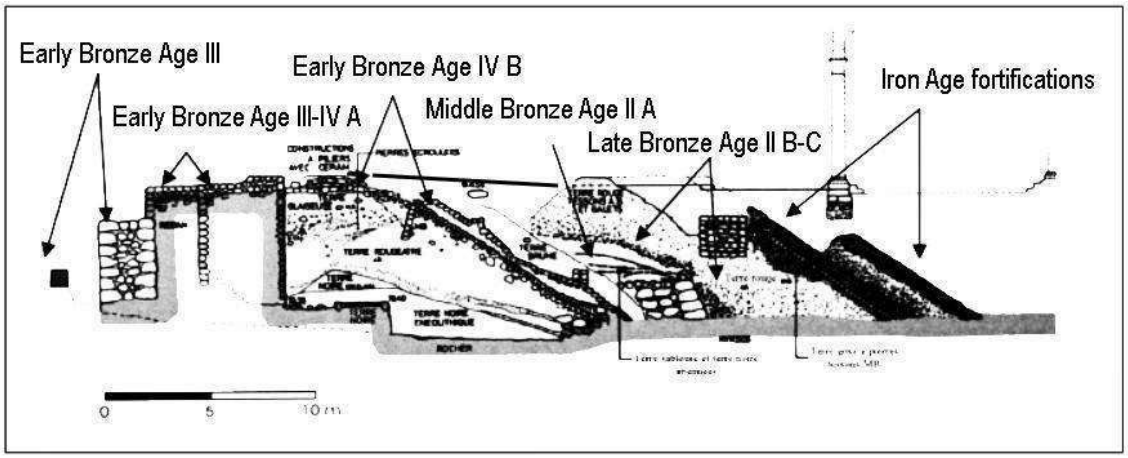
would have spread from the Late Bronze Age to Palestine to Levantine foundations in the west, Greece, and North Africa. However, the authors seem to overlook the fact that the development of the pier-and-rubble technique was already being utilised in Ugarit, a significant Canaanite centre, albeit not Phoenician.

The technique became known in the Greek world as *emplekton* (Greek: ἔμπλεκτον) and is commented on by Vitruvius:

> Another method is that which they [the Greeks] call ἔμπλεκτον, used also among us in the country. In this the facings are finished, but the other stones left in their natural state and then laid with alternate bonding stones. But our workmen, in their hurry to finish, devote themselves only to the facings of the walls, setting them upright but filling the space between with a lot of broken stones and mortar thrown in anyhow. This makes three different sections in the same structure, two consisting of facing and one of filling between them (Vitruvius, *De Architectura,* 2,8,7).

In the eastern Mediterranean, Byblos is a city that used the method and is one of the best examples of developing a defensive system. On top of the oldest remains, Roman structures and archaeological disturbances make reconstructing the city a complex task. However, from the Bronze Age, the available data reveal a perimeter formed by walls (Figure 3) of carved stones, only on the faces and filled with rubble (Ciasca, 1999, p. 170).

Figure 3 - North section of Byblos defensive system



Source: Lauffray, 2008, fig. 156-157 and 171; Burke 2018, 195, fig. 31

In this figure (Figure 3) it is possible to identify that the wall received a new layer for the defensive system in Early Bronze Age III-IV A (also referred to as the Pre-Amorite phase). The sturdy rectangular structure is one of the rampart buttresses measuring between ~3-4 m wide and spaced at ~2.5 m. Also, a red earth repair enlarged the defensive line by ~24 m (Dunand, 1954 pl. 212). Except for the coastline, the defensive line, composed of carved stones, encircled the entire city, with a total length of 850 m (Dunand, 1963; Saghieh, 1983; Burke, 2018, pp. 195–196).

Another common element in Levantine cities is the presence of the glacis. Byblos is one of the best-preserved sites with this defensive feature over time. The slope of the glacis consists of a sloped embankment in front of a fortification, so raised as to bring an advancing enemy into the most direct line of fire (Harris 2005, 462). This structure is one of the most characteristic apparatus parts of the Levantine defensive system in the east. At the beginning of Bronze Age III, a barrier of pressed sand and plaster (i.e., the glacis) was placed in front of the previous one, expanding Byblos defensive system by 20 m width.

According to Dunand (1954), the Middle Bronze II would be associated with the Amorite occupation in Byblos, which had a significant development regarding fortifications. The oldest and most

common type of Middle Bronze fortification in Byblos is the glacis built by parallelepipeds, keeping within the elliptical shape of the city (Lauffray, 2008, pp. 156–171). This glacis has a large base of blocks in its foundation and a smaller irregular block structure in its upper layers. The glacis is less than a metre thick and filled with dirt. The blocks of paving stones, made of limestone and sandstone, were built on a moderate slope of 40 degrees (Sala, 2013, p. 181).

The "Hyksos glacis" (Middle Bronze II-III), as it was called by Dunand (Dunand, 1954, p. 19), given the finds of ceramic fragments in its construction, consisted of a mixture of dirt, clay and sand. This blend was laid out against the outer face of the former paving stones and then covered with *kurkar* (porous local limestone), forming a 60-degree slope at the foot of the wall, differing it from the previous one. Blocks less than 1 m wide were used at the top (Sala 2013, 183; Burke 2018, 197).

This glacis followed the contour of the old walled defensive line of Byblos. However, its materials (large sandstone blocks) and technique (such as the steep slope of 60 degrees). Merged with the earlier Bronze II-III walls, this fortification would have at least 8 m high and reach a thickness of about 25 m at its base on the northern side and 45 m on the eastern side (Sala 2013, 183).

The Hyksos' glacis was rebuilt three times during the late Bronze and early Iron Ages. Later, when Byblos passed to Persian rule (539-332 BCE), it was reinforced again (Sala 2013, 184). The new glacis followed the same elliptical outline as the cliff of the Bronze and Iron Age glacis. The wall would have been 40-50 cm thick. From the Middle Bronze to the Persian Period, the glacis was constantly renewed with new materials and techniques (Figure 4). All these successions gave a thickness of about 40 m for the defensive system outside the northern wall curtain wall and more than 50 m for the eastern one (Sala 2013, 179).

Figure 4 - Persian glacis on the northern side of the site

Source: Sala 2013, 184 fig. 5

In Sidon, there were some reports on the existence of a glacis. It is important to comment that the Dunand excavations (1939-1924 and 1964-1965) in Sidon opened a trench extending to the sea for the disposal of the remains of the excavation. A glacis was discovered among other Hellenistic and Roman period finds during this process. Fragments of Attic ceramics from the 5th century BCE were also found, as well as two infant tombs dating from the Hyksos period. Unfortunately this trench was not excavated and a comparison between this glacis with another Levantine one is yet to come (Doumet-Serhal, 1999, pp. 32, 34).

Tel Dor is another archaeological site that also reveals the use of glacis (Figure 5) in its defensive system in the early Iron Age (10th century BCE). Its dating was only possible because of the location of associated ceramic remains. (Stern, Gilboa and Sharon, 1982, p. 34) This glacis is believed to have been made on another from the Bronze Age, following the logic of continuity in other Levantine

cities. Tel Dor's glacis (Figure 4) was finished of a thick plaster coating (Stern, Gilboa, and Sharon 1982, 34), another common element in Semitic cities during the Iron Age.

According to the stratigraphic sequence, the earliest phase would be represented by an irregular surface consisting of gypsum covered by small boulders extending under the wall. Ceramic fragments found on the surface dated this phase as being of Iron I (i.e., *c.* 1200 – *c.* 1140/1130 BCE) (Stern; Gilboa; Sharon 1987, 33-34).

The second phase, formed of clay bricks, was built on top of the previous one. On the other hand, the third phase was created by a composite of stones and clay bricks already on the slope. The clay brick segment of the wall erected in composite is confined to the lowest part of the structure by a thick gypsum glacis (Stern; Gilboa; Sharon 1987, 34).

The composite wall is confined in its third phase by a series of white-coloured surfaces. By its characteristics not detailed by the authors, this surface has been dated as being from Iron II (i.e. 8th

BCE). This composite wall continued to be used during the Persian period (586-332 BCE) (Stern; Gilboa; Sharon 1987, 34-35).

Figure 5 - Section C across fortification

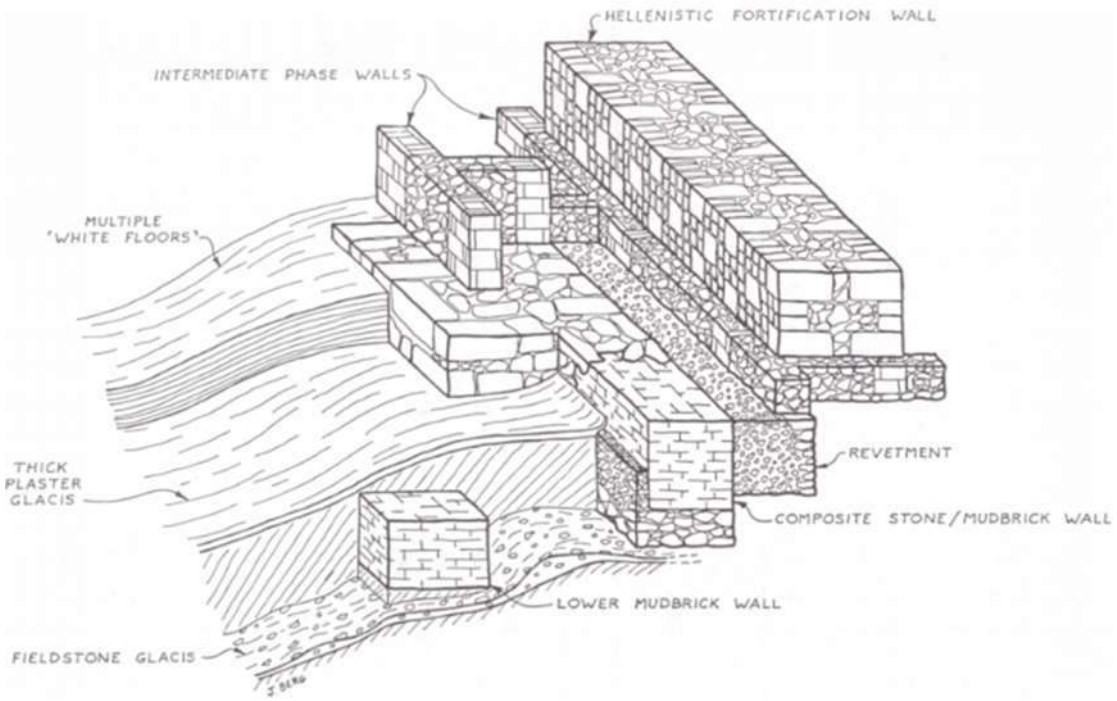


Fig. 1. Dor, Area C1: section across fortifications.

Author: Stern, Gilboa and Sharon, 1982, p. 33 fig. 1

Arwad in nowadays Syria is one of the examples of a Phoenician city that has a fragment of what would have been the Phoenician maritime defensive system. The island of Arwad had a defensive system built with large stones both for protection from higher waves and against enemy ships. According to radiocarbon dating analysis, the pier-and-rubble technique was widely utilised for port defence during Iron Age Iia at Arwad. This same system was also discovered at Akko (Raban, 1986, 1991, 1995, 1997), Tabbat el-Hammam (Braidwood, 1940) and the 4th century BCE port at Amathos

(Cyprus) (Empereur and Verlinder, 1987). During the Roman period, the system continued to form part of the construction mode, as was also identified in a Roman landing at Sarepta (Pritchard, 1975).

Atlit (20 km from Haifa), another Phoenician site, gives conditions to consider the reuse of the pier-and-rubble technique for constructing its port area. The underwater excavations revealed submerged silhouettes that were interpreted as a part of the city's jetty.

The ~100 m long and ~10 m wide pier in question is connected to the eastern corner of the city. Its ashlar blocks are arranged in the header method (i.e., with the top parts of the block in evidence) (see Figure 6). It consists of two parallel ashlar walls filled with boulders. There is also evidence of a tower measuring 20 X 12 m at the jetty's tip. Archaeologists suggest that this structure could be a lighthouse or even an observation tower (Haggi 2010).

At Atlit, the defensive system was not built by chance. It was systematically organised in a location that prevented both siltation and protected part of the city from winds and waves (Haggi 2010).

Considering that Phoenician foundations were made up of fortified towns, it can be inferred that the city's defensive system was connected to the artificially constructed area of the city's harbour. Using the same technique of rubble architecture gives conditions to think of standardisation for the buildings that would form the defence on land and sea of a Phoenician city (Haggi, 2010).

Figure 6 - Stone ashlars that would form the jetty in Arward

Author: Haggi 2010, fig. 3

2.2.2. Visual evidences

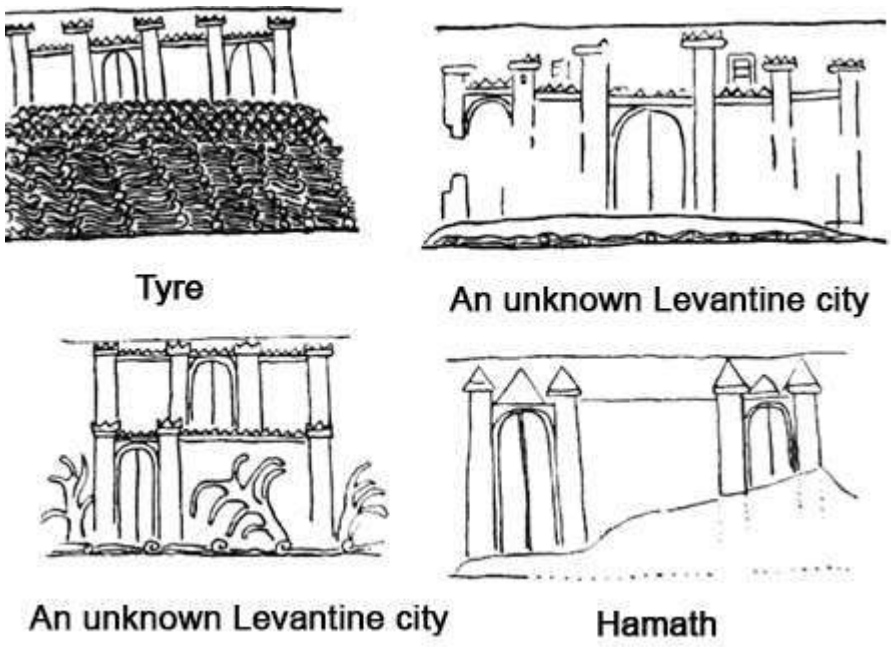
In Tyre, there is no material evidence of its defensive architecture. However, there is a repertoire of depictions on the island, following traditional Assyrian decorative elements. Such iconography of the city of Tyre is found in the ninth-century BCE bronze bands (Figure 7) of the gates of Balawat. Between the Assyrian reigns of Ašurnaṣirpal II (883-859 BCE) and Šalmaneser III (858-824 BCE), the

city of Tyre is depicted as a fortified city on a rocky island with five towers connected by walls (Figure 7).

Figure 7 - Enlargement on the walls of Tyre. It is possible to identify two arched entrances where the gates would have been located. Two towers would fortify both gates

Source: The Trustees of the British Museum, Museum Number 124661

Figure 8 - Depiction of Levantine cities in Balawat reliefs



Author: Naumann 1955, 296, fig. 378

Naumann (1955, p. 296) states that three types of towers can be identified in the Balawat reliefs: 1) the types aligned to the curtain of the wall (Figure 9) the types that are slightly; above the curtain line (Figure 10) and (Figure 11) the types that are widely above the curtain line.

Figure 9 - Type 1 or 2 – Towers aligned to the curtain of the wall or slightly above the curtain in an unknown Levantine city

Figure 10 - Towers that are slightly above the curtain line in Tyre, and at the unknown cities

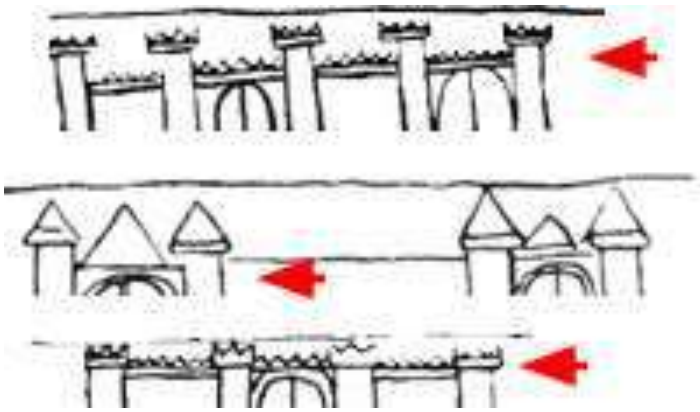
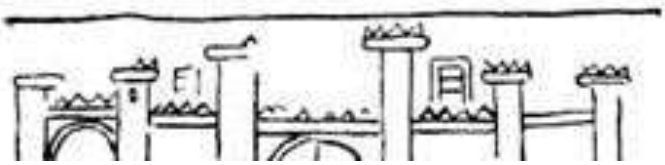


Figure 11 - Tower that are widely above the curtain line in an unknown city



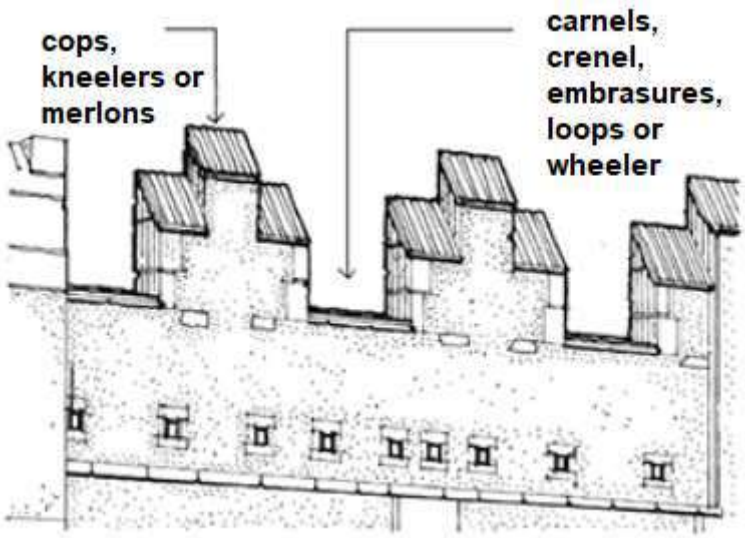
The battlements are a defensive structure that protects archers and soldiers from enemy attacks; they run along the entire city wall. In their triangular shapes (Figure 12), as represented in the reliefs, they could make archers aim at different angles more efficiently (having the steps that form the triangles of the crenulations as a fixed base for aiming arrows), still protecting them against enemy attacks. However, this idea is only hypothetical and would need a practical application to be proven.

Figure 12 - Example of triangular merlons in Seville from the Islamic period

Source: Photo by author (2021)

Triangular battlements can be noted over the city walls (Micale, 2008, p. 451). A merlon is located in an embattled parapet, where of the solid alternates between the embrasures (Harris 2005, 628). On the other hand, a battlement is formed by crenulations and merlons and can usually be found on walls (Figure 13). According to Curl and Wilson (2021), a battlement is a "parapet with alternating high and low parts. Indents between the higher parts are carnels, crenels, embrasures, loops or wheelers. The higher parts known as indentations are the cops, kneelers or merlons: a crenulated or embrasure wall thus forms a battlement". Crenels or embrasures are gaps built at regular intervals along the parapet. Conversely, merlons or cops are the solid structures between the crenels. In the Bronzes of Balawat, crenels and merlons can also be noticed on the ramparts and towers.

Figure 13 - Example of a battlement

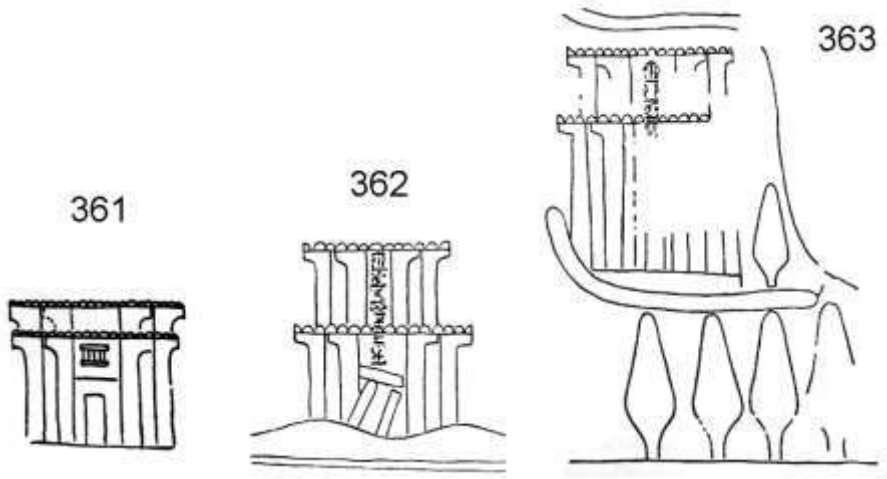


Author: Based on Curl and Wilson 2021

The iconographic representations of the buildings of the Syro-Palestinian region are not limited only to the Bronzes of Balawat. The Egyptian invasions of Levantine territory against the Hittites from Seti I to Ramses III left a sequence of records of the cities. Depiction of the towns and their fortresses can also be found on Egyptian soil. The oldest group of such depictions dates from the time of Seti I (1313-1292 BCE) and features the fortifications of southern Palestine, Lebanon and Syria (Naumann 1955, 290) (Figure 14).

In the reliefs of Balawat, the city gates are shown in pairs guarded by bastions and their entrance is shown as rounded gates. The Setis I plaques, on the other hand, offer an entrance gate of Egyptian typology. The plaque bears the inner element that may depict a citadel, or it is just an iconographic figuration to expose the defensive strength of the city (Naumann 1955, 292).

Figure 14 - (361) Southern Palestinian fortification. (Naumann 1955, Plate 42). (362) The Syrian city of Geder at the foot of the mountains of Lebanon (Karnak, Hall of Pillars, Plate 35). (363) Jenoam in the interior of Phoenicia (Karnak, Hall of Pillar Plate 3)



Source: (Naumann 1955)

However, the Balawat Bronzes and the Setis I plaques should be carefully analysed. It is necessary to point out that the illustrations may reflect a generalist idea about the Levantine cities, and it is not possible to say whether the artist was aware of the difference between the Levantine peoples. Thus, they cannot be given as reliable representations. Nonetheless, they show some defensive elements in common such as the crenulations on the merlons (triangular or rounded), battlements, towers and bastions.

Regarding the wall, the associated structures known as casemates are another element that Phoenician cities would share. At Tel Ashkelon, the earliest evidence for casemates appears in phase 14. What was found may be one of the earliest casemates (F. 185), organised along the city wall on top of the repair.

It was not possible to obtain an overall view of the structure since it was still partially concealed by a subsequently constructed rampart (Burke, 2014, p. 501, 2018, p. 240). However, this type of structure is very versatile due to its use as storage or housing during times of peace. The casemate could be filled with dirt or rocks to reinforce the wall system in war. In the following chapters, the

element of the casemates will emerge with more vigour in Phoenician foundations in the central and western Mediterranean.

Also, this archaeological site includes a defensive ditch (F.21) and a ramp that crossed it from the early Bronze Age (Period XXIV, Phase 4). It was possible to measure it as being 70m long. However, only 13m were excavated. The ditch was excavated on *kurkar* rock bases and measured 5.5 m deep and 9 m wide. It reveals a drainage system running north-westwards towards the Mediterranean Sea (Burke 2018, 273).

2.2.3. What characterises Phoenician-Punic defensive architecture in the Eastern Mediterranean?

Eastern Phoenician defensive architecture exhibits specific patterns inherited from developments at Ugarit. During its heyday, Ugarit expanded its influence throughout the Levant from the 2nd millennium onwards. When it reached the area of the Phoenician cities, techniques such as rubble-filled architecture became canon in constructing the city walls. There were variations of this system throughout the Iron Age. However, the principle of using rubble remained the same (Sader, 2019, p. 130).

Another widespread element in Phoenician cities was glacis, an inheritance from the communities before 1200 BCE. Generally, a glacis surrounds and protects the city walls and, in some cases, incorporates a moat and an access ramp.

Even without material traces of their defensive architecture, the reliefs of Balawat and the plates of Setis I suggest what the battlements that surrounded the cities might have looked like. However, concluding whether the merlons were triangular or rounded is challenging.

Casemates are also elements that were probably used by Levantine cities.

The case of Tel Ashkelon represents one of the earliest examples in the region. However, the reutilisation of its materials in subsequent phases and the uninterrupted occupation of specific urban centres hinder its thorough examination. The casemate or bunker is a very adaptable type of apparatus since, in times of peace, they were used for other purposes, and in a war, they were filled in to reinforce the defensive system.

2.2. Religious architecture

2.2.1. What is similar at different archaeological sites?

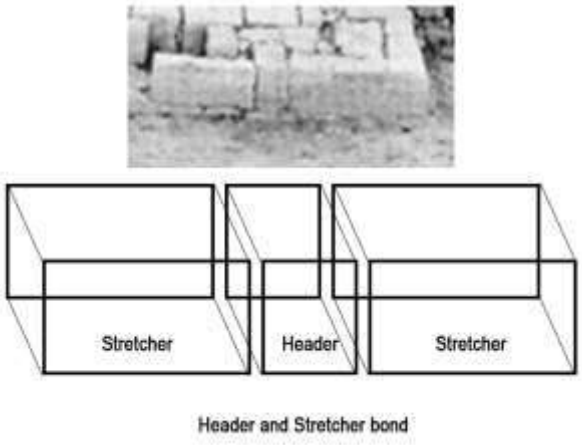
Recently, the Belgian archaeological team discovered a temple from the Persian period in Tyre (Badre 2015) (Figure 15). This enclosure is located south of the city, in the so-called "sector 7A".

Figure 15 - Temple podium area at Tyre

Source: Badre, 2015, p. 62 fig. 2(Badre, 2015, p. 62 fig. 2)

Subsequently, the temple was discovered, dating from the mid-6th century BCE. Archaeological evidence suggests this site was used until the Hellenistic period (3rd – 1st centuries BCE). The area where the temple was to be located had a sizeable rectangular podium measuring 6.5x21 m, oriented northwest-southeast. Its entrance was in the middle of the northwest wall, thus creating a long room (Figure 15). The structure was accessible by stairs located in its west. The stairs led to a raised stone platform with a bent entry (Badre 2015, 62-76). This building was constructed with well-carved ashlars, placed in header-stretcher bond (Figure 16).

Figure 16 - Header and Sretch bond



Source: Created by the author (2023)

In its back wall, an Egyptian cornice runs along it. The entire structure is oriented west-east. In front of it is a podium on which a kiln (Figure 17) filled with animal bones was discovered (Badre, 2015, p. 76).

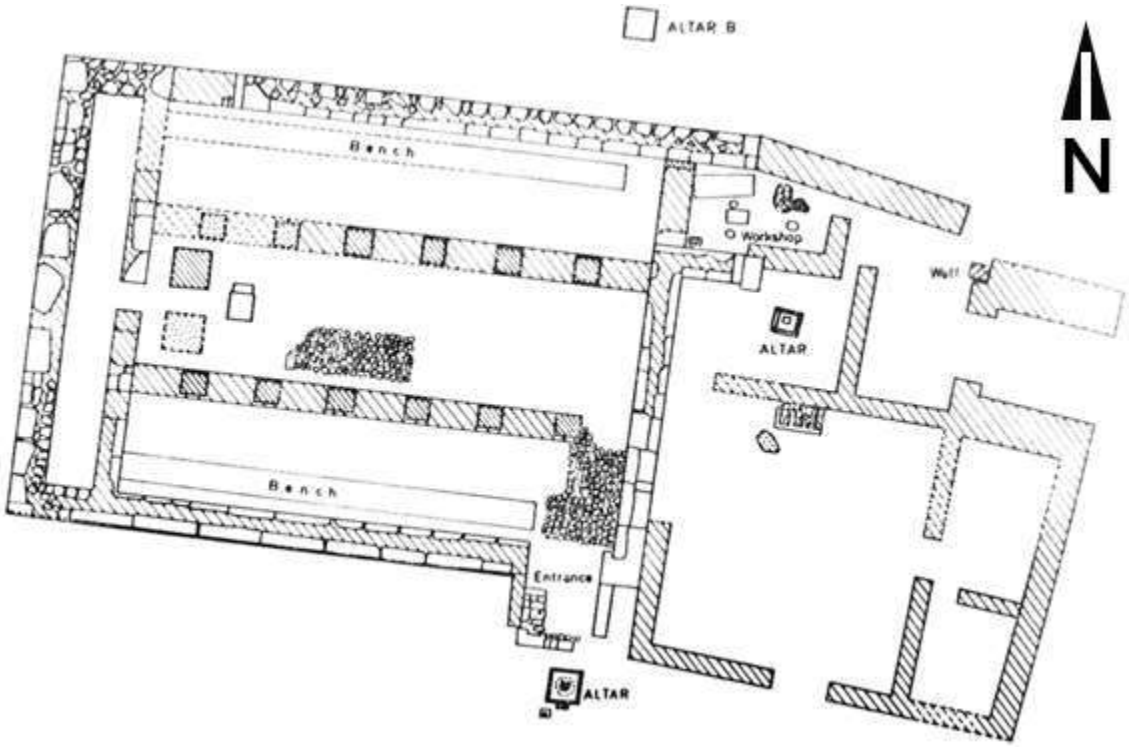
Figure 17 - Kiln found on the southeast facade of the podium

Source: Badre 2015, 75, fig. 15

Another site with an example of furnaces is the temple of Astarté in Kition (Figure 18). However, in this locality, the furnaces produced copper during Persian domination (~600-450 BCE). There were significant changes in the temenos area, such as the construction of a roughly rectangular walls made in rubble (6.50 m x 4 m) with the entrance to the east to accommodate a workshop for copper melting. The altar was enclosed within another rectangular room by rubble walls. A rectangular stone-built pit stood opposite the entrance to this workshop Karageorghis suggest that this type of temple, where the sacred area is connected with a workshop resembles the Late Bronze Age

arrangement. However it is not possible to stablish if this layout continued from this period until the Persian period, or it is a type of revival (Karageorghis, 1976, pp. 113–114).

Figure 18 - Plan of the temple in Kition



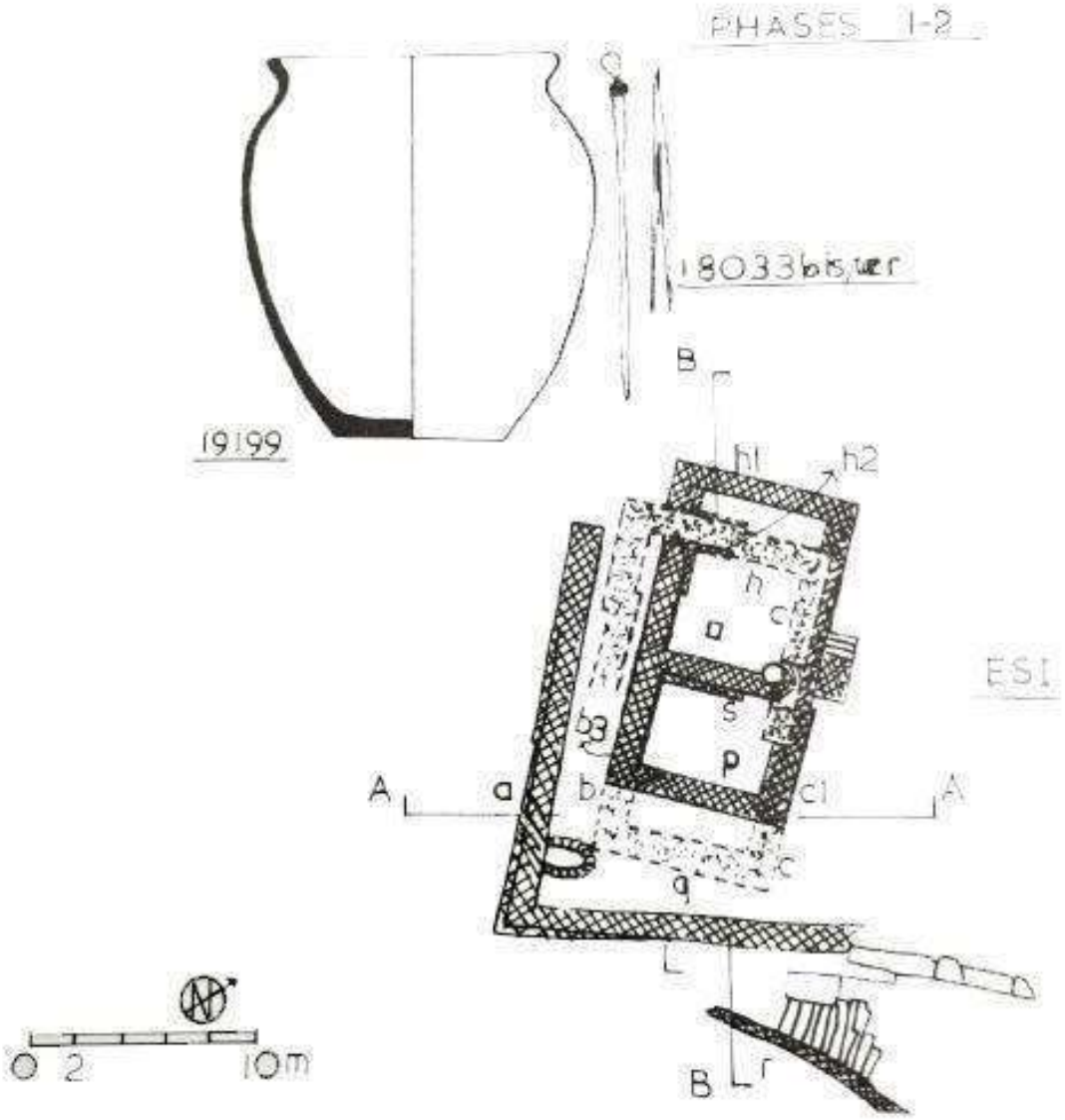
Source: Karageorghis, 1976, p. 112 fig. 16

Also, typical of Levantine temples is the presence of benches inside them. Kition, under Persian domination, features benches on the south and north sides facing an inner courtyard. (Figure 18**)** These seats measured 1.15 m wide by 30 cm high, with the southern one being 20 cm wider than the northern one (Karageorghis 1984, 113-114).

This apparatus seems to have been inherited from Bronze Age temples such as the *Enceinte Sacrée* in Byblos, which had only a single bench, arranged (s) against the wall (Sagieh 1983, 34-35). In its second phase, the Enceinte building could only be attested thanks to the discovery of three steps

that lead towards the *cella*. The *Beitraum*-type structure of this temple is also poorly preserved; only its 6.6 m wide southern part has been discovered. The northwest wall has an example of a bench (s) (Figure 19). A *Beitraum*, from the German, is a type of building that has a large hall where the altar is located in the middle of one side of the cell (Roaf, Sasson and Baines, 1995, p. 427).

Figure 19 - Phase 1 and 2 of the Enceinte Sacrée and its archaeological finds



Source: Saghieh 1983, fig. 11

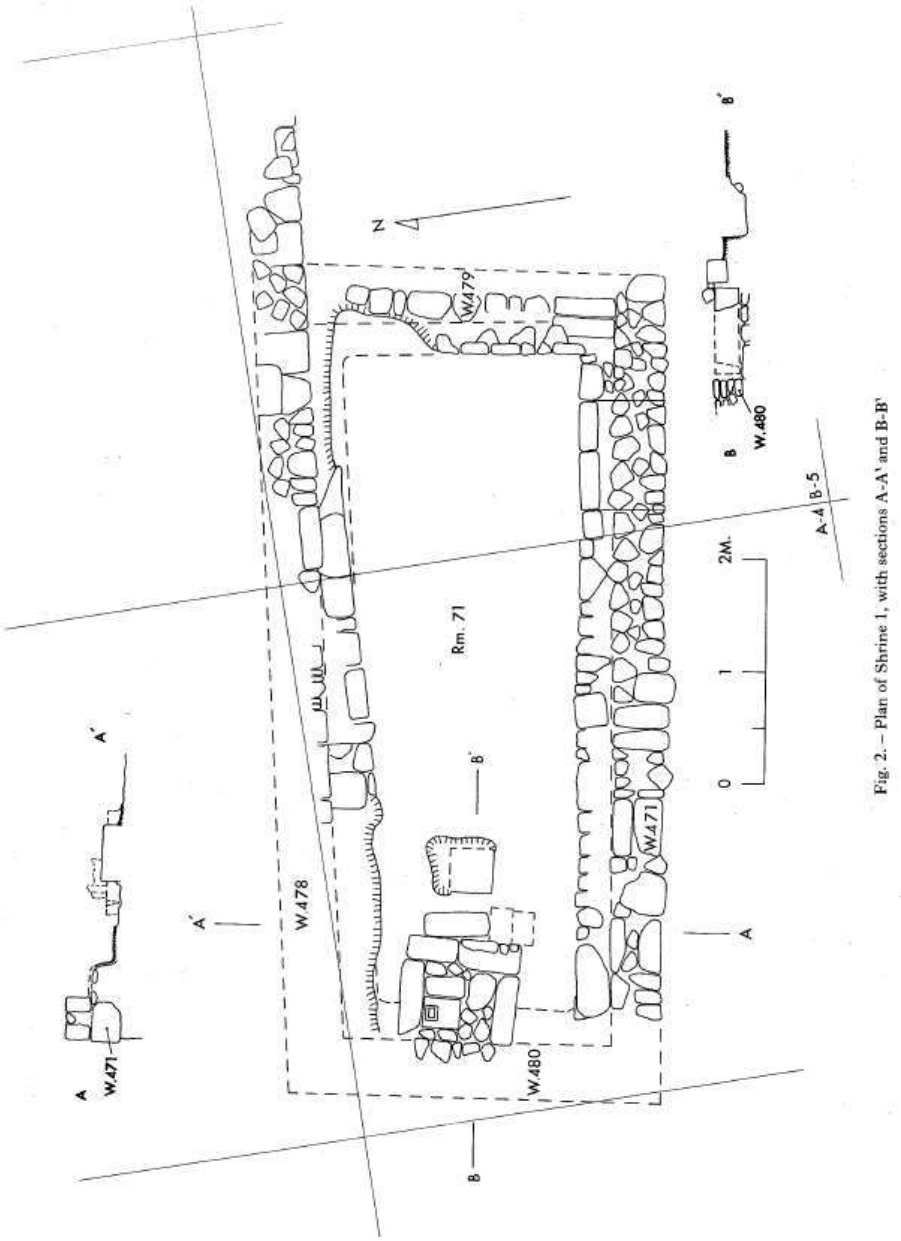
It is necessary to note that the entrance scheme known as bent-entry, which is a curved entrance to obstruct the invaders way was already present at the Temple of Baalat Gebal (*Bâtiment XVIII*). The temple was in use from the 3rd millennium until the Persian period with moments of remodelling and even destruction such as that happened during the Amorite invasion (*c.* 2150 BCE) (Bryce, 2009, p. 138). According to Saghieh (1983, 310-311), this building was part of the Byblos religious complex.

No evidence is available as to which partly served as its *cella* due to the lack of its altar. The building was only accessible by three narrow passages at the end of the side wall.

This Bronze Age II structure was rectangular on an east-west axis with a single room measuring about 15 x 8 m. Its entrance consisted of a set of bent-entry located in the northwest corner of the western part of the wall. To the south, a long hall was added (Edrey 2019, 94; Sala 2008, 59). In its first phase, only a deposit of funerary urns without further structural evidence was attested (Saghieh 1983, 40).

Tel Kazel, in present-day northern Lebanon, is another temple that features benches in its interior. The site dates from the Late Bronze and Iron Age II and was abandoned in the 6th century BCE to construct an industrial area. Its oldest phase (Level 6) has not been well preserved, preventing any reconstruction of the temple (Edrey 2018, 188-189).

Figure 20 - Plan of Shrine 1, with sections A-A' and B'



Source: Pritchard 1975, 15, fig. 2

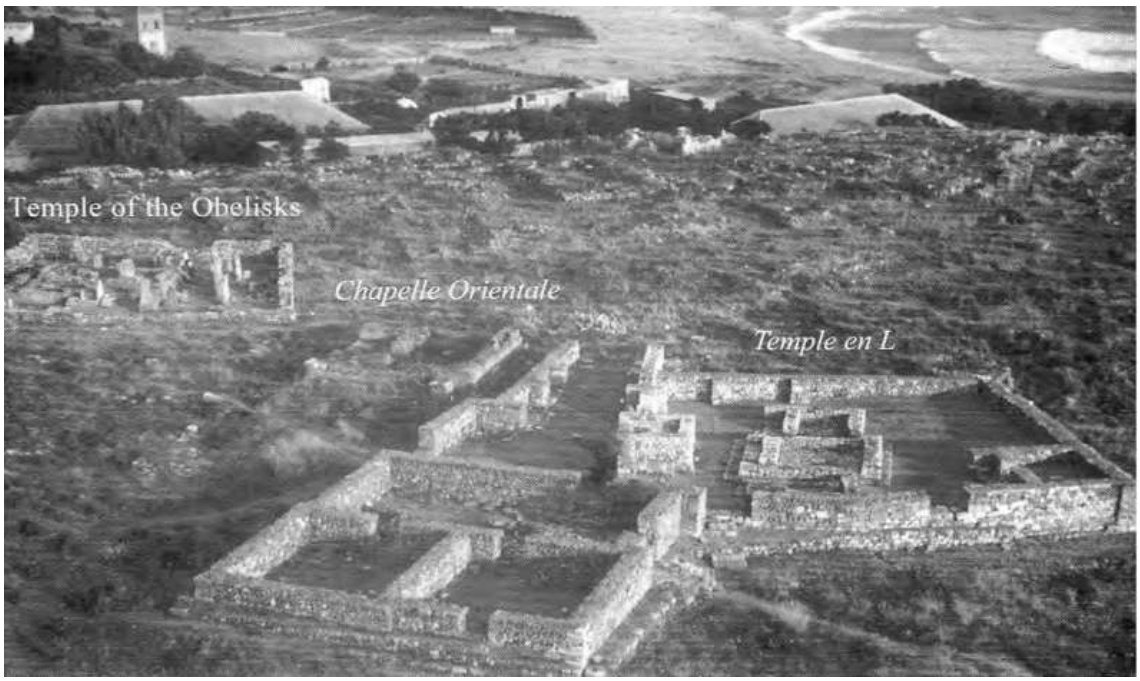
In Sarepta, during the 9th-8th century BCE, the bench inside the temple called "Shrine 1" (Figure 20) was built using different materials in comparison with the mentioned sanctuaries. These benches were constructed with pebbles laid with mortar. The corners and the top were covered with plaster to form a smooth surface. The structure is inside the temple, known as Shrine 1, in its rectangular

room (Room 71). The room was interpreted as having ritualistic functions identified by its architectural features and associated finds. The benches ran along its four walls. Only the north wall of the sanctuary survives intact. The estimated height of these possible benches is ~0.20 cm, varying in width between ~0.30-0.40 cm (Pritchard, 1975, p. 16).

Another marker of the Phoenician temples is the so-called "sacred pools". This also seems to have been another apparatus inherited from the Bronze Age not abandoned after the 1200 BCE. This continuity could be seen at Byblos. Dunand's characterisation of the Temple of the Obelisks delineates it as a building comprised of three *in antis* chambers, oriented towards the East and arranged around an irregular courtyard encircled by a peribolus. Subsequently, three smaller rooms are constructed abutting the northern wall of the central chamber, and an in antis chapel is erected in the northwest corner of the courtyard. Adjacent to the central chamber, there is a diminutive room that opens towards the West.

Also recognised as the Egyptian Temple, this architectural structure was erected during the Middle Bronze Age. This newly established temple complex was composed of an elevated platform enclosed by a temenos, encompassing a central chamber and a pro-cell/pronaos. Notably, the temple grounds featured numerous obelisks, betyls, and anchors, serving as votive offerings (Edrey, 2019b, p. 96). Phase 3 of the Temple of the Obelisks can be described as the complex divided into four buildings (Temple XIII, XV, Temple XIV, XVI). From Temple XIII, rooms A and B are implanted on the structures of the previous phase. A sacred pool was carved between the Temple of Balaat Gebal, the predecessor of Temple XIII, and the Temple in L to the southwest (Figure 21) (Saghieh, 1983, p. 18).

Figure 21 - General view of the Temple of the Obelisks, the Chapelle Orientale and the Temple in L



Source: Sala, 2015, p. 40 fig. 19

In the extra-urban complex of Bostan esh-Sheikh (north of Sidon), the podium's base was enlarged over the valley during the Hellenistic period. Approximately 12 m in front of the former temple podium is the chapel of the throne of Astarte. This open-air sanctuary was installed at the eastern base of the podium during the 3rd century BCE. Inside this chapel is the object that gives the site its name: the Egyptian-style granite Astarte Throne.

Figure 22 - Sidon, Bostan esh-Sheikh, Astarte Throne (Jona Lendering)

Source: Available from: https://www.livius.org/pictures/lebanon/saida-sidon/sidon-bustan-esh-sheikh/sidon-bustan-esh-sheikh-throne-of-astarte, [Accessed in 8th December 202].

A series of ceramic pipes fed the pool. The chapel is commented on in the Greek work of Lucian of Samosata (*De Dea Syria* 4) as a work of the Sidonians (Betlyon, 1985, p. 53).

Commenting on the sacred pool in the temple of Astarté, Dunand (Dunand, 1971, pp. 20–21) recovers Lucian of Samosata's accounts of the temple of Atargatis at Hierapolis-Bambice (present-day Mabije in Syria). The passage describes a temple with a *cella* that seems to float on water, the centre of worship of the goddess who names the complex (Betlyon 1985, 53).

The entire complex connected with the spring of the water source Ain Ydlal in a vast network of canals. The Astarte pool area measures ~10.8 m by 9.8 m and would have been 5.70 m deep. The Astarte Throne (Figure 22) seems to have been at the surface level of the pool. (Dunand, 1973, pp. 7–25; Stucky, 2002; Groenewoud, 2005, p. 153)

Before this location, the pool would have been on a less prominent site east of the complex (during the 4th- 3rd centuries BCE). Then, from the 3rd century onwards BCE, it was moved to the north of the complex. For the making of the pool, sizeable carved stone blocks were used. The presence of water sources such as pools and basins seem to have been part of the roots of the up to come Phoenicians in the East and will endure.

2.2.2. What is different at different archaeological sites

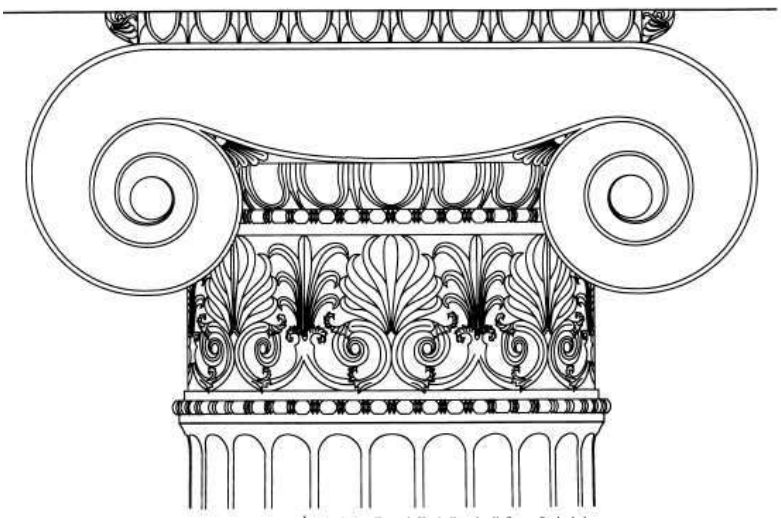
Even with many similarities, the Levantine temples present varying differences among themselves. In Sidon, at the College Site area (~4.4 km away from the extra-urban complex of Bostan esh-Sheikh), a monumental structure interpreted as a Middle Bronze temple was used and modified until the Persian period. It features an area reserved for communal feasts. Its north wall would have been 1.09 m wide and preserved 1.22 m of its original height. As a construction technique, numerous flat stones were arranged, one upon the other. Large boulders crowned the top of the wall from the Iron Age, part of a levelling plan for another building. The only structural elements that allow us to interpret this site as a temple are two platforms: one to the south measuring 2-7 m north-south and 1-4 m east-west. The other platform, located 2 m north of the first one, was perfectly built. This sizeable rectangular structure was made of large, roughly carved sandstone blocks. This structure would have measured 3.05 m by 1.95 m. One of its largest stones was 60 x 65 x 15 cm, and the smallest was 38 x 20 x 15 cm. Doumet-Serhal and Shahud (2013) interpret these platforms, with the support of faunal finds, as environments where communal feasts were held, having attested parallels at Nahariyah (Israel).

In Bostan-Esh-Sheikh, the temple's remains of Eshmun suggest a building with entangled architectural features. A few remains of the temple of Eshmun are located on a Persian podium

platform. Initially, this structure consisted of courses of carved blocks spoliated over the centuries. The temple was built around a cliff that served as the site of a cult.

An attempt was made to carry out a hypothetical reconstruction of the temple based on the architectural remains found in its area. Stucky (2002) managed to identify a temple built in rectangular-based limestone with two independent columns. Outside the temple during the excavations, a courtyard with an altar was identified.

Figure 23 - Reconstruction based on the archaeological documentation developed by Stucky



Source: Stucky 2002, 76 fig. 4

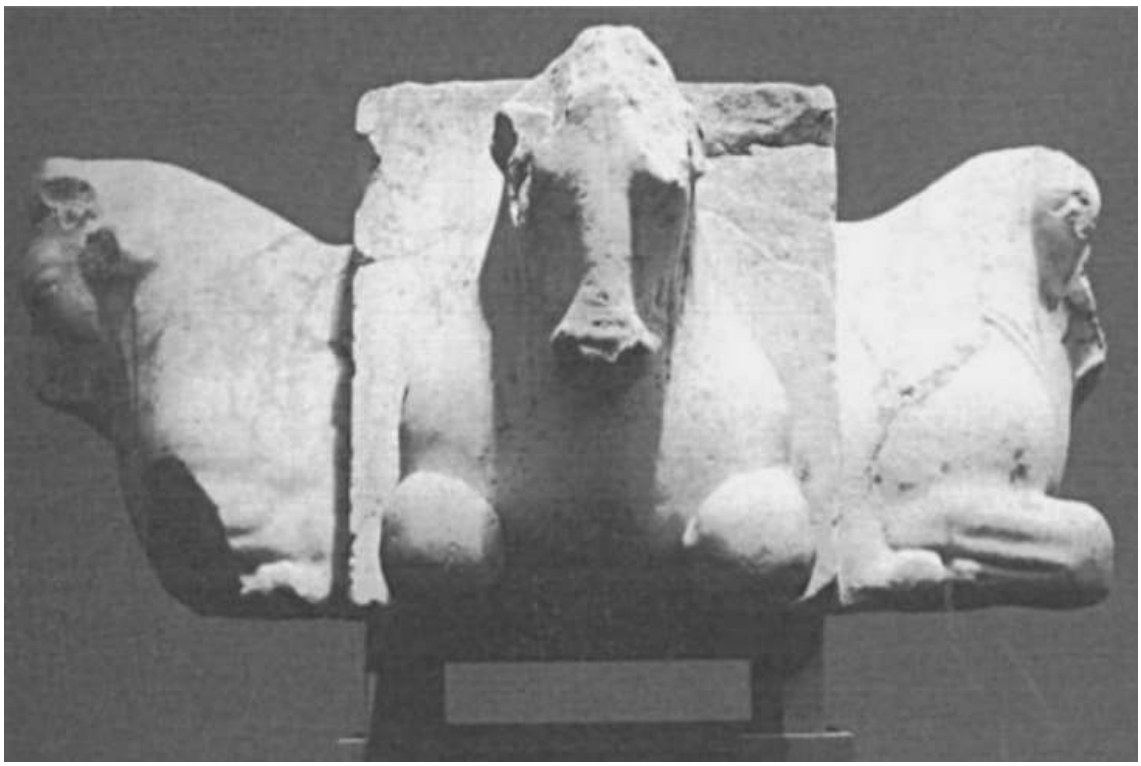
Many archaeological finds, as well as documents concerning the excavation of the Bostan esh-Sheikh complex, were lost during the Civil War in Lebanon; however, based on some recovered drawings, it was possible to redraw (Figure 23) the Ionic capitals of the Eshmun temple (Stucky 2002, 76).

Figure 24 - Missing bull protome

Source: Stucky 1998 fig. 3

Edrey states (2019, 116) that the temple may have been a joint Phoenician-Achaemenid initiative because of the close architectural parallels with such places as Persepolis and Susa. Decorative features such as bull protome fragments (Figure 24) have been found. During the Persian period, the previous pyramidal structure was covered by a massive podium of bossed limestone measuring more than 3 m x 1 m thick (Stucky, 1998, p. 6). From these features, Stucky describes the second temple as a Greek-inspired structure, having ribbed Ionic columns with capitals and a pediment at the front and rear of the building. Stucky assumed that four Persian columns that were recovered from the podium area belonged to the temple cell. The bull sculptures found were interpreted as decorative elements that would be part of the interior of the temple together, while the protomes (Figure *25*) would be supporting the top of the temple (Stucky 2002).

Figure 25 - Capital with four bull protomes, Temple of Eshmun



Source: Stucky and Mathys 2000, 140 fig. 12

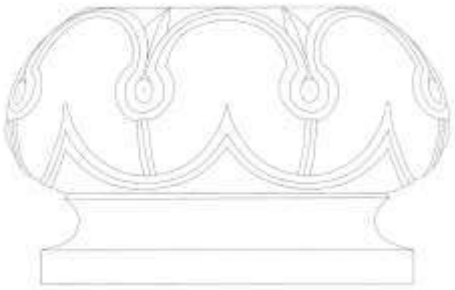
What led the author to come up with this idea was the lack of space in the outer area of the podium. There would be no room for two temples with different decorations (i.e., a Persian and a Greek). It is also important to note that the altar, an Egyptian-type cornice, was reused from the first temple. (Stucky 2002).

Figure 26 - Base of the column decorated in Assyrian relief

Author: Stucky 1998, 5 fig. 2

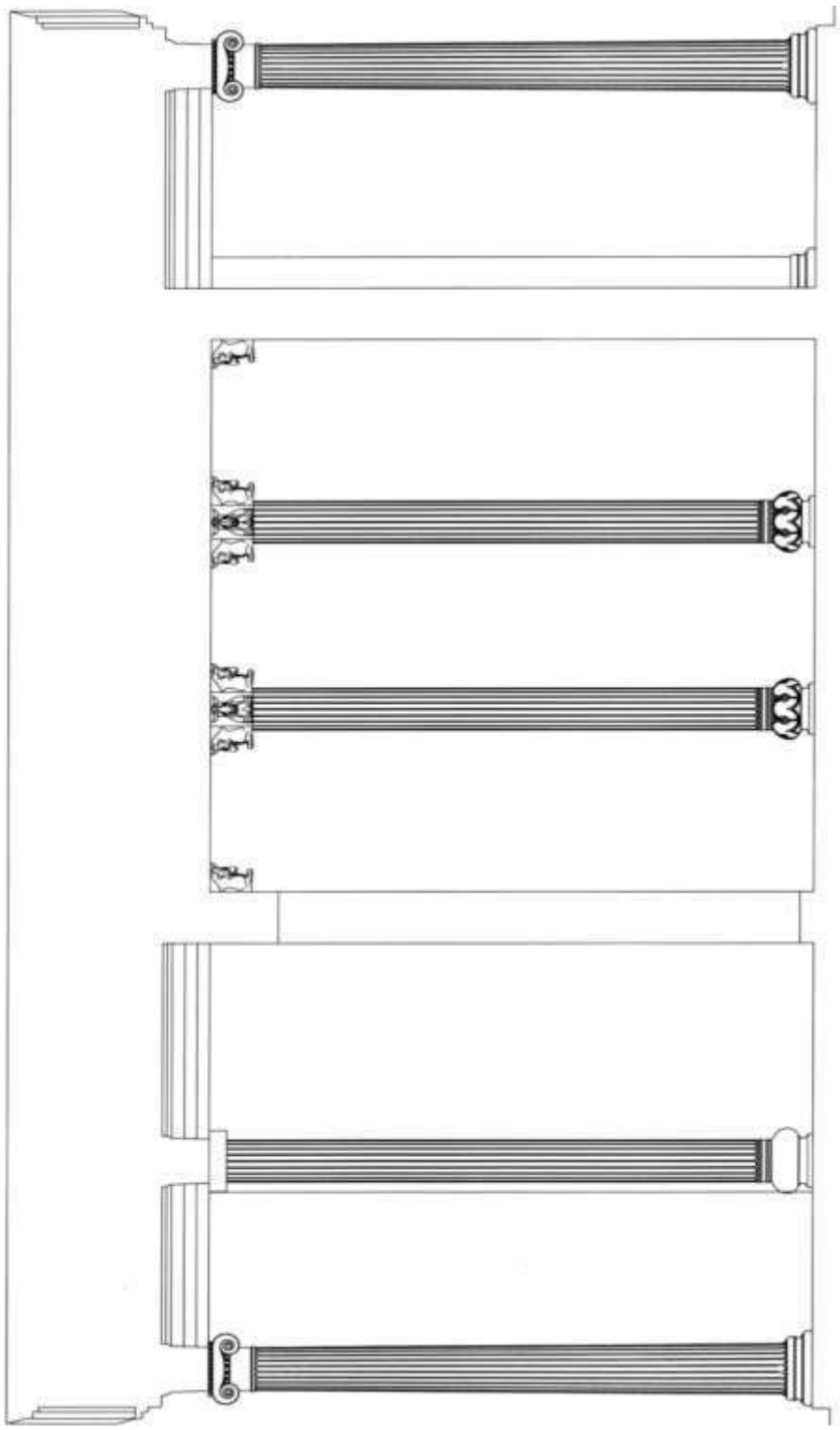
The height of the columns found also differs. The longest would be 8 m, and the shortest ~6.5 m. Stucky understood this difference as a possible propylaeum of the Greek-inspired Amphiprostyle temples. The decoration of these marble columns consists of phytomorphic motifs that may date to the years 380-360 BCE. In addition to the Greek element, Mesopotamian features stand out, which would be found within the temple, summed up at the base of an Assyrian flower-shaped column (Figure 26 and Figure 27) (Stucky 2002, 79).

Figure 27 - Drawing of the Assyrian flower-shaped column



Source: Stucky 2002, 78

Figure 28 - Proposed reconstruction of the Eshmun temple, according to Stucky



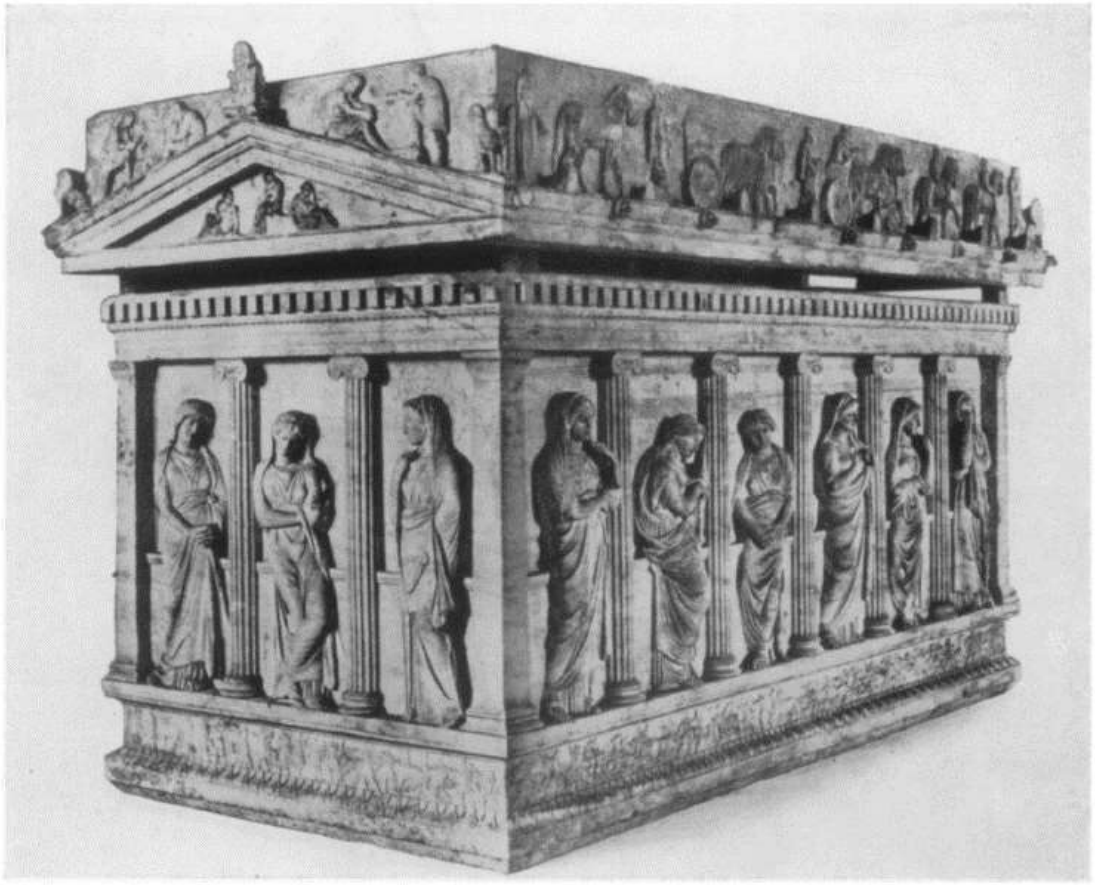
Source: Stucky (2002)

Figure 29 - Reconstruction of the facade proposed by Stucky of the Ionian temple of Bostan esh-Sheikh

Source: Stucky 2002, 77, Fig. 5

Regarding the reconstruction, Stucky suggests that it could be a sanctuary of the same typology (Figure 28 and Figure 29) as represented in the iconography of the sarcophagus of the Mourning Women (Istanbul Museum) (Figure 30).

Figure 30 - Sarcophagus of the Mourning Women, north and east face



Source: Weller, 1970, p. pl. I

However, the interior of the building would have possessed architectural elements of Assyrian and Persian inspiration (Stucky 2002). This sarcophagus was found in the Royal Necropolis of Ayaa on the outskirts of Sidon and depicts apparently female women wearing a long chiton and walking with the head bowed around an Ionian type temple (Stucky 2002, 91).

2.2.3. What characterises Phoenician-Punic religious architecture in the Eastern Mediterranean?

As the Levant was subjected to the rule of other peoples, many building techniques became part of religious architecture. However, continuity seems to date back to the Bronze Age. In the *Bâtiment XVIII* (Byblos), one of the first bent entries of the Levant has been identified. In the following chapters, these entries will be attested in other Phoenician temples in different periods and other areas (Central Mediterranean and Far West) and even in defensive architecture. However, this entrance typology blends with Persian construction modules, where large podiums are established for the temple installation.

Another continuity that seems to have originated in the Bronze Age are the benches inside temples at Byblos, Tel Kazel and Tyre. Usually, they are arranged against the walls and in front of an altar or a baetyl. These low benches serve for the devotee to squat down during worship. This will also be a typology exported to the areas touched by the Phoenician presence.

The Levant will also witness the construction of the first sacred pools. In Byblos, during the Bronze Age, the sacred pool was dug inside the temple complex between the Temples of Balaat Gebal and Temple XIII. During the 3rd century BCE, the extra-urban complex of Bostan esh-Sheikh will have the "Pool of Astarte". This pool is another well-known example of a sacred pool. In this case, the image of the goddess enthroned between two lions is positioned in front of the pool. It is important to note that the Bostan complex is directly connected to the Ain Ydlal spring by several channels, which shows the profound link between Phoenician religious structures and water.

On the diversity of styles in Phoenician temples, there is the example of the Temple of Eshmun, also in Bostan esh-Sheikh. The platform on which the temple rises has a Persian typology, and its architectural elements have Assyrian, Greek and Egyptian characteristics.

Therefore, when we say that the Phoenicians were mainly Levantine, we mean that their civilisation was primarily centred in the Levant region and that their influence and cultural practices spread throughout this area. Even being a cosmopolitan melting-pot during foreigners rule the so-called "Phoenicians" maintain a substantial heritage from the previous "Levantine" communities. The upcoming chapter (Chapter 3) will delve into Phoenician defensive and religious architecture in the Central Mediterranean. It will explore essential elements that persisted throughout the Phoenician-Punic expansion.

3. Chapter 3 – Phoenician-Punic defensive and religious architecture in Central and West Mediterranean

3.1. Introduction

The aim of this chapter is to present the Phoenician-Punic defensive and religious architecture in Central and West Mediterranean. It is important reminding that what we understand as "Phoenician-Punic" had a very profound "Levantine" subtract (i.e., inspirations from a previous period before 1200 BCE). Here will be presented example a sample of Phoenician-Punic cities polyorcetics such as in Motya, Carthage, Nora, Sulcis, Tharros, Tas-Silġ and the sanctuary of Sardus Paters (Sardinia). This chapter presents samples as examples from various archaeological sites in the Near East to demonstrate that the "Phoenicians" maintained a significant cultural continuity with the preceding "Levantine" societies of the Bronze Age. The chapter is divided into three parts: 1) Initial considerations on the topic; 2) Defensive architecture – similarities, differences, and concluding remarks; and 3) Religious architecture – similarities, differences, and concluding remarks.

Figure 31 - Archaeological sites and cites commented on the text

Source: Author, 2023

3.2. Preliminary notes concerning the polyorcetics

According to the dictionary Merriam-Webster (2023) Polyorcetics (Greek: πολιορκητικόν) is the "art to conduct and resist a siege". The term was coined during Byzantine times recorded at the works of "Parangelmata Poliorcetica" (Παραγγέλματα πολιορκητικά) ("Siegecraft") of Hero of Byzantium and "De obsidione toleranda" ("On Withstanding Sieges"), by several anonymous or just one. However, the term was adopted by several authors (see Sáez Abad, 2004; De Angeli, 2019; Montanero Vico, 2020; Echeverría Rey, 2021) to refer on periods before the Byzantines, such as the Antiquity. In this research this will be the term to refer on innovations and techniques concerning the defensive systems.

The innovations during the 5th and the beginning of the 4th century BCE, a period of intense conflict in Sicily between Greeks and Phoenician-Punics, seem to follow the technical advances of polyorcetics of that time that will led to the siege made by Dionysius I, tyrant of Syracuse, in 398 BCE (Trundle, 2019, pp. 152–153).

According to Diodorus Siculus (*Library of the World History,* 14.51.1):

> After Dionysius had completed the mole by employing a large force of laborers, he advanced war engines of every kind against the walls and kept hammering the towers with his battering-rams, while with the catapults he kept down the fighters on the battlements; and he also advanced against the walls his wheeled towers, six stories high, which he had built to equal the height of the houses.

As it is possible to note, battering-rams, catapults and siege towers (Which Diodorus called wheeled towers) were used after the construction of a mole to siege Motya. Dionysius I during the period of

peace with Carthage, took the opportunity to improve a series of military machines gathering the best artisans from all the Mediterranean (Diodorus Siculus, The Library of History, 41.1):

> For his purpose was to make weapons in great numbers and every kind of missile, and also quadriremes and quinqueremes, no ship of the latter size having yet been built at that time. After collecting many skilled workmen, he divided them into groups in accordance with their skills, and appointed over them the most conspicuous citizens, offering great bounties to any who created a supply of arms. As for the armour, he distributed among them models of each kind, because he had gathered his mercenaries from many nations; for he was eager to have every one of his soldiers armed with the weapons of his people, conceiving that by such armour his army would, for this very reason, cause great consternation, and that in battle all of his soldiers would fight to best effect in armour to which they were accustomed. And since the Syracusans enthusiastically supported the policy of Dionysius, it came to pass that rivalry rose high to manufacture the arms. For not only was every space, such as the porticoes and back rooms of the temples as well as the gymnasia and colonnades of the market place, crowded with workers, but the making of great quantities of arms went on, apart from such public places, in the most distinguished homes.

Even the catapult is recorded as a Syracusan invention by Diodorus (*Library of History*):

> In fact, the catapult was invented at this time in Syracuse, since the ablest skilled workmen had been gathered from everywhere into one place. The high wages as well as the numerous prizes offered the workmen who were judged to be the best stimulated their zeal. And over and above these factors, Dionysius circulated daily among the workers, conversed with them in kindly fashion, and rewarded the most zealous with gifts and invited them to his table. Consequently, the workmen brought unsurpassable devotion to the devising of many missiles and engines of war that were strange and capable of rendering great service.

Sicilian warfare showcased impressive technological advancements. This progress in siege technology spread from Sicily to the Punic and Greek mainland, as will be shown later, leading to the establishment of fortified cities and a greater emphasis on defensive and offensive technologies. The Macedonian kings, notably Philip and Alexander, further enhanced warfare with their innovative catapults, enabling the successful storming of cities across Europe and Asia (Trundle, 2019, p. 153).

In 409 BCE, seizing the opportunity presented by the political turmoil following the Athenian failure at Syracuse, the Carthaginians embarked on an invasion of Sicily. Led by Hannibal Mago, their formidable army comprised a diverse array of forces, including Iberians, Libyans, Campanians from Italy, and even Greek contingents. Notably, the Carthaginians demonstrated their advanced warfare techniques during this campaign.

Diodorus Siculus (*The Library of Histories*,13.54.3-7), our primary source, sheds light on the events surrounding the siege of Selinus in 409 BCE. With meticulous detail, he describes Hannibal's strategic approach: after landing near the city, he swiftly divided his army into two parts, encircled the city, and positioned his formidable siege engines Hannibal wasted no time launching assaults, employing not only six towering siege towers but also an equal number of battering rams clad in iron. Additionally, the Carthaginians unleashed a barrage of arrows and stones from their multitude of archers and slingers, effectively repelling the defenders from the battlements. Following the successful siege of Selinus, Hannibal turned his attention to Himera, where he employed a new tactics. Utilizing battering rams, the Carthaginians vigorously shook the city walls, while simultaneously undermining them to create chambers. The wooden supports within these chambers were then set ablaze, causing subsidence and ultimately leading to the collapse of a portion of the wall (Trundle, 2019, pp. 140–141). Through these vivid accounts, we gain valuable insights into the Carthaginians' sophisticated siege warfare techniques and their ability to adapt and employ diverse military forces

Considering these innovations happening during the 5th – 4th century BCE, it is possible to move forward to discuss the defensive system at the Central and West Mediterranean.

3.3. Defensive architecture

3.3.1. What is similar at different archaeological defensive sites?

The Phoenician-Punic foundations established in the Central and the West Mediterranean will show some shared characteristics due to the intense contact with other communities, such as the Greeks, Nuraghes and the Sicilian indigenous populations. In the Central Mediterranean, some of the best archaeological remains of the Phoenician-Punic defensive system exist.

In Kerkouane (North Africa) the walls of the city are described as a double angular enclosure, consisting of two lines of walls forming angles. They encompass the settlement and provide an additional layer of protection. Positioned strategically, the walls exclude areas such as necropolises and cultivable lands used for agriculture and rural activities (Fantar, 2005, p. 2).

The extent of the walls stretches approximately 425 meters, meeting a cliff at the northern and southern ends. Along this cliff, a boulevard was constructed, following its contour. However, due to erosion caused by the sea, only a portion of the boulevard remains preserved (Fantar, 2005, p. 2).

Between the two lines of walls, there is an intermediate corridor with a width ranging from 7.5 to 13 meters, predominantly around 10 meters. This corridor facilitated movement between the walls and

allowed for the construction of auxiliary structures like towers, stairs, warehouses, and residences to reinforce the defensive system (Fantar, 2005, p. 2).

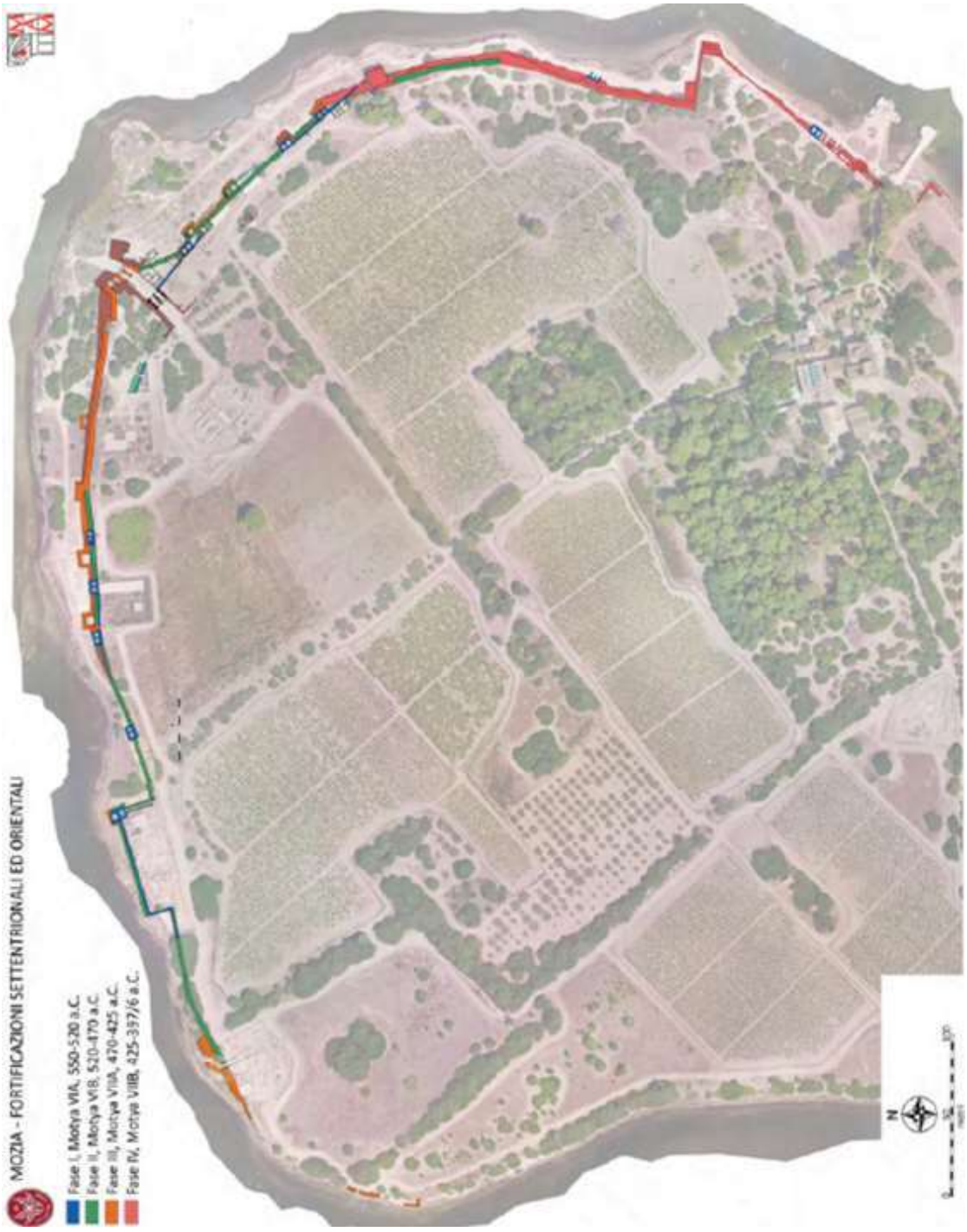
It is important to note that the available information about the walls is incomplete. A systematic and exhaustive excavation is necessary to gain a more comprehensive understanding of the intermediate corridor and its connections to the walls. Further research and excavation work are required to address the existing gaps (Fantar, 2005, p. 2).

Regarding the gates, the city has posterns (secondary gates) and two relatively well-preserved main gates. The western gate is a rare type found in the Mediterranean, with its opening inserted between overlapping sections of the wall. The southern gate is more common, featuring two aligned openings with a slight displacement to the right (Fantar, 2005, p. 3).

The preservation of streets within the city has facilitated the study of its urban layout, although detailed studies on certain aspects, such as the external opening of the western gate and the passage leading to its internal opening, still require thorough excavation (Fantar, 2005, p. 3).

To Vincenzo (2019, p. 899) the layout of Motya bears similarities to Kerkouane in North Africa (Tunisia) and Monte Sirai in Sardinia. This defensive system is the result of Motya, in Sicily, is one of the best-excavated sites and revealed important defensive system elements. The city was surrounded by a massive wall that followed the contour of the island (Figure 32). Four large gates made the access to the city. Each entrance was oriented roughly according to the cardinal points (Hermann & Sconzo, 2020). Parallel to the wall, a ring road was built, similar to Kerkouane. For Falsone and Sconzo (2017), the ring road would not only be a way to move troops faster around the island but also to delimit the area of the workshops. The wall of Motya was fully interconnected along two kilometres, giving no possibility of an enemy landing by sea (Nigro and Rossoni, 2004, p. 46).

Figure 32 - Map of the wall of Motya



Source: Nigro 2020, 14 fig. 1

The wall was built from the 6th century BCE onwards. It remained in use until the destruction of the city in 397 BCE by Dionysius of Syracuse. Several phases have been identified in its remains supporting the idea that the defensive system of the city was in constant improvement (Bondì and Oggiano, 2009, p. 179).

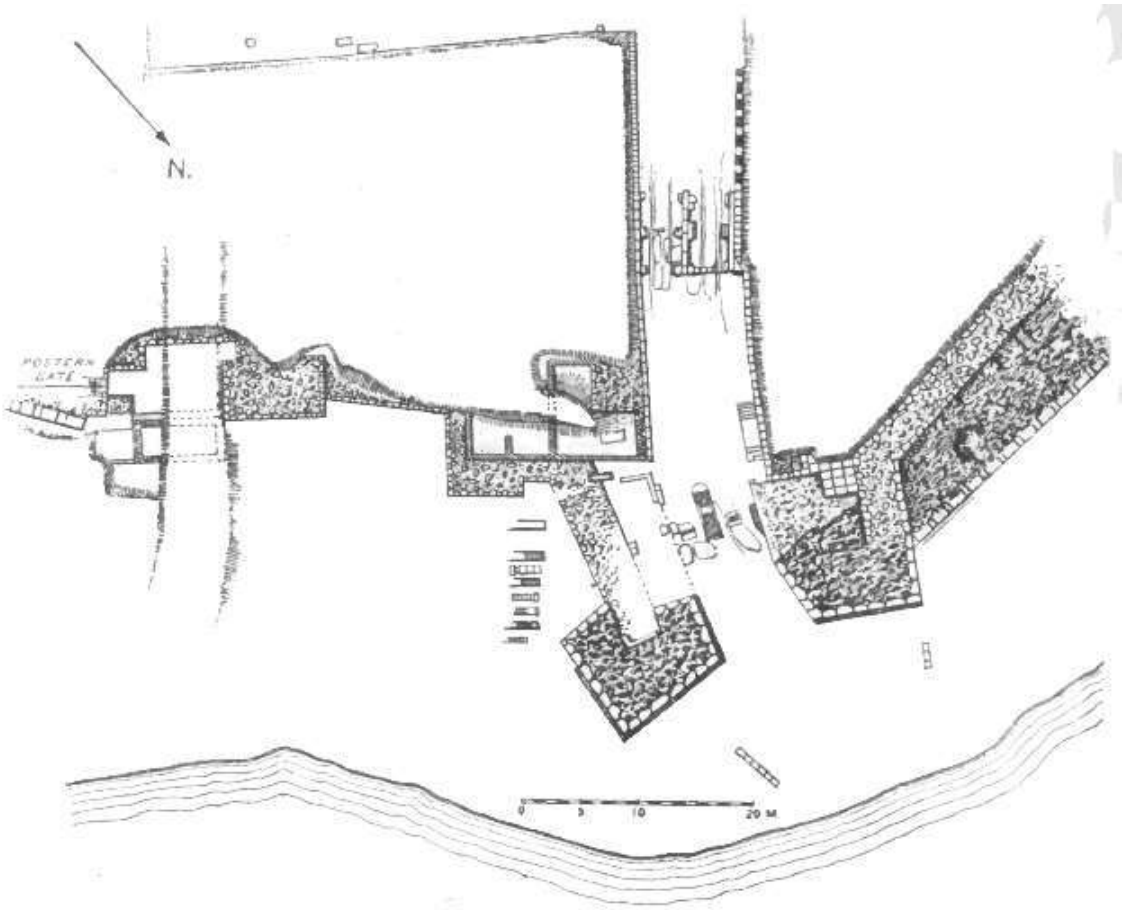
Ciasca *et al.* (1972) identified four phases of use:

The first phase (Motya VIA, 550-520 BCE) reveals the moment when the city was equipped with a defensive system for the first time. During this period, the thickness of the curtain varies between 0.8-1.3 m. The wall, at this moment, was a medium-sised irregular dry-mounted structure made of mud bricks (adobe). Regular towers measuring 8.0/8.25 m x 5.0/5.25 m are located at intervals of 21-25 m. These overhanging towers from the curtain wall were accessible from access ramps and wooden stairs (Nigro, 2020, p. 15).

The second phase (Motya VIB, 520-470 BCE) can be identified with the strengthening and addition of wall sections, increasing their thickness by 2.60 m. The structure consists of slabs and limestone blocks 1.50 m high and 2.65-2.85 m thick. This second new mud brick wall was built on a stone plinth that limits the previous phase (Nigro, 2020, p. 15). In the third phase (Motya VIIA, 470-425 BCE), the wall was rebuilt, with some modifications and was monumentalised. Large stone blocks were used, applying the pier-and-rubble technique in its middle. Isodomes blocks are an extremely regular masonry arrangement. In this type of organisation the stones had uniform measurements are put over others (Harris, 2005, p. 548). The masonry blocks were arranged without mortar.

Thus, the façade of the blocks was cut and smoothed, while the rest remained unfinished with a rustic appearance made by the rustication method which consists in In this method, the facade is left in its natural state while the remainder is smoothed (Harris, 2005, p. 840; Nigro, 2020, p. 15).

Figure 33 - The North Gate and its towers



Source: Based on Whitaker 1921, 166 Plan C

In its fourth phase (Motya VIIB, 425-397/6 BCE), the thickness of the wall reaches 5 m, having a base in limestone with ~4.5 m high and 5.2 m wide. Square towers of 12 m were added to the East, South, West and South Gates, while the North Gate features two trapezoidal bastions (Figure 33). From this phase, the limestone blocks are among the main features as they serve to drain rainwater. In line with the bastions of the gate, two small temple buildings constructed in the 6th-5th centuries BCE have been identified, of which only the foundations remain. Both were added towards the end of the 5th century BCE, The battlement was topped with limestone merlons (Figure 34) The raw

materials came from the nearby island of Favignana (Nigro and Rossoni, 2004, p. 50; Nigro, 2020, p. 14 fig. 1).

Figure 34 - Semi-circular limestone merlons of the battlement

Source: Whitaker, 1921, p. 181 fig. 20

This defensive line was still defended by towers arranged at regular intervals, among them the so-called East Tower, or Oriental Tower, equipped with an external staircase that was assumed to lead directly to the other fortifications.

The North Gate opens between two trapezoidal-shaped bastions ~15 m apart from the coastline (Figure 33). Its walls are perpendicular and have visible foundations slightly above sea level. However, its earliest foundations remain below the current sea level (Whitaker, 1921, pp. 164–165).

The towers are 8.50-7.60 m apart, depending on the position of the measuring point. The façade of East Tower has 10.68 m on its northern side, 10 m on its eastern façade and 6 m on the west façade.

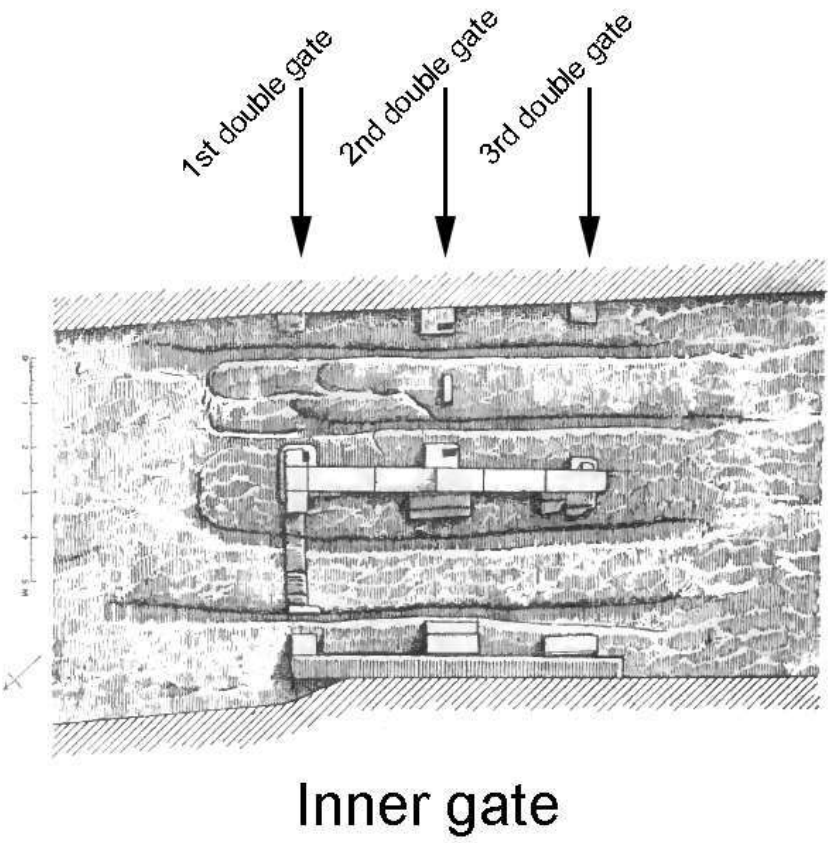
The West Tower has 9.75 m in its north façade, 5.25 m in its east façade and 4 m in its west façade. Currently, the East Tower is isolated from the curtain wall.

On the other hand, the West Tower remains connected to the curtain wall. The filling between these two walls of the curtain consists of the pier-and-rubble technique. Both towers were built on a limestone layer over the natural rock. The blocks forming them vary greatly, with some being up to 3 m long and 1 m wide. They were generally arranged regularly, one on top of the other, without using any mortar, although there were traces of mud and small stones filling the interstices (Whitaker, 1921, pp. 166–168).

The East Tower reach a height of 4m now, even though one only has six rows and the other has four rows. Whitaker states that judging by the smaller blocks found around the two buildings, the upper parts were probably constructed using smaller stones than those used for the foundation. The West Tower also follows the same technique of interior filling with rubble. However, the east building presents a surface formed by regular blocks, which leads one to consider the existence of a possible staircase inside it. Whitaker reports many spears and arrowheads in the vicinity of the towers, which is evidence of a great conflict in front of the city's main gate (Whitaker, 1921, pp. 168–169).

Concerning the entrance to the city, Whitaker identified a double entry formed by two perpendicular openings and separated from each other by a corridor (Figure 35). The corridor would be 3.70 m wide with a pediment of 1.20 m. This corridor also had an opening in its middle wall. This "window" probably would be a communication channel between both pathways. The height of this corridor would be ~2 m. Some remains on the ground seem to have belonged to the upper ornamental set of the entrance. These are fragments of cornice and limestone blocks with moulding on both sides (Whitaker, 1921, pp. 164–165).

Figure 35 - The second entrance or second gate with its three doors



Source: Based on Whitaker 1921, 170 Plan D

Judging by the device located at the entrance of the city and the layer of ashes, the doors would have been made of wood. Next to the doors, many nails, among other metal fittings, were found, probably elements that were part of the locks (Whitaker, 1921, p. 171).

Passing the first entrance, along a cobbled path with a width of 7.80 m flanked by a sandstone wall, there is a second double entrance gate ~22 m from the outer gate. This second entrance, or inner entrance, was composed of three double wooden gates, one followed by the other separated by a distance of ~2.5 m. Like the outer entrance, this entrance would have a central corridor with window-like openings between the walks (Whitaker, 1921, p. 171). The choice to have an entrance area restriction is due to the possibility of counterattacking the attackers using a trapping system.

On the casemate system, the western part of the wall shows little evidence of a casemate. The one discovered (Room 22) is partly destroyed and blocked by a filling of mud-brick. The casemate has ~4.20 x 3 m and includes an access corridor (Room 22a) and the main room (Room 22). The investigations of Isserlin did not clear the mud brick from Room 22, so there is no information on the room's interior. (Isserlin and du Plat Taylor, 1974, p. 62)

In Carthage, one of the latest evidences of the defensive system is the "Sea Gate". The structure resembles Motya's double gate (cf. Figure 35 and Figure 36). From the 5th century BCE, an urban reform transformed the Mago District area.

Concerning Carthage, the previous radial orientation was replaced by a new one that followed the models of orthogonal cities. New streets were planned to be broader, with 3 m wide. Between them, a road opened towards the great gate, known as the "Sea Gate", which was in use in the 5th-3rd centuries BCE, and was later closed in the 2nd century BCE. It is plausible that this closing can be directly linked to the third and last Punic war, where Carthage was under a brutal Roman siege. Therefore, to ensure that the enemy could not enter the city using the "Sea Gate", it may have been sealed for this purpose (Rakob, 1998; Kaufman *et al.*, 2019, p. 46).

Classical sources mentioned the city as protected by a long-walled mesh. Apian (Punic Wars 14, 95) mentioned:

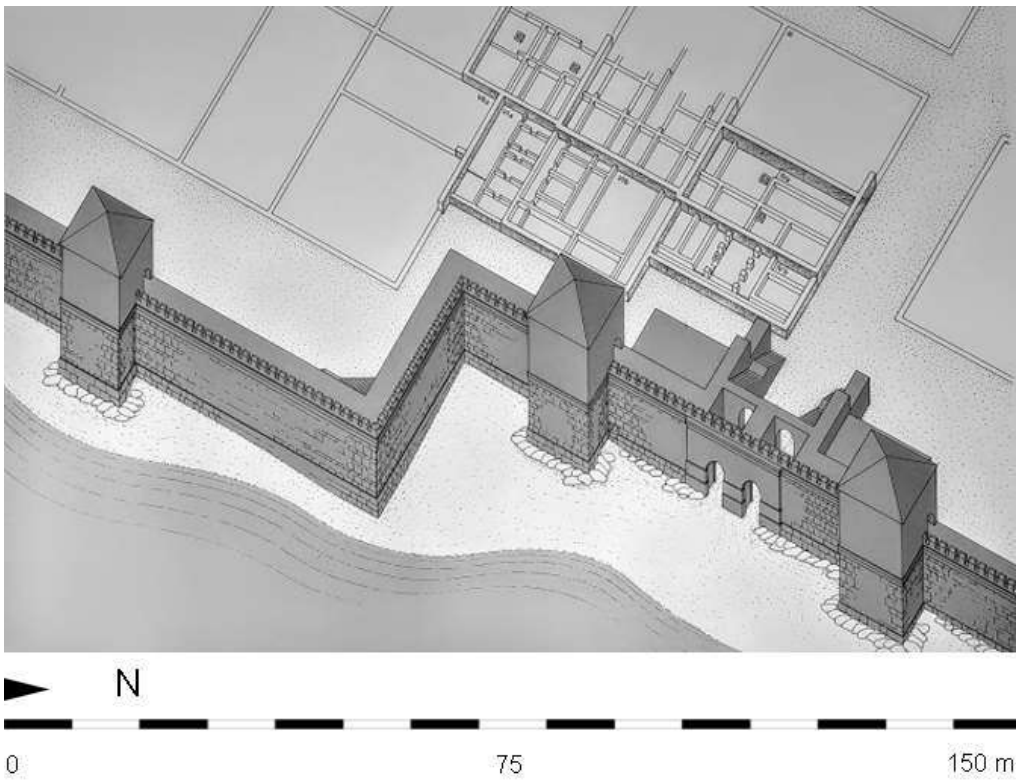
> On the seaside, the city was protected by a single wall. Towards the south and the mainland, where the citadel of Byrsa was on the isthmus, there was a triple wall. The height of each wall was fifteen metres, not counting parapets and towers, which were separated from each other by a space of sixty metres, and each was divided into four storeys. The depth was ten metres. Each wall was divided vertically by two vaults, one above the other. In the lower space were stables for 300 elephants, and beside them were containers for their food. Above were stables for 4,000 horses and places for their fodder and grain. There were barracks also for

> soldiers, 20,000 foot and 4,000 horses. Such preparation for war was organised and provided for only in its walls. The angle running around this wall to the harbour along the tongue of land mentioned above was the only weak and low point in the fortifications, having been neglected from the beginning.

Concerning the walls of Carthage, the area of the "Sea Gate" is a place that shows structural remains from the defensive line. The wall was 10 cubits thick, which guaranteed a thickness of 5.20 m. It is important to note that the unit of measurement used until the final moments of Carthage in 146 BCE was based on the Egyptian royal cubit (i.e. 0.52 cm). However, it is not possible to claim that this would be a standard unit of measurement for all the buildings in the city. A conversion table of measures from the century 3rd century CE found at Lepcis Magna sets out the equivalents to the Roman foot, Ptolemaic and Punic cubit, the latter of which ranged from 51.4-51.7 cm (Rakob, 1992, p. 33; Dridi, 2009).

This "Sea Wall" was also the structure that delimited the maximum expansion area of the residential neighbourhood. The entire system was built using well-carved sandstone ashlars sourced from the El-Haouaria quarries at Cape Bon, and the covering was made with white stucco. This walled line is believed to have skirted the entire coast until it met the city's military and commercial port (Lancel, 1992, p. 190; Rakob, 1992, p. 34).

Figure 36 - Reconstitution of the Mago district in the 5th-3rd century BCE



Source: Based on Rakob (1998 fig. 3) and Chrismate 2017, available from: https://chrismate.blogspot.com/2017/12/la-carthage punique.html [Accessed on 03 March 2022]

Another wall from the 5th BCE was discovered in Byrsa, which would be the citadel of Carthage. This defensive line of double typology (i.e. two parallel walls with transverse reinforcements) was installed precisely on the summit of the eastern slope of Byrsa hill. As the excavation was limited to a small area, the hypothesis was that it was a casemate wall, a type widespread in the Phoenician-Punic world. As the authors comment, this typology of casemate can be found mainly in the Iberian Peninsula in sites such as La Fonteta (8th century BCE) (Docter *et al.*, 2003, pp. 45–46).

Still in North Africa, Kerkouane in North Africa is a well-preserved site with a strong defensive system. The city has an organised elliptical layout, protected by a circular wall. The main streets intersect at the city centre in a cross shape and are connected by a pathway that encircles the entire area. The

casemate system, positioned in front of the circular wall, shows how the defensive system was well integrated into the city's design.

Other similar casemate walls are the Castillo de Doña Blanca, Alicante (7th-6th centuries BCE), Cartagena, Murcia (in the 3rd century BCE), in Cabezo Pequeño del Estaño, Alicante (8th century BCE) and both Carteia la Vieja and la Nueva, San Roque (7th- 5th centuries BCE) Showing that the same methods of construction in the Phoenician-Punic World are in constant transmission (Prados Martínez and Blánquez Pérez, 2007, p. 60).

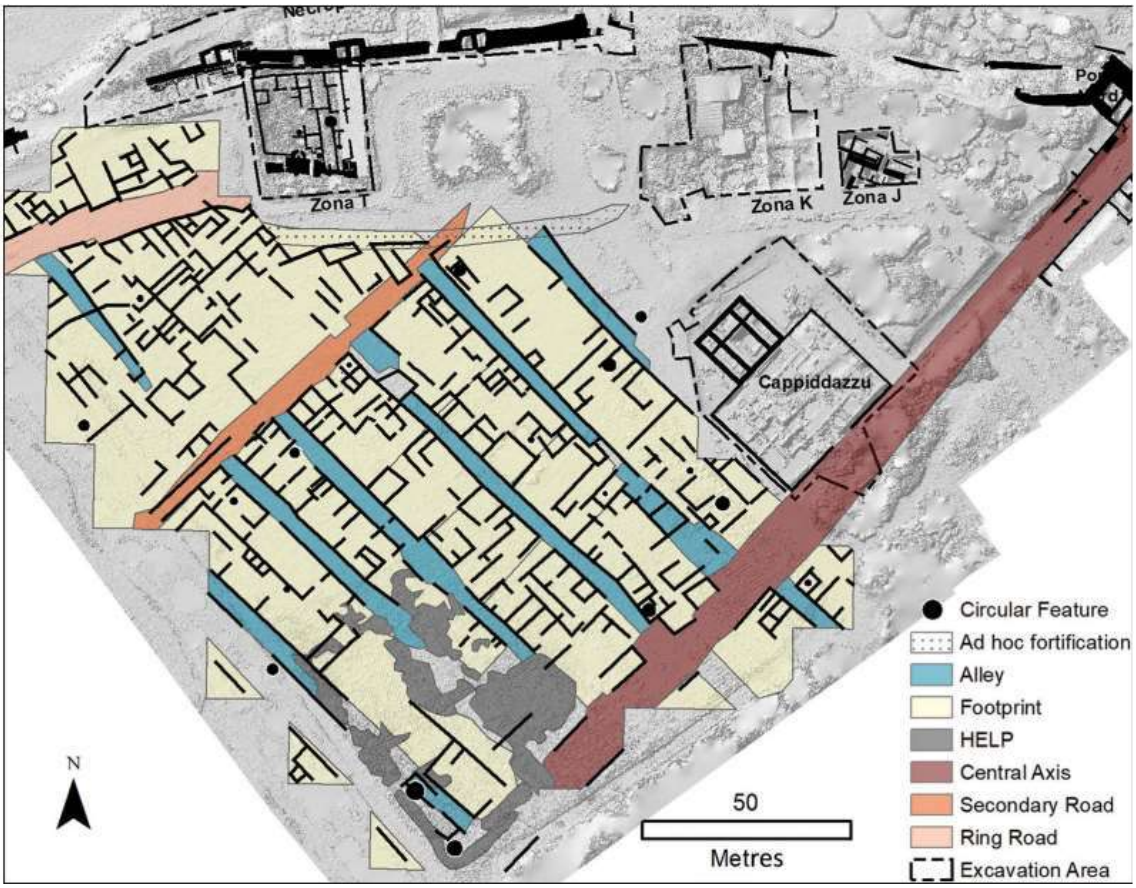
Sulcis (skly in Punic) (present-day Sant'Antioco) reveals a defensive system dating from the 4th century BCE. This organisation can be understood within the Carthaginian political measures for expansion and consolidation in Sardinia (Bartoloni, 2004, p. 57; Doak, 2019, p. 161). The oldest core of the Punic fortifications is on the hill of Fortino Sabaudo, in present-day Sant'Antioco. This defensive system was built upon an ancient Nuragic settlement, and there is evidence of towers in its curtain walls both during the Nuraghe and Punic-era. The entrance to the fortification was designed by the use of the pier-and-rubble technique, known in Italian as *a sacco*, just like the more traditional Semitic constructions. The interior between these two walls was filled with dirt, chips and rubble (Bartoloni, 2004, p. 78).

The remaining part of the wall layout has a length of ~100 m, with gaps. The structure consists of a double wall that is 2 m apart from each other. The outer wall is formed of large trachyte blocks (~0.80 m), which are vaguely rectangular, not due to their condition but due to the composition of the rock. On the other hand, the inner wall is formed by the same rock of smaller dimensions. (~0.60 m) Because of the juxtaposition of its blocks and its dry cohesion, there are gaps. The solution found by the builders was to fill these spaces with pieces of trachyte and clay (Bartoloni, 1971, p. 147).

The defensive system relied on a road around it that could bypass the city circuit (Figure 37), resembling the case of Kerkouane in North Africa. This type of road is ~1.50 m long and was made

of rammed earth (*pisé*) mixed with gypsum. This layout allowed the rapid movement of troops to the wall. (Bartoloni, 1971, pp. 148–149; Hermann and Sconzo, 2020, p. 992 fig. 6).

Figure 37 - Interpretation of the magnetic gradiometry



Source: Hermann and Sconzo, 2020, p. 992 fig. 6

In Sardinia, concerning the defensive system at Mount Sirai was constructed in the 4th century BCE and is believed to have been erected during the 379 BCE insurrectionary movements. Due to a later restructuring, little is known of the layout of the 4th century BCE defensive system. However, the remains of a tower can be found in the northeastern area, where the plateau was accessed. Based on the other fortifications of Sardinia, Tharros, Cagliari, Nora and Sulcis, it is believed that the defensive system should have used the pier-and-rubble technique (Bartoloni, 2004, p. 57).

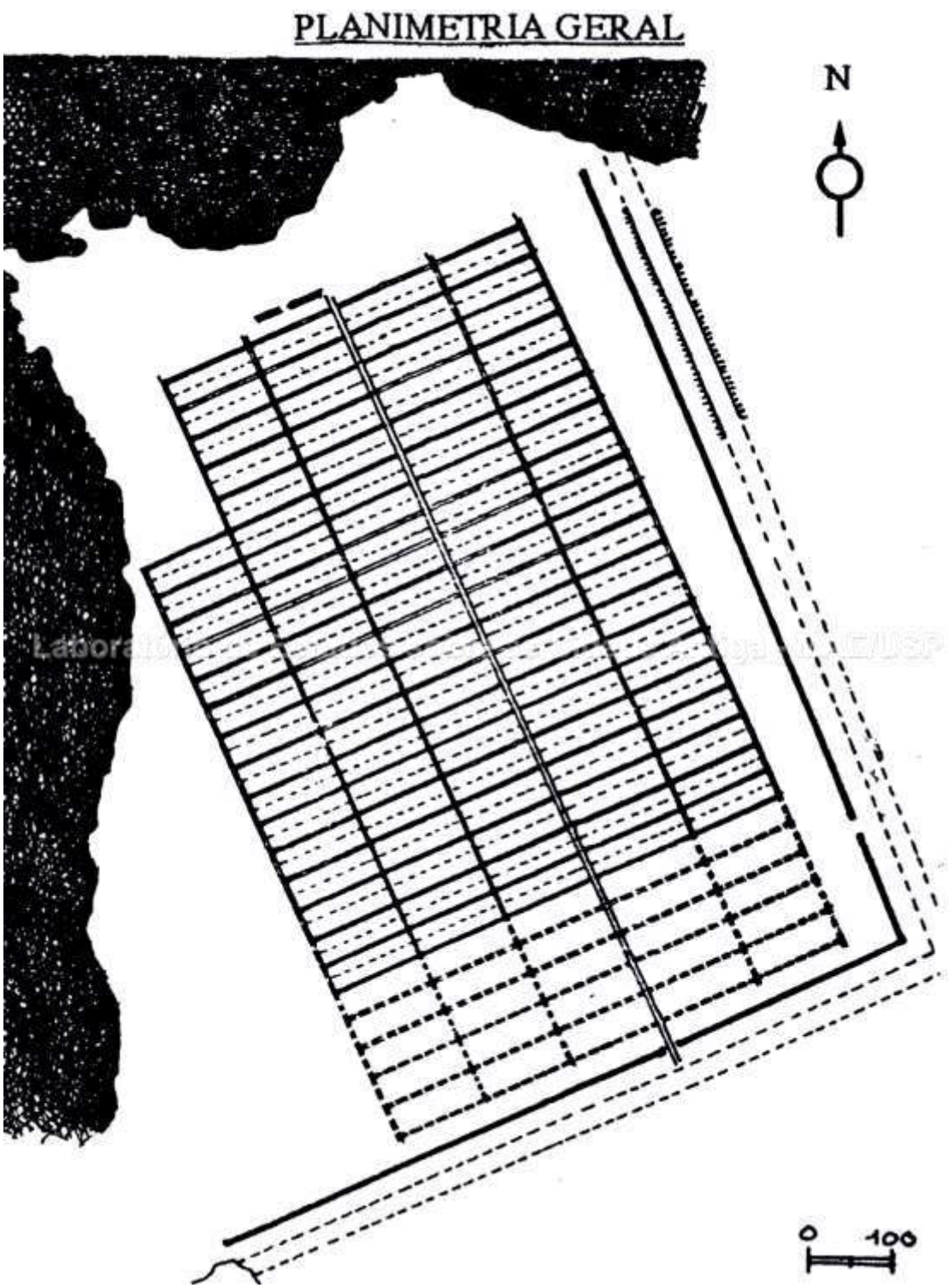
From the 3rd century BCE, for unknown reasons, Mount Sirai underwent significant restructuring, and the defensive system of the 4th century BCE was dismantled. Its parts were reused to construct a new city beyond the urban perimeter. Due to this reuse, some buildings from this period were identified as defensive structures (Bartoloni, 2004, p. 57). However, it is now believed that the reuse was for constructing residential areas outside the walled perimeter (Bartoloni, 2004, p. 58). It was also possible to identify a narrow artificial moat (Bartoloni, 2004, p. 68).

3.3.2. What is different at different archaeological sites

After the destruction of the city of Motya (Phoenician-Punic: mṭw') by the Syracusans in 397 BC, its inhabitants founded the town of Lilybaeum (nowadays Marsala), located on a promontory on the extreme western tip of Sicily, closer to Carthage. The site also seems to have been chosen thanks to the sandbank surrounding it, making its location difficult to access for a besieger who would challenge the city by the sea. The Sicilian Phoenicians developed a defensive system capable of dealing with the siege innovations. Dionysius I, the tyrant of Syracuse, tried to invade it 30 years after its foundation with siege engines, but failed (Vecchio and Giglio, 2006, p. 123; Giglio, 2008, p. 39).

According to Bollati (1999), the plan of Lilybaeum was established on a flat promontory area. Its urban mesh, set at the end of the 4th century BCE, was conceived respecting the principles of orthogonality. The city has 6 axes (Figure 38), the main one oriented northwest-southeast, and 21 perpendicular roads. The perimeter was walled and also had a 26.40 m deep ditch.

Figure 38 - Lilybaeum plan



Source: Bollati and Bollati, 1999, p. 27

The defensive system of Lilybaeum also received, below the level of the moat, a tunnel dug in the rock, where several graffiti of soldiers, boats and other warlike elements can be found (Vecchio and Giglio, 2006, p. 61). It is known that during the Roman siege of 253 BCE, general Himilcon ordered tunnels to be dug for the locomotion of the troops. However, this defensive system was slowly abandoned after the fall of Carthage in 146 BCE (Giglio, 2008, p. 61).

During the invasion of Timoleon, the city became a reception point for Carthaginian military operations (Plutarch, *Timoleon*, 25, 1), receiving the contingents from Africa and the surviving Carthaginians from Crimissus (Diodorus Siculo, *Historical Library* 16, 80, 1).

Most of the city's walled curtain and its towers are from the 4th century BCE (Zirone, 2005, p. 12). The conservation of the foundation plinths of the wall, reaching ~1.40 m, allows us to suggest that the defensive system reached a height of ~6-10 m to sustained it. Giglio and Vecchio (Vecchio & Giglio, 2006, p. 127) proposed that the wall was built using mud bricks to ensure some "elasticity" during the impact caused by the stones thrown by the catapults.

Regarding the city moat it ran 30 m from the wall, it had been designed to prevent the attack of ballistic machines, probably because of the memory of the use of such weapons by Dionysius I against Motya. This sector has a width of 9 m / 9,30 with a depth of 4,24 m and is connected with the main moat. Its slope had a 4º angle in the east-west direction. At another location known as *Via del Fante*, to the north, the moat has a constant width of 5.30 m and a depth of 6.40 m protecting the old port area. This evidence leads Giglio and Vecchio (Vecchio & Giglio, 2006, p. 129) to hypothesise a city-port defensive system similar to that of Athens and Piraeus.

In Sardinia, Tharros was a Phoenician city, founded over a Nuragic settlement, in the last quarter of the 7th century BCE at Cape San Marco. Like other foundations in the Gulf of Oristano (e.g. Sulcis, Porto Botte, Porto Pino, Inosim, Othoca), Bartoloni suggests that a pre-colonial frequentation

movement possibly existed to have an occupation in such an early period (Bartoloni, 2005, p. 945; Fariselli *et al.*, 2017, p. 321; Doak, 2019, p. 873).

Figure 39 - The fortification on the north side of the Su Muru Mannu: A) Pit; B) The counter-scarp wall; C) The perimeter wall

Source: Available from: https://virtualarchaeology.sardegnacultura.it/index.php/it/siti-archeologici/eta-fenicio-punica/area-archeologica-di-tharros/schede-di-dettaglio/1185-il-complesso-fortificato, [Accessed in 07 March 2023]

Around the city of Tharros, a triple wall built between the 5th – 3th centuries BCE, at a time of Carthaginian domination, was implanted, cutting through the city's isthmus. This wall is the first attested defensive system due the lack of data from the initial Phoenician settlement probably from the 8th BCE. The northern part of this wall is surrounded by a trachyte wall reinforced with another

wall where limestone blocks are implemented. The rest of the city's defence is completed by a moat and the rampart of a counter-scarp (angular structure opposite the scarp) (Figure 5) (Barreca, 1983, pp. 71–72; Lancel, 1995, p. 379; Tronchetti, 1995, p. 739).

The new wall was built on the previous artisanal sector. It was possible to identify slags, among other ferrous materials, under one of the foundations of the wall curtains. These remains give some certainty about the period of use of this artisanal sector and the establishment of the wall. The wall foundation itself was filled with sandstone, basalt and ceramic fragments. Subsequently, the walls were built with ashlar blocks made of sandstone. However, other blocks used to construct the wall seem to have belonged to the shrines in the vicinity of the sacred area. As evidence, there are inscriptions on some blocks that can also be dated to the 4th century BCE.

Traces of this defensive system can be found on the hilltop (cf. Figure 39) of Su Muru Mannu which translates as "the great wall") (Moscati, 1987, p. 484). On this site is located one of the finest Punic fortresses in Sardinia. Only its eastern and northern part remains. The wall surrounding the fortress of Su Muru Mannu consists of irregular basalt blocks, built dry (i.e. without the use of any mortar), and it is noted that it was repaired and renovated in Antiquity. There is a postern on its eastern side that shows some attempt at decoration, given the use of regular blocks made of light-coloured sandstone. The passage appears to have been blocked off around the 1st century CE. Around the rampart, there would have been a moat no longer visible, given the transformations of the Roman period. Behind the wall, there would have been a Nuragic village during the Bronze Age, which during the Phoenician-Punic period, was replaced by the construction of a house.

Another find of great interest for a better understanding of this defensive system is the merlon that crowned the curtain of the wall. As in other defensive systems of the Phoenician-Punic world, this is a limestone merlon discovered on the perimeter of the walls (Figure 40).

Figure 40 - Semi-circular limestone merlons found around the wall

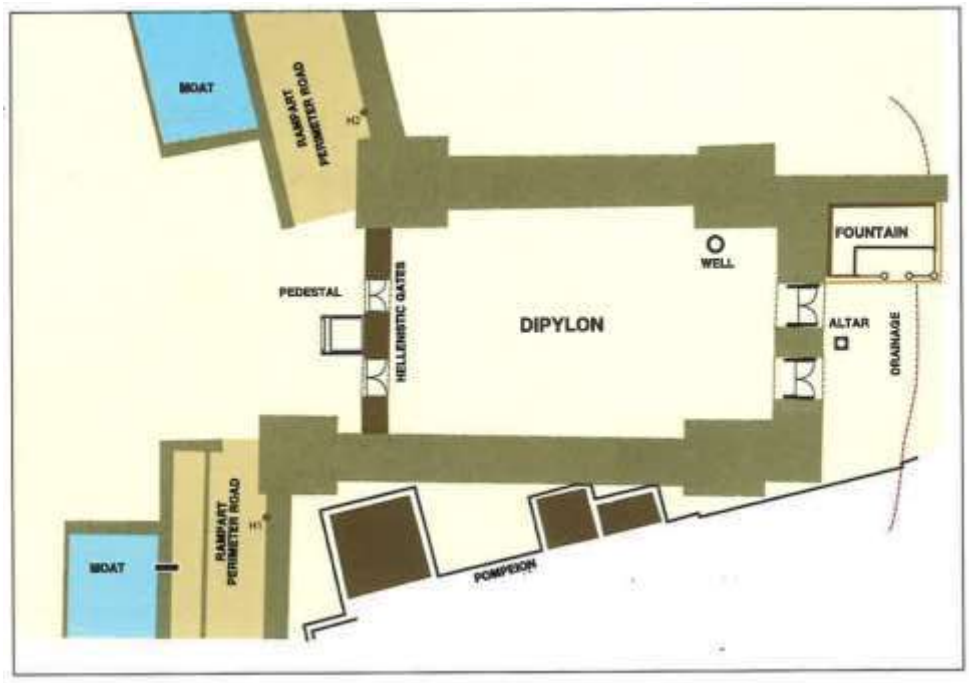
Source: Available from: https://virtualarchaeology.sardegnacultura.it/index.php/it/siti-archeologici/eta-fenicio-punica/area-archeologica-di-tharros/schede-di-dettaglio/1185-il-complesso-fortificato, [Accessed in 7th March 2023]

In the 2nd century BCE, the defensive system underwent a significant restructuring. The rampart was reinforced with basalt boulders, and the ditch was opened with the structuring of the counter scarp. At another point of the site, it is possible to identify remnants of the northern flank, where the Spanish tower known as San Giovanni stands. In this local, in the 2nd century CE, it is possible to identify a rectangular plan arranged at what could have been an entrance gate. It has been determined that the complex was hastily made using material from the barrier related to the ramparts. The reconstruction is due to landslides along the hill that have destroyed the Punic defensive line (Moscati, 1987, p. 485).

3.3.3. What characterises Phoenician-Punic defensive architecture in Central and West Mediterranean?

In their process of expansion across the Mediterranean, the Phoenicians brought with them their more traditional means of construction, such as building their walls by the pier-and-rubble method. Phoenician foundations will be well protected by towers, bastions, moats and monumental gates on islands, promontories or on coasts. It will be most evident in the city gates the developments in military architecture that follows the poliorcetic of the time. Two great gates, such as the Sea-Gate of Carthage and the North Gate of Motya, will be examples of the application of new defence techniques. Their constructive scheme closely resembles other Mediterranean developments, such as the Dipylon of Athens. It is necessary to note that this defensive system has similarities with the Athenian Dipylon in the late 4th century BCE. Being the main entrance to Athens, it connected the city to the Academy, the Triasian plain, the Peloponnese and the rest of Greece. The Dipylon is also known as the "Gate of Kerameikos" or by its older name "Gate of Triasiana". Spathari states that Dipylon was the first fortification to trap the enemies (Figure 41).

Figure 41 - In the 5th century BC, the Dipylon already featured two sets of double gates



Source: Spathari 2009, 18 fig. 15

In this planning, the attackers, after passing the first gate, find themselves in an open and unprotected area facing the counterattack of the besieged. In its last phase at the end of the 4th century BC, beyond the trapping system, two towers flanked the promenade for access to the city. However, it is necessary to point out that the bag trap of the Dipylon dates from the 5th century BCE. Only in the 4th century BCE will the Dipylon be equipped with a second line of double gates facing the older entrance (Spathari, 2009, pp. 16–19). This similarity in defensive systems demonstrates the transmission of construction know-how in circulation in the Mediterranean between the 5th – 3rd centuries BCE. The gates underwent significant advancements in sophistication. In the cases of Motya and Carthage, two bastions were constructed perpendicular to the main entrance, with three additional series of smaller gates. The gate area served as a pincer gate a few metres inside the walled line. In this system, enemy troops would be cornered at the entrance and attacked by arrows or boiling water from the ramparts. The restructuring that took place in the Central Mediterranean was not only limited to the curtain wall areas. There was also a restructuring of the areas around it.

In Carthage's case, the Sea-Gate reform also meant a restructuring of the Mago district. There was a widening of the streets towards the gate, and later, during the Third Punic War, it was closed to prevent the Roman advance.

In Sardinia, the defensive systems will be installed from the 4th century BCE. In the case of Fortino Sabaudo, in Sant' Antioco, the whole system will be installed over an ancient Nuragic settlement. This city, ancient Sulcis, still had a system of displacement that ran along the inside of the wall for quick mobilisation. There would be a road that ran along and delimited the entire inner area of the city and ran parallel to the curtain of the wall.

At the top of Su Muru Mannu, at ancient Tharros, one of the best, and few examples, of Punic forts were located, which consisted of irregular basalt blocks arranged without mortar.

Some innovations that occur are the tunnels of Lilybaeum. After the destruction of Motya, the city, founded by survivors, developed a robust defensive system that could reach a height of ~6-10 m. In the case of Lilybaeum, the wall was built with mud bricks, which would ensure better absorption of catapult impact. There would be a moat running along the entire wall, and it is believed that it also protected the port of Lilybaeum.

With the examples as a basis, it was possible to see that the Central Mediterranean underwent several reforms to keep up with the poliorcetics developments of its time. However, methods such as the pier-and-rubble became the only defensive type used by the Phoenician-Punic, constantly adapting it to defensive novelties.

3.4. Religious architecture

3.4.1. What is similar at different archaeological sites

Vincenzo argues that it is challenging to decide on the interpretative models concerning the sacred buildings in Sicily. There is a suggestion that a *Pfeilertempel* (Pillars temple) was the prototype of Phoenician temples in the Levant and the West (Vincenzo, 2019, pp. 542–544).

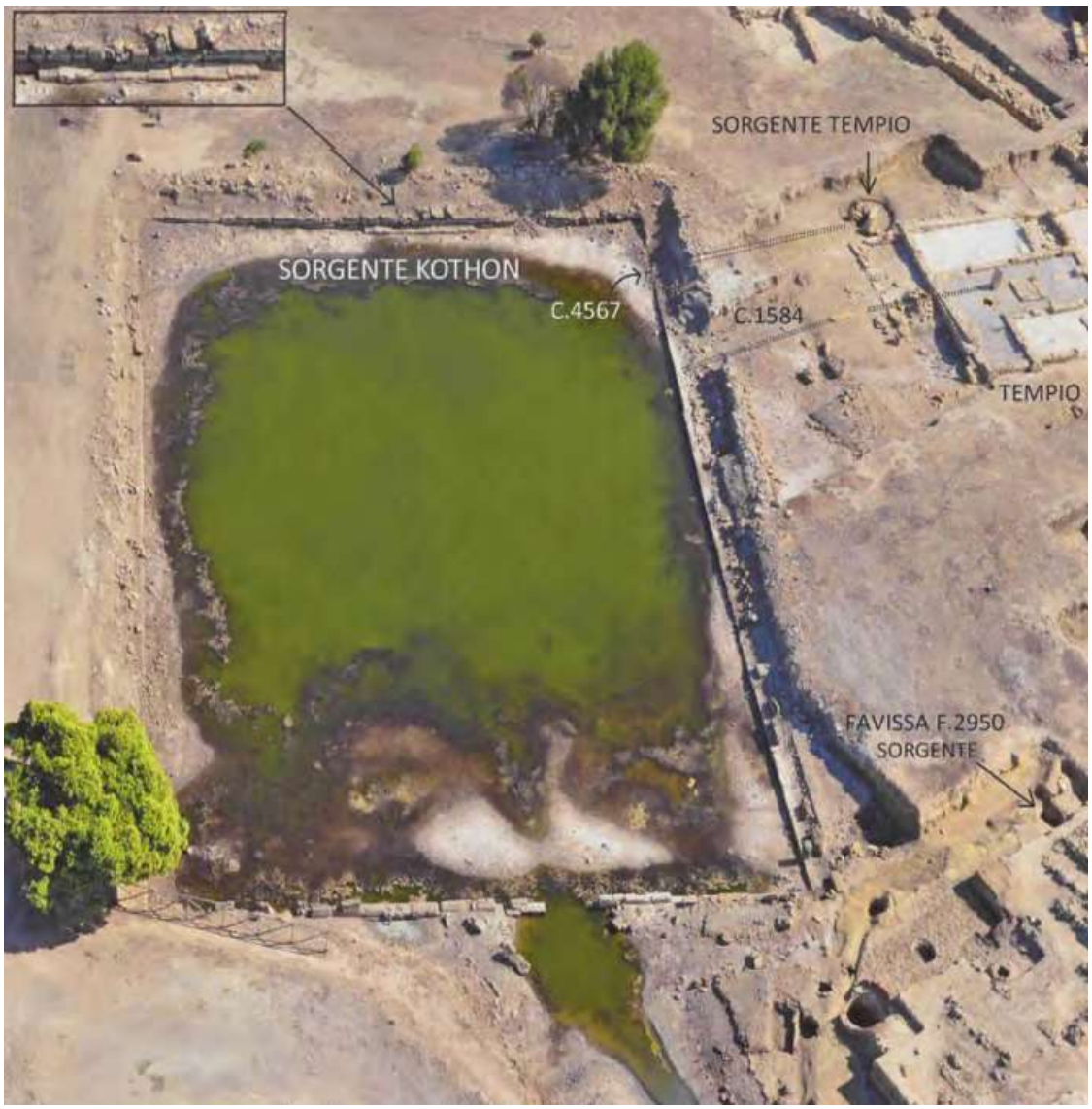
The recent excavations of the "Temple of the Kothon" in Motya revealed ritual practices similar to those in the Levant. In its initial phase (800-750 BCE), the natural lake that existed south of the island was fed by the nearby freshwater springs (Figure 42). A series of wells were built along the basin. They were connected to the water basin by a series of channels (Nigro *et al.*, 2019, p. 141). The temple layout could be inspired by other sacred lakes or pool, such as the one in Byblos, maintaining a religious practice element from Phoenicia in its foundations.

Figure 42 - The complex of the "Temple of the Kothon". In red are marked the area of the springs

Source: Nigro, 2022, p. 5 fig. 2

Still at Motya, a tripartite building called "Fondaco C8" served as a storage and also a place for interchanges and shelter for the sailors. A temple dedicated to Baal was initially built to the north of Fondaco, an open-air worship space. The area had several features, such as obelisks and stelae, and its centre had a sacred freshwater well. A walled temenos surrounded the complex. During the Carthaginian rule, the temple was monumentalised, assuming the nowadays visible layout.

Figure 43 - The sacred pool of the Temple of the Kothon



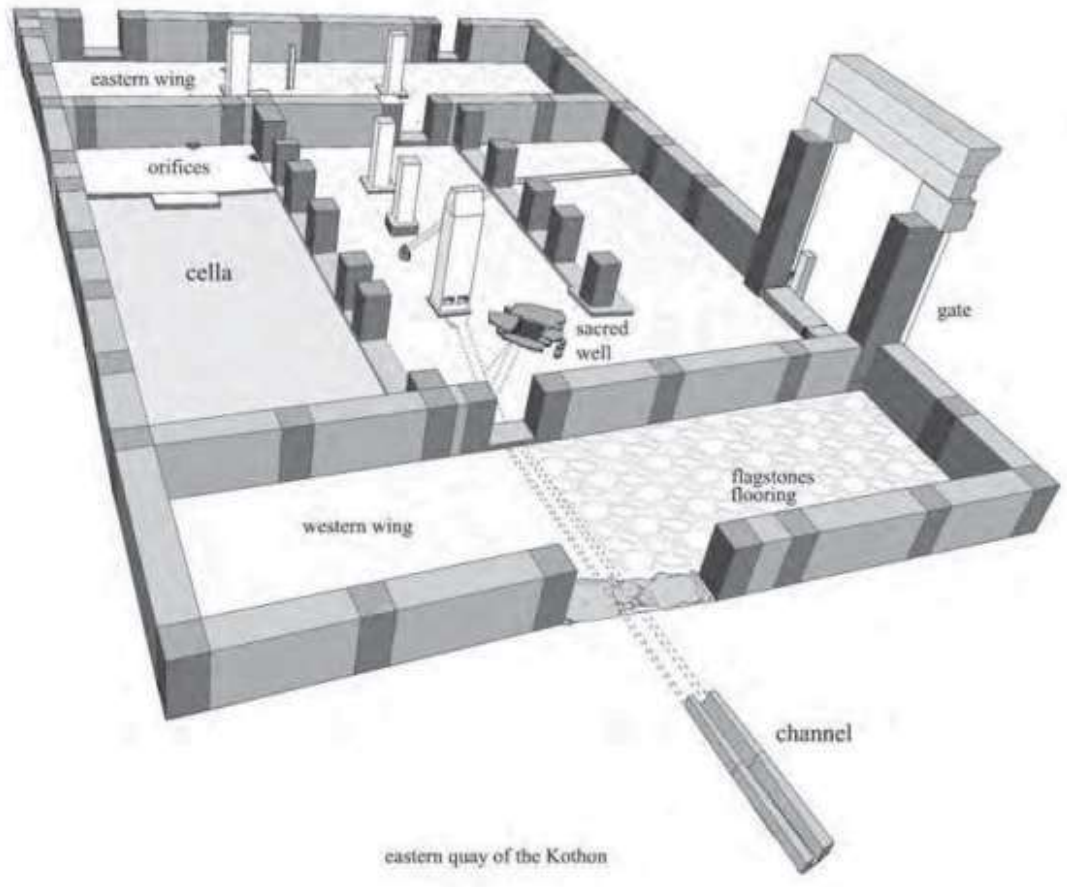
Source: Nigro et al., 2019, p. 139 fig. 3

Within the documented area next to this pool, there is evidence of a large temple with Levantine characteristics. In past periods around 770-750 BCE, there are signs of religious occupation, such as votive wells and cultic installations associated with Phoenician Red Slip ceramics, such as trays and handmade vessels. During this period, there seems to be no importation of Greek ceramics. However, in the entrance hall of Temple C1, a juglet with a Nuragic askoid shape (which will be

illustrated in Figure 49 n the next section) was found. According to Nigro (2011, p. 7), this discovery attests to Motya as an important point of contact between Tyre and its foundations in Sardinia.

In its subsequent phase (Phase 8 - c. 750-550 BCE), Temple C5 was built, following almost the same layout as the previous one. The temple features a central courtyard with an obelisk and two betyls (Figure 44) similar to what occurs in the aforementioned Temple of the Obelisks in Byblos (section 2.2 in Chapter 2).

Figure 44 - Reconstruction of the Temple C-1

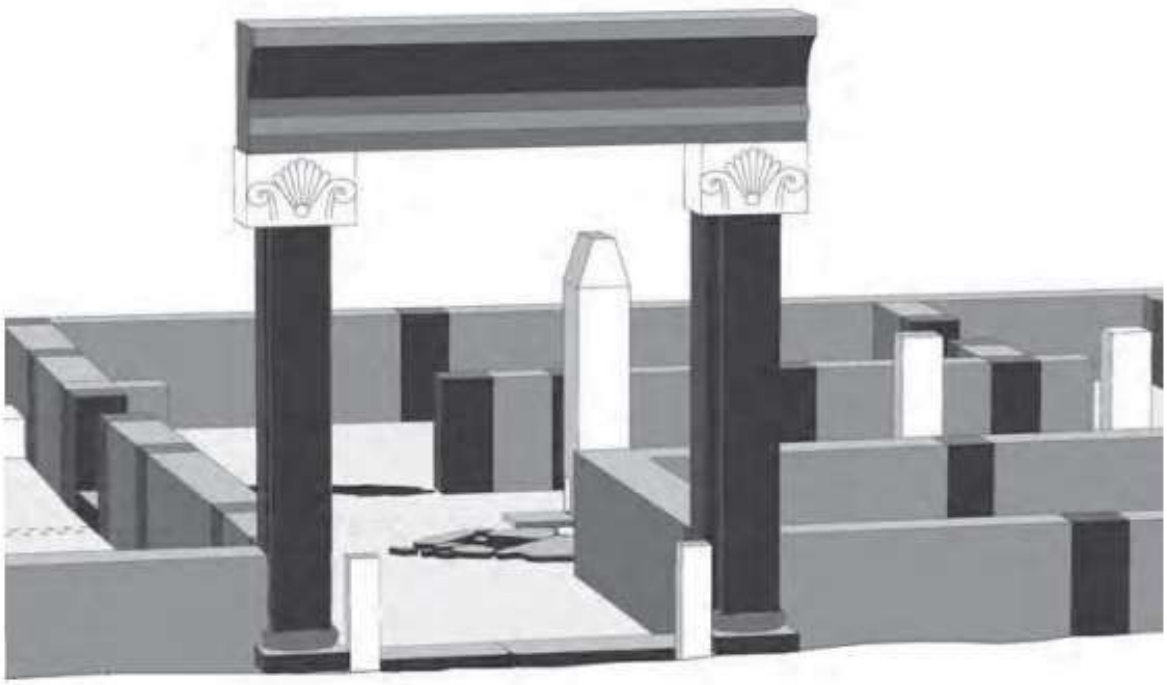


Source: (Nigro, 2012, p. 319 fig. 7)

The building also includes a *cella* on its north side and an *adyton* or *sancta sanctorum*, which houses a low-altar with a small stele behind it. The altar is flanked by a circular depression made of greyish mud-bricks, believed to have been used for incense and cremated offerings.

Next to the altar, there is also a funnel-shaped pit referred to by Nigro as "*mundus*" (i.e. a pit dedicated to sacred libations), from where two glass beads were recovered.

Figure 45 - Reconstruction of the temple entrance with the aeolian capitals above and the two pillars at the sides on the ground



Source: (Nigro, 2012, p. 318 fig. 5)

The entrance of this temple, facing south, is situated in front of the sea and the pool. Nigro (Nigro, 2011, p. 9) suggests that in the 6th century BCE, Temple C1 would have featured a typically Phoenician façade. This entrance passage would have been crowned with a proto-Aeolic capital of

Cypriot style, supported by two half-columns (Figure 45). The capital was found inside the votive well at the centre of the temple and is proposed to have been part of the temple's facade.

In the 4th century BCE, two stone pillars flanked the entrance of the building, which could be one of the characteristics mentioned by Herodotus (*Histories* II, 44, 3). He narrates that the Temple of Herakles Thasios had two pillars, one of gold and the other of emerald. While these pillars may not have been made of precious stones, they could be interpreted as an *interpretatio graeca* to some pigmentation or decoration that is now lost.

3.4.2. What is different at different archaeological sites

In the West, the Phoenician-Punic sanctuaries will merge with the local places of worship and later with the Roman temples. During the Carthaginian resettlement of previous Greek sites, there were some cases where the temple was located near commercial areas, as in Selinus.

The Punic resettlement of Selinus (339 BCE) rearranged the city layout in a nonorthogonal urbanistic layer. In Temple C, 12 rooms were discovered and interpreted as workshops within a portico. This workshop area was interpreted as a type of agora. A series of seals attest to its commercial role. However, the seals could also attest to non-commercial use. The Semitic temple also was a place to archive documents. The most common seals in these places depict Heracles/Melqart with a bull, a club or a dolphin, the same found in Selinus (Vincenzo, 2019, pp. 539–540).

In Sardinia, the sacred area of Tharros is one of these examples. Discovered in the 1950s, the site has been intensively researched from the perspective of cultural entanglement processes. There was a reuse of the Punic building during Roman rule until Late Antiquity. However, from the abandonment

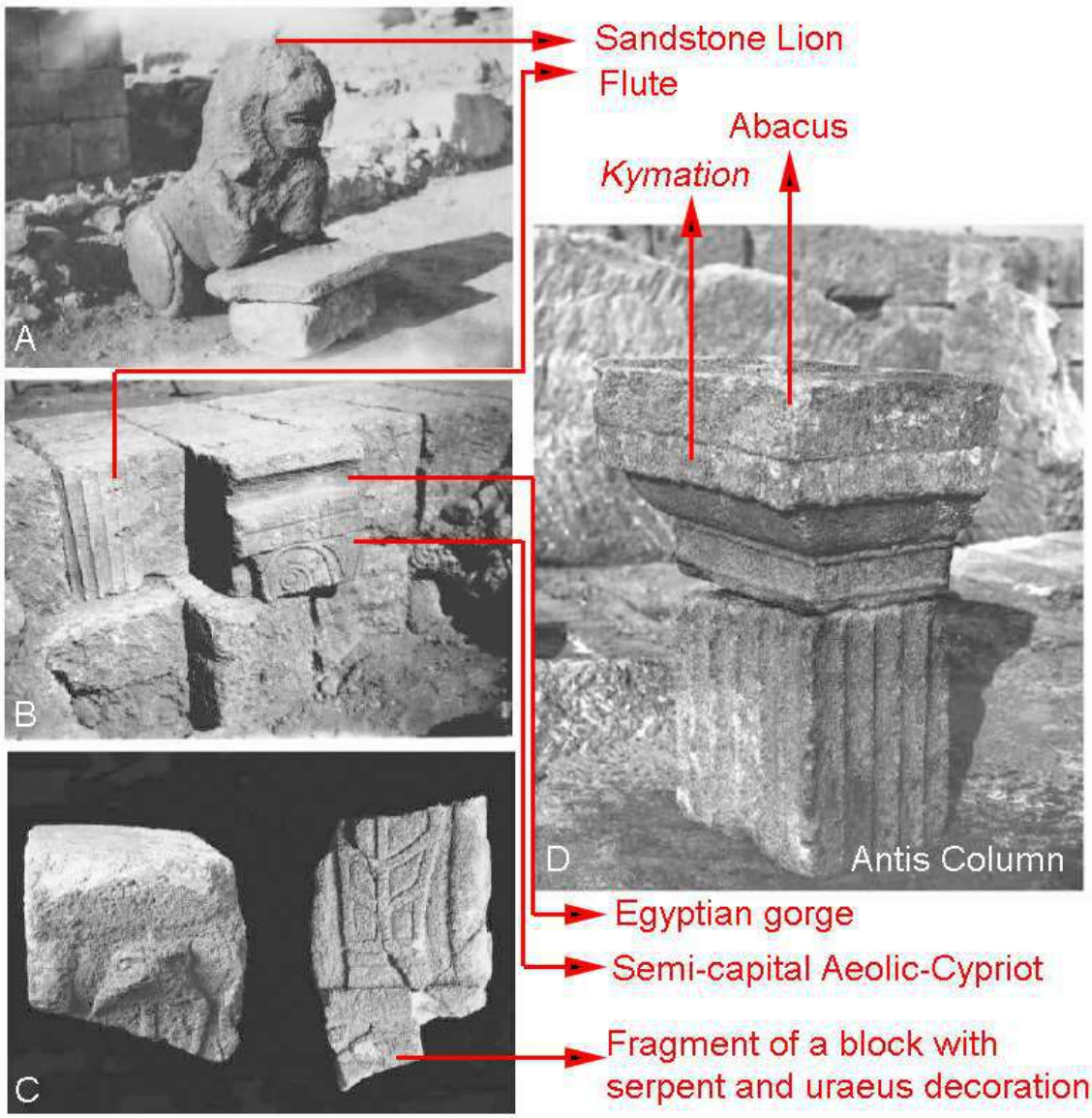
of Tharros, much was spoliated to be building material for other later structures (Belfiori, Floris and Marano, 2019, p. 554).

However, some remnants of the sacred area throw light on what this worship space might have looked like from the Punic to the Roman period. Known as the "Monumental Temple" or "Temple of half Doric columns", this building is located in the central area of the present archaeological site, south of the *decumanus maximus* (Belfiori, Floris and Marano, 2019, p. 554).

The progression of the temple can be divided into three phases, these are:

1) Middle Punic (480-300 BCE) – At this time, the core of the sacred area would be an elevation surrounded by a circular area, protected by a temenos of large square blocks. The rocky surface of this elevation would have a series of funnel-shaped holes interpreted as *cupulae* for the reception of votive offerings (Belfiori 2019, 556). Still from the Punic phase, important sculptural elements have also been discovered, such as a life-size seated lion made of sandstone (Figure 46A). This statue is an apotropaic effigy arranged at the front of the sanctuary as a protective element of the sacred area. A part of a temple of the antis-type column was discovered (with meandering decoration at its base) with a *kymation*, cushion and *abacus* (Figure 46D) (Floris, 2014, pp. 44–45 fig. 6).

Figure 46 - Some architectonic elements find found at the site of Tharros

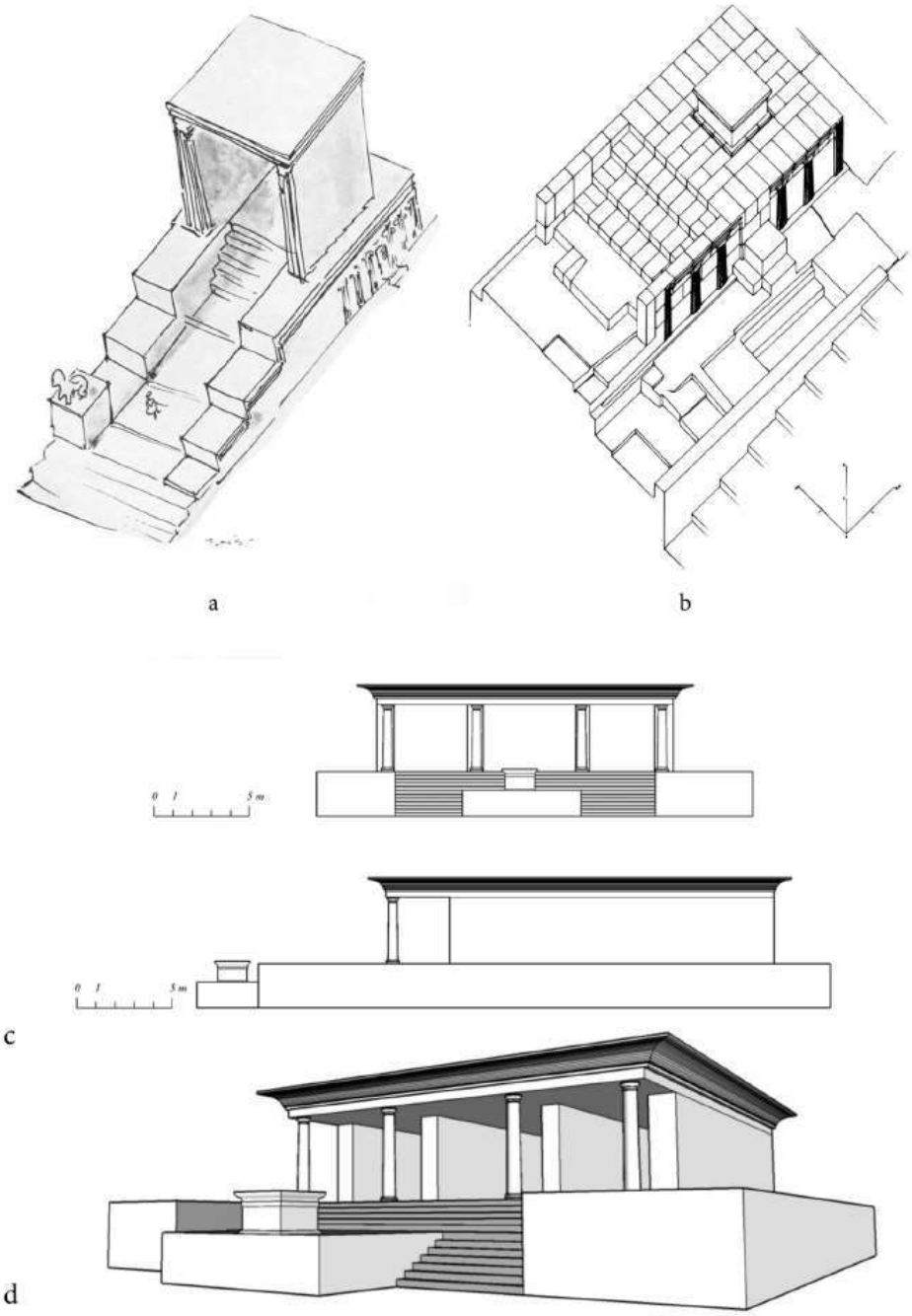


Source: Based on Floris, 2014, p. 45 fig. 5, 6 and 7

2) 4th – 3rd century BCE – In this second moment, the bedrock would have been carved on a platform with an access ramp decorated by a pseudo-Doric portico crowned by an Egyptian collar cornice on its three sides (Figure 47). According to Pesce (Pesce, 1961, pp. 390–395), there would be an Egyptian-style aedicule at the top. However, Acquaro (Acquaro, 1991, p. 549) believes there would be an altar, not an aedicule.

3) 1st century BCE to 1st century CE – During this last period, the Punic temple would have been dismantled; however, its architectural elements were reused in the foundation of the Roman temple. For Pesce (1961, pp. 402–419), the area would have been organised as a labyrinth with an altar in the centre and a small prostyle temple built on the base of the ramp of the Punic temple. Unpublished data gave conditions for Floris (2014) to suggest how the structure could have been in the Roman period. In this phase, the Doric capitals and two Egyptian cornices are reused inside the Roman cistern in the most immediate area of the sacred enclosure. This reuse of architectural elements caused Belfiori to suggest a continuation of Semitic practices that would result in a entangled architectural style (Belfiori, Floris and Marano, 2019, p. 556).

Figure 47 - The first and last phases of the sacred area in a) and b) one can see the two proposals for the sacred area, the first by Pesces (1961) and the second by Acquaro (1991). In the last phase (c and d), we have the Roman temple proposal



Source: based on Belfiori 2019, 556-557, fig. 4-5

At Sulcis, in the archaeological area known as *Cronicario*, there is evidence of Phoenician occupation since the mid-eighth century BCE. Dwellings and buildings that seem to belong to a public area have been discovered. As religious buildings, a place for sacred use in the open air was also found at the *Cortile A* (Courtyard A). This space constitutes one of the first pieces of evidence of Phoenician implantations dedicated to religious use. The evidence of numerous votive terracotta, *thymiateria* with a female head, and *oscillas* of various types led archaeologists to interpret this space as sacred (Pompianu, 2012, pp. 2174–2175).

To support this interpretation, structures related to the finds were discovered north of Cortile A, in *Settore IV* (Sector 4). A walled system identified as US 3375 appears to delimit the northern area. This delimited area has been interpreted as a possible portico. Another excavated area of interest was US 3312, east of the portico. This site was identified as a votive deposit thanks to the coroplastic finds (statuettes, *oscillas* and anatomical ex-votos). In neo-Punic language, epigraphic findings are written in clay on a female figurine that indicates that a devotee stayed overnight in the temple (Pompianu, 2012, pp. 2176–2177).

Regarding the portico, a type of paving known in Sardinia as *cocciopesto* (i.e. *opus signinum*) has been identified This hydraulic concrete is for partly composed of crushed brick that was used for covering walls and floors. This paving has been pointed out as belonging to the final moment of abandonment of area US 3447. From this moment of abandonment, it is believed that the portico would have had access to a canteen, given the abundant findings of a table and kitchen pottery. Vestiges of the most varied marine and terrestrial fauna types also support this interpretation. Other finds that stand out are necklaces, needles, bone amulets, bronze rings and an ivory plate with bilingual inscriptions between Latin and Neo-Punic languages (Pompianu, 2012, pp. 2178–2179).

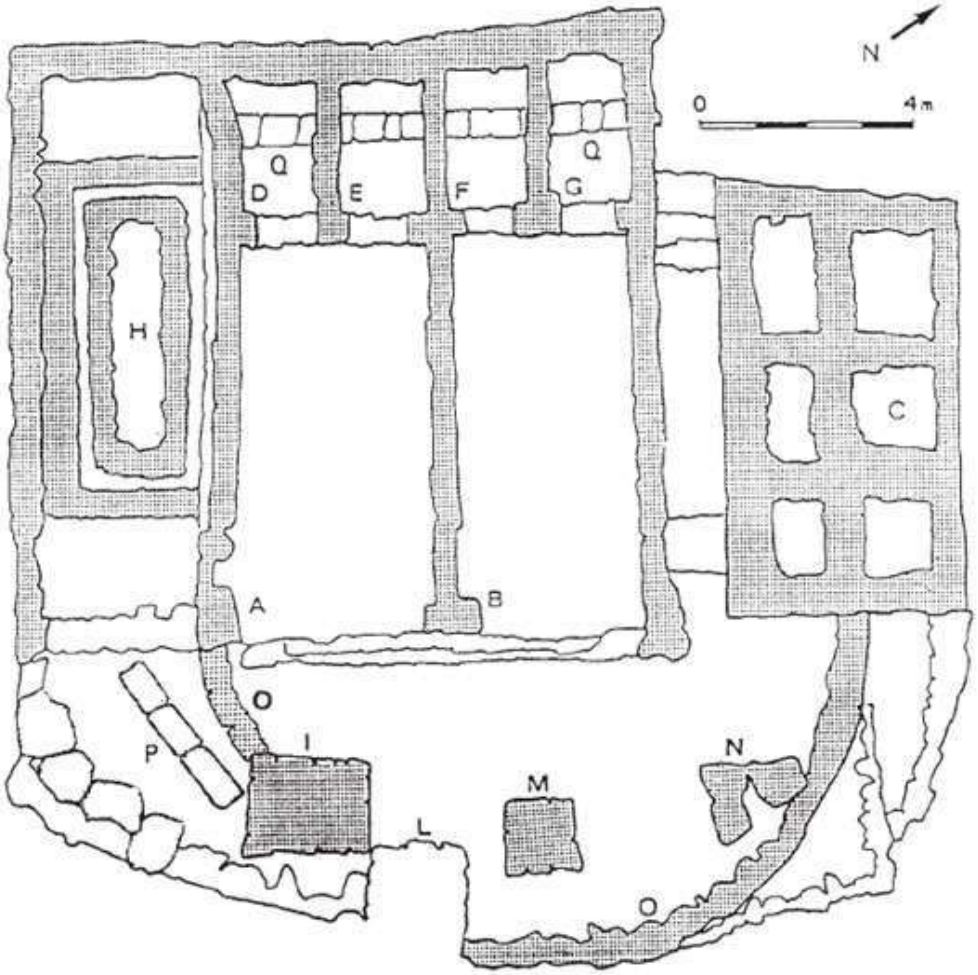
Another interesting find that induces us to interpret the locality as a religious area is the perfume burners with female depictions and a *kalathos* made with pieces of coral (Pompianu, 2012, p. 2180).

Regarding the dating of the building, there are still controversies since the votive material comprises the 3rd-1st centuries BCE. The excavation nearby at Cortine A suggests a linear systematisation of the structure from the middle of the 1st century CE when the town became a *municipium* (Pompianu, 2012, p. 2183).

However, it is not possible to affirm that the place was dedicated to only one deity. The anatomical ex-votos, the neo-punic and bilingual inscription, and the possible canteen may suggest the site as an enclosure dedicated to the practice of *incubatio*, which could be related to Eshmun and later Aesculapius (Pompianu, 2012, pp. 2183–2184).

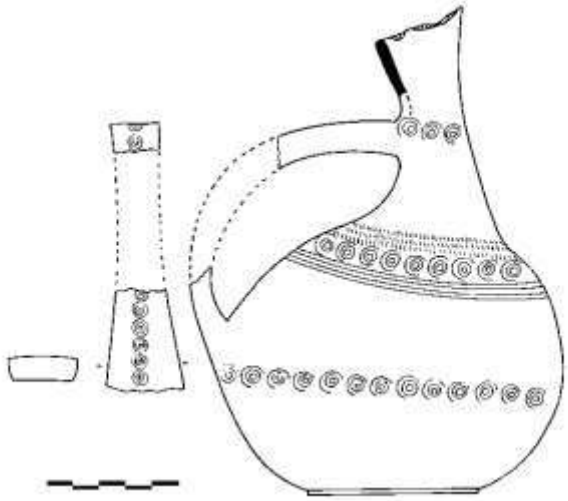
In Mount Sirai, the sanctuary known as Mastio (Figure 48) dedicated to Astarté, located in the acropolis of the city, was built in the 4th century BCE on an ancient (possibly religious) Nuraghic building and was in use until late 3rd – 2nd BCE (Bartoloni, 2004, p. 91). Its construction was masonry, and its *cella* was built on a curvilinear Nuraghic structure. Besides the well-known statue of Astarté found in the area of the building, there is also evidence of libations by the finding of jugs similar to the Nuraghic *broccas askoides* (Figure 49) in bronze (Bartoloni, 2012, p. 855 fig. 11).

Figure 48 - Mastio Plan in the first phase. (A) South Courtyard A; (B) North Courtyard; (C) Tower; (D) Casemate; FAÇADE Casemate with shrine; (F) Casemate; (G) Casemate; (H) Cistern; (I) Altar; (L) Entrance; (M) South Altar; (N) North Altar



Source: Bartoloni 2004, 28, fig. 12

Figure 49 - Brocca akoide



Source: Bartoloni 2012, 1855, fig. 11

The building received this name because it was initially interpreted as a fortified defensive tower in the housing area of the city facing an area interpreted as a square. It is believed that, in Phoenician times, the temple was inside a nuraghe since the structure of the Phoenician period walls (*c.* 725-525 BCE) do not overlap the earlier construction. Bartoloni (2004, 70) reminds us that this situation is not a unique case in Sardinia since there are similar models in Su Mulinu de Villanovafranca, Lugherras de Paulilatino and Genna Maria of Villanovaforru.

In the case of the temple of Mastio, the *pronaos* area had four worship altars. The whole space was delimited inside the circuit of the previous Nuraghic monument. There would be a staircase that gives access to two courtyards that compose the *naos*. The four *cellas* at the back of the structure composed the *Sanctum Sanctorum*, where there would also be a room where the offerings would be kept. Water also had important significance in the temple of Mastio since there was a cistern on the left side of the building (Bartoloni, 2004, p. 91).

The nuraghe of Mount Sirai was destroyed during the Carthaginian attack of 525 BCE, and the temple was rebuilt, possibly by new inhabitants. The cult of Astarté (Figure 50) seems to have

replaced an earlier one. An interesting finding of a bronze votive inscription in the sanctuary area, dedicated to a male deity, was discovered. Still, it had the description carefully erased so that above it was devoted to Astarté (Bartoloni 2004, 70).

It is not possible to conjecture about the temple in this period since it was remodelled in 360 BCE during a fortification of the settlement of Mount Sirai. The *bagnarola*-type cistern (a type of a large container in rectangular shape that resembles a bathtube or basin) is the only part of that time that has reached our days. Regarding water management, the *bagnarola* is a common element in the Punic world due to the number of cisterns found in different sites. (e.g. Carthage, Kerkouane, Gadir and so on) The present building is a restructuring dating from 238 BC, divided into three parts (Bartoloni 2004, 71).

Figure 50 - Astarte sanctuary at Monte Sirai

Available from: http://virtualarchaeology.sardegnacultura.it/index.php/it/siti-archeologici/eta-fenicio-punica/area-archeologica-di-monte-sirai/schede-di-dettaglio/1364-il-tempio-di-astarte. [Accessed in 6th May 2022]

The first sector facing southwest has a external façade that seems to follow the circular layout of the nuraghe. Access would be through an entrance in the Nuraghic tower, open on the southeastern side. The central area was arranged as a low terrace where four altars of varying sizes lie (Bartoloni 2004, 70-71).

Its second sector is interpreted as a place reserved for prayers. The access was made by a small two-step staircase built with the use of small Nuraghic ashlars. The stairway gave access to two large courtyards separated by a wall that could have been arranged to support the ceiling. At the end of these two courtyards, there would be a sector dedicated to the storage of cult objects, where there would be the place where the statue of the goddess was placed next to a baetyl. Also, there would be a sector for the storage of votive offerings of the devotees (Bartoloni 2004, 71).

After 238 BCE, a tower with six internal compartments was built. For the construction, the workers used trachyte blocks from the fortifications constructed in 360 BCE as well as two menhirs[1] (Bartoloni 2004, 71).

Another important temple is the known as "The Temple of Sardus Pater" located at the Antas Valley a subregion of Sulcis known for its abundance in metal ore deposits.

[1] Monuments possibly of religious origin from before the arrival of the Phoenicians.

Figure 51 - Plan of the temple of Sardus Pater

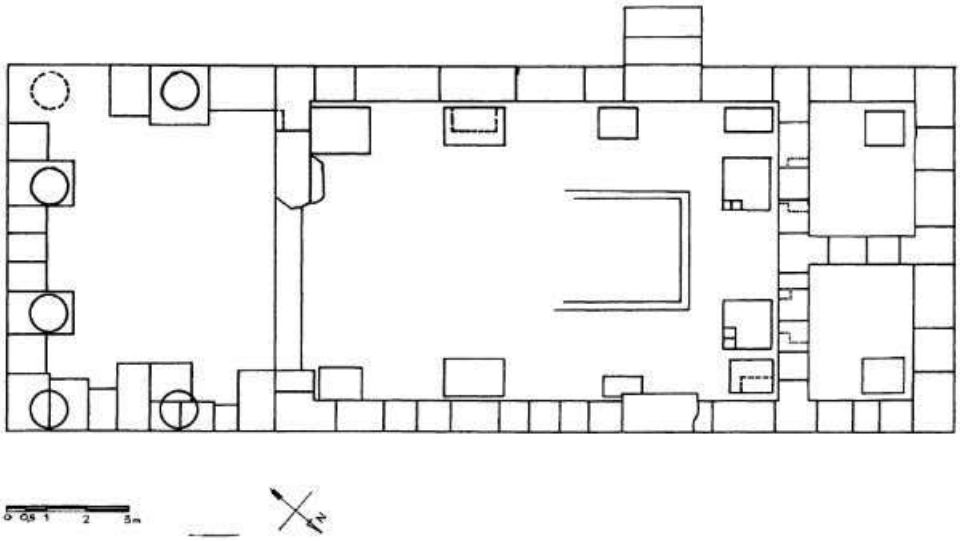


FIG. 2. Plan of the temple at Antas.

(Moscati, 1969, p. 25 fig. 2)

It is believed (Bernardini and Ibba, 2015, p. 75; Columbu *et al.*, 2021, p. 3) that the temple has a major role as a central manager of the nearby mines of silver. The nowadays visible ruins are from Roman times; however, this layer was stablished on a Punic-era temple. The sanctuary was dedicated to the god Sid associated as an indigenous deity (Doak, 2019, pp. 500–501).

Figure 52 - Temple of Sardus Pater

Source : Columbu et al., 2021, p. 2 fig. 1b

The sanctuary was also stablished on a possible Nuragic sacred area. From the 9th BCE the site held an important funerary significance There are a series of pit tombs found near the podium. One of these tombs yielded a bronze Nuragic figurine with Levantine inspirations. It was proposed that the figurine could represent the hunter-warrior god known as Babai, associated with the Punic Sid, due the finding of ex-votos, and *Sardus Pater* during Roman times (Bernardini and Ibba, 2015, pp. 79–82; Bernadini, 2019, pp. 5–10).

After the Punic conquest of Sardinia (500 BCE), the sanctuary immediately underwent into construction. A second period of constructions happened approximately in 300 BCE.

Both of these phases are under the Roman-era construction. It dates from the Augustan period followed by several others during the Imperial-era (Figure 53).

Figure 53 – (a) Ideal reconstitution of the temple of Antas by the architect Gaetano Cima in Roman times; (b) fragments of columns and capitals drawn by the previous architect

Source: Columbu et al., 2021, p. 4 fig. 3

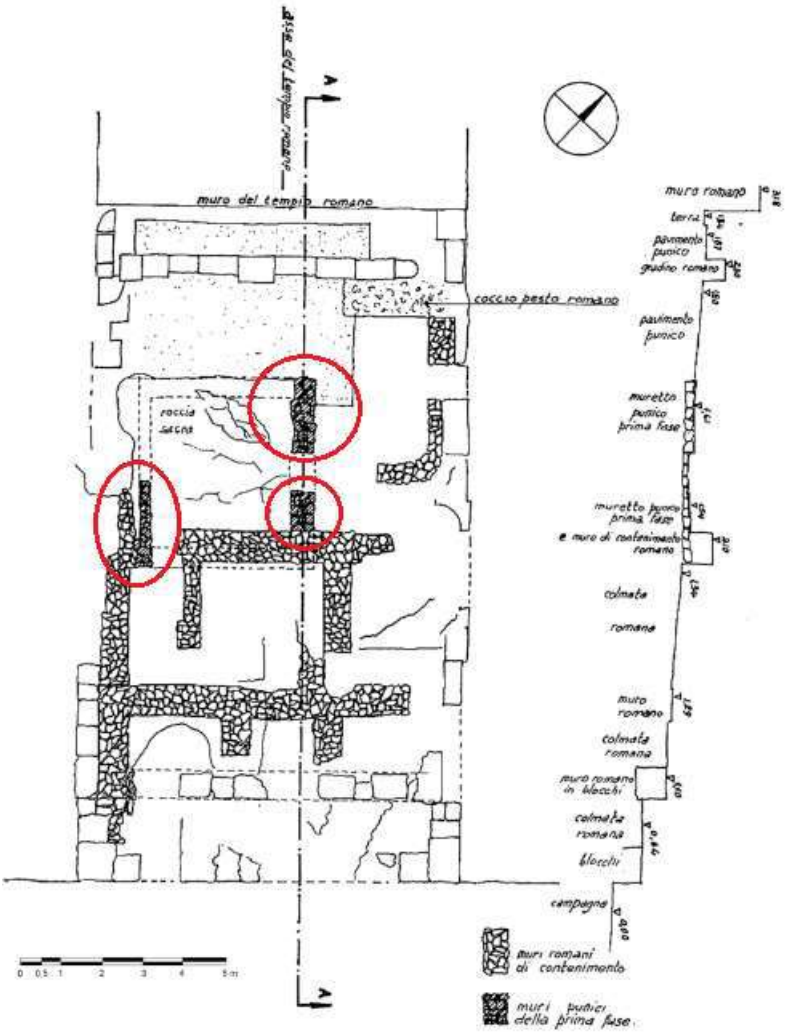
Figure 54 - Egyptian cornice from the Punic Temple of Antas

Source: Zucca, 2019, p. 50 fig. 19

The temple is oriented SE-NW and it has a staircase of access and a podium (9.25 x 23.25 m) The used construction materials were limestone blocks in *opus quadratum* technique (Moscati, 1969, p. 24). The nowadays visible area of the temple is divided into a *pronaos*, *cella* and a bipartite *adyton*. Fours columns could stand in front of the *pronaos*. These columns (~8 m height) had smooth shafts, Attic bases and Ionic capitals. The *cella* (~11 m deep) has pillars attached to the walls while the floor is marked by a white mosaic surface. In front of the lowest step and to the North side, appears a layer of *cocciopesto*.

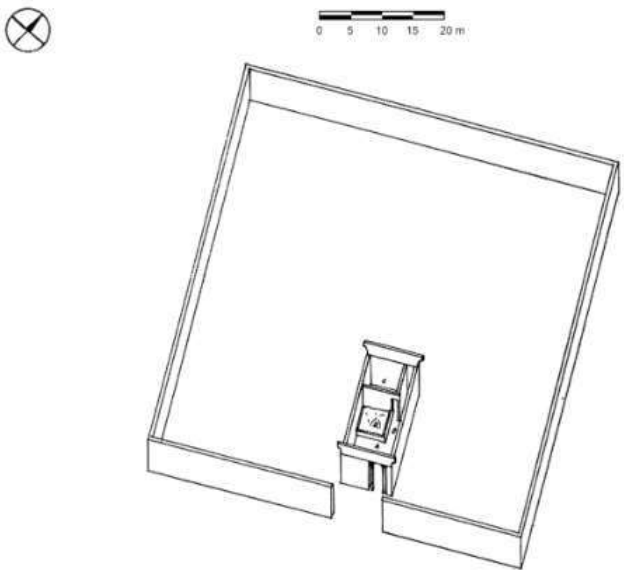
The Punic temple was reconstructed (Figure 56) as a *sacello* (a small construction dedicated to a god) due the rectangular walls found under the Roman temple (Figure 55). Based on the archaeological finds the temple could have been made in sandstones ashlars. The temple interior was divided into three rooms with two Doric columns and an Egyptian cornice (Figure 54) could coronate the top. This cornice was re-used during Roman times for the construction of the temple's stairs.

Figure 55 - Area of the temple, within the red circles are the remains from the Punic sanctuary



Source: Zucca, 2019, p. 39 fig. 19

Figure 56 - Reconstruction of phase b



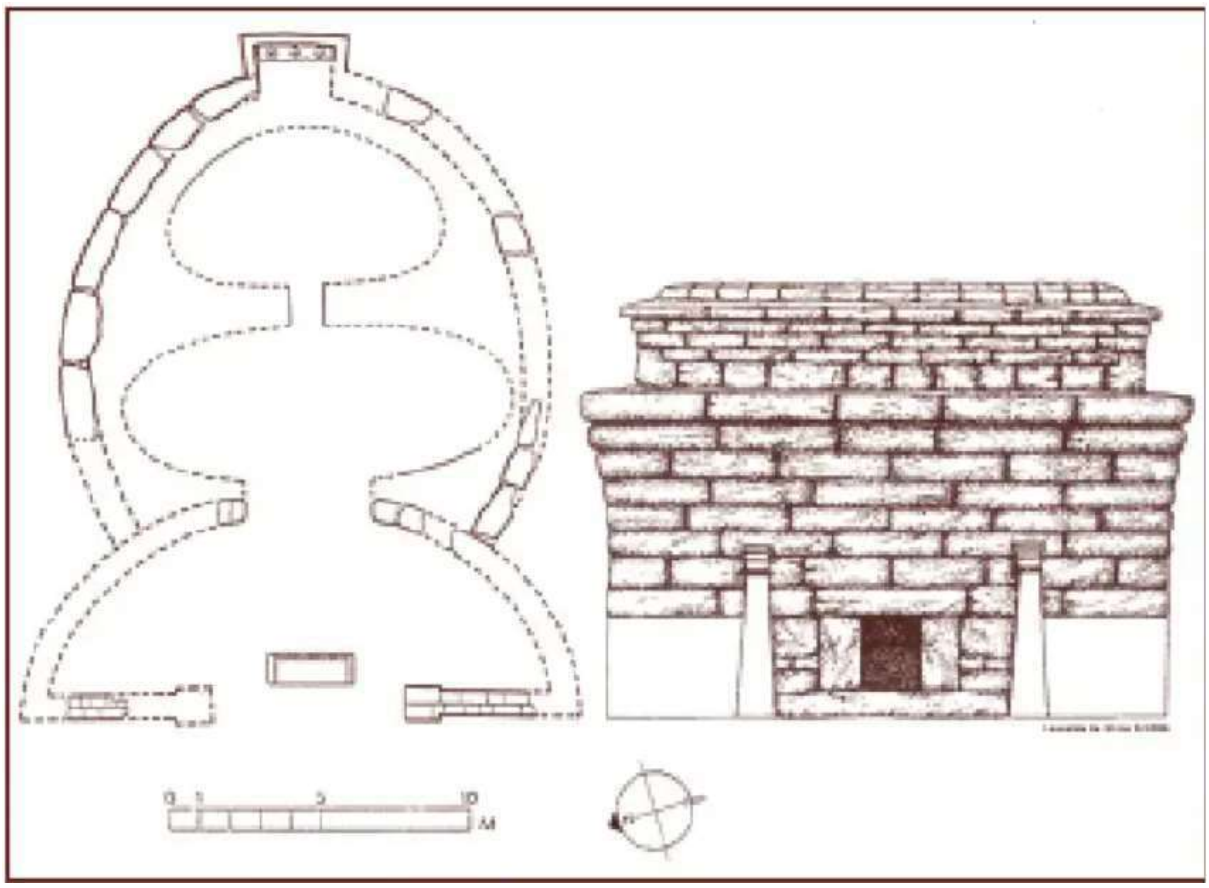
Source: Zucca, 2019, p. 48 fig. 17c

In Tas-Silġ (Malta), through a slow process of negotiation with the local communities, the Phoenicians were able to settle on the island (Bonanno *et al.*, 2000, p. 68). During this process of cultural and political dialogues between the indigenous and the foreigners, a megalithic monument was transformed into an extra-urban Phoenician sanctuary dedicated to Astarté (Bonanno *et al.*, 2000, p. 68).

The initial Phoenician sanctuary would have been founded in the second half of the 8th century BCE to the south of the indigenous sacred complex of Tarxien that dates back to the prehistoric and late-Neolithic periods (3000-2500 BCE). The Phoenician newcomers established a sanctuary that contained an internal environment in the shape of an ellipse, limited only by the concave façade at the front, following the mould of an earlier megalithic sanctuary (Figure 57) In its first phase, there were no substantial modifications in its style. However, in the 6th century BCE (or even earlier), the prehistoric plan began to be regularised. An antebellum hall was built, and the concave façade gave way to a central entrance passage. There would have been two columns at its entrance of Egyptian double-gauge capitals, typical of a Phoenician structure (Figure *58*), a slab-shaped altar, and another

large stone with a hole in the centre (for liquids?) was also identified from the same period. To the west, another altar and another religious setting (Structure 46) were used throughout the Late-Hellenistic period. Other votive monuments were found in front of the temple. Structure 46 was interpreted as a small chapel that could be connected to a water reservoir (Guzzo 2010, 473-476).

Figure 57 - Reconstruction of the temple within the megalithic structure

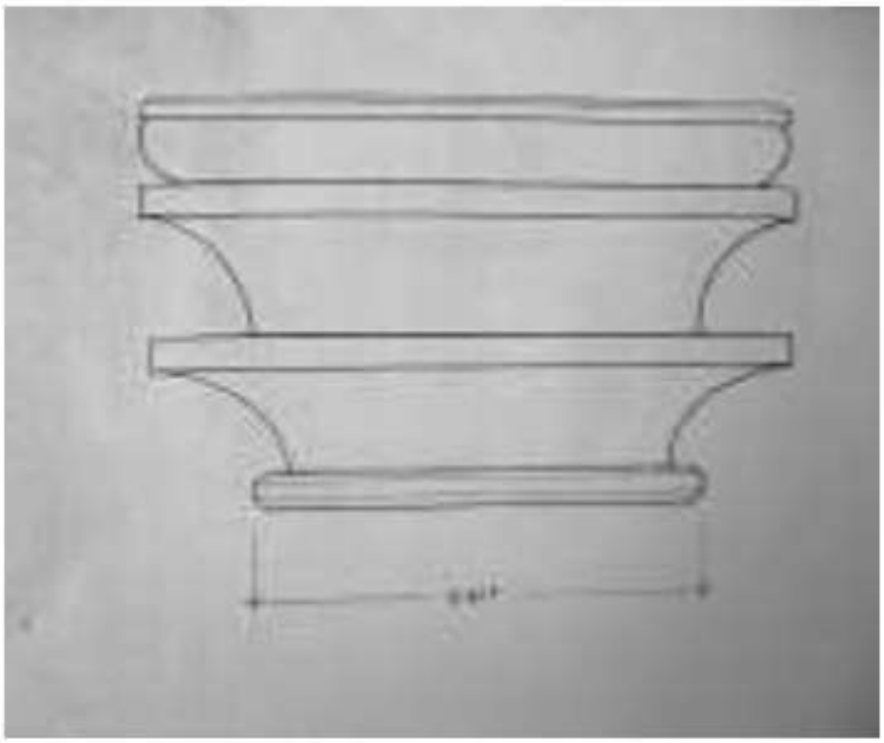


Source: Guzzo 2010, 474, fig. 7

A small pool of late Neolithic origin was identified in the southern part of the complex, which continued in use during the Phoenician period. A significant intervention took place in the 2nd – 1st century BCE, already under Roman rule. Some orientations were changed, the floor was redone, and

a central arcaded courtyard was built. The older structures, however, were not altered (Amadasi Guzzo, 2010, pp. 478–479).

Figure 58 - Egyptian capital reconstruction



Source: Amadasi Guzzo, 2010, p. 475 fig. 8

The ash layer became progressively darker and more compacted at the base of the pit. Activities in the sieve revealed a terracotta pendant, coins, inscribed ceramic fragments, terracotta figurines, a metal ring, and a piece of glass (Bonanno *et al.*, 2000, p. 74).

Underneath SU 8 (i.e., where the pit was sealed with boulders and irregular stones) more faunal remains, urchin needles, and charcoal was discovered. In this period, given the traces found, archaeologists interpreted this moment as its destruction and disuse (Bonanno *et al.*, 2000, p. 74). Subsequently, a period of occupation was identified, of which little has come down to us. It concerns

only two regular stone slabs of 0.57 x 0.69 m and 0.75 x 0.76. From their finding, it is suggested that this may be a paved area of the Tas-Silġ temple. Five large polished stones were also identified, four aligned on the east-west axis and the fifth forming a right-angle northward. From this structure, it was determined that mortar was used to make the connections. The structure was provisionally identified as a wall (1.80 m east-west and 1.12 north-south) (Bonanno *et al.*, 2000, p. 76). In this area, a votive deposit containing numerous ceramic and faunal remains was identified. Below this layer a large quantity of ceramics, shells, bones, bronze hooks, and pieces of coral. In trench B1 a deposit of sand, ash containing stones of varying size, ceramic remains, bronze nails, glass beads, a coin, a piece of moulded plaster, hewn stones, bones, charcoal fragments, shells, and terracotta figurines with fragments of inscribed stone were exposed (Bonanno *et al.*, 2000, p. 79).

In Area C the excavations initially revealed an area of rubble deposition. However, traces of the type of paving mentioned by archaeologists as *cocciopesto* (i.e., *opus signinum*) were identified with their removal. Sill blocks were also found on the aforementioned floor at the area's northern boundary. Two pits were also excavated, the first filled with red soil adjacent to the sill blocks and the second with a mixture of rubble and greyish soil. From the horizons discovered in these pits, it was possible to establish that levelling was initially done for the then installation of the terrace and installation of the *cocciopesto*. From the wells were recovered statuettes of bearded beings, inscribed ceramic fragments, beads, fragments of a worked rock, bones and shells (Bonanno *et al.*, 2000, pp. 79–82).

In area D several traces of murex of different types were identified. This initial layer covered another one composed of large irregular stone blocks that extended all over the trench except for one plot that consisted only of large ceramic fragments. In the excavated area identified as D3, at the back of the terrace, three walls were discovered as well as a deposit of irregular stones, ash and limestone dust (Bonanno *et al.*, 2000, pp. 79–82).

3.4.3. What characterises Phoenician-Punic religious architecture in Central and West Mediterranean?

As far as the architecture of places of worship is concerned, baetyl and obelisks seem to have been the main elements for Phoenician-Punic worship, having been found in contexts such as Motya and Monte Sirai, for example.

The use of water seems to have been customary in some Phoenician temples. In Motya the "Temple of Kothon" is an example that demonstrates the link between Phoenician religiosity and water. The sacred pool at this site was supplied with fresh water from a nearby spring. In Byblos, we have the example of the sacred lake in the area of the city temples. In the case of Motya, the circular area of the temenos, protected by a wall, would have possessed chapels, warehouses and shelters for sailors. Sardinia was also touched by Phoenician architecture. In this case, several elements of Levantine origin were discovered when the island was under Punic control, in the sacred area of the "Temple of Half Doric Columns" in Tharros. There would have been in this area a series of funnel holes interpreted as *cupulae* for the reception of ex-votos. Other decorative elements have been discovered, such as a lion in sandstone, a part of a column in antis, Aeolian-Cypriot capitals, decorations with *uraei* and a *cavetto* cornice (concave moulding). The Temple of Antas in Sardinia had its sacred aspect maintained during Roman times and even its construction was made using elements from the previous Punic-era possible *sacello*. Even in Roman times and after its dismantling, the architectural elements were reused. In Sulcis a large area was discovered where there would be a canteen, with a kitchen and a place for devotees to rest, an unique place in the area. The area was delimited by a temenos which had a portico. On the east side of the portico, a votive deposit was discovered with epigraphs in neo-Punic language, which suggest that the devotee spent the night in the temple.

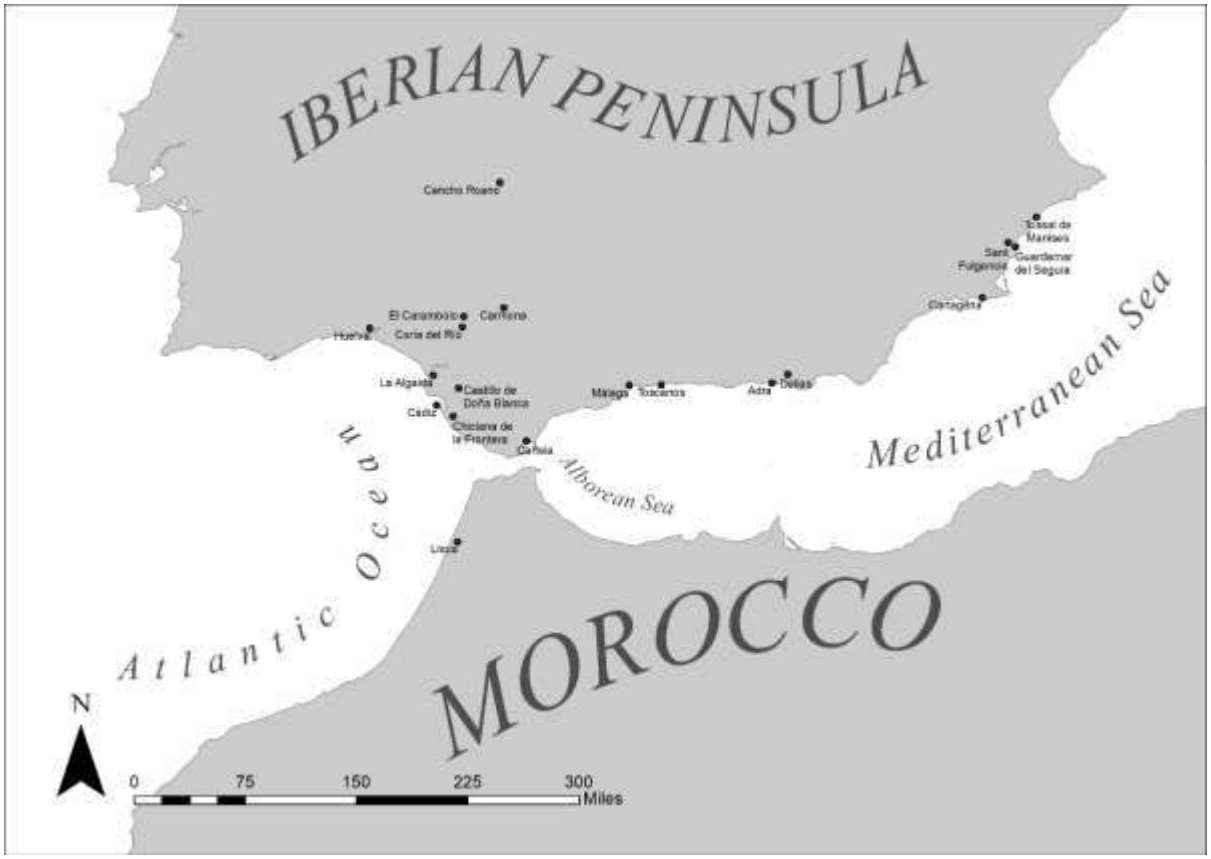
What seems to be recurrent in Phoenician temples are their Egyptian decorative elements, such as their cornices their Aeolian or Egyptian capitals, among other zoomorphic elements.

The upcoming chapter (Chapter4) will specifically examine Phoenician defensive and religious architecture in the Far West, focusing on regions such as Iberia. It will explore the enduring elements that characterised Phoenician-Punic expansion and their interaction with the indigenous communities of Iberia. This chapter will shed light on the coexistence and entanglement of Phoenician and Iberian architectural traditions during that period.

4. Chapter 4 – Phoenician defensive and religious architecture in Far West Mediterranean

4.1. Introduction

Figure 59 - Archaeological sites and cites commented on the text



Source: Author (2023)

4.2. Defensive architecture

4.2.1. What is similar at different archaeological defensive sites?

The Far West region had a significant Phoenician-Punic presence, and Phoenician sailors recognised Spain as an ideal landscape for expansion into Iberia. They utilised the Guadalquivir River and its tributaries as routes to establish trade hubs with the local communities. One such settlement was the Castillo de Doña Blanca, which, though presently located inland, was originally situated along the waterfront like other Phoenician settlements. Positioned strategically on a hill 30 meters above sea level, Doña Blanca offered visibility over both land and sea movements. While the settlement's defensive system has only partially survived, its origins can be traced back to an earlier local foundation known as *fondos de cabañas*, and it was occupied during the protohistory (Neville, 2007, p. 94).

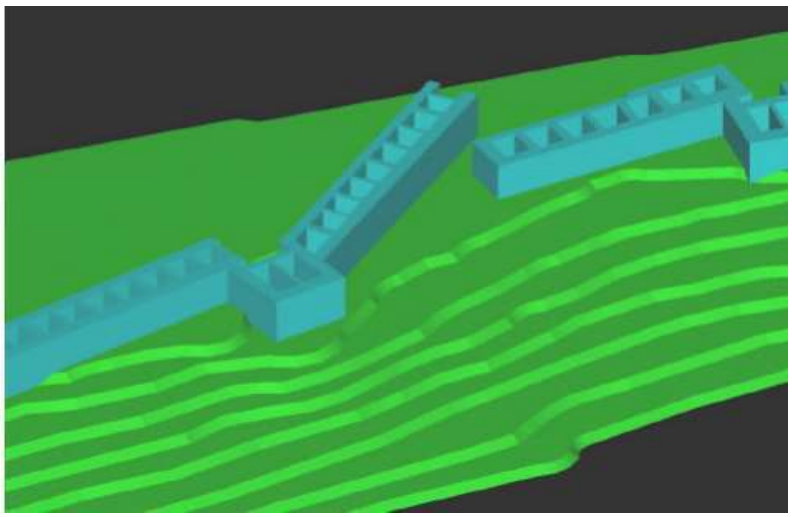
The ancient wall of Castillo de Doña Blanca, dating back to the 8th century BCE, reaches a height of approximately 5 meters and is fortified by a surrounding ditch. Constructed using mortar and clay bricks, the wall extends from the plinth to the curtain, likely featuring a uniform appearance due to a layer of white clay covering its surface (Alarcón Castellanos, 2005, p. 20).

The ditch, believed to have been around 20 meters wide and 4 meters deep, can still be observed in the southeast corner of the archaeological site, although its presence is less prominent compared to other areas. Subsequently, in the 4th and 3rd centuries BCE, Castillo de Doña Blanca's defensive system underwent extensive expansion. The preserved walls from this period were skilfully built using stones of various sizes, meticulously fitting together. The outer part of the wall was reinforced

with quadrangular towers and a complex system of casemates (Figure 60). However, this fortified structure stood for only a brief period before being destroyed (Alarcón Castellanos, 2005, p. 13).

During this phase, the harbour area of the city was also fortified with a defensive system constructed from ashlars (Bendala and Blánquez, 2002, p. 147).

Figure 60 - Three-dimensional interpretation of the curtain wall and its barracks in the 4th century BCE



Source: Agugliaro and Veira, 2004, fig. 7

In Cartagena (Figure 62), two walls dating back to the Punic period have been discovered. These walls are positioned approximately 6 meters apart and are oriented in a north-south direction. The first line, located on the outer side of the wall, spans 15 meters in length, while the second line measures 30 meters. The construction of the wall employed the opus quadratum technique, utilizing sandstone blocks with dimensions ranging from 120-130 cm in thickness, 60 cm in height, and 70-80 cm in width. In certain sections of the defensive system, the external facade boasts up to five rows of blocks, reaching a height of nearly 3.20 meters (Baño, 1997, pp. 123–125).

The space between the two walled lines is divided by a series of perpendicular walls built at different points with a mixture of blocks and stones in the *opus africanum* style (Figure 61). The vertical wall was constructed in alignment with the walled lines and utilised T-shaped ashlars in its construction (Baño, 1997, pp. 123–125).

Figure 61 - An example of opus africanum wall in Dougga (Tunisia)

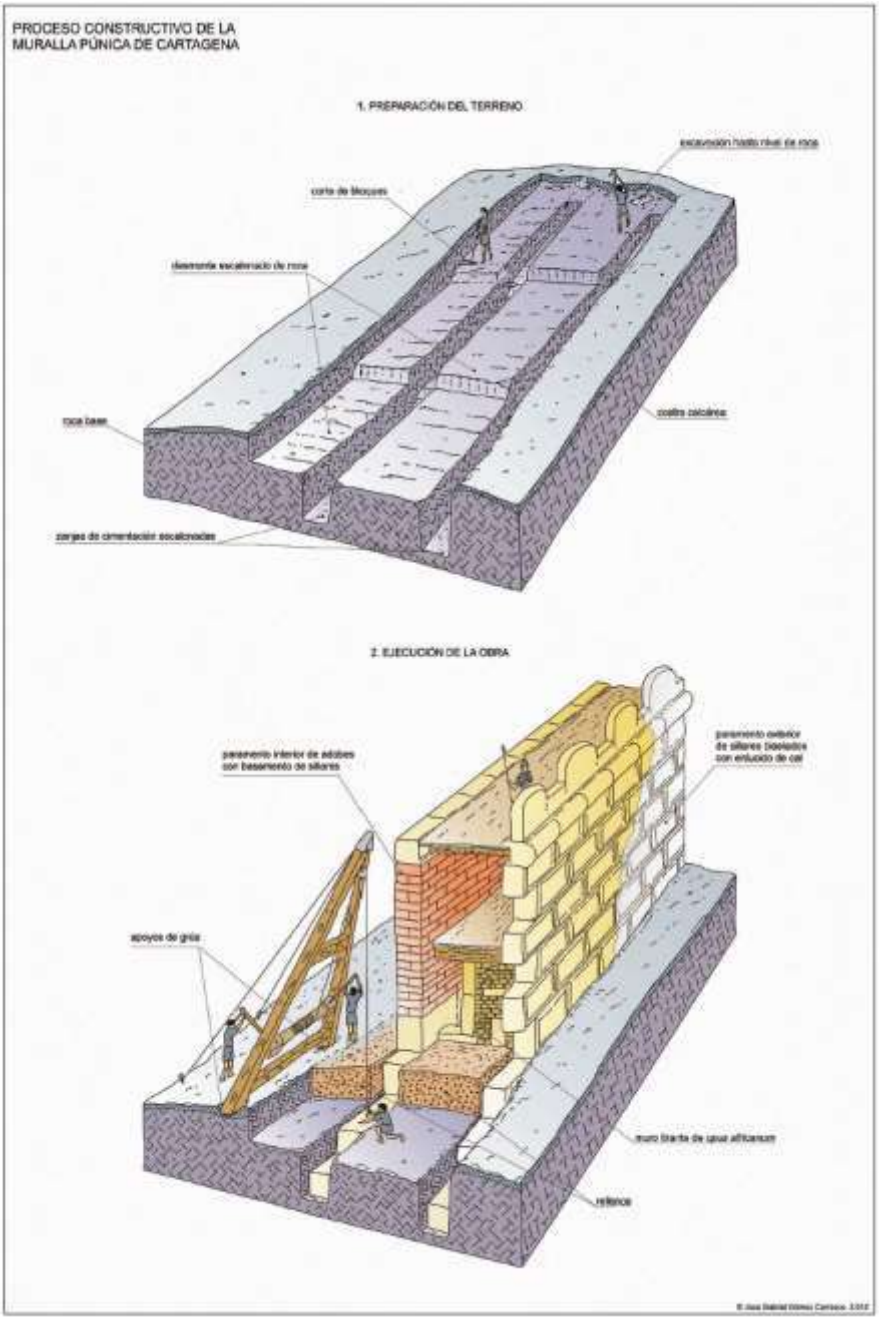
Source: Creative Commons (2006)

This sector of the defence system highlighted three areas that could have served as casemates. All three rooms found have access to the rest of the wall through doors identified by doorways. The system of casemates in Cartagena, as in other places in the Phoenician-Punic world, was intended

for storage for different purposes. Appian (*The Punic Wars,* 95) commented that the casemates could serve as stables for war elephants, horses and grain in Carthage.

Based on the same author, there were also barracks for infantry and cavalry soldiers. The upper level of the wall featured a support system that allowed for the movement of archers along the wall walk (known as "*chemin de ronde*"). A parapet protected the walkway, which may have been fortified with merlons and battlements (Baño, 1997, p. 126).

Figure 62 - Construction process of the Punic wall of Cartagena de La Milagrosa



Source: Asensio and Camino, 2015, p. 135 fig. 5

Another robust defensive system is Cerro de Castillo (Figure 63). The site is a less-studied settlement, but it has great potential for further studies. The enclave is located in the province of Cadiz, between the coast and the *campina*. Its defensive system consisted of two parallel walls, ~4 m long. The external façade was thicker than the internal one, measuring 1.80 m, built on lead with clay masonry,

which guaranteed its great solidity (Figure 63). The inner façade measured 1.30 m and was formed by ashlars of different sizes. Small pieces of stone were also used to fill the gap spaces in the wall. The 0.80 cm empty space between the two walled lines was filled with earth following the pier-and-rubble technique (Bueno Serrano, García Menárguez and Prados Martínez, 2013, pp. 31–32). There were also perpendicularly reinforcement walls built along the inner and the outer façade. Each of these was 80 cm wide by 80 cm long (Bueno Serrano, García Menárguez and Prados Martínez, 2013, p. 32).

Figure 63 - Cerro del Castillo walls

Source: Bueno Serrano, García Menárguez and Prados Martínez, 2013, p. 38 fig. 8 and 9)

Figure 64 - Artistic depiction of how the southeast corner could have been built

Source: Prats, 2010, p. 70

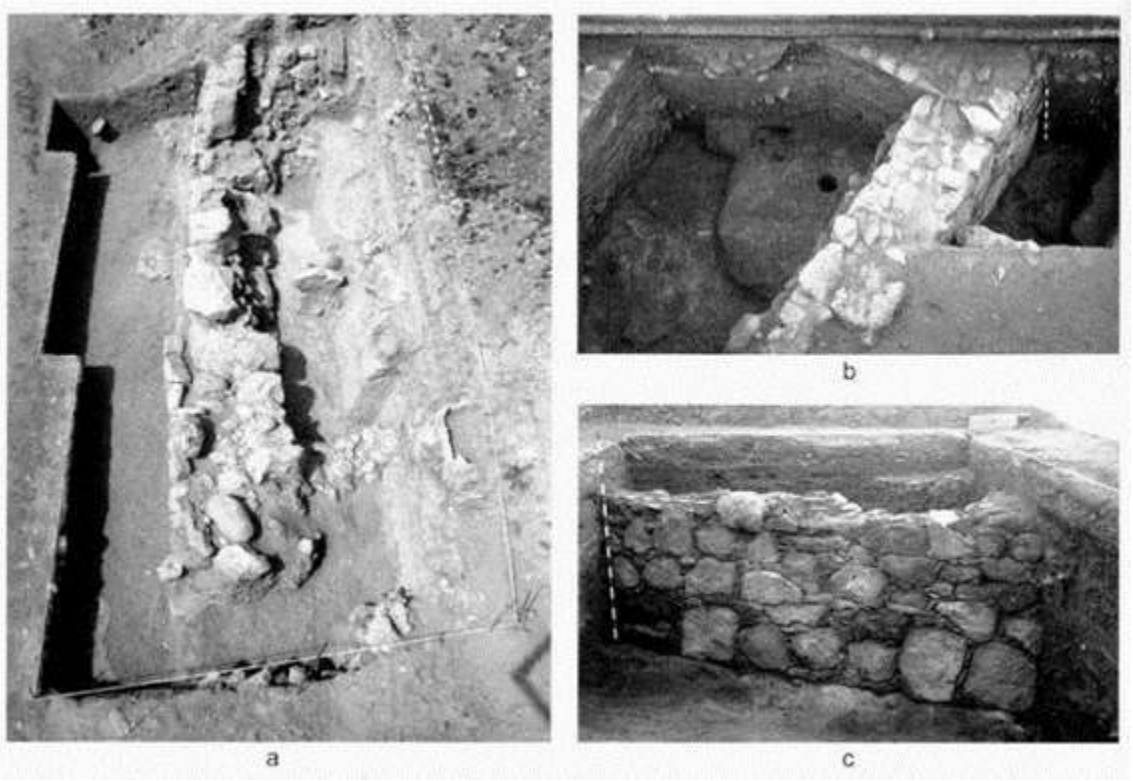
Malaga's settlement, founded in the 8th BCE, will only build its walls in the 6th century BCE. The period without a stone wall does not mean that Malaga was undefended. The initial presence at the area could be limited as a commercial port, or *maqom* (Phoenician: mqm*)* (Padilla, 2006, p. 379; Román and Aguilar, 2006, p. 347) Possibly, after agreements with the indigenous communities, a city would be officially founded. The defensive system is built with large masonry blocks using reddish clay as mortar (Figure 64). Due to the occupation of the modern city, no more than 11 m of the wall has been uncovered. It is believed that another 3 m discovered could have been part of constructing a defensive tower. The wall has a similar system to the Castillo de Doña Blanca. Its two 0.70 m thick walls, both the inner and outer façades, are filled with stone and earth, following the construction method of the pier-and-rubble. This structure has a reasonably solid total thickness of ~2 m. The gaps between some bocks were filled with masonry pieces. Traces of lime were discovered on the external façade, which may indicate a uniform plaster appearance to it (Román and Aguilar, 2006, pp. 347–349).

To the east of Malaga, the foundation of Abdera (nowadays Adra) is located on the right bank of the river Adra and stands on Cerro de Montecristo. In the past, this promontory dominated the landscape of the estuary. Nowadays, Cerro de Montecristo has been destroyed due to river sedimentation. According to radiocarbon dating (KIA 2141). Abdera was probably founded in the 8th century BCE. It is problematic to reconstruct the city and its development over the century. The constant interventions altered the archaeological site and its surroundings. Another factor is the insufficient archaeological investigations to understand the site better (López Castro, 2009, p. 463).

The city was located on a peninsula of ~5 hectares of surface area, and its southern slope opened towards the sea. The north and east of the town faced the estuary of the river Adra, an excellent natural harbour protected against the sea (Castro, 2009, p. 463).

The excavations of 2006 brought to light a part of the city wall. This partially excavated part has been provisionally dated as a defensive system from the 7th – 6th century BCE. This I contemporary with the construction of the walls of other Phoenicians cities such as Málaga and Cerro de Alarcón (Toscanos) (Castro, 2009, p. 465).

Figure 65 - – (a) Phoenician wall from Abdera, 2006; b) Baria, 1997, Unit 26, constructions from the 6th – 4th BCE; c) Baria, 2003, Unit 26, wall from the 4th BCE



Source: López Castro 2009, 465, fig. 4

The defensive system was built on the southern limits of the promontory, resting on an area of dwellings dating from the 8th – the 7th century BCE. This area was levelled by a mortar and gravel covering to prepare the ground. On this mortar cover, rows of large limestone blocks were placed. Some of them still retain the holes made in the quarrying area for the movement of each piece. The space between each of these blocks was filled with small stones and mortar. A row of horizontal ashlars was discovered on the base, formed by large limestone blocks (Castro, 2009, p. 465).

The same excavation of 2006 identified only the outer façade of the wall, a fact that led archaeologists to believe that there would be an inner façade with similar characteristics. The interior space between this first and probable second wall was filled with clay and transversed by walls (Castro, 2009, p. 465).

Excavations in the external area of the defensive system allowed archaeologists to prove that Abdera did not have a moat, at least for the slope facing the sea. Furthermore, excavations inside the defensive system have identified that the wall was abandoned in the 2nd century BCE, which is believed to have been dismantled (López Castro, 2009, p. 465).

4.2.2. What is different at different archaeological sites

On the Alicante coast, the settlement of Tossal de Manises, which in Roman times would come to be called Lucentum, has a Punic stage that can be verified by the solid walls (Figure 66) that followed the poliorcetic patterns of its time (i.e., 4th-3rd BCE). The defensive system delimits an urban centre of ~3 hectares protected by a wall equipped with large towers and a curtain wall. The towers would have had three storeys and be dimensioned to accommodate ballistic-type artillery.

Figure 66 - View of part of the wall of Tossal de Manises

Source: Bendala and Blánquez, 2002, p. 152 fig. 14

In addition, the defensive system also had Punic hydraulic installations such as *bagnarola* cisterns near towers VI and VIII. These storage systems were fed by water collected from the terrace of the towers. A ceramic pipe system directed rainwater to the cisterns. Tossal de Manises is a centre of interest since this coexistence exists between the hydraulic and defensive systems. In other settlements of the Phoenician-Punic world, these layouts are standard in residential areas (e.g. Byrsa in Carthage) or sacred areas (e.g. Temple of the Kothon in Motya in Sicily) (Bendala and Blánquez, 2002, p. 154).

Figure 67 - Bagnarola type cistern from Tossal de Manises

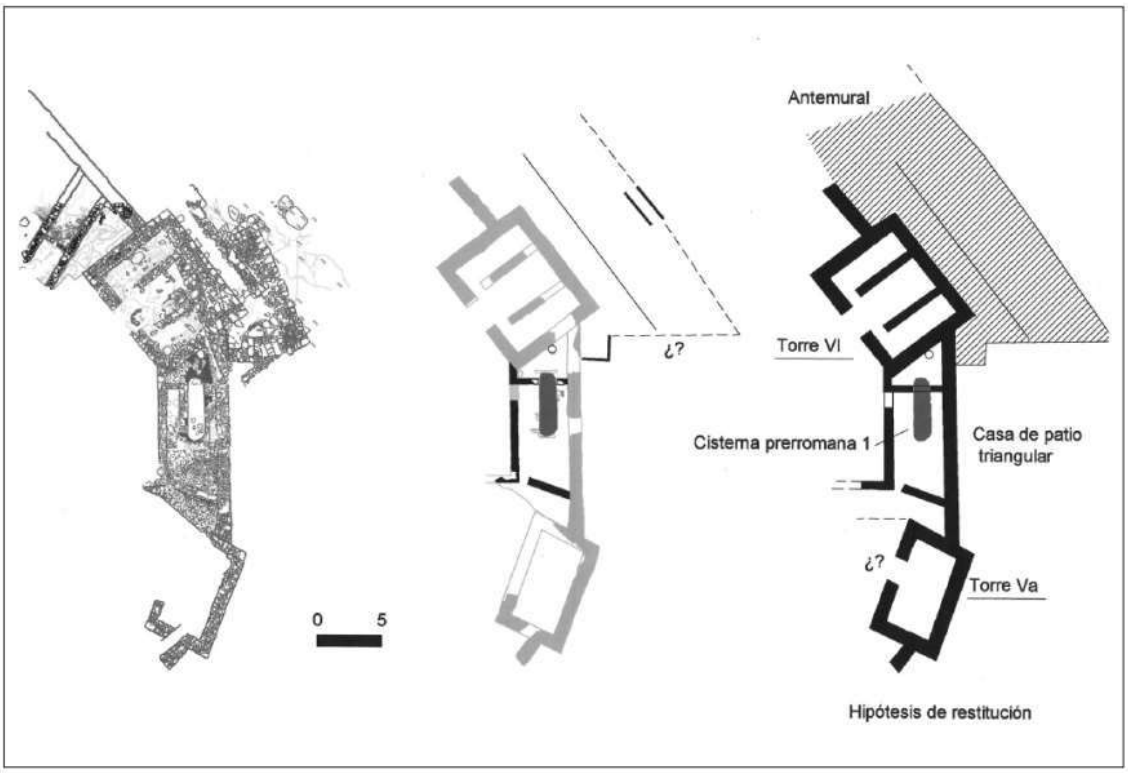
Source: Bendala and Blánquez, 2002, p. 152 fig. 15

Besides, unlike the other wall curtains of the Phoenician-Punic world, that of Tossal of Manises is only ~1-1 m thick. Another innovation in Tossal was the "antemural wall", located 10 m from the city wall. Doménech comments that the "antemural wall" was made using cyclopean devices, and the potential height is unknown (Doménech, Mas and Porras, 2010, p. 236).

Stone and earth were deposited between the wall and the "antemural wall" to form the future *chemin de ronde* for troops and ballistic weapons (Doménech, Mas and Porras, 2010, p. 236). Everything leads one to believe that this is a variation of the pier-and-rubble technique where the

Cyclopean "antemural" structure would act as the outer façade of the defensive system. At the same time, the wall was built by the use of ashlars (Figure 68).

Figure 68 - Plan and restitution of the south-eastern side of the late 3rd century BCE wall



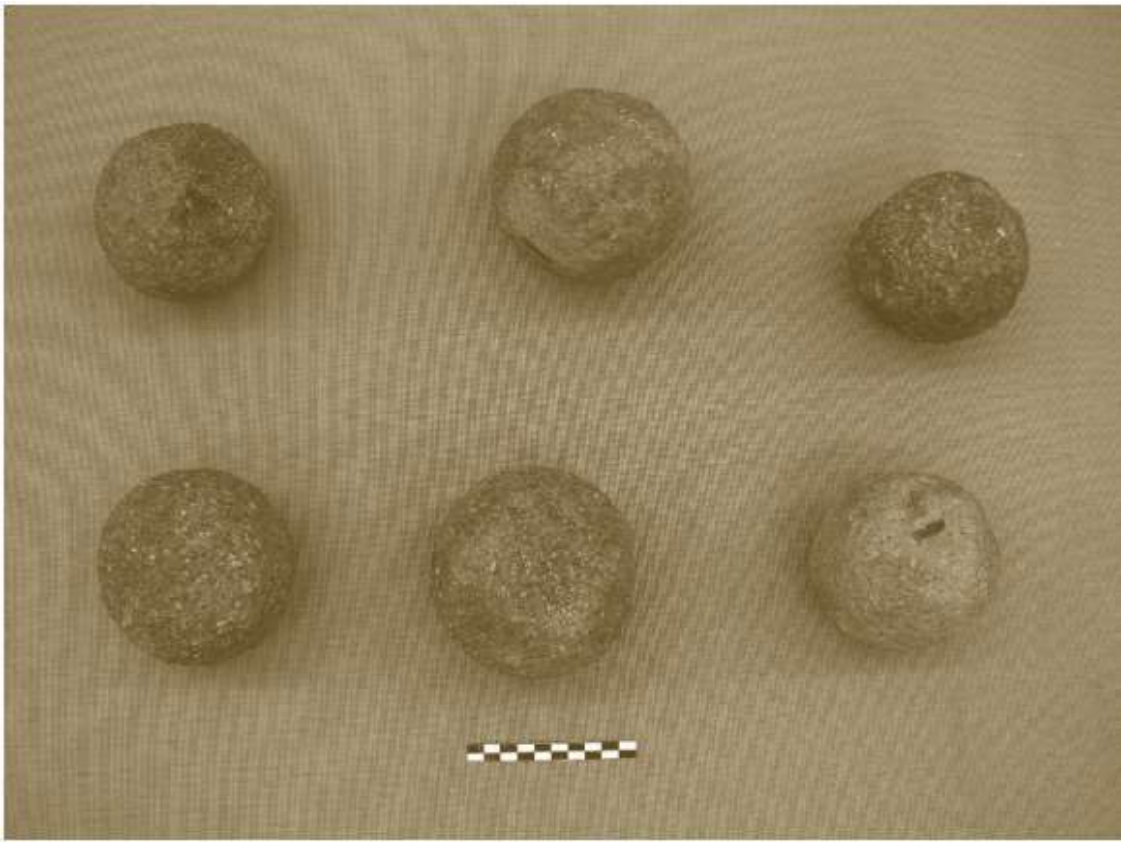
Source: Doménech, Mas and Porras, 2010, p. 236 fig. 5

This *chemin de ronde* was formed by filling the space between the "antemural" and the wall connected to towers VI and VIII. Tower VI would have a surface area of 82.8m² (10.16 x 8.15 m), while Tower VIII would have 75.71m² (11.30 x 6.70 m). Tower VI has only one independent access to three different compartments, while Tower VIII only has one access for one room (Figure 68).

The archaeologists in charge claim that there are parallels between Tower VI and the wall of casemates of Cartagena, as it is divided into three compartments. It is also believed that the "antemural" was of a lower size than the city wall to have the capacity to allow the launching of

objects by ballistic machines. This interpretation is corroborated by the finding of seven stone projectiles from around Tower VIII inside Cistern 2 (Figure 68). Petrographic analysis reveals that they are projectiles of volcanic origin (plagioclase 75%, biotite 15%, 8% amphibole 2%, quartz, opaques and phyllosilicates) which outcrop in Cartagena, more specifically in the area of Cabezo Beaza. Cartagena is famous in textual sources for having been discovered as a sizeable Punic artillery arsenal when it was taken by Scipio (Doménech, Mas and Porras, 2010, p. 237).

Figure 69 - Ballistic projectiles found inside cistern 2



Source: Doménech, Mas and Porras, 2010, p. 237 fig. 7

So far, the defensive system of La Fonteta dates from the last moments of the 7th century BCE. Researchers suggest that La Fonteta adopt a slightly trapezoidal shape endowed with rectilinear

walls reinforced by quadrangular bastions. One of the bastions was found in the southeast corner, while two others would have been located south of the wall (Prats, 2010, p. 70).

The constructional technique of the wall refers both to the Eastern Mediterranean and adopts characteristics of the Central and Western Mediterranean. According to the suggested reconstitution, the height of the defensive system should reach 12 m in height. La Fonteta shows one of the best-preserved glacis. This glacis goes a distance of more than 20 m from the inner wall. Due to the construction of an Islamic *coenobium* (i.e. monastic community) in the 10th century CE, parts of the structure were destroyed (Prats, 2010, pp. 69–70).

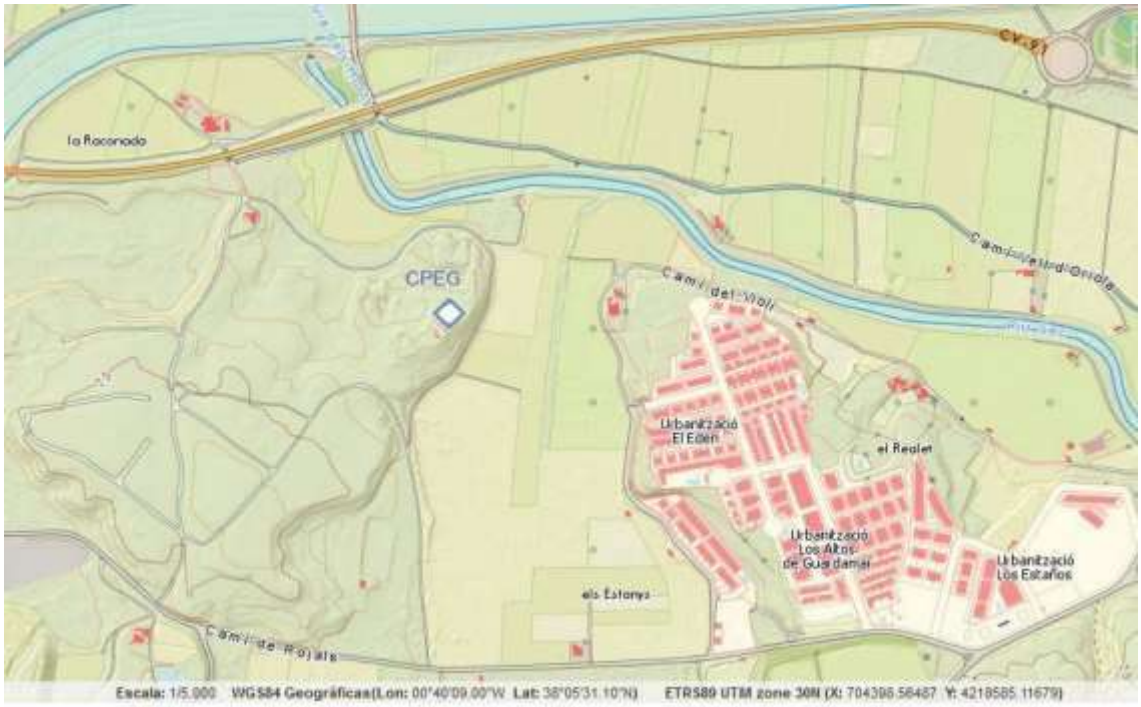
The settlement of Altos de Reveque was discovered in 2008 on two hills (the highest is 389.5 m and the lowest 384 m) separated by a small stream. The Altos has a privileged view from its location to the east, south and southwest and almost the entire Gulf of Almeria. This foundation, like the others, consists of a walled enclosure with a perimeter of 1057 m and a surface area of 5.3 hectares. The construction technique for its defensive system is similar to all the other constructions discovered at the site (Castro, Manzano-Agugliaro and Ochotorena, 2010, p. 30).

According to archaeologists, the settlement of more than 5 hectares applied tactical and poliorcetic principles. Thus, its structuring was based on not leaving any of the hills unprotected. The defensive system completely adapted to the terrain's natural levelling, including the most rugged and steep areas. The excavations could not discover any trace of a possible moat surrounding the foundation (Castro, Manzano-Agugliaro and Ochotorena, 2010, p. 30).

A continuous walled curtain forms the defensive system except for three parts where a construction of a farmhouse (*cortijo*) is currently located. The *cortijo* used, for its construction, the stones from the wall, destroying some 35 m of it. The other part is situated between the division of the two hills by the creek. Finally, the last point was at the southwest angle for cattle raising, which removed a 28

m stretch of the wall. However, it is still possible to identify the row of stones beneath the demolition (Castro, Manzano-Agugliaro and Ochotorena, 2010, p. 30).

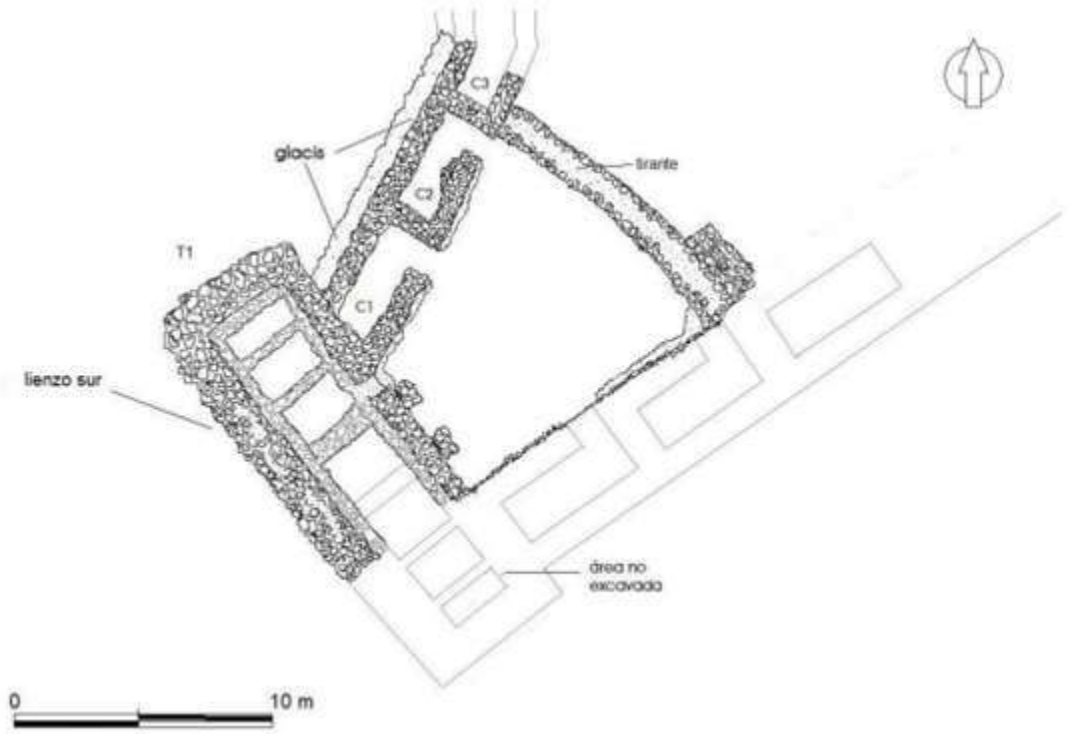
Figure 70 - Location of the archaeological site of Cabezo Pequeño del Estaño



Source: Bueno Serrano, García Menárguez and Prados Martínez, 2013, p. 46 fig. 13

Another Phoenician walled settlement is Cabezo Pequeño del Estaño (Figure 71**)** It is an archaeological site in the province of Alicante, on the right bank of the river Segura. The site occupies an elongated hill like a spur at the northern end of the Pallaret and Los Estaños Mountains. The settlement was founded at ~26 m above sea level in a landscape of smooth hills and easy access. The defensive system comprised the entire settlement except for its northern face, where the river channel (in Antiquity, a marsh) acted as a natural defence. There was a glacis protecting the walls, at least in the excavated sector (Figure 71).

Figure 71 - The excavated area of Cabezo Pequeño del Estaño

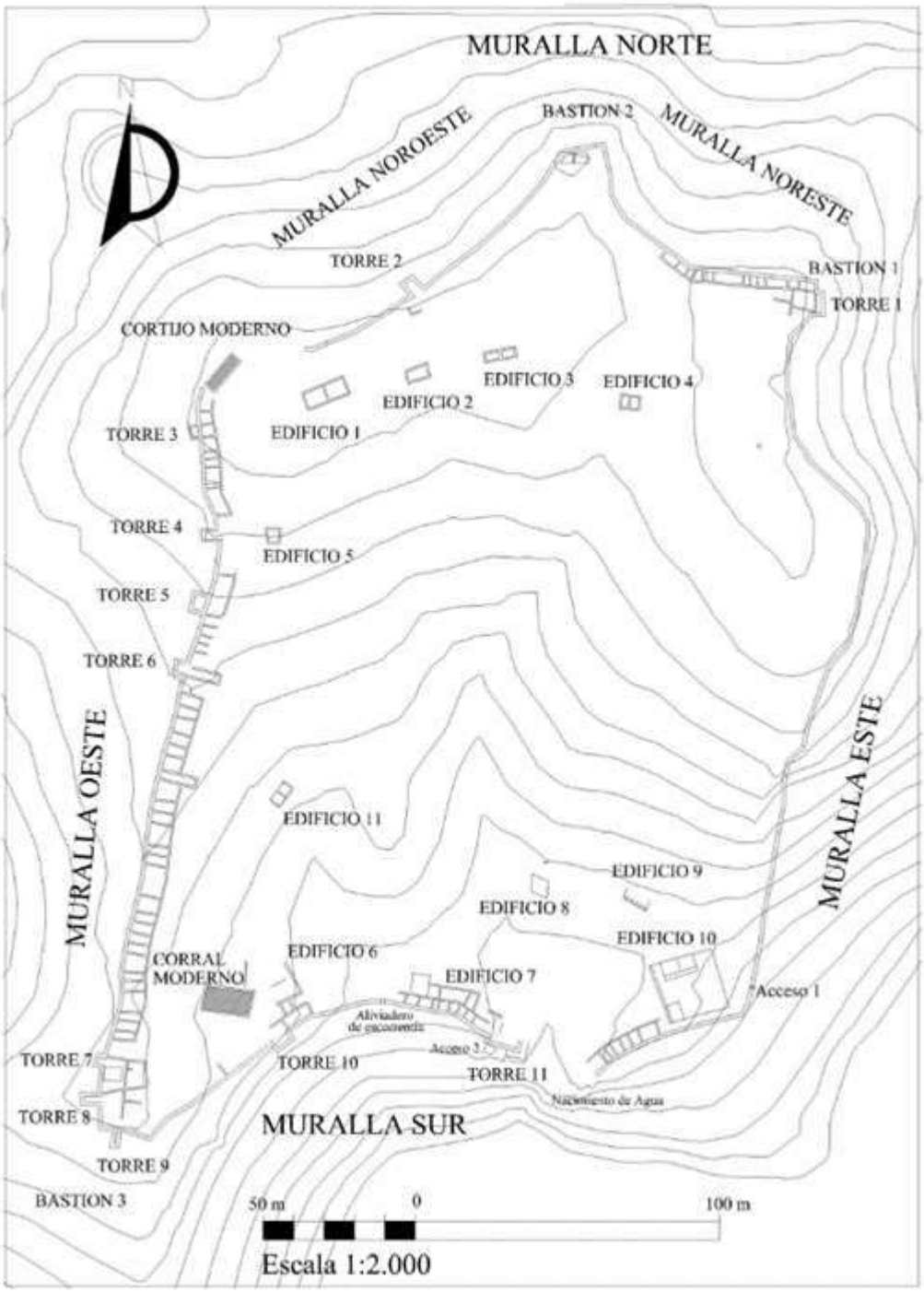


Source: Bueno Serrano, García Menárguez and Prados Martínez, 2013, p. 49 fig. 15

The construction of the wall was carried out on natural rock. Two parallel walled lines have been identified, made in irregular ashlars with local stones worked and covered. Unlike the other settlements, its outer wall was covered with grey silt from the marsh area. The width of the wall varied between 4 and 5 m, and later, there was a reinforcement of buttresses erected with reddish clay masonry with seaweed as a stabiliser (Bueno Serrano, García Menárguez and Prados Martínez, 2013, p. 48).

Between the two parallel walls, in a 3 m wide space, the use of small, medium-sised stones, clay soil, decomposing adobe, and ceramic resembles the Phoenician tradition based on the pier-and-rubble technique. The ceramic finds inside the wall made it possible to date this moment as having occurred in the 8th century BCE (Bueno Serrano, García Menárguez and Prados Martínez, 2013, p. 48).

Figure 72 - Altos de Reveque planimetry



Source: Castro, Manzano-Agugliaro and Ochotorena, 2010, p. 32 fig. 4

In Altos de Reveque (Figure 72), the defensive system was constructed using the double walling technique, with inner compartments divided by transversal walls arranged at regular intervals. The external and internal façade walls have the same width throughout, with ~1 m in the external walling and about 0.50-0.52 m inside. These dimensions can be related to the metrological systems employed by the Phoenicians and Carthaginians, which were based on the Babylonian cubit of 50-51 cm, the Egyptian of 52.3 cm and the Phoenician of 49.7 cm (which was employed in Motya) while the 51.87 cm was used in Carthage in the 5th century BCE (Castro, Manzano-Agugliaro and Ochotorena, 2010, p. 31).

Archaeologists believe that the closest one used at Altos de Reveque is the Phoenician-Punic cubit of ~52 cm measures more comparable to those obtained on most of the settlement's walls. Thus the width of the external wall would be two cubits, while that of the internal and transverse walls was formed by one cubit (Castro, Manzano-Agugliaro and Ochotorena, 2010, p. 31).

The wall had 6.20 m (~12 cubits) as a total width. However, on its western side, there is a variation between 5.5 m and 8.5 m (approximately 11 and 17 cubits). This difference is believed to be due to a better defensive need as the maximum width coincides with the most accessible and, therefore, most vulnerable slope. The builders may have considered the eastern slope inaccessible, so they deemed it necessary to build only one wall (Castro, Manzano-Agugliaro and Ochotorena, 2010, p. 31).

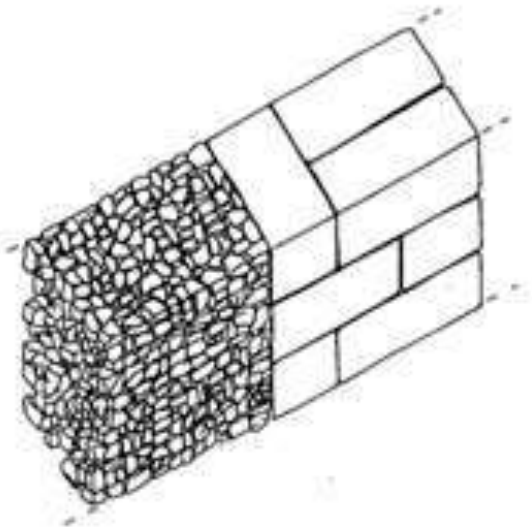
Concerning the transversal walls, there is a variation between the size of the compartments, with intervals ranging from ~2 m (~4 cubits) in the north and south and ~3 m (~6 cubits) in the west wall (Castro, Manzano-Agugliaro and Ochotorena, 2010, p. 31).

In Carmona (Seville), a wall excavated below the manor house nº 2 of Higueral street was interpreted as a part of the defensive system. The structure is dated from the second half of the 6th century BCE.

Its construction technique, in turn, does not correspond to any other typology of Levantine origin. However, there are similarities between the two types (Anglada Curado *et al.*, 1993, p. 224).

Mixed techniques of ashlars and masonry were used for its construction (Figure 73). In the path identified by the excavation, it was possible to identify traces of ashlars carved in local calcarenite. The structure was made up of overlapping rows of at least three dry-jointed ashlars (106 x 64 x 40 cm), two with cleavers (138 x 56 x 40 cm), and one header-stretcher (112 cm). The buttress of the defensive system had been dismantled except in its lower course. A junction of slabs and stones was covered with compacted red clay (Anglada Curado *et al.*, 1993, p. 221).

Figure 73 – Reconstruction of the Carmona wall technique



Source: Belén et al. 1993, 242

This structure section was joined to the 1.80 m high masonry work. In the masonry construction, the stones (~20-40 cm) were coated with orange-coloured clay. The façade of this section was levelled until a flat, regular surface was obtained. It is believed that this section would have been reformed

because it is an area that should support greater pressure and weight (Anglada Curado *et al.*, 1993, p. 222).

This stretch of wall, identified in Carmona, is a unique example of a defensive system situated within the lands of the Guadalquivir; however, the ancient landscape of the Phoenician occupation period allows the Tartessian Gulf to enter the Guadalquivir up to the limits of Seville. However, it is not possible to say that Phoenician settlers founded the city of Carmona. The area around this settlement has evidence of an intense confluence between Phoenicians and locals. Thus, it could be a local town of strong Semitic inspiration (Anglada Curado *et al.*, 1993, p. 226).

4.2.3. What characterises Phoenician-Punic defensive architecture in Far West Mediterranean

As in the Central and Western Mediterranean, defensive architecture in the Far West follows the same patterns as Levantine forms. In the Far West, many of the Phoenician settlements were installed on sites where there were already structures of the local populations, as occurred in the Central Mediterranean (e.g., Sardinia). In the Iberian Peninsula, the installations took place on native settlements dating from the 2nd millennium known as *fondos de cabaña.* From the 9th century BCE – the 8th century BCE, the Phoenicians built their defensive systems *ex novo* from these initial nuclei. These defence systems used local raw materials to follow the same Levantine techniques. The Iberian Phoenician defensive systems have the rampart, its curtain, towers, entrance gates and moats, except for Abdera. The buttresses are found in Cabezo Pequeño del Estaño and Carmona. However, many sites have not been extensively studied in its hinterland. Thus, it is not possible to affirm that all of them had the same pattern.

The glacis is a construction found in some settlements such as La Fonteta e Cabezo Pequeño del Estaño, depending on the type of terrain. And just like the case of the buttresses, it may have been used but not yet found.

The casemate is a Phoenician-Punic system par excellence and is maintained in all the sites surveyed, with variations in width and length.

Thus, it is impossible to state that only two sites would have had this defensive apparatus. However, the material of the structures varies. Castillo de Doña Blanca's wall was built with clay bricks, not ashlars as in Cartagena, Cerro de Castillo or limestone as in Abdera. Even with certain variations, the pier-and-rubble technique is maintained in all Phoenician foundations.

Cartagena is a city that, to build its walls, uses two types of *opus*, the *quadratum* and the *africanum* made in sandstone blocks and hewn stones. Both techniques are standard in North Africa, especially in Cartago, the founding city of Cartagena.

The *bagnarolas* at Tossal de Manises (4th – 3rd century BCE) are some novelties not fully understood. These structures, hitherto found in religious environments, are in dialogue with the city's defensive system. It is still unknown what their function would have been, as there is even an indication of canalisation for collecting water from the *bagnarolas*.

On the other hand, ballistic projectiles were found in Tossal de Manises, which could be thought of as an arsenal deposit, which would have facilitated the feeding of the city's defence machines. The analysis of these projectiles points to the material of volcanic origin from the surroundings of Cartagena, recognised in Classical sources as a Punic arsenal city. Another novelty, still in Tossal de Manises, is the "antemural" structure, which would serve as a platform in front of the wall, possibly for the displacement of war machinery. The "antemural" platform could function as the troops' second *chemin de ronde.*

Local Iberian communities may have adopted the Phoenician defensive system. The case of Carmona is a unique example of a defensive strategy as it mixes three differentiated techniques that have similarities with the Levantine ones. Thus, Carmona may have been an indigenous centre of strong Semitic inspiration.

Concerning the aesthetic aspect of the walls, there is a pattern of white clay coating, as in the case of Castillo de Doña Blanca and Málaga or even red, such as Carmona. The only settlement where the surface of the walls had a different coloured coating was Cabezo Pequenño del Estaño. This foundation used the greyish silt from a nearby swamp.

Thus, it can be seen that there were variations in the use of materials, but the construction techniques remained the same. There are examples of the use of *opum africanum* from North Africa. This *opus* shows an expansion of Punic construction methods, a fact that makes clear the arrival of Carthaginian military innovations in Iberia, one of the stages of the Second Punic War (218-201 BCE).

4.3. Religious architecture

4.3.1. What is similar at different archaeological, religious sites?

Figure 74 - Sanctuary III (dark) and the central altar. The adobes to the top left are from the sanctuary wall IV. There are two benches surrounding the altar

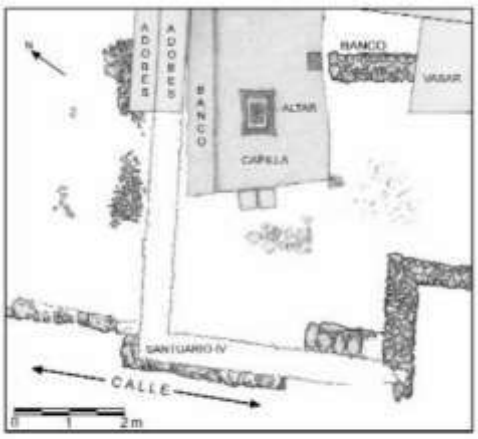


Fig. 2 – Santuario III de Caura (estructuras sombreadas). Los adobes situados a la izquierda de la parte superior de la capilla corresponden al muro perimetral del Santuario IV y a un muelle-banco adosado a su cara externa.

Source: Escacena Carrasco et al. 2008, 434, fig. 2

Archaeological investigations in Caura (Seville) have revealed the prehistoric levels of a settlement dating to the 1st millennium BCE. The constructions were made using stone foundations. On the top, adobe remains were discovered, probably the lower part of a wall. The excavations found a sanctuary that follows a rectangular pattern around an altar (Escacena and Izquierdo, 2008, p. 434).

There are 5 levels of occupation of this shrine that were identified. All phases had some similarities with the previous one. This fact suggests the maintenance of the cult of one deity. No significant modifications occurred on any of the levels, and the site seems to have been used until its abandonment in the 6th BCE (Escacena and Izquierdo, 2008, p. 434).

Level 3 is the phase with the best evidence of the cult utility of the environment. This phase is called Sanctuary III and can be dated to the 7th century BCE. In this period, a paved area with reddish soil was identified. A wall closed the altar, or bonfire, enclosure while traces of a clay bench were identified on its interior side. In front of this bench, a bull skin-shaped altar is placed at the sanctuary's centre (Figure 74) (Escacena and Izquierdo, 2008, p. 434).

Escacena Carrasco comments that this altar typology is well documented in Iberia and characterises centres of worship that can have both an urban and rural character. Cancho Roano (Extremadura) is one of these temples located in urban areas. On the other hand, the Temple of El Oral (Alicante) is isolated in the landscape and may have been a dedicated temple in a rural area. (Escacena Carrasco 2008, 435). In Caura, the sanctuary had an open-air typology delimited by a wall (Greek: temenos?). Thanks to a site that appears to have been a portico, it is believed that the entrance to the temple and the sacred enclosure may have been one in front of the other (Escacena and Izquierdo, 2008, p. 435).

The paved area in red indicates that the Temple has covered parts. Thus, everything leads one to believe that this coverage would protect the sites and prevent flooding during rain (Escacena and Izquierdo, 2008, p. 435).

The most sacred area, the *sanctum santorum*, corresponds to the Sanctuary III chapel, where the altar mentioned above appears in the shape of an ox skin. It is a small enclosure that may have been covered, although its walls have not been identified on its four sides. The ashes and a burning area indicate that the room must have had good ventilation, while some roofs should have protected it from keeping it from rain (Escacena and Izquierdo, 2008, p. 435).

The benches that rise 10 cm above ground level were identified on the reddish earth paving. They were also built using clay and painted red, like the pavement (Escacena and Izquierdo, 2008, p. 435).

Regarding the altar (Figure 75) it was not aligned with the temple walls in any period. This altar seems to be oriented toward the summer and winter solstice, as it is at El Carambolo (Escacena and Izquierdo, 2008, p. 435).

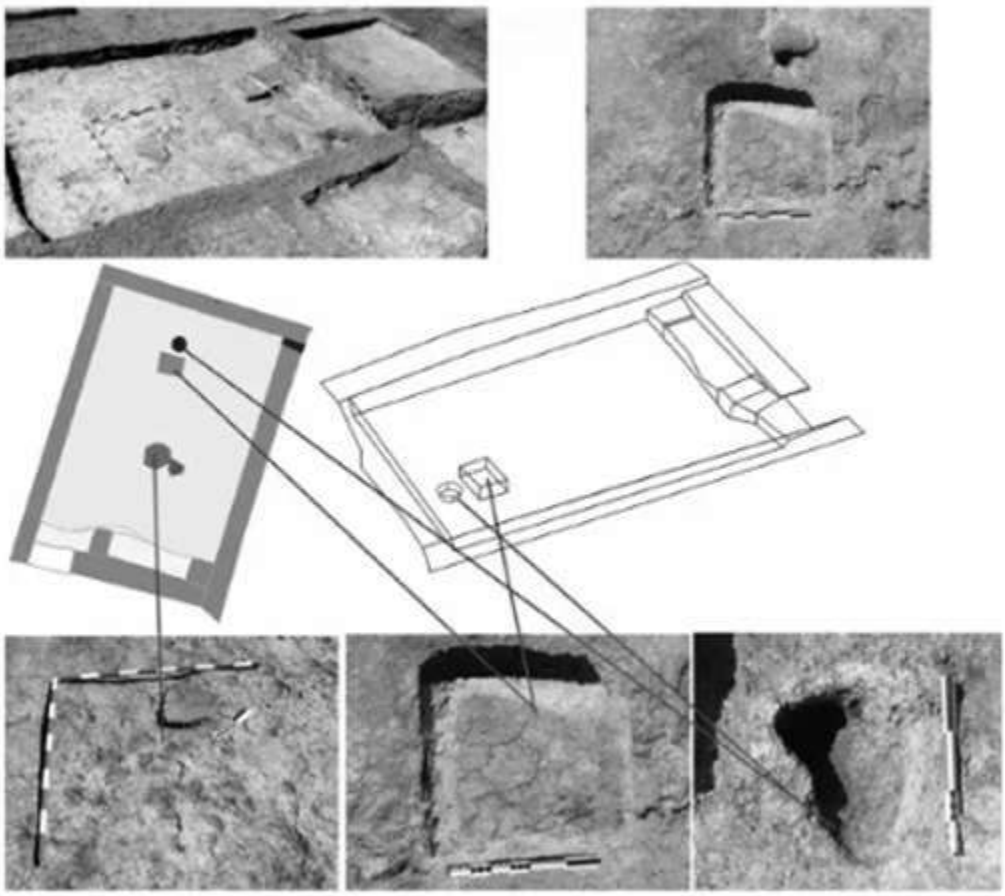
Figure 75 - Caura altar

Source: Escacena Carrasco et al. 2008, 436 fig. 3

Another settlement with a similar Phoenician tradition sanctuary is called La Rebanadilla. The site is located 3 km from the current coastline and 1.9 km from Cerro del Villar (Martin, 2021, p. 37).

Several structures from indigenous traits were excavated in its first phase (Phase IV). It is believed that these structures would be workshops linked to a sanctuary. In the second phase (III), a 0.60 cm thick adobe perimeter wall was found in an area that can be understood as a temple (Martin, 2021, p. 37).

Figure 76 - Temple I. The altar and the niche for the baetyl



Source: Sánchez et al., 2018, p. 308 fig. 3

Two temples, I and II (named buildings 4 and 5), were identified within this main temple. These two rectangular areas have walls erected in adobe (each 0.45 and 0.30 cm). Like other temples of this typology, benches ran along the side walls (Martin, 2021, p. 37).

Temple I is a room of 4 x 3 m where an altar, or a bonfire, of 0.46 x 0.33 cm has been identified. A cavity for a baetyl on the ground was also part of the cultic area. (Figure 76) (Martin, 2021, p. 37).

Temple II, on the other hand, has a larger dimension. Its courtyard measures 4.5 x 3.37 m and features an altar or a particular area for the fire. The rectangular altar was built in clay, measuring 0.38 x 0.28 cm. An incense burner (*thymiaterion*) was also found in this locality. Next to this temple, two

attached rectangular dwellings were identified, the first one measuring 2.58 x 2.30 m, with benches running on three of its four sides. One of these benches, in plaster, was painted red. There was also an ox horn found at the entrance of this temple. At the end of this courtyard, a *sanctum sanctorum* of 1.90 x 1.30 m was identified, which had a rectangular structure excavated in the ground measuring 0.77 x 0.50 m where a stone baetyl and a large ceramic cauldron with painted decoration were identified (Martin, 2021, p. 37).

In Málaga, under a manor house located on Císter-San Agustín Street in the historic centre, several levels belonging to a shrine were discovered. The site was dated from the 8th century BCE and was dismantled in the 6th century BCE to construct a new defensive system for the city (Román *et al.*, 2011, p. 132).

The sanctuary is located in an area close to the current Malaga Cathedral. The building is also in a strategic location as it stands over the bay, in the vicinity of a possible port (Román *et al.*, 2011, p. 132).

The location of a Phoenician sanctuary in the ancient Phoenician city of Malaga (Phoenician-Punic mlk') highlights a connection between the construction of sacred spaces and the founding of new colonies. There is a first level of ground with floor treatment made of red clay on which a free-standing platform is ~30 cm high. The central body of this structure is pseudo-rectangular, presenting concave appendages in its corners, forming the well-known oxhide shape (Román *et al.*, 2011, p. 132).

There are differences concerning the choice of ground and colouration. The outer part maintains a yellowish tint without any intrusion. The inner area has a brownish or brown colouration with shells and small molluscs that would form part of the conglomerate. The final treatment of the structure was made with a thin reddish coating plastered with reddish varnish with the same characteristics as the soil where it stands (Román *et al.*, 2011, p. 133).

Figure 77 - Altar from the Sanctuary, II Phase

Source: Román et al., 2011, p. 147 fig. 21

From this initial moment, it was possible to identify walls that would demarcate the sacred area. However, new walls were built in another area of the same locality due to the construction of a new shrine (Román *et al.*, 2011, p. 133).

The construction of this second shrine did not destroy the previous one. The area remained respected and was covered by yellowish-sieved earth with inclusions of lime. Thus, the ground was elevated, and a new reddish clay pavement was placed. On this new pavement, another altar was set down (Figure 77). This unique sanctuary was in use from the 7th to the 6th centuries BCE (Román *et al.*, 2011, p. 133).

Arancibia Román states that of all the known types of Phoenician altars located in southern Iberia, the most similar is found in the altar at Coria del Río, the ancient Caura. (Román *et al.*, 2011, p. 133).

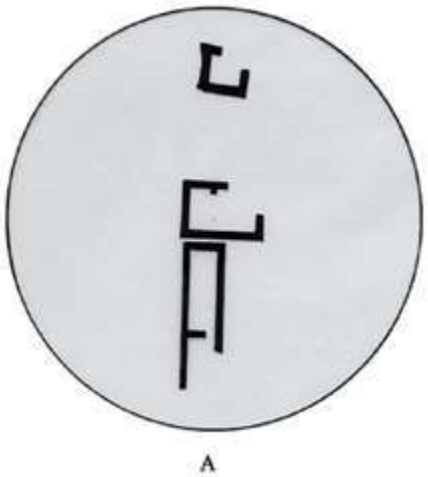
In the north of Sanlúcar de Barrameda, the settlement of La Algaida, also known as Monte Algaida or Cerro del Tesorillo, is located in an area of marshes. However, this site would have been a large island of alluvial formation in the past. Pedro Barbadillo carried out prospections in the 1950s when the site was identified as Tartessos (Girón, 2020, p. 236).

Systematic excavations would only occur in the 1970s, led by Ramón Corzo. During these investigations, a possible temenos was discovered, where a baetyl or the altar stone for sacrifices was found. A well was also identified, and a series of little-dimension buildings were constructed around it. According to Corzo they could correspond to different eras. The larger buildings are better preserved, presenting the internal compartmentalisation of the author's proposed areas, *pronaos* and *cella* (Girón, 2020, p. 236).

The oldest building was constructed with masonry and had thick walls (3 m). Its antiquity was verified thanks to bronze pieces of Etruscan origin found inside (Girón, 2020, p. 236).

In the vicinity of these two buildings, a third one divided into three areas appears (Figure 78), where ashes and osteological remains of animals were discovered. Amphorae fragments were also part of the finds in this area. The author interprets this environment as a house of sanctuary officials (Girón, 2020, p. 236).

Figure 78 - Plan of the Phoenicia-Punic Sanctuary

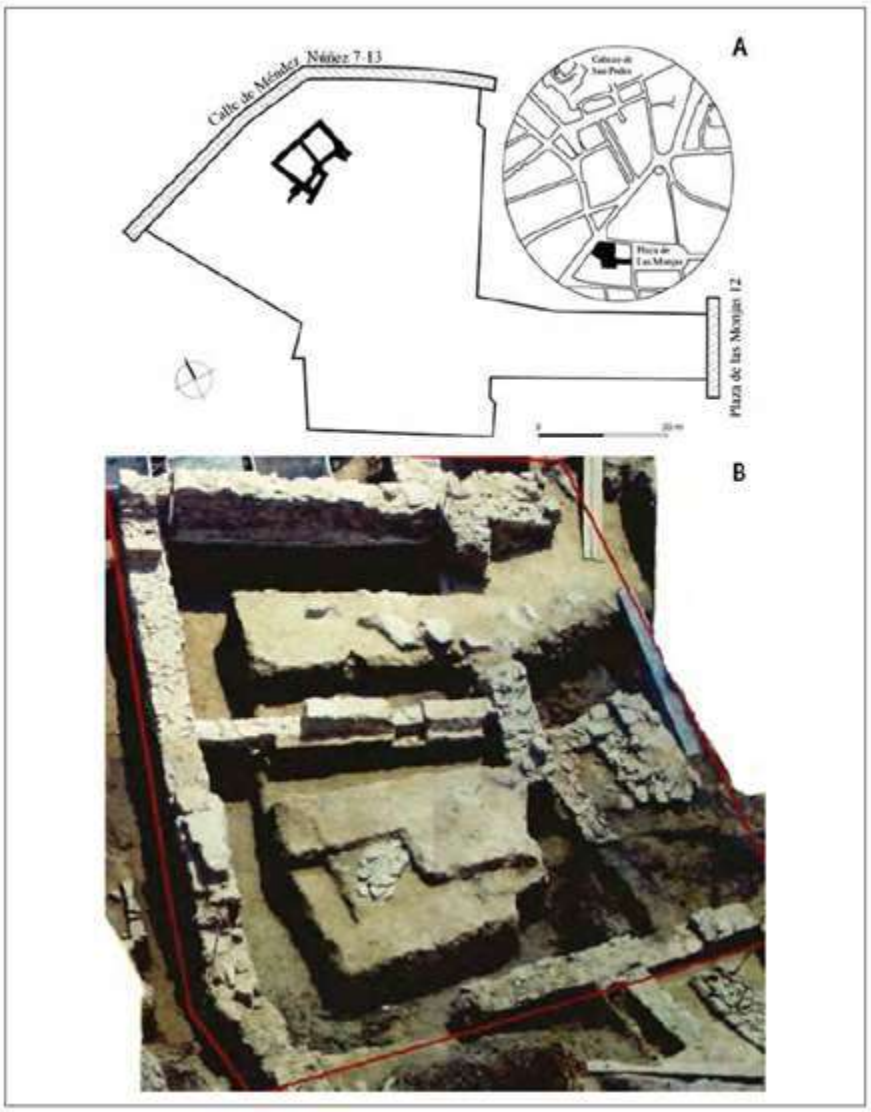


Source: Girón, 2020, p. 239 fig. 2

4.3.2. What is different at different archaeological and religious sites?

In Huelva, the discovery of the sanctuary dates back to the 8th – 6th century BCE. The place is located on Méndez Núñez Street, Plaza de las Monjas 7-13 (Figure 79). The site is distinct since it contains some remains of blacksmithing activities from early dates. In addition, a vast number of ceramic fragments can be dated as being from the Middle Geometric II, among others that have been dated as being from the 7th century BCE (Martin, 2021, p. 39).

Figure 79 - (A) First phase from the Méndez Núñez Sanctuary; (B) View from the first phase

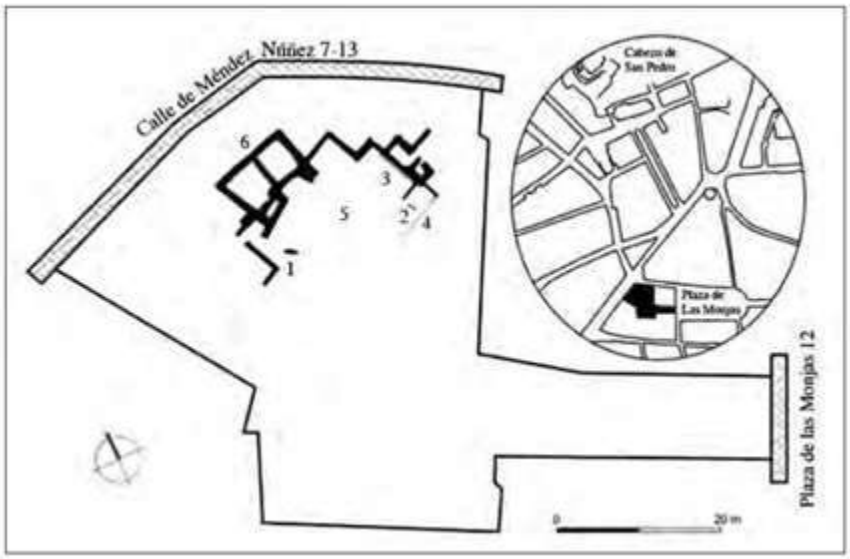


Source: Martin, 2021, p. 38 fig. 3

In its first constructive phase (8th -7th centuries BCE), a small temple of a rectangular plan of ~9 x 5.75 m was found. Its walls were built by using the adobe technique without any stone plinth. Its pavement was made of clay. One enclosure was identified as having been built on quadrangular clay slabs. Mederos Martín comments on this same rectangular plan in Císter Street in Málaga containing an *ara*, altar or *Sanctum Santorum*-type (Figure 80) enclosure of 0.32 x 0.48 m, dating from the late 8th century BCE to the first half of the 6th century BCE. Another example that can be cited is that of Coria del Río (Seville) (Martin, 2021, p. 39).

The sanctuary of Huelva continued in use throughout the Phoenician phase, which spams until 575 BCE. There was an abrupt end to it. Abundant remains of marine origins were found at this time, contributing to possible destruction by an earthquake and a tsunami.

Figure 80 - Phase 3 of the sanctuary (1) Tumulus; (2) houses; (3) benches; (4) sanctuary wall; (5) Temenos; (6) Sanctuary



Source: Martin, 2021, p. 40 fig. 4

In addition to the cult structure, a silver cupellation furnace, and a small silver ingot in the shape of an ox skin (2.6 x 3.9 x 5.4 cm), were also identified. These finds indicated that the craft production area would be near the temple (Martin, 2021, p. 39). In the second phase of the sanctuary, only one circle of slate wedges were found for inserting five baetyls (Figure 81) and an example in Figure 82 made with *roca ostionera* (very common in Phoenician constructions in southern Iberia) and lava, which are used in the third phase (Martin, 2021, p. 39). The *roca ostionera* is a sedimentary rock formed by ichtyofaunal remains (*Glycymeris* sp. *Ostrea edulis* and *Pecten* sp.).

In its last phase (550-500 BCE), the sanctuary had several attached dwelling units, which have been interpreted as storage places since they contained Punic amphorae. In the external area of these dwellings, silica slag and a possible goldsmith's workshop were identified. Inside the enclosure, benches are attached to the walls (Martin, 2021, pp. 39–40).

Figure 81 - Roca ostionera baetyls found at the site

Source: Mederos Martín 2021, 41, fig. 5

Figure 82 - Example of ashlar of roca ostionera. It is possible to see molluscs' shell

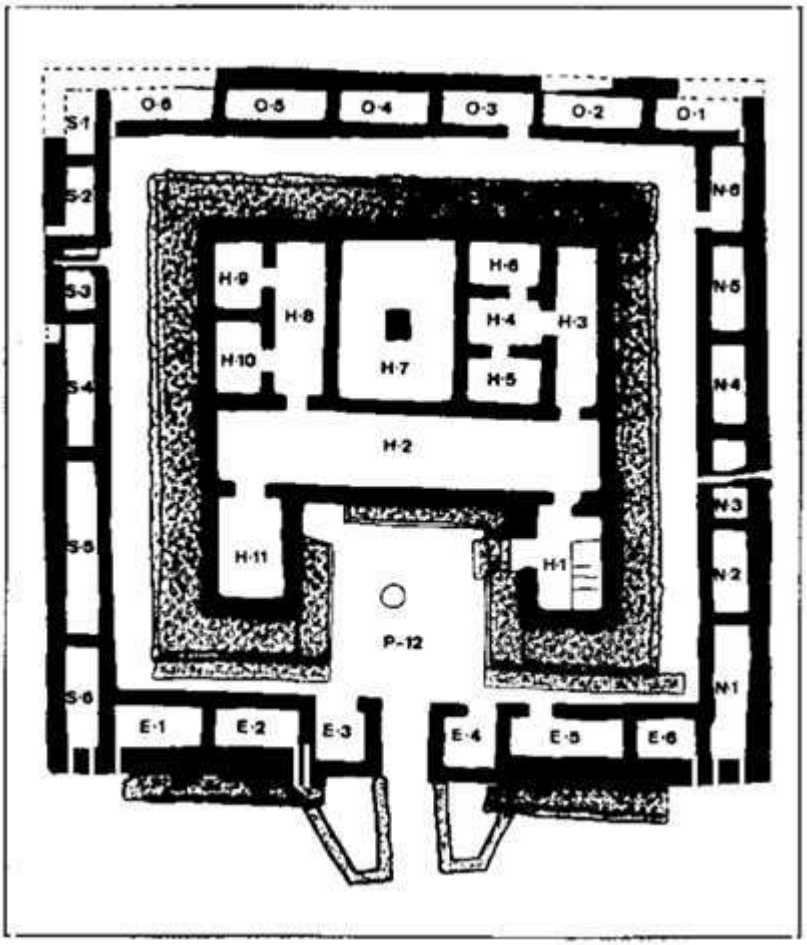
Source: Available from: https://sevillamoving.com/blog/la-piedra-ostionera-de-cadiz/, accessed in 13th May 2023

According to Muñoz Fernández (Fernández, 2014, p. 131), Cancho Roano (present-day Zalamea de la Serena in Badajoz) is a palace sanctuary. The site is located opposite the Arroyo de Cagancha river. The architectonical features of the building led Muñoz Fernández to consider it a temple and a palace. Its construction dates back to the so-called "Orientalising period" in Iberia (*c.* 750-600 BCE). The structure was built on an ancient settlement *fondos de cabañas*, with their traditional circular or oval huts.

It is a building of credited grandeur with a large stone terrace. It also had two towers and a wall flanking the entrance. The presence of a moat around the whole complex contributes to its interpretation as a palace sanctuary (Figure 83) (Fernández, 2014, p. 131).

Concerning its interior, several rooms and altars were discovered. These facts led archaeologists to interpret these environments as small chapels dedicated to the offerings of the devotees. Regarding the material culture, pottery of indigenous origin, and Phoenician inspiration, were also identified. Prestigious goods such as *kylikes*, ivories, bronzes and vitreous paste provided conditions for interpreting the archaeological site as a possible place to redistribute prestige goods. To strengthen this idea, weights from weight systems, scales and seals were also discovered inside the building. Concerning the location of the palace sanctuary, it is dominant in the landscape, being a possible territorial marker controlling the commercial flow from the coast to the interior of the lands. Near the sanctuary, mills have been discovered, confirming the region's dedication to cereal production. Minerals such as gold flowed down the Tagus, while tin could be found superficially (Fernández, 2014, pp. 131–132).

Figure 83 - Monumental complex of Cancho Roano



Source: Pérez and López-Ruiz, 2016, p. 246 fig. 7.8

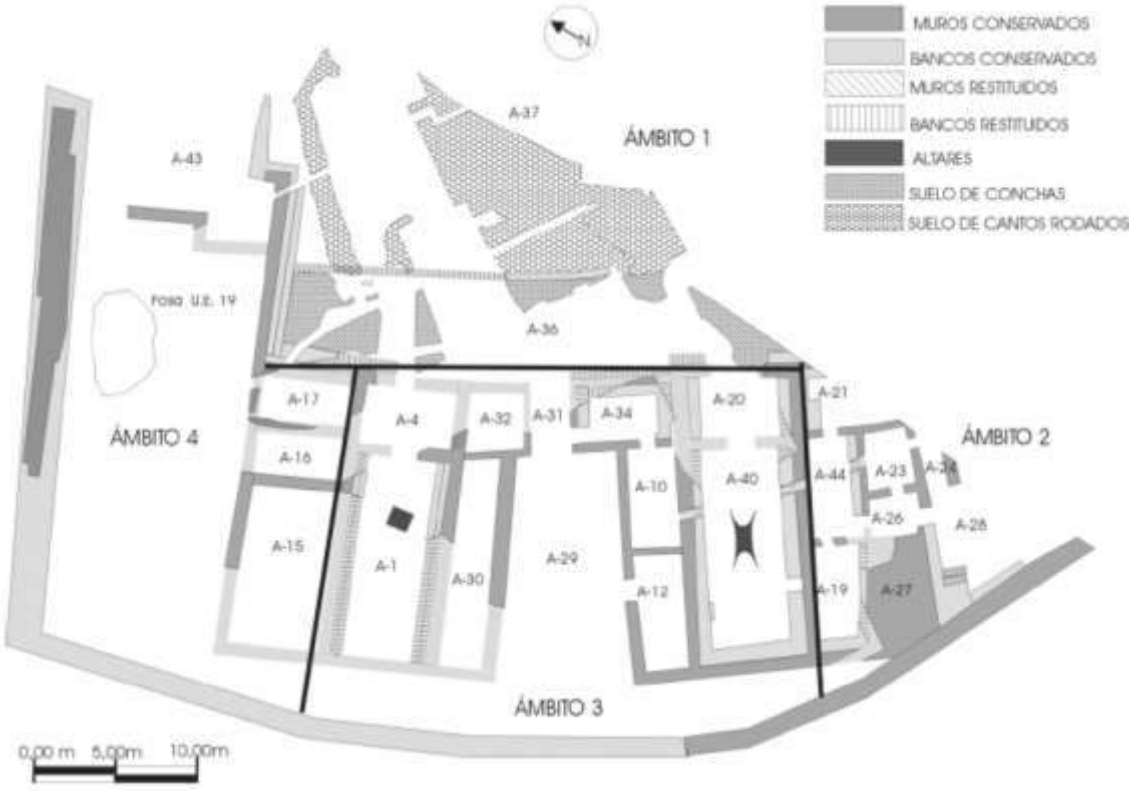
Cancho Roano can be defined as a square building (24 x 24 m) with its main façade facing east. The structure was built on a two-metre-high podium made of masonry. Inside the building, a square room (10 x 10 m) was discovered through which stairs could give access to doors that opened on the side walls (Blanco Freijeiro, 1981, p. 232).

Similar to Cancho Roano, the sanctuary of El Carambolo is located in what would have been, in antiquity, the Lacus Ligustinus. This gulf joined the coast of present-day Andalusia. Its geographical position allowed visual control of the mouth of the Guadalquivir River. Four levels of occupation in this complex have been identified. Its first phase is similar to Cancho Roano, built on oval and circular

structures known as *fondos de cabañas*. El Carambolo has several rooms, like the oxhide altar, with benches on three walls, except the northwest one.

New archaeological interventions of 2022 have identified periods ranging from the 8th century BCE to the 6th century BCE. The sanctuary was built during the Iberian Orientalizing period. Its foundation was monumental, with altars shaped like ox hides (Figure 84, A-40). There were numerous renovations until it was used as a place to produce craft activities, given the presence of ovens. These activities ceased until it was abandoned around the 7th / 6th century BCE.

Figure 84 - Plan of the El Carambolo during the 6th BCE

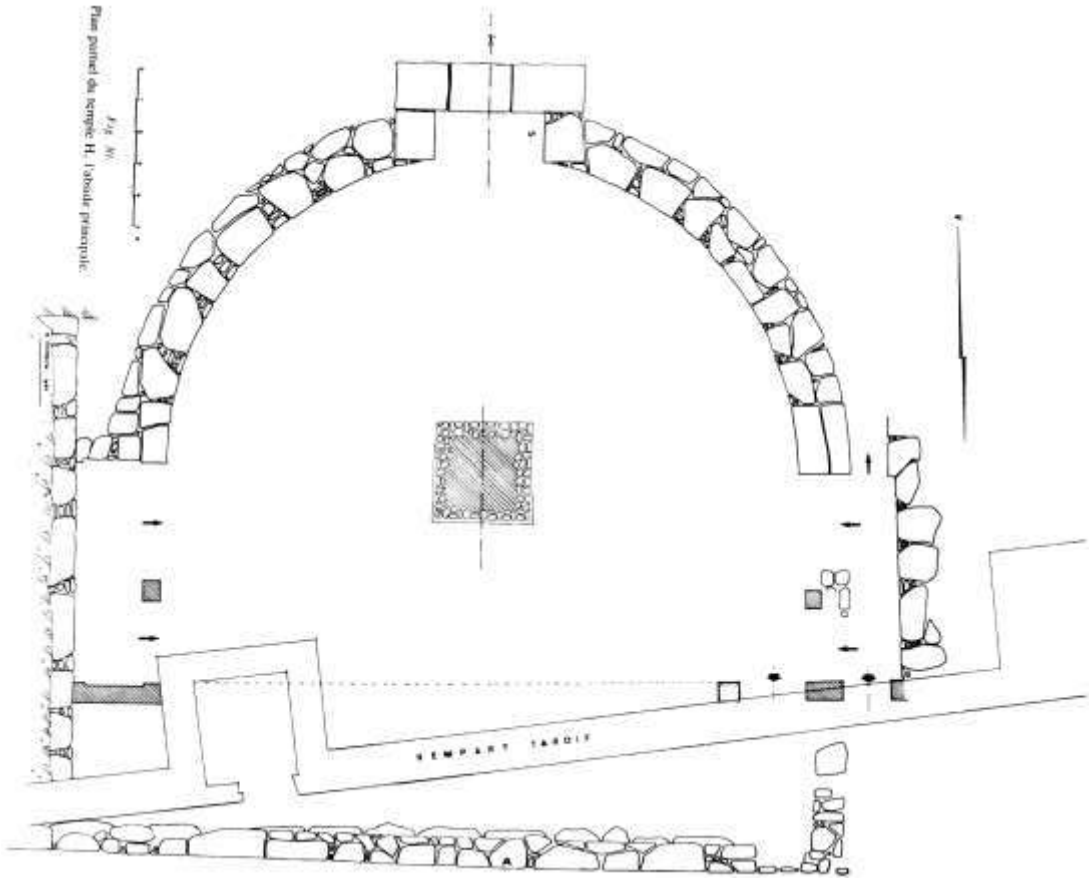


Source: Fernández Flores and Rodríguez Azogue, 2005, p. 125 fig. 4

In the Far West, Morroco, the oldest Temple of Lixus, known as temple H, stands in the highest part of the city, oriented in a north-south direction. It seems to have been dedicated to Melqart, associated with Heracles according to Classical authors (Ponsich, 1981, p. 97; Vasquez Hoys, 1992, p. 105). Based on ceramic finds from Attica (such as fragments of plates, *bobèche* type *enocoas*) next to Phoenician two-spouted lamps and necks of amphorae and indigenous ceramics, the dating of the building happened in the 7th century BCE and early 6th century BCE (Ponsich, 1981, p. 105).

Only the north apse is visible, which gives conditions to suggest the size of the temple. This apse was constructed using the so-called megalithic apparatus, which varies in volume from 2 cubic m for some blocks. Pillars interspersed established all the structure with flat stones as is customary in Phoenician-Punic constructions. The apse (Figure 85) measures 19.40 m, and its wall is 1.65 m thick and is similar to the sanctuary of Mastio (see Chater 3 section 3.4.2) in Sardinia (Ponsich, 1981, p. 97; Vasquez Hoys, 1992, p. 105).

Figure 85 - The temple's apse

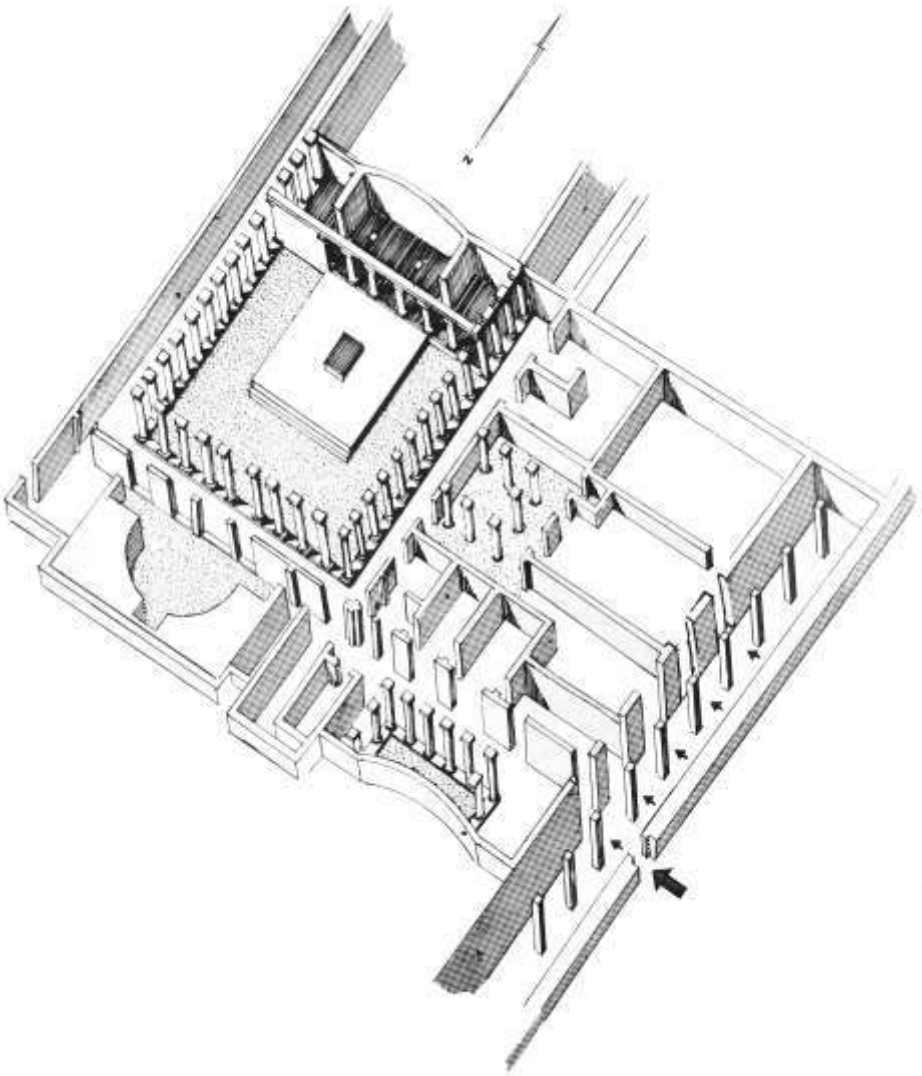


Source: Ponsich, 1981, p. 98 fig. 30

In its centre is a rectangular structure with 3 m on each side. This structure was suggested as a base for the installation of the altar. The area was systematically destroyed 0.40 cm from the ground. Ponsich (1981, p. 100) commented that this area would be too small to be a chapel and too large to be a simple niche as it measured 3.50 m wide and 1.60 m deep. However, the interpretation that it was a cult structure is indisputable. On the external wall is a mortar pedestal that measures 0.15 cm high and has traces of red ochre-coloured paint (Vasquez Hoys, 1992, p. 105).

The surrounding building has an enlarged form compared to other temples in the city, such as Temple F (Figure 86). Given its grandeur and exquisite use of its construction techniques, it is believed to have been an important site for those arriving by sea (Vasquez Hoys, 1992, pp. 105–106).

Figure 86 - Reconstitution of the F Temple and its annexes



Source: Ponsich, 1981, p. 56 fig. 13

Other temples with this apse shape are temples “F” and “G”. These two buildings were constructed from blocks measuring 2 m to 2.50 m in length and 1 m in height made from local sandstone and laid in successive rows. The foundation of the apse area has a depth of 1.20 m, which suggests that it would support a larger structure (Ponsich, 1981, p. 100). By its arrangement and characteristics, this apse was interpreted by Ponsich (1981, p. 100) as a possible sacred enclosure reserved only for the initiated. Thus, this area would be less accessible to the public due to the small dimensions of the courtyard. This whole area was subsequently covered by the construction of temple F (Ponsich,

1981, p. 100). Regarding its large columns (0.65 cm in diameter), all were clad and painted, which must have belonged to the colonnade of the peristyle "H". It is believed that its plan was imposed by the monument's orientation on the immense acropolis dominating the spur from which the distant ocean could be seen (Ponsich, 1981, p. 100).

4.3.3. What characterises Phoenician-Punic religious architecture in Far West Mediterranean

The sanctuaries in the Far West had certain distinctive features compared to those in the Central and Western Mediterranean. These sites will act as small contact centres with the local populations and will be located in areas with great visual dominance over the landscape. Two of these large sanctuaries will be Cancho Roano and El Carambolo, located in *fondos de cabaña*. Both are fortified and have a defensive ditch, which shows a particular caution towards the local communities of Iberia. There were also metallurgical workshops in its internal area, given the presence of furnaces and slag. Another sanctuary that could have had a significant size is the one found in Huelva, located on cabañas foundations. This sanctuary was excavated in the middle of the current city, so it was not possible to carry out an extensive excavation to better understand it. However, the excavated area already shows the presence of an altar in the shape of an ox skin, beetles, ritualistic furniture and metallurgical workshops which worked with gold. These large sanctuaries had a labyrinthine aspect, roughly resembling the Byblos (see Chapter 2 section 2.2) and the Motya (see Chapter 3 section 3.4) way, having several rooms not yet fully understood. While there were large sanctuaries, worship also seems to have been conducted in the open air, as at Caura. At Caura, only a temenos delimited the sacred area. There would also be a portico, the main entrance to the site. Still, in Caura, some elements corroborate the idea of a cult in a closed or covered environment. A *sanctum santorum* with a clay altar, or of another material, in the centre and benches around it is a prevalent element

in Phoenician sacred sites. These benches ran along the walls of a room with an altar. In the case of La Rebanadilla, the benches were covered with lime and later painted red. Elements such as ritual basins or *bagnarolas* will be found not in religious sites but concerning the walls (i.e. Tossal de Manises). Another *bagnarola* that will appear in the Iberian Peninsula, in a religious context, will be that of Carteia, which will be presented in Chapter 6.

5. Chapter 5 – Case study: Carteia

5.1. Introduction

5.2. The Bay of Gibraltar, between Iberians, Greeks and Phoenicians

The Bay of Gibraltar was a middle ground[2] between different Mediterranean communities in Antiquity. The initial Phoenician exploration into Atlantic shores during the 10th BCE gave conditions to cities' foundation from Southern Spain to Northern Portugal on the 7th BCE. However, this Far West was not terra nullius waiting to be colonised. A diverse range of Iberian communities was there and coexisted with the newcomers.

Between two seas and two continents, the Bay of Gibraltar became a mandatory stop for any navigator who arrived from the Mediterranean or the Atlantic. There, the Phoenician foundation of Carteia was the main contact hub between this diversity of inhabitants. Its material culture sheds light on a melting pot of identities in the Far West.

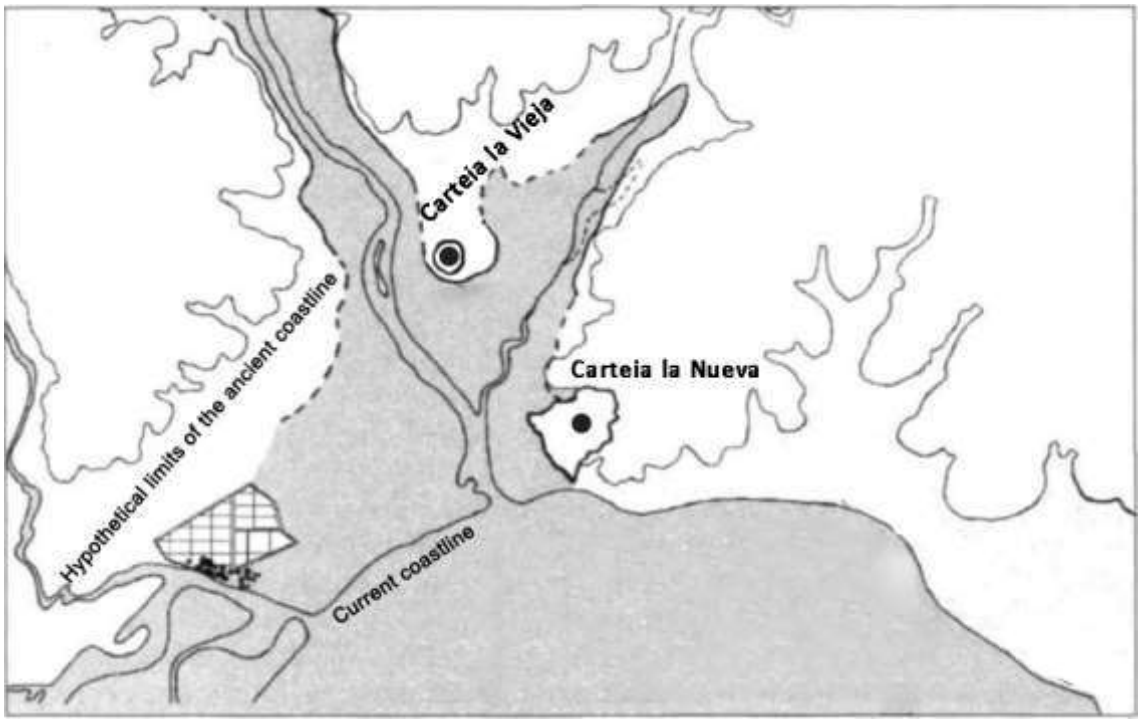
5.2.1. Carteia la Vieja (Cerro del Prado)

[2] Based on the concept of middle ground created by Richard White (White, 2010) and reviewed for the Mediterranean by Irad Malkin (Malkin, 2011).

During the 7th century BCE, Phoenician sailors founded the first settlement in the Bay of Gibraltar, near the current city of San Roque. Archaeologists consented to call it Carteia la Vieja to distinguish this place from Carteia la Nueva, another Phoenician foundation nearby (Roldán *et al.*, 2006; Roldán and Blánquez Pérez, 2011; Jiménez Vialás, 2012). The original foundation was established on Cerro del Prado hill. Nowadays, this formation is partially destroyed due to the construction of industrial facilities. This is a phenomenon that interferes substantially with the archaeological sites of the area. Due to its location, the Bay of Gibraltar is a heavily industrialised area, mostly dedicated to petrochemical production.

Carteia la Vieja was situated on a slope on the east bank of the Guadarranque River's mouth (Figure 87); this type of setting is typical of Phoenician settlements. The whole area is flanked by the Rock of Gibraltar to the southeast and Point Carnero to the West. Less than 30 km away, it is possible to observe the African continent the city of Ceuta, another Phoenician foundation dating from the 7th century BCE (Jiménez Vialás, 2012, p. 431).

Figure 87 - Map of the possible palaeography of the Bay of Gibraltar during the Punic era. Cerro del Prado was the first Phoenician foundation and Carteia the second city



Source: Arteaga, et al. 1988 apud Bendala Galán et al., 1994

The first archaeological excavation carried out on a Phoenician foundation in the Bay of Gibraltar happened in 1975. The campaign was coordinate by Tejera Gaspar and Loïc Menanteau. The investigators unearthed *Carteia la Vieja* under a hill area called Cerro del Prado. This area corresponded to a set of low hills located next to the old mouth of the Guadarranque river (Figure 88).

Figure 88 - The Cerro del Prado in 1976. Picture by Tejera Gaspar

Source: Roldán et al., 2006, p. 90

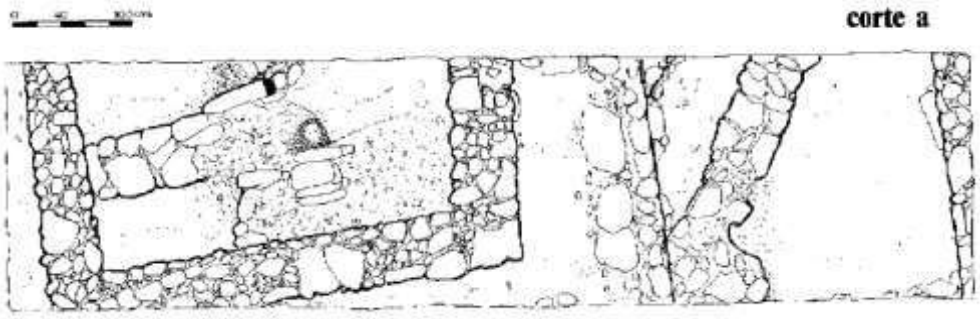
Little remains of the initial Phoenician foundation due to the development of quarrying and other industrial activities. Part of the settlement was preserved below a butane factory (Cabrera and Perdigones, 1996, p. 158). Only two areas could be excavated (one 8x2 m and the other 6x3 m). These corresponded with part of the residential and defensive sector. The unearthed city wall built using irregular stones (~0,30 cm), was linked to the clay 'brick's rectangular dwellings by the back part of the house (Figure 89) and a possible furnace full of ashes. In the interior of the wall, a layer of a purple rammed earth (Roldán *et al.*, 2006, p. 98).

Figure 89 - Part of the Phoenician walls of Cerro del Prado

Source: Roldán et al., 2006, p. 96

After the first excavation, a survey was organised by French researchers from the Casa de Velázquez. It revealed that in ancient times, the first settlement area was a lagoon environment that had its marine conditions degraded. These conditions lead the researchers to interpreted this fact as one that could have been contributed to its abandonment in favour of a new urban centre known as Carteia la Nueva (Roldán *et al.*, 2006, p. 90).

Figure 90 - Excavation plan by Joaquín Muñiz Coello, 1976



Source: Roldán et al., 2006, p. 102

However, in 1989, a new rescue excavation under the German Archaeological Institute direction in Madrid identified Cerro del Prado not as a single hill but three. The Phoenician foundation was built in the southernmost area of these hills (25 m above sea level on a surface of 500x600 m). The river would be 160 m away. Its layout favoured creating a small natural beach where the possible remains of a pier (Figure 91), built-in stone (fossiliferous limestone) and a mortar are preserved but poorly studied (Roldán *et al.*, 2006).

Figure 91 - Possible pier related to Cerro del Prado in 1976 by Tejera Gaspar

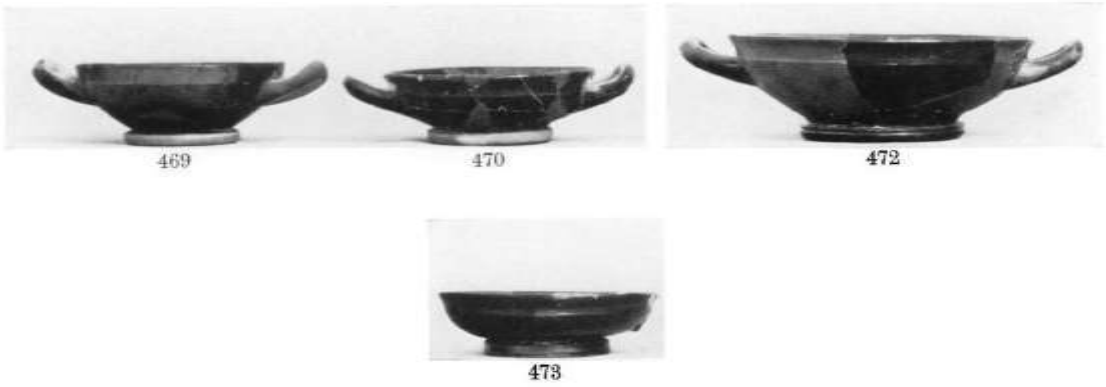
Source: Roldán et al., 2006, p. 99

In the early 1990s, Spanish and German archaeologists identified the site's disposal area related to pottery activities outside the city walls. They discovered 150 fragments of Attic ceramics that dated this new extramural production area between the 5th centuries BCE until the 4th-century BCE (Roldán *et al.*, 2006, p. 93).

The stemless cups are shallow with a low foot with many varieties. This type of cups is rare in the archaic period and was in vogue until 480 BCE. It also competes with the skyphos in popularity. The first cups were shallow with a concave or inset lip; from the third quarter of the 5th century BCE, the plain rim is more favoured, and with this shape, the incised and stamped decoration which appear in late in the second quarter of the 5th century BCE due to a large field to be displayed. After the early 4th BCE century, production decreased, giving space to the cup-kantharoi and kantharoi (Sparkes, Talcott and Richter, 1970, p. 98).

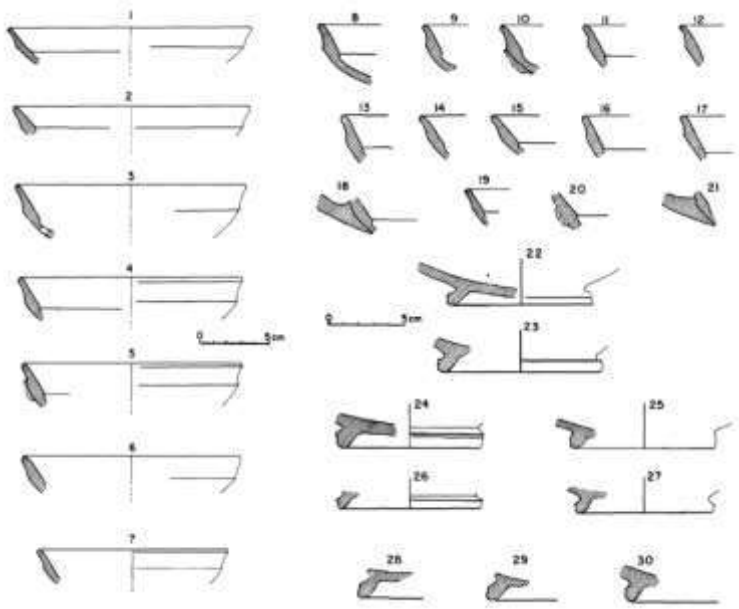
The assemblage is predominantly black glaze fragments, with only one fragment of a red-figure krater identified (Cabrera and Perdigones, 1996, p. 159). The most numerous types were the stemless inset lip cup (Figure 92) related to the Athenian Agora (Sparkes, Talcott and Richter, 1970, p. 101, nº 469-473). These cups are known in Iberia as Cástulo cups (Figure 93), one of the most common black glaze Attic types in Iberia (Sánchez Fernández, 1992).

Figure 92 - Variants stemless cups from the Athenian Agora



(Sparkes and Talcott, 1970 cf. pls. 22) Source: Sparkes and Talcott, 1970 cf. pls. 22

Figure 93 - Cástulo cups from Cerro del Prado (1-30)



Sources: Cabrera and Perdigones, 1996, pp. 159–170

Cerro del Prado was one of the main sites that reveal the use of Greek pottery. In addition to the chronological issue, the ceramic remnants suggest a specific demand within a commercial circuit from the Greek apoikia of Empúries (today Ampurias in Catalonia) bound for Gadir (now Cadiz in Andalusia). The materials would have been part of the ensemble. According to the Labeca's glossary ἀποικία is a city founded by Greek immigrants' groups, mainly after the 8th century BCE. The apoikias hold religious and moral ties with their founder cities. However, it is necessary to stress that they were politically and economic completely independent from the mother-cities. Available at http://labeca.mae.usp.br/pt-br/glossary/, accessed in 16/03/2021.

Conjointly it is necessary to mention the existence of the so-called cerámicas grasses, grey ware present in almost all strata from the excavated area. The *cerámicas grises* (Figure 94) are products of furnaces with poor ventilation. According to Maas-Lindemann (2002; 2006), the grey pottery in the Phoenician colonies is linked with Final Bronze Iberians groups' presence. It is currently believed

that this type of pottery reflects the contacts with indigenous populations of the Final Bronze Age (Roldán *et al.*, 2006, p. 93).

Figure 94 - Example of the cerámica gris from the Museo Nacional de Español Picture of Miguel Hermoso Cuesta, 2014

Available from: https://commons.wikimedia.org/wiki/File:Cerámica_tartésica_M.A.N..JPG. [Accessed in 20 March 2021]

After the Greek pottery findings, Cerro del Prado's abandonment theory for creating a new city does not sustain itself. As mentioned before, Carteia la Nueva's foundation was connected to silting up of Guadarranque river banks (Pellicer Catalán, Menanteau and Rouillard, 1977, p. 230). But the black varnish Attic ceramics suggest that the site was not suddenly abandoned. The findings indicate that the settlement remained active. Even with very circumstantial evidence, some authors have argued that Cerro del Prado was abandoned during the 4th century BCE (Pellicer Catalán, Menanteau and Rouillard, 1977, p. 230; Ramírez *et al.*, 1990, p. 194; Vera, 2004, p. 122). The siltation process was used as the main argument for those who defend the abandonment of Carteia la Vieja.

Recent geoarchaeological investigations carried out by the German Archaeological Institute of Madrid at the University of Bremen identified that Cerro del Prado, was in fact a peninsula (Suárez Padilla, 2018, p. 232).

5.2.2. Carteia la Nueva

Figure 95 – Aerial view of Carteia la Nueva

Source: Roldán et al., 2006, p. 23, fig. 2

The new Carteia (Figure 87), found 2 km from the ancient Cerro del Prado (Figure 95), was situated in the Bay of Gibraltar's bottom, nowadays the municipality of San Roque (Bendala Galán *et al.*, 1994, p. 84). Under Punic control from the 6th century BCE forward, it was monumentalised during the

Iberian Peninsula conquest by the Carthaginians in 237 BCE (Roldán *et al.*, 2006, p. 20; López Castro, 2019, p. 596).

Bendala Galán argues that a series of Hellenistic models with Greek roots was applied to construct the walls (Figure 96) (Bendala Galán *et al.*, 1994, p. 89). To justify his argument, the author uses the walls of Carthage (Tunisia), Lixus Volubilis Shalla, Tamuda (Morocco), Sulcis (Sardinia), Motya (Sicily) and as examples outside Iberia. Within the Phoenician-Punic area in Spain, the walls of the indigenous and Phoenician site of Castillo de Doña Blanca (El Puerto de Santa María) are another reference from the same period (4th-3th BCE).

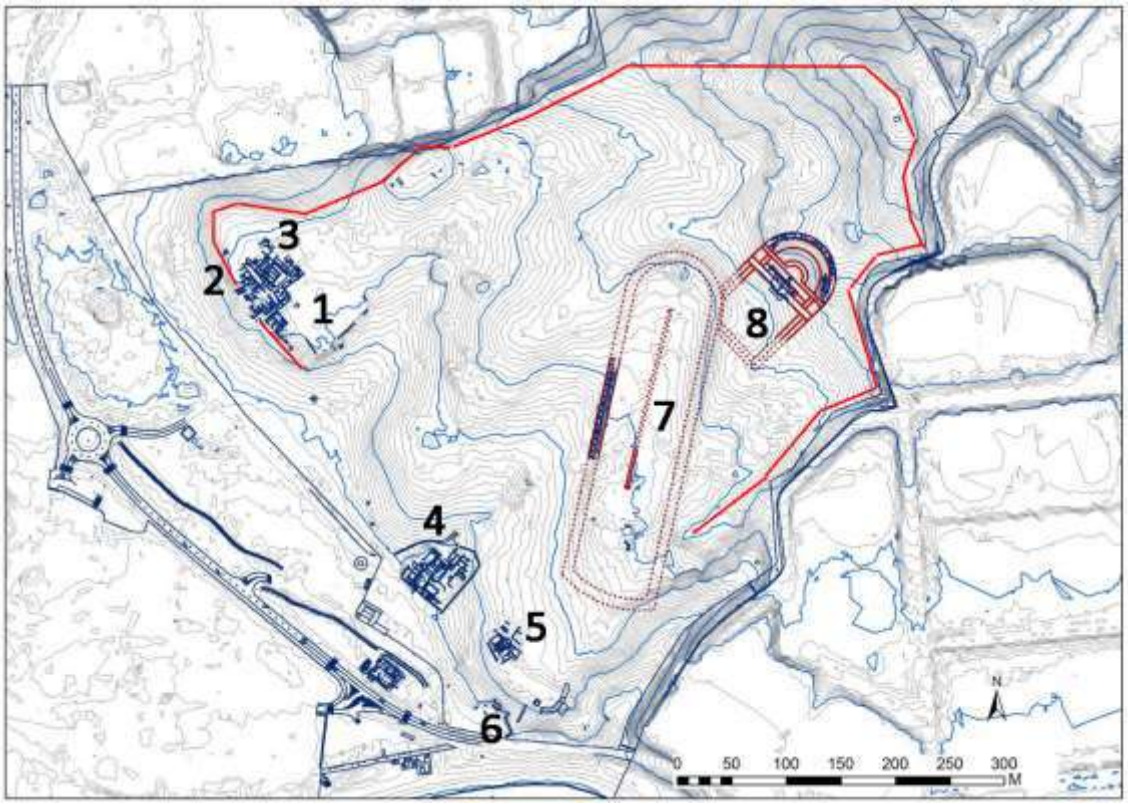
Figure 96 -The so-called área 113, the Punic walls from the East sector (3rd BCE)

Source: Blánquez and Roldán, 2012, p. 65

The city also participated actively during the Civil Wars, being a partisan of Pompey. Some of the destruction attested in the archaeological record could be considered reprisals because of its

political participation. However, even with these ill-fated political adventures, Carteia prospered at the end of the Republic, and during the beginning of the Empire, its area extended for 27 ha protected by a wall built on the Punic defensive route having control over territory beyond its perimeter, which exceeds the current archaeological site of the city (Figure 97).

Figure 97 - Plan and Digital Elevation of the Archaeological site of Cartea (1) the Roman Forum area, (2) The Punic walls, (3) The Roman Temple (4), The thermal bath (5) Roman Domus, (6) The salting fish workshop area, (7) Roman Circus, (8) Theatre. In red around the site the possible wall path



Source : (Jaén-Candón et al., 2019, p. 142).

Figure 98 - Plan of the excavated areas at the forum

Source: Roldán et al., 2006 lam. 2

During the Republican period, a great temple was built on an ancient Punic sanctuary (Figure 98), perpetuating its sacred function. Its destruction occurred amid the civil conflicts, probably as a sequel for the support to Pompey. Under Augustus, the town recovered and became prospered with new buildings. Residential areas with a set of *domus* were built, and the space in commercial regions of *tabernae* was organised. Also, the areas of fish salting workshops for *garum* production have increased since the 6th century BCE. At this very moment, the baths and a theatre. Recently a Roman circus was discovered using GPR (see Jaén-Candón *et al.*, 2019) (Figure 97).

5.2.3. Entangled Carteia

Entanglement is a factor of reorganisation of practices and social spaces and is applied mainly by the dominant groups the subaltern groups. Therefore, for this author, therefore, entanglement would also be a definition of the globalisation process that would result in something much more complex than the idea of cultural homogenisation (Hodos, 2017, pp. 5–6).

In the Iberian Peninsula, this phenomenon can be identified in the Roman cities of Punic ancestry. The necropolises, such as in Gadir (actual Cadiz), Baelo Claudia (today's Bolonia), Carmo (today's Carmona) and Baria (today's Villaricos) (Jiménez, 2010, p. 25). The landscape of these cities' necropolises is markedly Phoenician-Berber, especially the one of Baelo Claudia that probably in the past shared similarities with North African necropolises, by the presence of *cupae*, turriform tombs abundant in Mauritanian Cesariense, Numidia and Proconsular Africa (Jiménez, 2010, p. 30).

The wall was discovered thanks to excavations on the western flank of the city. It shows a part of the wall's base defensive route. The identification of this defensive line allowed the characterisation of a wall in two phases: a Punic stage and the later Roman stage (Roldan et al. 2006: 301).

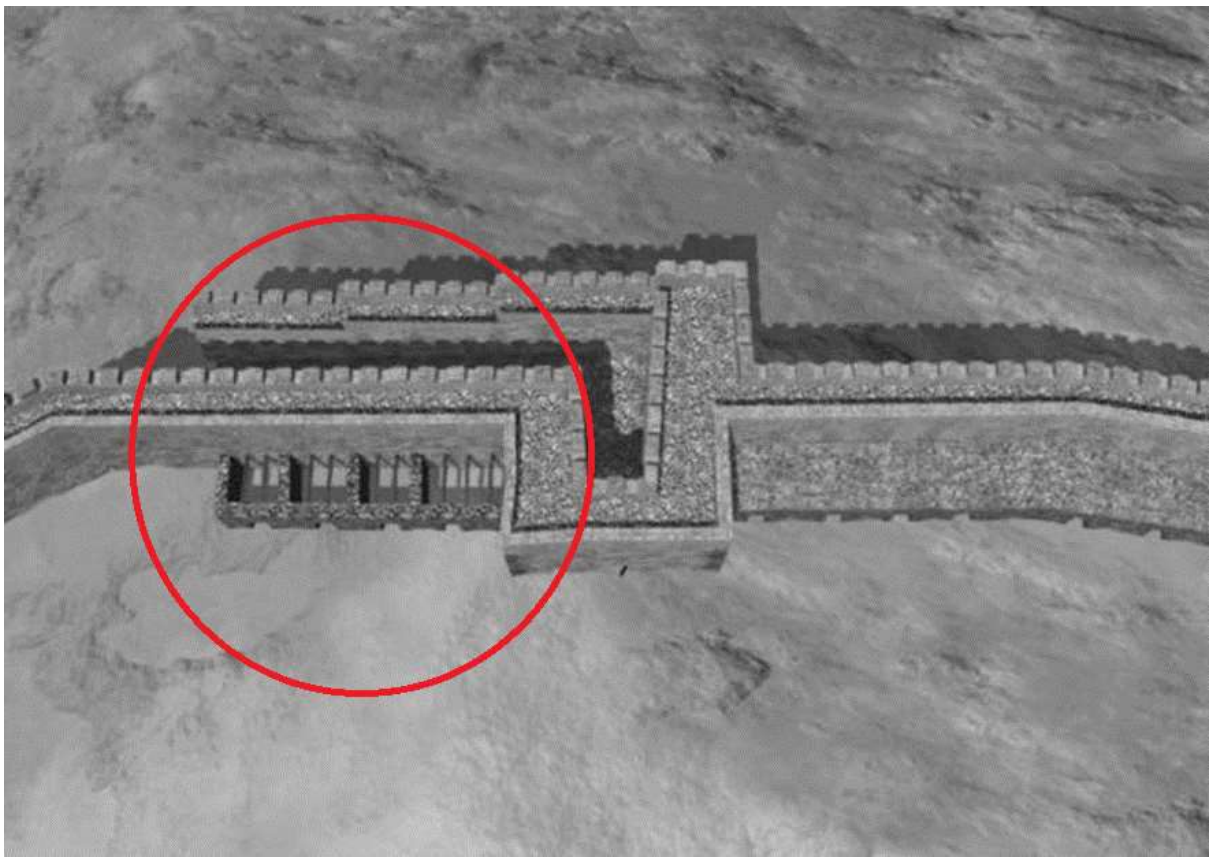
From the first wall, 9.5 m long by 3 m thick were discovered. From its external phase, six rows of elevation were preserved. Only the foundation levels are preserved in the inner part, presumably because stones were reused in other constructions (Roldán *et al.*, 2006, p. 301).

The first phase was identified as being from the mid-fourth century BCE, if not earlier, due to the ceramic findings that appeared in strata contemporary to its time (Roldán *et al.*, 2006, p. 301).

Both the wall and the buildings of the same period elsewhere in the city are basically constructed of compressed sand and clay. It is believed that the perimeter wall could have reached a height of between 6 and 8 m, given its width (Roldán *et al.*, 2006, p. 301).

Penetration tests in the wall revealed large wells full of ash and rubbish remnants, something that can indicate the use of this very space beyond its defensive purpose. As expected in other Phoenician and Punic settlements, the casemate wall could have been linked to metallurgical activities. At the end of the 3rd century BCE, in line with the Barca's actions in Iberia, the wall was remodelled according to a monumental enclosing project over several Semitic cities (Bendala and Blánquez, 2002, pp. 151–154). The Barca (Phoenician: brq) which means lighting (also known as Barcid) family was a political dynasty that controlled the Carthaginian republic after 237 BCE. The surname Barca is after the family patriarch Hamilcar Barca (275-229/228 BCE), the hero from the First Punic War. He was killed in action in 229-228 already in Iberia and was replaced by his son-in-law Hasdrubal until 221 BCE. After the loss of Sicily in the First Punic War, the Barca faction dominate the Carthaginian Senate and turns its focus to Iberia were plenty of Phoenician cities were stablished during the 10th-9th centuries BCE. The Barcas were the responsible to conquest and fortify the Iberia creating a new Punic capital there called after the African capital Carthage (nowadays Cartagena) (see Hoyos, 1994). In this second phase, the wall kept the urban perimeter unchanged. The wall of the initial phase became the external face of this new walled perimeter. The casemates were then arranged in quadrangular environments (Figure 99) so that the wall had a total width of 6.60 m (Roldán *et al.*, 2006, p. 302).

Figure 99 - Punic I phase. Highlighted in red the wall's casemate



Source: Roldán et al., 2006, p. 306, fig. 215

A new section of the wall was excavated, revealing more about Carteia's defensive system. As Blánquez and his colleagues point out, a further 20 m of wall traces have been discovered, as well as six new casemates have been revealed, typical elements of Punic military architecture in Iberia (Blánquez Pérez, Roldan and Jimenéz, 2017, pp. 513–517).

The wall was dismantled by the end of the 2nd century BCE in a time of profound urban and architectural remodelling. This event culminated in constructing a large temple in the city's highest part, near the wall's path and its monumental city gate. According to Bendala and Blánquez (2002, p. 151), the podium was practically all plundered from the Punic wall. In other parts, adobe was used on the Punic wall. This vernacular material is also present in other Greek and Punic centres such as

Gela, Sicily, Kerkouane in North Africa and Cartagena, and Iberia (Bendala and Blánquez, 2002, p. 151).

Another important sector of the site was the sacred area of the city (Figure 87). A test revealed a continuity of this place as a sacred environment that persisted over several periods (Roldán *et al.*, 2006, p. 311).

It appears that the remains of the possible altar have taken up two-thirds of the platform. According to the painted wares found in its layers, the altar dates from the late 3rd century BCE and the early 2nd BCE (Roldán *et al.*, 2006, p. 312). Its plan suggests a quadrangular or rectangular structure made of beaten earth. Little of its height was conserved once the structure was disassembled for the construction of the Republican temple.

Figure 100 - View of the Punic altar and the votive deposit beneath it

Source: Roldán et al., 2006, p. 313, fig. 220

Below the altar (Figure 100), it was possible to document a remaining structure which seems to be another altar with the same or similar characteristics. These levels were destroyed for the construction of the aforementioned Punic altar. On the eastern edge of the ancient altar, it was possible to identify a votive deposit associated with this earlier nucleus' founding moments (i.e., 4th century BCE). An ovoid type amphora was discovered containing earth, ash, and bone remains, which suggest a sacrificial or cultic act. All was carefully covered and sealed by a layer of soil and fragments of fossiliferous limestone. Later tiny combustion was carried out, identified by generalised blackening of the stratigraphic profile (Roldán *et al.*, 2006, p. 314).

Figure 101 - Aerial view of the Roman city on the Punic one

Source: Roldán 2006, 127, fig. 79

The Roman forum platform is also an important area since it is upon the ancient Punic centre (Figure 101). The city of Carteia was severely affected after the Civil War once it supported Pompey. During the Principality 27 BCE – 84 CE), as happened in other cities, Carteia was reorganised under a new urban order and new iconographic programs that aimed at the accomplishment of political propaganda and the imperial cult (Jiménez Vialás, 2012, p. 64). The deep urban remodelling left its vestiges in the elevated platform now known as Cortijo El Rocadillo, where the forum of the city was located. A *cortijo* is a rural dwelling that could be understood as a farmhouse in English. A street opened from the lower part of the town to the forum that could be accessed by a large, 14-step monumental stairway that had been built to overcome a 3 m high natural gradient (Roldán *et al.*, 2006, p. 394).

Nowadays, it is known that these constructions were built on previous structures of the Punic city thanks to the excavations that took place in the 1960s (Roldán Gómez et al. 2006: 394).

From this earlier stratigraphy, Iberian and Punic ceramics were excavated from the 3rd century BCE (Roldán *et al.*, 2006, p. 394).

Still, in the Roman forum area, the main transformation of the 2nd century BCE was the Punic Gate's dismantling. This entrance was in use until that period. However, the construction of a temple of Etruscan-Italic typology on the Punic sanctuary (see Register 45) used many of its materials. Sandstones from the Punic buildings were reused for their construction, such as the dismantled Punic Gate to be reused as a quarry (Jiménez Vialás, 2012, p. 512).

Carteia is part of a much broader phenomenon that occurred throughout Iberia, which deserves attention. The Barca's political and military plan had its objective to fortify the Carthaginian domain in the West. This phenomenon would reverberate in greater integration of this region with the Mediterranean koine (Bendala and Blánquez, 2002, p. 515).

5.3. Conclusion

This chapter highlights that archaeological exploration of and research on Carteia spans 412 years. However, as stated during the text, much of the collected data from the first actions was not systematised or published. Although more systematic research began in the 1970s, the is phase can also be challenged, considering that the Bryant Foundation was an act to confirm Carteia as Tartessos and not an organised data collection.

The amount of data collected during these last investigations is astonishing combined with 27 years (Appendix 2) of divulgation thanks to the *Anuarios Arqueologicos de Andalusia*, however, a considerable part of this material lacks profound analysis interpretation. Considering this, the material evidence has the prospect to provide new understandings of ancient Carteia.

6. Chapter 6 – Architectonic developments in Carteia: a comparative

6.1. Introduction

In this chapter will be presented the architectonics developments of Carteia concerning its main defensive and religious structures: the Punic wall and the Roman Temple. Here will be analysed how Carteia construction techniques dialogues with other Phoenician-Punic settlements in Chapter.

6.1.1 Defensive Architecture

6.1.1.1. The Punic Wall

From 2006 to 2013, the second phase of the Carteia Project was carried out. The objective of this archaeological campaign was to improve knowledge about the city wall. Due to the various occupations that took place until the archaeological site reached its current state, there were successive phases of construction that make it difficult to understand the oldest levels. Nevertheless, it was possible to document over 20 meters of the Punic wall curtain in the southern zone. The defensive system had six casemates (Register 44). The outer wall, 3 meters thick, dates from the 4th century BCE. The parallel inner wall was only installed in the second half of the 3rd century BCE. At the same time, other perpendicular walls that form the casemates were installed. The casemates were approximately 3 meters by 3 meters, or about 6 Punic cubits (0.50-0.51 meters). This modular

system finds parallels in Cartagena and Castillo de Doña Blanca during the 3rd century BCE (Blánquez Pérez, Roldan and Jimenéz, 2017, pp. 513–514, 525).

It is important to emphasize that the prehistoric settlement preceding the archaeological site of Carteia occurred at Cerro del Prado, within the inland territory. As mentioned in Chapter 4 – **Phoenician defensive and religious architecture in Far West Mediterranean**, it is believed that due to sedimentation at the mouth of the Guadarranque River, the city was relocated to a location closer to the coast.

6.1.1.2. Construction techniques

As we have seen in the later chapters (Chapter 2 – **Phoenician defensive and religious architecture in Eastern Mediterranean**3. Chapter **3 – Phoenician-Punic defensive and religious architecture in Central and West Mediterranean** and Chapter 4 – **Phoenician defensive and religious architecture in Far West Mediterranean**), it is possible to infer that the Phoenician-Punic defensive system had, as a canon the use of casemate depending on the period, such as Tel Ashkelon in Levant (Burke, 2018, p. 240), Motya (see Whitaker, 1921; Isserlin and du Plat Taylor, 1974, p. 62), in North Africa at Carthage at the slope of Byrsa hill and Kerkouane (Docter *et al.*, 2003, pp. 45–46); in Sardinia at Mastia (Bartoloni, 2012, p. 855 fig. 11) and Iberia with the best preserved casemates systems in Castillo de Doña Blanca, Cartagena, Malaga, Cabezo Pequeño del Estaño and so on (Docter *et al.*, 2003, pp. 45–46; Alarcón Castellanos, 2005, p. 20; Neville, 2007, p. 94; Prados Martínez and Blánquez Pérez, 2007, p. 60). Still in Iberia, in Carteia, the Punic defensive system with walls and casemates is located in the area of the Roman forum.

Two phases have been identified from the 4th century BCE. The first was called Punic I. This initial period reveals the oldest layers of the site. Rammed earth constructions were discovered above the

geological level of sand and clay. The foundation of the city was built during this first period, upon which subsequent phases were based. The geological level appears to have always been a concern of the architects, as the first wall perimeter was built upon it. This concern may have been due to the sandy nature of the terrain and the pressure that the future wall would generate. Given these characteristics and the width of its bases, it is believed that the first walled perimeter would have been approximately 6 to 8 meters in height. There were no excavations inside the wall, but the authors believe that the casemate system does not appear to have been applied during this first period (Roldán *et al.*, 2006, p. 301). This is a novelty, as Cerro de El Prado, the first Carteia, or Carteia la Vieja, founded in the 7th century BCE, already had a casemate system.

The immediate area around this first wall presented traces of ashes and slag, suggesting that it was an industrial area that was later destroyed to make way for the construction of the casemates (Roldán *et al.*, 2006, p. 302).

Only the foundation of the first wall from the 4th century BCE remains, with three rows of its facade being approximately 3 meters wide. However, it was possible to identify that the wall was built with cut stone masonry. On its inner face (Punic II), the blocks were smaller and did not follow a specific order. Clay was used as mortar on the inner face.

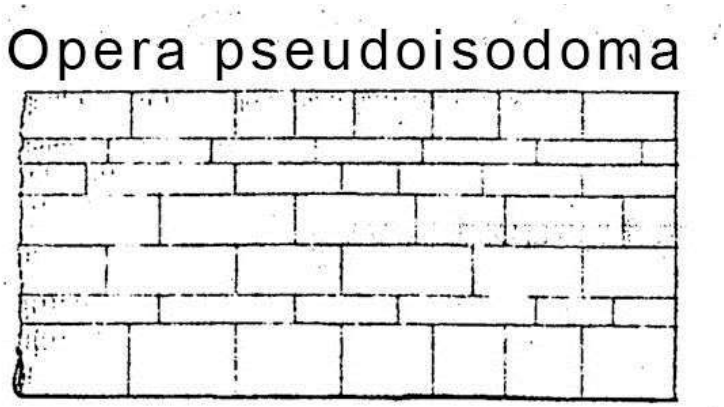
In the second period (Punic II), the wall seems to have maintained the same perimeter as the initial one, adopting the casemate system. This second wall was built inside the first one, at a distance of 2.70 meters. The filling of both walls was done with debris and clay using the pier-and-rubble technique. Perpendicular walls were arranged to install the casemates, causing the wall to reach a width of 6.60 meters, with casemates approximately 2.70 meters deep and 3.30 meters wide (Roldán *et al.*, 2006, p. 302).

The perpendicular walls that enclose the casemates, have the same construction characteristics as those mentioned in their foundation (Blánquez Pérez, Roldan and Jimenéz, 2017, p. 514).

A novelty of this campaign was the discovery of the footing or an antemural structure, added to the external curtain wall for a length of 20 meters. This footing or antemural structure was interpreted as a possible Roman reinforcement work (1st century CE) on the still-in-use Punic wall. It may have been a reinforcement built due to seismic movements that occurred in 40-60 CE. (Blánquez Pérez, Roldan and Jimenéz, 2017, p. 517). Part of the pavement made of *opus signinum* and the choice of sandstone stones give a North African tone to the structure.(Blánquez Pérez, Roldan and Jimenéz, 2017, pp. 514–516).

The façade of the Punic wall was monumentalised by the use of ashlar blocks carved from yellow sandstone arranged in a pseudo-isodomic configuration. According Vitruvius (42) The *opera pseudoisodoma* is characterised by the use of "the rows of courses do not match but run unequally" (Figure 102).

Figure 102 - Example of pseudoisodome

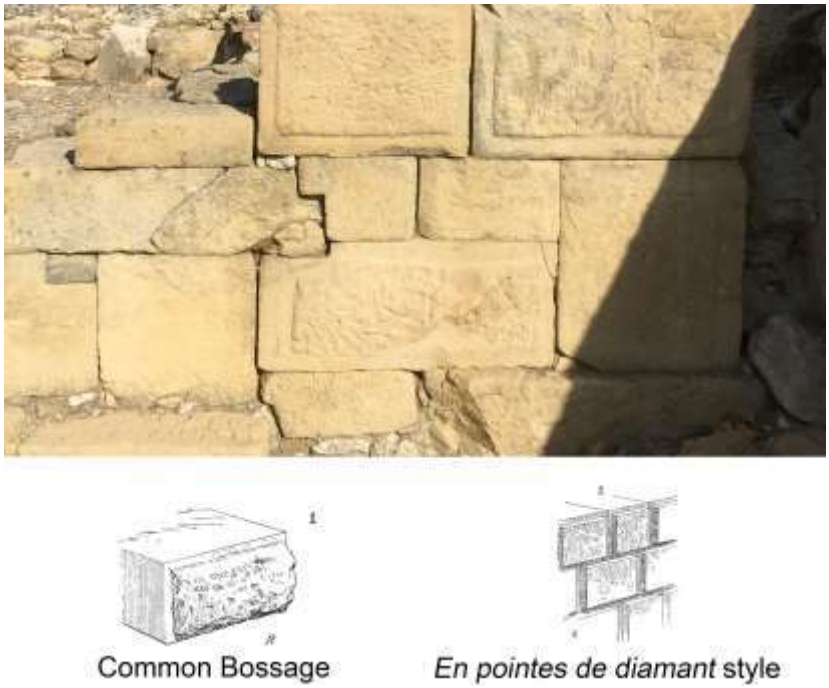


Source: Feibs, 2010

The ashlar blocks used to build the Punic wall were cut from yellowish sandstone and arranged in a pseudoisodomic manner, giving the facade a monumental appearance. The blocks were cut to ensure a slightly bossed (i.e., rustic) surface resembling the type of *en pointes de diamant*. (Figure

103 and Figure 104). The sturdiness of the blocks led to a portion of the wall being dismantled to build the podium of the republican temple (Bendala and Blánquez, 2002, p. 151).

Figure 103 - Example of bossage in ashlars at Carteia and two other similar styles



Source: Compilation of images by the author. The photo above was taken by the author (2021) and the illustrations bellow are from (Viollet-le-Duc, 1866, pp. 216–218 fig. 1 and fig. 2)

Figure 104 - View of a casemate

Source: Photo by the author, 2021

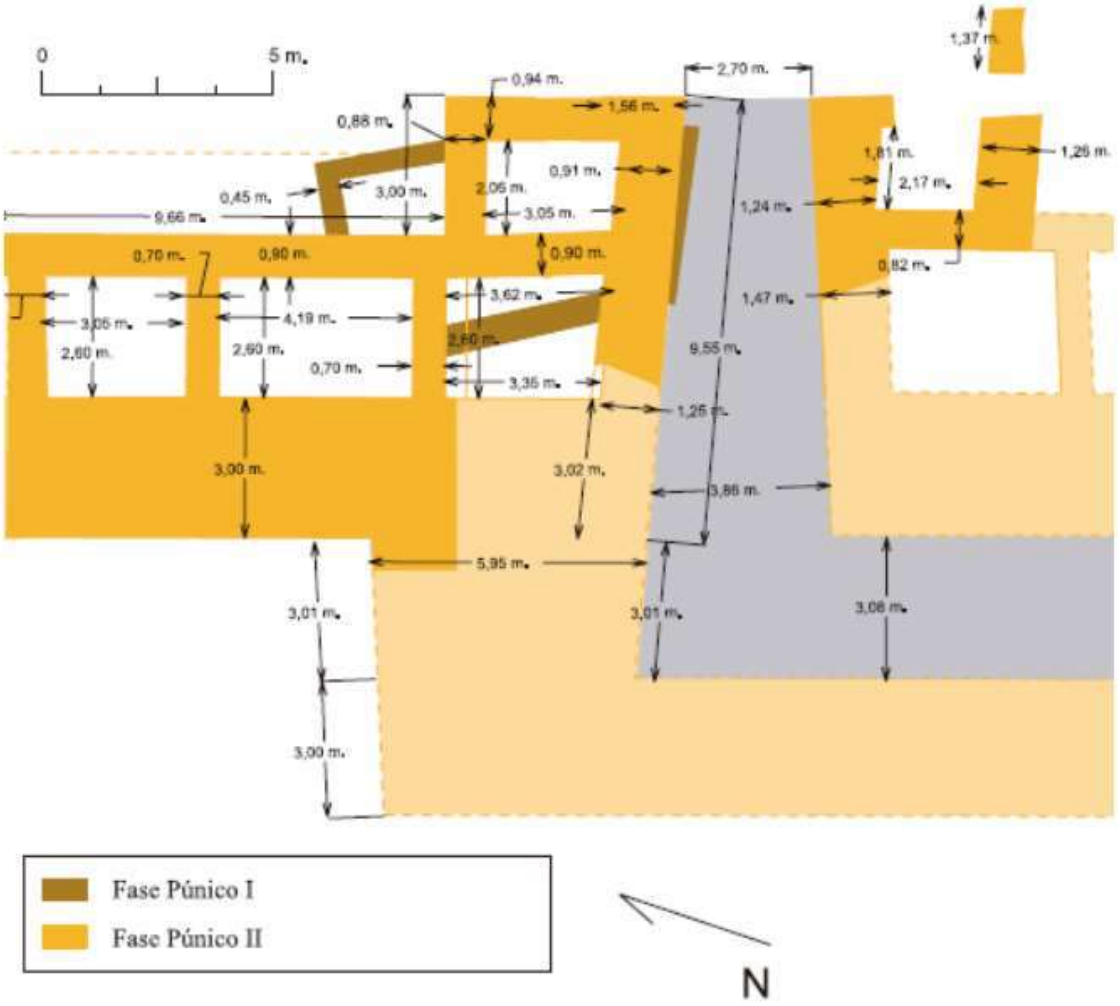
Another structure identified was the city gate of Carteia. However, little has been identified about its building blocks. So far, only one entrance path has been found between an entry flanked by two towers. The interpretation of the city access suggests the possibility of a protected access ramp by a section of the wall. This "elbow" system, a novelty, also had a wide entrance (~5m) narrowing to the main entrance of 2.70m (Bendala and Blánquez, 2002, p. 152; Roldán *et al.*, 2006 annex 6) (Figure 105) (2006, p. 12 fig. 6; Álvarez Martí-Aguilar and Ferrer Albelda, 2009).

In the interior part of the wall, there would be a similar *chemin de ronde* to those found in Motya (Sicily) and Kerkouane (Tunisia). It is believed that, like these other Semitic foundations, this *chemin de ronde* would circulate around the entire inner perimeter of the wall. The presence of 25 and 30 cm long slabs, which ran parallel to the casemates, would be part of this circuit (Roldán *et al.*, 2006, p. 304).

Thanks to a threshold made of smooth stones, it was possible to identify the entrance to the casemates. Access to the casemates would be through a single narrow entrance of about 40 cm (Roldán *et al.*, 2006, p. 304). Acredita-se que parar evitar humidade a casamata possuísse um mínimo de vãos, tanto portas quanto janelas (Aubet, 2000, p. 28).

Regarding the access gate, it is believed to be a structure between the two towers without any type of hinge that determined the opening. However, slightly protruding bench-like structures on each side suggest the installation of a large wooden gate. It can be assumed that the gate was protected by an adarve (*chemin de ronde*), ensuring mobility on both sides of the wall (Bendala and Blánquez, 2002, p. 152).

Figure 105 - The defensive system with gates, casemates and towers

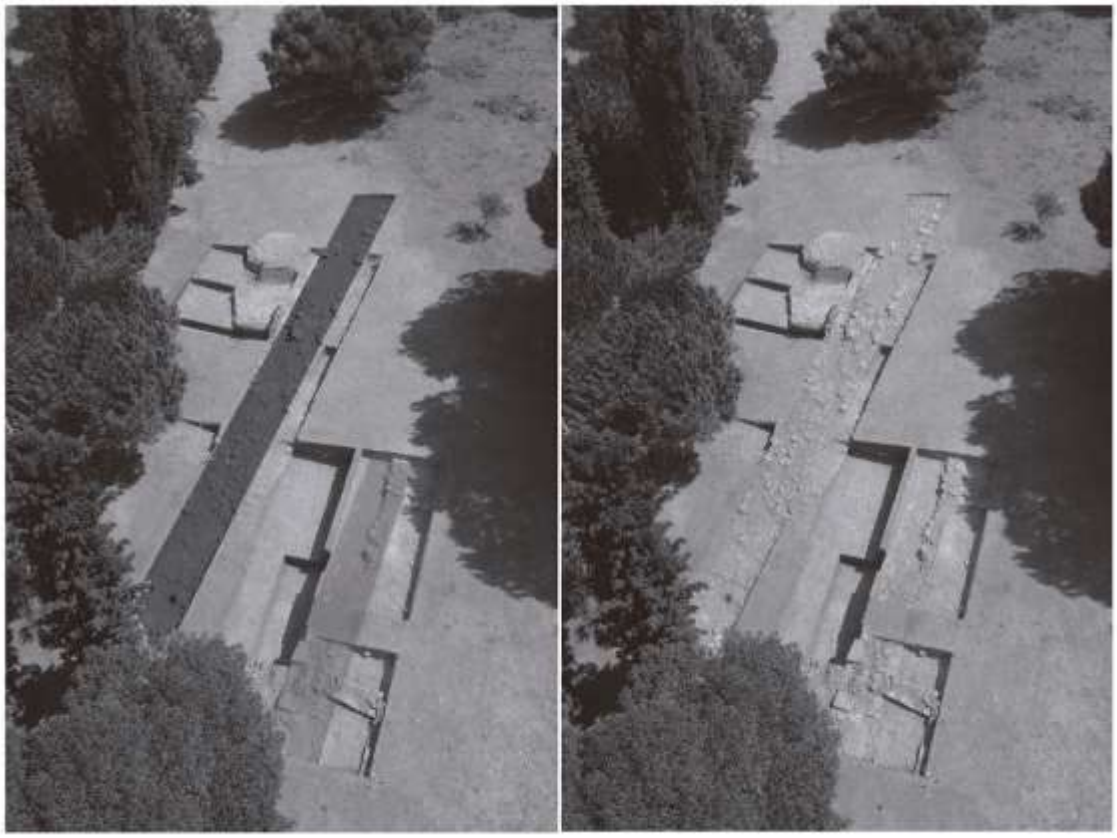


Source:(Roldán et al., 2006 annex 6) Roldán et al., 2006 annex 6

In another sector (Area 113), the Punic wall is buried within the interior area of the Roman wall. Both run parallel to each other for 10 meters, separated by a distance of 4 meters with the Punic wall on the inside (Figure 106).

The Punic wall would have limited only 2 hectares and was used during the Republican period. Later, another wall from the Augustan period could have delimited the urban area to 25 hectares (Blánquez Pérez, Roldan and Jimenéz, 2017, p. 517).

Figure 106 - View from the Área 113. To the left, the Roman wall. To the right, the Punic wall



Source: Blánquez Pérez, Roldan and Jimenéz, 2017, p. 519 fig. 7a and 7b

During the excavation between the two walls, it was possible to document the earliest levels of the Punic city and the foundation of the Roman wall. The initial occupation is reflected in the construction of a structure made of rammed earth, predating the Semitic foundation. Due to the lack of archaeological evidence, it was not possible to identify the period of this first construction. In a second phase, the first rammed earth structure was destroyed and a foundation trench was dug for the wall of the 4th century BCE.

Unlike the casemate wall, this wall would already have casemates since its foundation. The construction techniques of the walls that closed the casemate were identical to those found in the southern zone (Blánquez Pérez, Roldan and Jimenéz, 2017, p. 517).

During the period when the Iberian Peninsula came under Carthaginian rule, the defensive system was strengthened. The wall was increased in height and its foundation was extended to support it, destroying part of the layer of rammed earth structures. It is believed that this period corresponds to the Barcid or Roman Republican era (3rd to 2nd centuries BCE) (Blánquez Pérez, Roldan and Jimenéz, 2017, p. 521).

During the Republican period, the casemates were reused for other activities. One of them would have been the minting of coins, given the numismatic remains without minting and metal slag discovered in casemate 2. This was the first monetary workshop found in the Iberian Peninsula. (Figure *107*) (Arévalo, Blánquez and Roldán, 2014, p. 898 fig. 1).

Figure 107 - Empty coins in a thread

Source: Arévalo, Blánquez and Roldán, 2014, p. 898 fig. 1

The Punic wall also adapted to the contours of the terrain. The higher walls were located in the lower areas. The foundations of these walls were robust enough to support the weight of the construction and to mitigate collapses.

In 2018, preventive archaeological activities were carried out at the site of Carteia. The aim was to trace the entire walled perimeter of the city, for a better understanding of its extent and division. The defensive system of Carteia, which is still visible to this day, dates back to the 3rd century BCE.

With regards to the wall curtain, its main construction techniques involve the use of irregular blocks of medium to large limestone and sandstone rocks. Clay and other types of mortar ensured a bond between the rows of blocks. Gravel was used to fill the gaps between each block (Roldán Gómez, 1992, pp. 42–43; Morote and López Rodríguez, 2018, p. 1).

Figure 108 - Punic ashlar found during the survey in trace 1

Source: Morote and López Rodríguez, 2018, p. 3 fig. 2

In the North and Northeast sector of the site seven traces of the defensive wall line were discovered. The first trace (*Tramo 1*) with 191.70 m length was not excavated and its information relies just on the visible mount. However, Punic ashlars **(**Figure 108) were identified during the survey. Which could suggest that the defensive line from the Punic wall near the Roman Forum continued to North. Beside these information it was poorly detailed by the investigators (Morote and López Rodríguez, 2018, p. 2). After the trace 2 there are a 117 m of hiatus without no remains of defensive system. The

third trace (*Tramo 3*) is one of the visible points of the wall, with a length of 52 m and a width of 3.69 m. It becomes more visible between coordinates 36.187.41 (latitude), -5.40856 (longitude), disappears at 36.1874 (latitude), -5.40839 (longitude), and is approximately 27-31 m above sea level depending on the terrain. The construction technique used consists of the use of masonry and blocks of different materials (Figure 109). Its interior was filled with medium-sised blocks and lime, but there are also elements of rubble. In this same area, one of the towers (5.34 m x 6.09 m) of the defensive system was discovered, however, it remains unstudied. It is also believed that one of the access gates was in the same part of the wall, as the area is located near the city's necropolis. The discovery of a Roman coin, displaying intricate iconography that makes identification challenging, leads to the belief that it represents an already expanded Roman defensive system (Roldán Gómez, 1992, pp. 42–43; Morote and López Rodríguez, 2018, p. 1).

Figure 109 – View of Tramo 3

Source: Photo by the author, 2021

Section 4 (*Tramo 4*) is located in an area of denser vegetation and extends to the area where the wall becomes visible again. This section has the same characteristics as the previous one. Section 5 (*Tramo 5*) in the south direction has a length of 341 m and some parts of it are moderately well preserved. In section 6 (*Tramo 6*), it has been affected by the construction of a road and dense vegetation. Finally, section 7 (*Tramo 7*) is one of the best-preserved sections. There is a tower that stands out from the rest of the wall. This tower was built with rectangular-shaped blocks of cut stone. Everything leads archaeologists to believe that it is a work from an unspecified Roman period (Morote and López Rodríguez, 2018, pp. 3–11).

The interesting fact about this line is the mixing of Punic and Roman elements in it. Theses traces show several techniques of construction. Concerning the Augustan period, the *opus caementicium*

was used as a mortar and the *opus poligonal* and the *opus vitattum* was used at the façade. The *opus caementicium* is described by Vitruvius as "Roman concrete". This *opus* is composed by aggregates, a binding agent and water. The aggregate is a filler (e.g. gravel, broken tiles, chunks of stone, and so on). The binding agent is the substance that start the chemical reaction that bond the elements after the mixture with the water. The binding agent could be slaked lime, mixed with sand. This method is, however, more than a method of building as it could be considered "artificial stones" (Yegül and Favro, 2019).

6.1.2. Religious architecture

6.1.2.1. The Punic Sanctuary

The Phoenician-Punic sanctuary was established at the highest point of Carteia, in the location known as Cerro del Cortijo del Rocadillo. Initially, a votive deposit was made to inaugurate the sacred area (Roldán *et al.*, 2003, p. 195).

6.1.2.1.1. Initial Occupation (Punic Ia)

At the time of its foundation, traces of a wall (U.E. C.4-36) were discovered, partially documented. This wall had a stone plinth and its upper part was built with greenish adobe. It was not possible to delimit the space it defined given the small extent of the excavation. Other walls were also found

nearby (U.E. C.4-27 and U.E. C.4-28), possibly from the same phase given their construction technique (Roldán *et al.*, 2006, pp. 314–316).

It was possible to document an accumulation of remains of a previous structure, which appeared to be a first altar with specific characteristics. These levels were destroyed for the construction of the aforementioned Punic altar. On the eastern edge of the old altar, it was possible to identify a votive deposit associated with the founding moments of the city (i.e., 4th century BCE). An ovate-shaped amphora (Figure 110) was discovered containing soil, ashes, and bone remains, suggesting a sacrificial or cultic act. Everything was carefully covered and sealed with a layer of soil and fragments of fossiliferous limestone. Later, a small combustion was carried out, which was identified by generalised blackening of the stratigraphic profile (Roldán *et al.*, 2006, p. 314).

Excavation unit C.5/25 has revealed the existence of a water channel system constructed using ostionera stone ashlars. This structure is hollow and pierced in its central upper part. The channel's course appears to be oriented from east to west, and its location suggests a connection to the subsequent phases of the Punic sanctuary. This system is believed to have been implemented during the earlier stages of the settlement, just above the geological level, in what is referred to as Punic Phase Ia (Roldán *et al.*, 2003, p. 232, 2006, p. 232).

Figure 110 - (a) View of the Punic altar, with a portion of the ovoid pottery exposed externally; (b) Opening of the ovoid pottery beneath the altar, containing soil, ashes, and faunal remains.

Source: Roldán et al., 2006, p. 313 fig. 212, fig. 222

It is important to note that during this same period, the sanctuary of Gorham's Cave, which had been used until the first decades of the establishment of Colonia Libertinorum, was abandoned. This phenomenon may reflect what Jiménez Vialás (2012, p. 513) considers a "clear reflection of the end of Phoenician-Punic religiosity in the area." According to Vialás, this process had already been occurring very gradually since the final moments of the 2nd century BCE. Therefore, it seems evident that the construction of the temple in Carteia would have overshadowed the Gorham cave (Jiménez Vialás, 2012, pp. 512–513).

6.1.2.1.2. Second phase and monumentalisation (Punic II)

Little is known about the Punic sanctuary that existed before the Republican temple, as the podium was built over it using the same wall stones. However, traces of the pavement from the previous structure were identified (U.E. C.2-34 and C.4 10/13), made of reddish or purplish clay with the presence of small pebbles. In the same area, there are also traces of ashes, charcoal, and organic remains. Due to the accumulation of this material, the soil expanded to the surrounding areas, increasing the sanctuary's area. In this sector, an altar was also found, and in context with some painted ceramics, it indicates use during the late 3rd and early 2nd centuries BCE, referred to as the Punic II period (Roldán *et al.*, 2006, p. 312).

It is believed that this type of altar, with a simple structure and without reliefs or iconographic details, has an equivalent in Gadir and may have been of a typology present in the coin emissions of Lascuta. The altar had a size of 2.85 m and was a stepped structure formed by parallelepiped blocks in the manner of a mastaba. (Roldán *et al.*, 2006, p. 312; Lima, 2018) (examples in Figure *111*, Figure 112, Figure 113 and Figure 114). (Phoenician: lskw´t) (Located at Alcalá de los Gazules).

Figure 111 - The Lascuta coin features the following iconography: On the obverse:(a) A depiction of the head of Hercules/Melqart wearing a lion's skin (leonté) and with a club resting on the shoulder. (b) To the left of the head, a representation of a stepped altar adorned with spikes. Available from https://monedaiberica.org/v2/type/941 [accessed in 2nd February 2023]

Source: Estarán Tolosa, 2016, p. 416

Figure 112 - The Lascuta coin, dating approximately from 160-100 BCE, features the following elements: On the obverse:(a) A depiction of the head of Hercules/Melqart wearing a lion's skin (leonté) and with a club resting on the shoulder. (b) On the reverse, there is a representation of a stepped altar adorned with spikes. To the left of the altar, there is a cista (a type of chest) and to the right, a jar. This coin is catalogued as MIB 18/02 in the publication "Moneda Ibérica (MIB)" edited by P.P. Ripollès and M. Gozalbes, Valencia.

Source: Available from https://monedaiberica.org/v2/type/941 [accessed in 2nd February 2023]

Figure 113 - Lascuta Coin. *ca.* 160-100 BCE. (a) Obverse: Head of Heracles/Melqart wearing a lion's skin and carrying a club over the shoulder. (b) Reverse: Stepped altar with stylised ears of grain. MIB 18/03, in P.P. Ripollès, M. Gozalbes (eds.), Iberian Coinage (MIB), Valencia.

Source: Available from https://monedaiberica.org/v2/type/941 [accessed in 2nd February 2023]

Figure 114 - Lascuta Coin. *ca.* 160-100 BCE. (a) Obverse: Head of Heracles/Melqart wearing a lion's skin and carrying a club over the shoulder. (b) Reverse: Stepped altar with stylised ears of grain, a cista on the left, and a jar on the right. MIB 131504, in P.P. Ripollès, M. Gozalbes (eds.), Iberian Coinage (MIB), Valencia.

Source: Available from https://monedaiberica.org/v2/type/941 [accessed in 2nd February 2023]

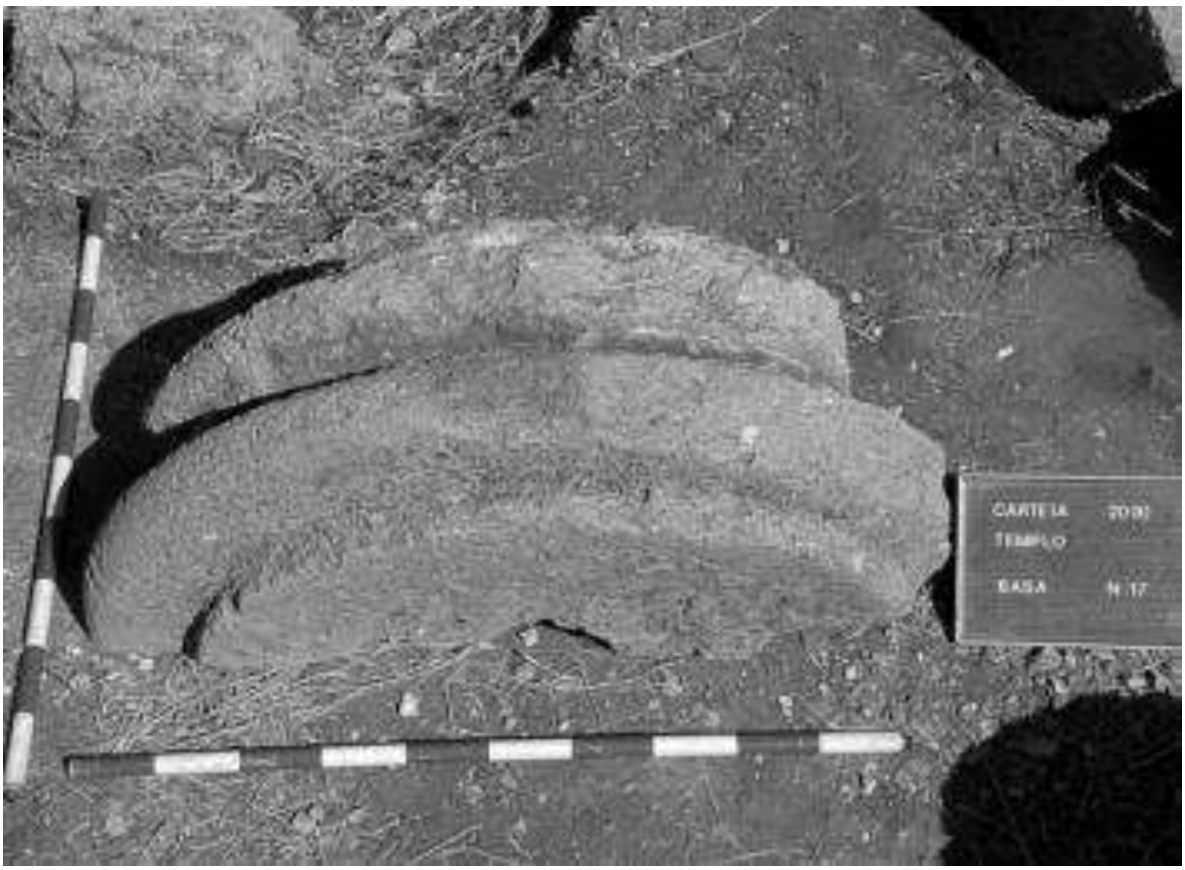
The remains found in Carteia could correspond to this type of altar and would be located in the centre of a courtyard within an outdoor enclosure, such as a temenos, where other facilities could be located, such as small chapels, housing for participants of the cult, a shelter, and a wing for the preparation of animals for sacrifice, among other functions. Kerkouane is one of the cities with one of the best-preserved Punic sanctuaries, which illustrates the aspect of a Punic sacred area. So far, its architectural aspect evidences the usual modesty of Punic faith given its sobriety, absence of ornaments, and strict and austere symbolism (Roldán *et al.*, 2006, p. 312).

6.1.2.1.3. The Roman Republican Temple

The Roman Republican temple is located at the highest point of the city on the forum platform. The temple was built at some point in the 2nd century BCE according to the Punic and Greco-Italic ceramic findings. Its destruction occurred during the civil wars between Caesar and Pompey, when Carteia's elite supported the latter. The podium rises above the reused ashlar blocks of the Punic wall and probably other public buildings within the city. Its four corners are oriented towards the four cardinal points, with its facade facing southeast.

Regarding its facade, it is important to emphasize the direction of its entrance facing the Rock of Gibraltar, a place of worship frequented since the 9th-8th century BCE. The orientation of the temple in this way reveals that Phoenician-Punic religiosity was not completely erased after Roman domination. The fact that it is aligned with an important landmark that would have been a place of worship and likely pilgrimage from the city reveals how Phoenician-Punic cosmology continued to be present even under the Roman Republican facade. From the perspective of Hodder's theory of entanglement and Hodos' concept of globalisation, the orientation of the temple towards the Rock of Gibraltar and its significance as a place of worship for centuries provide valuable insights into the complex interconnections between different cultures, belief systems, and practices.

Figure 115 - Attic base made of stuccoed ostionera limestone in the Republican temple of Carteia



Source: Roldán et al., 2006, p. 410 fig. 266

Hodder's theory of entanglement (Hodder, 2012) suggests that cultural phenomena are not isolated, but rather intertwined and interconnected. The orientation of the temple towards the Rock of Gibraltar demonstrates the entanglement of Phoenician-Punic religious beliefs and practices with the local landscape. Despite the Roman domination, the continuity of Phoenician-Punic religious sentiment is evident, indicating that cultural elements persisted and were not completely erased.

Moreover, Hodos' concept of globalisation highlights the interconnectedness of different regions and the exchange of ideas, beliefs, and practices across vast distances. The orientation of the temple towards the Rock of Gibraltar, a significant place of worship and likely a site of pilgrimage from the city, exemplifies the globalised nature of religious practices during that time. It suggests that the

Phoenician-Punic cosmology maintained its presence and influence even within the Roman Republican façade.

The entanglement theory and the concept of globalisation shed light on the intricate relationships between local and global forces, the blending of cultures, and the endurance of religious beliefs and practices over time. The orientation of the temple reveals a complex web of connections, where religious ideas and rituals transcend political and cultural boundaries.

By analysing the temple's orientation within the framework of entanglement and globalisation, we gain a deeper understanding of the entwined nature of ancient societies, the persistence of cultural elements, and the ways in which beliefs and practices interact and adapt within changing contexts. These theories allow us to explore the multi-layered history of the site, unveiling the interplay of diverse influences and the ongoing presence of Phoenician-Punic cosmology beneath the Roman Republican façade.

The temple has a rectangular plan measuring 22.46 meters in length and 17.85 meters in width, which is equivalent to 75 by 60 Roman feet (Roldán *et al.*, 2003, pp. 222–223, 2006, p. 379).

The podium received a cyma reversa mold made of limestone, of which only 6 blocks remain. This structure was completely covered with plaster, maintaining homogeneity throughout the whole ensemble (Roldán *et al.*, 2003, p. 224).

In front of the podium, there is a staircase made of white limestone, covered with a reddish *opus signinum*-type mortar due to its waterproofing properties on structures. The staircase underwent a renovation using fossiliferous rock, also covered with a coarser hydraulic mortar than the previous one (Roldán *et al.*, 2003, pp. 224–225).

Only the first three courses of the temple's façade structure remain. These courses define the area of the *cella*, measuring 10 meters in length by 6 meters in width, and were built using two

techniques: *opus vittatum* and *opus caementicium*. The two alae, located on either side of the *cella*, extend to the end of the podium, creating a peripteral temple without a back room. The *pronaos* of the temple would have started at a distance of 4 meters from the end of the stairs and the beginning of the *cella* (Roldán *et al.*, 2003, p. 225).

The construction of the temple respected the layout of the former Punic sanctuary area. The temple itself was oriented in the same way, perpetuating the sacred character of the site (Roldán *et al.*, 2006, p. 378).

Figure 116 - Ideal reconstruction of the Republican temple.

Source: (Roldán et al., 2003, p. 228 fig. 126)

The Roman Republican temple of Carteia is one of the structures that has been extensively studied at the site. The building was constructed on top of a possible pre-existing open-air Punic sanctuary, which went through three successive phases of occupation. The podium of the temple was excavated in the 1980s by Woods, Collantes, and Fernández-Chicarro, who initially considered it to be a Capitolium. However, new assessments of the structure indicate that it was a triple-*cella* building from the Republican period. Since Carteia was captured by the Romans in 206 BCE (3rd century BCE), the temple would have been destroyed in the second half of the 2nd century BCE. The dating of this destruction was made possible through the discovery of ceramic findings, including black-glased productions, Punic and Greco-Italic amphorae, whose typology indicates a 2nd-century BCE date (Roldán *et al.*, 2006, p. 395).

Figure 117 - Image of the sacred pool, showing the use of hydraulic mortar similar to that used in the staircase of the Roman temple.

Source: Available from: https://www.andalucia.com/province/cadiz/sanroque/carteia-roman-archaeological-site, [Accessed in 6th March 2023]

The building features a sacred pool at its rear, with a depth of 1.65 meters. This rectangular structure with an irregular trapezoidal tendency measures 9.97 meters in length and 2.80/3.07 meters in width. The entire pool is coated with hydraulic mortar of the *opus signinum* type. It has a drainage outlet located in the centre of the west wall. At the time of its discovery, it was mistakenly interpreted as a baptistery (Figure 117), although its dating is difficult to verify due to the lack of other associated elements (Roldán *et al.*, 2006, p. 397).

After its destruction, up to the levels of its podium, a possible *macellum* (i.e., the Roman market) was built but not fully excavated. Its walls already displayed a distinctive construction technique, utilizing *opus vittatum* in combination with pavements made of *opus signinum* with white *tesselae* forming geometric designs, typical of the period prior to the Roman conquest (Roldán *et al.*, 2006, p. 395).

6.1.2.1.4. The Augustean Temple

During the Augustan period (27 BCE - 16 CE), another temple was constructed in the vicinity of the previous one. It is not possible to determine its exact location, nor whether it was built upon the previous temple, as no extensive excavations have been carried out in the forum area. The archaeological record in this area is significantly disturbed due to the long occupation of the site, reuse, and destruction of its architectural elements. What remains of this temple from the Augustan period are heavily degraded architectural elements. (Roldán *et al.*, 2006, p. 399). The main group of elements consists of pieces of bases, drums, capitals, cornices, and the characteristic bull protomes (Figure 120 and Figure 121) which are seated on their hind legs, resembling a capital. These bull protomes are one of the most representative elements of the temple's uniqueness. They are made of fossiliferous limestone (commonly known as *roca ostionera*), which is highly characteristic of

Phoenician-Iberian constructions, and are covered with stucco. The pieces exhibit visible fragments of shells that form this type of limestone (Roldán *et al.*, 2006, p. 399; Roldán Gómez, Lourdes, Blánquez Pérez and Martínez Lillo, 2013, p. 206).

The columns from this period are of the Corinthian order and have fluted shafts. These are structures without plinths that were intended to support the bull protomes. The bases of these columns are formed by torus moldings (i.e., convex moldings located at the bases of columns of various orders). The lower torus moldings have a diameter between 110 and 125 cm, while the upper ones vary between 105 and 110 cm. The entire base was carved from a single piece starting from the imoscapo (Roldán *et al.*, 2006, p. 400). Its plinth had a small height and diameter (80 x 90 cm). The entire column base would have a total height of ~46-50 cm.

Figure 118 - A imoscapo column tambour

Source: Roldán et al., 2006, p. 400

The shaft of the structure was composed of drums with varying heights. Their measurements range from 40 to 60 cm. The diameter of the shaft is 80 cm, corresponding to the imoscapo, and gradually narrows down to a smaller diameter of 70 cm at the sumoscapo, indicating a decrease of 10 cm from the base to the top. The shaft also featured a total of 20 flutes, although the lower part of this type of shaft remained smooth, just like the upper part, before these flutes extended throughout the entire structure (Roldán *et al.*, 2006, p. 400).

The capitals of this temple, of the Corinthian order, were made in two pieces, with each piece corresponding to one of the acanthus leaf crowns. These pieces vary greatly in their state of preservation. The lower part of the capitals features an astragal, a less common decorative element used to separate the shaft from the capital. This lower part also has a row of 8 acanthus leaves

encircling the *kalathos*. Each leaf has 5 symmetrical lobes radiating from a central vein. On the upper part of the capitals, corresponding to the second leaf crown, there are 4 acanthus leaves forming volutes at the corners. The iconography of one of the capitals depicts a possible winged Victory holding a large crown in her right hand and a flower in her left hand (Number 1 in Figure 119). The other capital features a possible winged daimon, whose extremities transform into plant-like motifs (Number 2 in Figure 119). These capitals have a height of slightly over 40-45 cm. Their lower diameter measures around 70 cm, and the lower part varies between 60-65 cm (Roldán *et al.*, 2006, pp. 400–403).

Figure 119 - (1) Capital featuring the depiction of a winged Victoria figure; (2) Image of a possible winged daimon with its extremities transforming into phytomorphic elements

Source: Roldán et al., 2006, p. 403 fig. 258, fig. 260

Regarding the entablature, parts of the architrave piece, such as the lintel and the aforementioned bull protomes, have been preserved. These protomes are structures made in two parts and finished with a stucco covering (Figure 120). The bulls, depicted lying on their own legs, would form a single element. The faces of these bulls would be facing opposite directions (Figure 121). Their depth corresponds to the 80 cm of the architrave (Roldán *et al.*, 2006, p. 406).

Figure 120 - Bull protome, limestone with remnants of stucco (27 BCE - 14 CE)

Source: Roldán Gómez, Lourdes, Blánquez Pérez and Martínez Lillo, 2013, p. 206 fig. 15

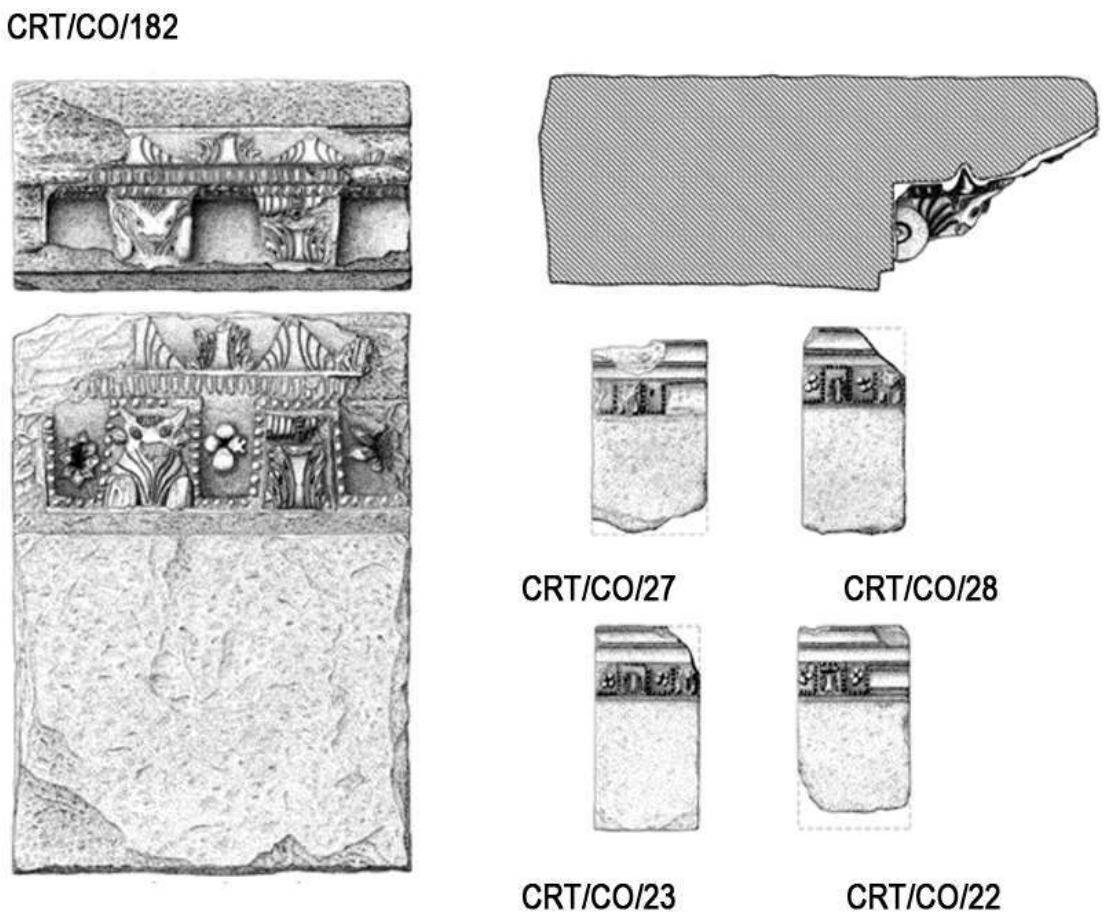
Figure 121 - Bull protomes from Carteia at the Museum of Seville

Source: Roldán et al., 2006, p. 405 fig. 263

Regarding the frieze, thanks to the discovery of a decorated cornice and various other parts (e.g., CRT/CO/27, CRT/CO/28, CRT/CO/23, and CRT/CO/22) adorned with acanthus leaves and bull protomes. The largest of these pieces measures 125 cm in height and 45 cm in width (CRT/CO/182) (Figure 122).

The modillions (i.e., ornamental blocks in the form of an inverted "S" found in the Corinthian and Ionic orders) vary between phytomorphic and zoomorphic elements, such as the depiction of a bull's face.

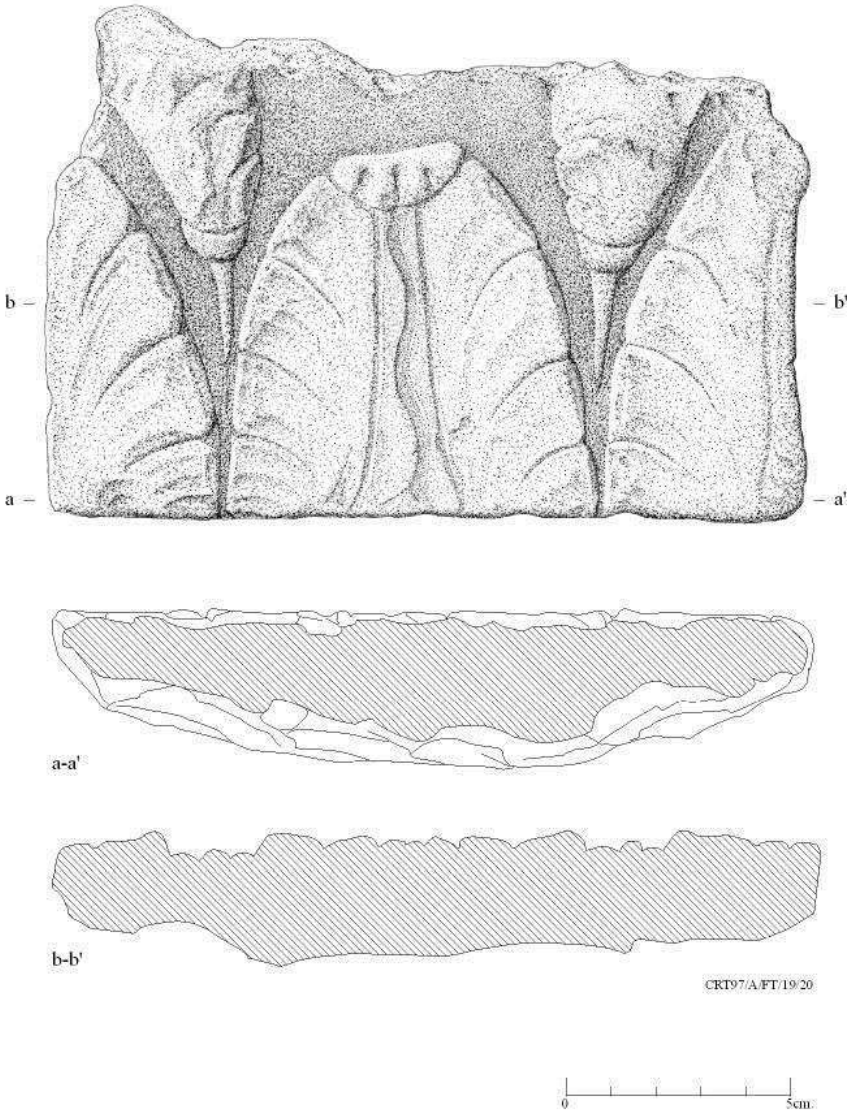
Figure 122 - The larger cornice and its other components



Source: Roldán et al., 2006, p. 405 lam. 94, lam. 95

Additionally, from this temple of the Augustan period, there are elements of palmettes (Figure 123) that could have been used as acroteria.

Figure 123 - Palmette or acroterion from the Augustan period



CARTEIA. **Fig. CXXXIII.** *Material arquitectónico del sector romano: capitel de pilastra del frontal del templo.*

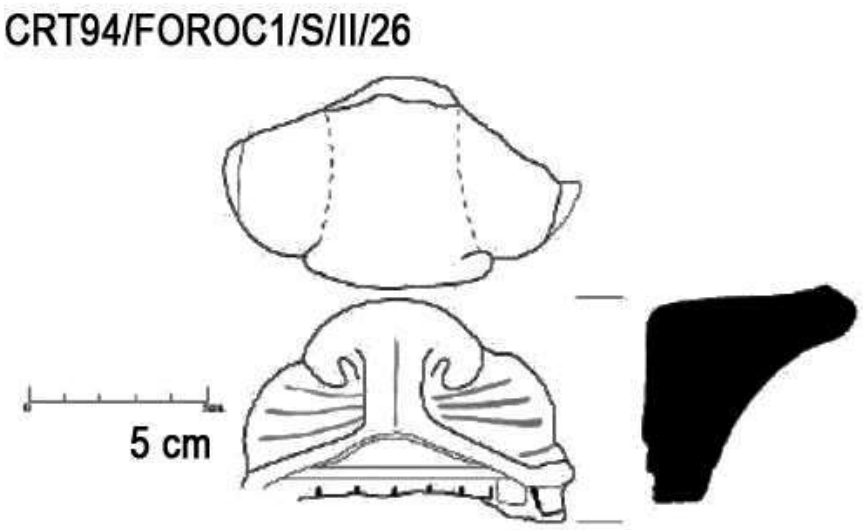
Source: Roldán et al., 2006 Fig. CXXXIII

Differences in construction techniques can be identified between the Republican period and the later period. In the Republican period, there is still a clear Punic influence with the use of gray or

whitish limestone, along with courses of yellowish sandstone from earlier Punic constructions (Roldán *et al.*, 2006, p. 397).

Another eye-catching decorative element is a relatively less-discussed zoomorphic lion-like antefix (CRT94/FOROC1/S/II/26) (Figure 124). This decorative element, probably from the Augustan period, as it was found in a layer subsequent to the destruction of the first temple, could have been part of the entire decorative ensemble of the temple.

Figure 124 - Lion-like zoomorphic antefix.



Source: Roldán et al., 2006 fig. CLXIII

7. Chapter 7 – What do we mean by Virtual Reality

7.1. Introduction

In this chapter it is my intention to organize chronologically the process of development of virtual reality concisely, based on different sources, in order to show how this concept, spread from the Humanities to the Exact Sciences and its uses in Archaeology through the Digital Humanities. Digital Humanities serves as a bridge between traditional humanistic disciplines and the capabilities of digital technology, fostering new ways of exploring and understanding cultural artefacts, historical contexts, and other elements of human culture. It emphasizes a thoughtful integration of technology to enhance the study of human culture while also considering the ethical implications of digital research and its impact on scholarship.

7.2. What is virtual reality?

Andrews et al. (1879) translated the Latin term "virtūs" (singular) and "virtutium" (plural) as manliness, manhood, the sum of all corporeal or mental excellences of man, strength, vigor, bravery, courage, aptness, capacity, worth, excellence, and virtue. In his book "Qu'est-ce que le virtuel" (1995), Pierre Lévy affirms that the term originated from the medieval Latin word "virtualis", which is derived from "virtūs". According to this philosopher, for example, a tree is virtually present in the seed (1995). In other words, certain elements are linked to the capacity to become another thing depending on the transformation process. Therefore, a virtual element is something that has the

potential to become another thing. For instance, Tori et al. (2018) present a digital archive that represents a three-dimensional object as something that had the potential (i.e., the virtūs) to become physical by a 3D printer.

On the other hand, the concept of virtual reality in English originated from French theatrical practice. In his essays "Le Théatre et son double" (1938), Antonin Artaud was the first to use the expression "la réalité virtuelle" to describe the illusory nature of the characters played by actors on the stage and the objects in the theatre, which could either be the original ones or just their resemblance:

> Tous les vrais alchimistes savent que le symbole alchimique est um mirage comme le théâtre est um mirage. Et cette perpétuelle allusion aux choses et au principe du théâtre que l'on trouve dans à peu près tous les livres alchimiques, doit être entendue comme le sentiment (dont les alchimistes avaient la plus extrême conscience) de l'identité qui existe entre le plan sur lequel évoluent les personnages, les objets, les images, et d'une manière générale tout ce qui constitue la réalite virtuelle du tréâtre, et le plan purement supposé et illusoire sur lequel évoluent les symboles de l'alchimie (Artaud 2019 : 139).

During the 1960s, Ivan Sutherland and Bob Sproull developed the first head-mounted display prototype at Harvard University. This prototype merged 3D images with real images (see Sutherland, 1968; Fuchs, Moreau and Guitton, 2011; Tori and Hounsell, 2018).

However, it was not until the 1980s that the term "virtual reality" was introduced in computer science by the researcher Jaron Lanier, who was an artist and computer scientist (Firth, 2013; Tori and Hounsell, 2018). Lanier was able to merge two opposing concepts into a new one, resulting in a concept that could explain the essence of his technology (Biocca and Levy, 2013, p. 35; Firth, 2013; Won *et al.*, 2015; Lanier, 2017).

In terms of the term "reality", Tori (Tori and Hounsell, 2018, p. 13) defines it as any stimulus that comes from the external environment and is perceived by our senses, including images in the mirror or those that are technologically projected. In essence, it refers to the ambience or elements that the user considers as part of their reality. While there are many other explanations of the term "reality", for the purpose of this discussion, the latter definition will be used.

In his work Cyberculture (1999), Lévy outlines three distinct interpretations of the concept of virtuality. Firstly, virtuality can be understood in a technical sense, referring to its association with computing. Secondly, virtuality can describe something that is not real. Lastly, it can be seen as a philosophical concept, indicating that virtuality is a part of reality itself. Lévy suggests that the term "virtual reality" is an oxymoron, as the word "virtual" implies the absence of physical presence. According to him, virtuality represents a de-materialised entity that exists independently of physical reality (Lévy 1999: 47-48).

According to Romero Tori et al (2018) in their book "Realidade Virtual" (2018), the concept of Virtual Reality (VR) appears contradictory since how could something virtual also be real at the same time? By creating artificial environments that are perceived by our sensory systems in the same way as the physical world, a different reality is generated. This new reality enables actions that were previously only possible through the tangibility of physical objects. Nowadays, individuals introduced to VR are able to experience different emotions and engage in a multitude of activities, such as learning and teaching, creating a new synthetic arena of interactions that is increasingly difficult to distinguish from reality.

Lock (2003: 153) distinguishes between immersive and non-immersive VR based on the user experience and the technology used. According to him, both types use three-dimensional reconstructions to create a virtual world, but non-immersive VR is delivered through a computer monitor, while immersive VR requires high-end computer power to generate complex real-time moving models. However, the classification of VR into immersive and non-immersive is considered

by some to be overly simplistic. A more appropriate approach would be to consider targeted degrees of immersion, as the user's attitude and interests also play a crucial role in the VR experience.

Tori et al (2018) argue that the issue of virtuality versus reality became less relevant after the introduction of Augmented Reality (AR) in the 1990s, which allowed for the combination of virtual and real elements. They also note that Milgram's Continuum, which established degrees of reality and virtuality, was an important development in this area. Milgram et al (1994) proposed a continuum ranging from real environments, through augmented reality (AR), mixed reality (MR), and augmented virtuality (AV), to completely virtual environments (VA). However, according to Tori et al (2018), drawing a clear boundary between different types of reality is not a simple task.

7.3. The early pinhole optics principles in Antiquity

According to Eric Renner in his book "Pinhole Photography: From Historic Techniques to Digital Application" (2012), the pinhole camera (Figure 127) may have allowed early humans to view images of the eclipsed sun on the ground under the tree canopy. The earliest recorded description of pinhole optics was likely made by the Chinese philosopher Mo Ti (墨子) around 400 BCE (Renner 2012, 8). In ancient Greece, Aristotle or one of his disciples witnessed this phenomenon and posed the following question in 330 BC:

> Why is it that during eclipses of the sun, if one views them through a sieve or a leaf – for example, that of a plane -tree or any other broad-leaved tree – or through the two hands with the fingers interlaced, the rays are crescent-shaped in the direction of the earth? Is it because, just as, when the lights shines through an aperture with regular angles, the result is a round figure, namely a cone (the reason being that

> two cones are formed, one between the sun and the aperture and the other between the aperture and the ground, and their apices meet), so, when under these conditions part is cut off from the orb in the sky, there will be a crescent on the other side of the aperture from the illuminant, that is, in the direction of the earth (for the rays proceed from that part of the circumference which is a crescent)? (Aristotle *Problemata* XV, 911b).

Aristotle's observation was fundamental to the development of the camera obscura (see section 7.6), which served as the foundation for the daguerreotype, the calotype, and eventually the modern camera.

7.4. The Vitruvian Scenography

Figure 125 - The Boscorealle frescoes of Pompeii in the Metropolitan Museum of Art

Source: Wikimedia Commons

In Antiquity, there were attempts to create an immersive experience for viewers, with the first endeavours to develop some form of virtual reality occurring through drawings on walls. The only written source on architecture that details this can be found in "The Ten Books on Architecture" by Vitruvius, which was dedicated to the Emperor Augustus between 27-23 BCE (Sinisgalli 2012, 61). Vitruvius defines this immersion as scenography, deriving from the Greek σκηνη and γραφειν, which means the drawing of a scene or an architectural work in conformity to the view of a scene (Sinisgalli, 2012, p. 64; Hann, 2018; Camerota, 2020, pp. 11–12).

The use of scenography in frescoes found in Pompeii was able to create a sensation of depth, as exemplified by the frescoes in the Villa of Boscoreale, now housed in the Metropolitan Museum in New York. The frescoes depict a colonnade atrium with a circular colonnade in the centre, and they are painted to create an illusionistic ambiance (Sinisgalli 2012, 115).

7.5. The Perspective Development

During the Renaissance the development of linear perspective and emphasis on correct proportions of architectural were a fertile ground for the development of new techniques. The architect Filippo Brunelleschi and the writer Leon Battista Alberti played crucial roles in formalizing perspective as an artistic technique through works such as Brunelleschi's use of linear perspective device in his two panels, nowadays lost (1425 CE) and Alberti's "De Pictura" (1435 CE) (Edgerton, 2009, pp. 44–45, 117).

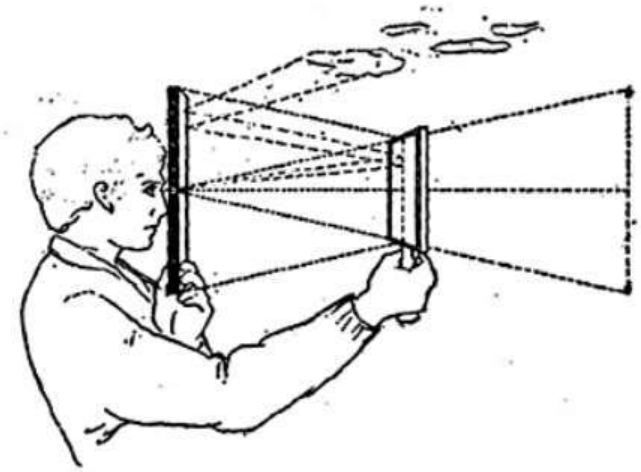
The linear perspective is a mathematical system that is used to create the illusion of depth, space, and distance on a flat surface. Initially, the artist needs to draw a straight line to represent the horizon and then the so-called visual rays that connect the viewer's eye with the point of distance. According to Samuel Edgerton in *The Mirror, the Window and the Telescope* (2009), the result was a

representation of three-dimensional objects, and after Brunelleschi and Alberti's studies, almost every artist from that period in Italy tried to use this technique, such as Donatello, Masaccio, Fra Angelico, Masolino, Paolo Uccello, Leonardo, Raphael, and Piero della Francesca:

> By 1700, the perspective way of perceiving visual "reality" in the physical world was accepted as a universal, natural truth, as absolute as Isaac Newton's recently proven law of gravity (2009: 6).

According to Edgerton (2009), the geometric-optical linear perspective was not a product of innate artistic talent, but rather a learned skill, akin to reading and writing. As evidence of this, he notes that medieval paintings often rendered only certain objects in a scene, such as wider tables to accommodate more objects like dinner plates, glasses, and pitchers. Rooted in scientific geometry, the perspective caused a commotion in Florentine society, which was not accustomed to this type of painting.

Figure 126 – Interpretation of the linear perspective device of Brunelleschi



Source: Lancia, 2008, p. 81 fig. 1

The first painting to employ this technique was exhibited at the Florence Baptistery, and many other artists followed in Brunelleschi's footsteps. Brunelleschi demonstrated the operation of his wooden panel to the public. His device provided artists with a high level of precision. The device comprised a small convex mirror mounted on an adjustable support. The artist would position the mirror at a specific angle. By looking into the mirror, the artist could perceive a miniature reflected image of the scene. (Figure 126). Interestingly, the painting was not compared with the Baptistery building itself, but with its reflection in a mirror, a fact that marks the event as Brunelleschi's mirror (Edgerton 2009, 6):

> Nonetheless, Brunelleschi's demonstration permitted viewers to believe that they had penetrated the very "enigma" of the mirror, to see both the virtual reflection and actual Baptistery "face to face" behind the reflection, just as Saint Paul had preached. His small handheld panel of the Baptistery astonished fifteenth-century Florentines because it revealed not just a superior likeness but rather because the artist's perspective seemed to enhance as never before the symbolic importance of geometric measurement (Edgerton 2009, 49-51).

7.6. The Camera Obscura

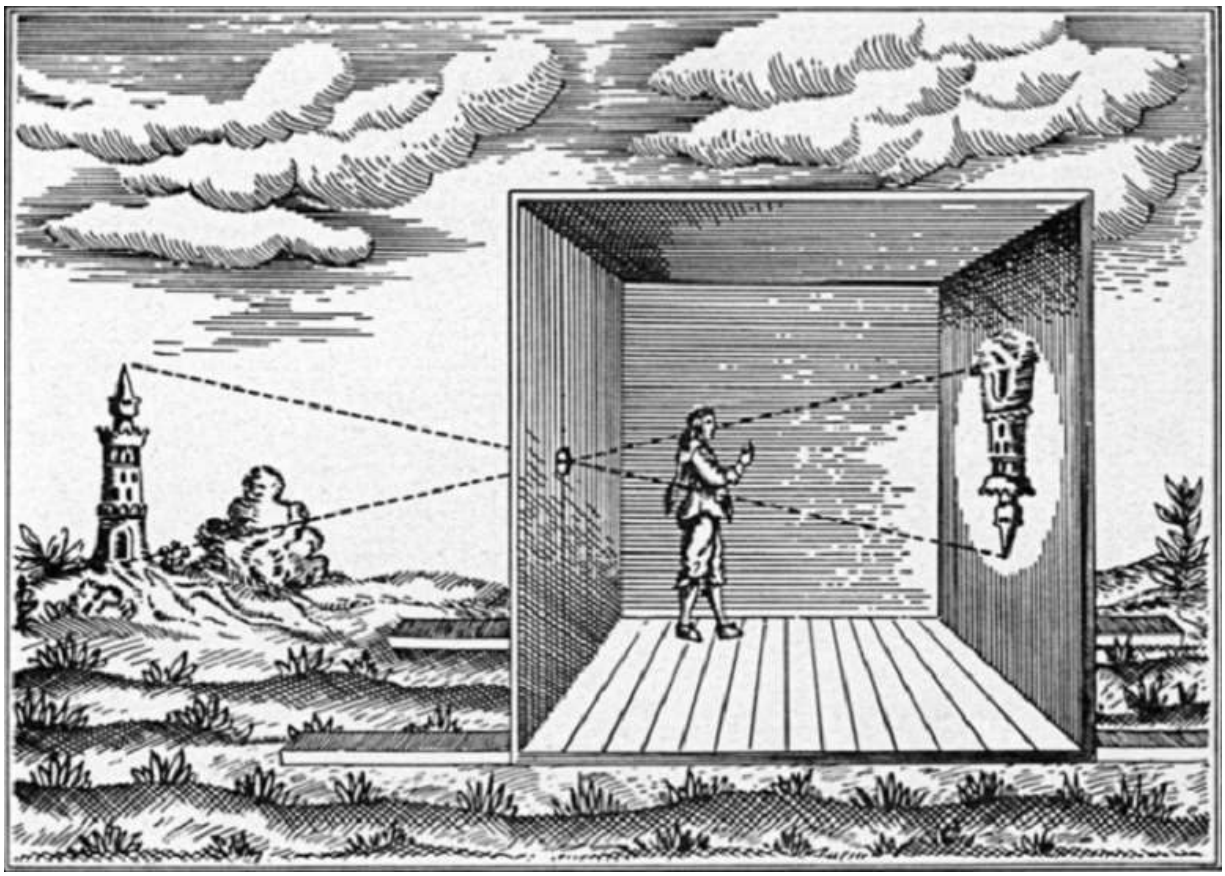
The Camera obscura (Figure 127), which translates from Latin to "dark chamber," emerged from a scientific process that can be traced back to Aristotle, Euclid, and was subsequently described by Leonardo da Vinci and studied by the Arab physicist Ibn al-Haytham (أبو علي، الحسن بن الحسن بن الهيثم) in his book Kitāb al-Manāẓir (كتاب المناظر), which translates to The Book of Optics.

> His device allowed light to enter through a pinhole into a darkened enclosure within which was cast a sharp inverted image of the scene outside. Geometers, artists, architects, and scientists alike used these projections to develop new understanding of perspective, derive mathematical coordinate systems, illustrate remarkable new depictions of reality, and begin to ponder key scientific question about the duality of matter and energy (Grimshaw 2014, 18-19).

According to Grau (2003, p. 54), the camera obscura:

> (…) represented a pioneering achievement in the history of cinematographic modes of perception because it introduced a restructuring of possibilities for visual experience through optical techniques. It was an innovation comparable with the discovery of perspective, and an important precondition for its development was a further stage in the process of individualizing the observer (Grau 2003, p. 54).

Figure 127 - Example of a camera obscura displaying an upside-down image



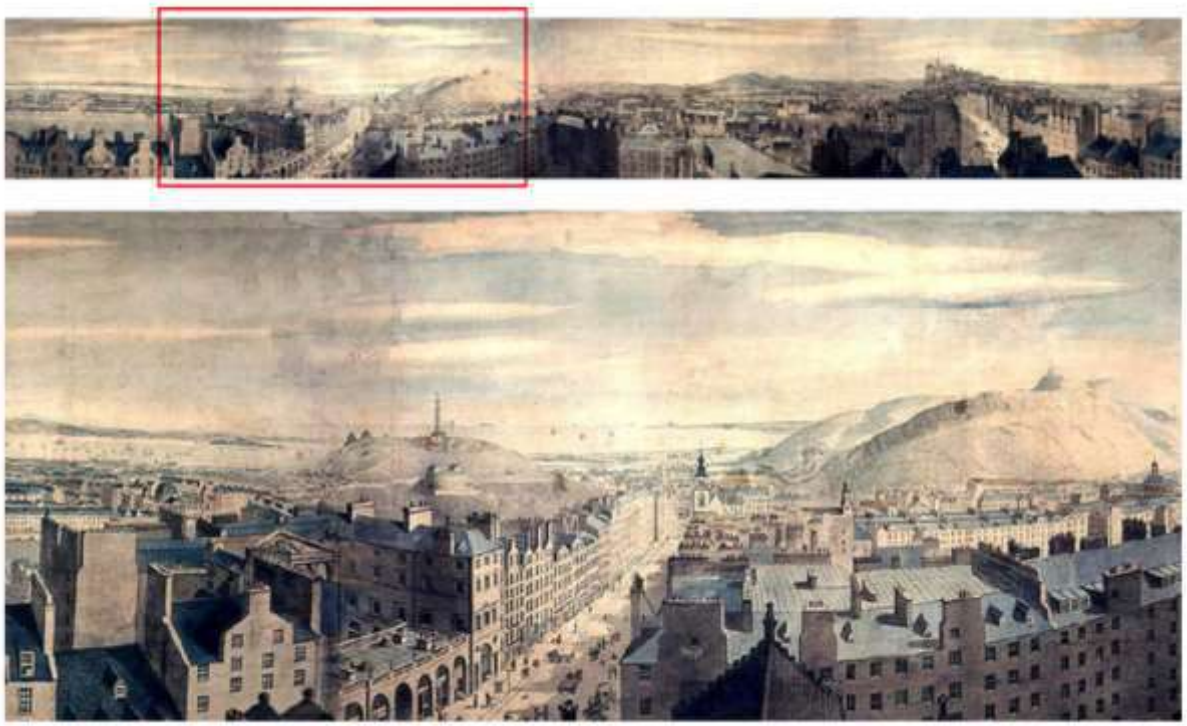
Source: Wikimedia Commons

7.7. Panoramic paintings and the cycloramas

According to the Virtual Reality Society of the United Kingdom (VRS), efforts to create a sense of depth in scenes were undertaken during the 19th century. The earliest use of the concept of virtual reality was manifested through panoramic paintings. The term "panorama" was first coined in 1789 by Robert Barker (1739-1806), who invented this technique of painting. The word originated from two Greek terms, namely πᾶν, which means all, and ὅραμα, which means sight or view. In 1788, Barker exhibited the first panoramic view of Edinburgh (Figure 128), followed by panoramas of London and battle scenes from the Napoleonic Wars. These works of art were made as a mean of

filling the viewer's vision allowing them to feel present at a historical event or in a specific scene (D. Borra, 2015; Lescop, 2017; Young, 2021).

Figure 128 - Section of the panorama of Edinburgh by Barker



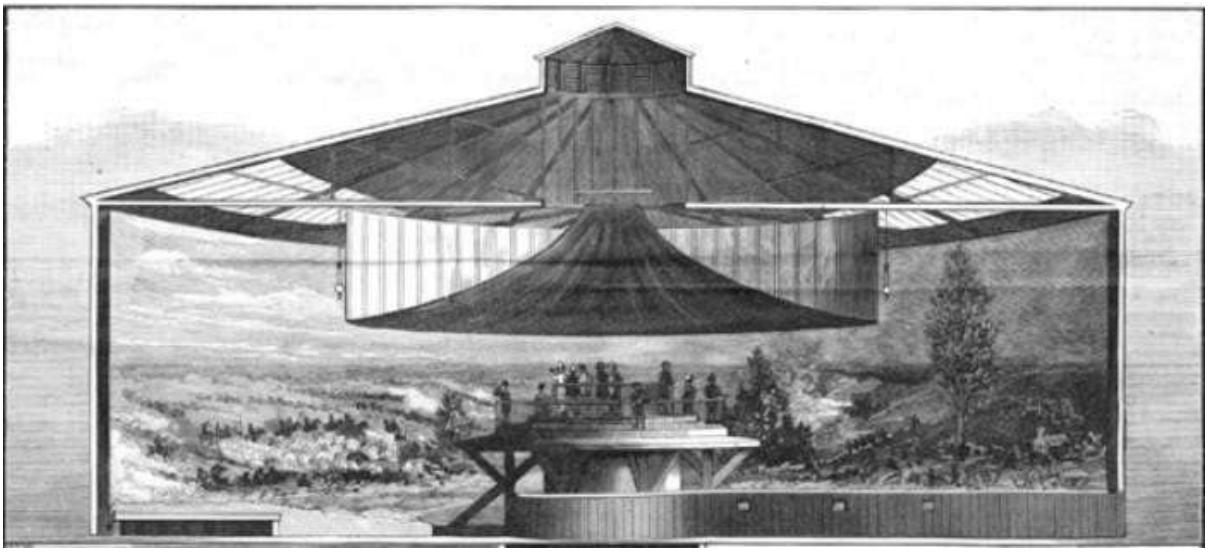
Source: (Verdiani, Cornell and Rodriguez-Navarro, 2015, p. 28 fig. 12)

These paintings were not solely exhibited in museums; in fact, specific cylindrical structures were constructed to hold them. For instance, in 1883, the painting depicting the American Battle of Gettysburg (Figure 129), created by the artist Paul Dominique Philippoteaux, son of Henri Philippoteaux, who had also painted the Siege of Paris in the same style, was installed in an immersive structure located in a large circular building on the City Hall Square (nowadays Borough Hall) in downtown Brooklyn (New York). This building was known as a cyclorama and was one of the few such structures found in the United States and Europe during the 19th century.

The immersive ambiance created by the cyclorama was so convincing that there are accounts of police being called to stop a robber and apprehend two individuals dressed as fake soldiers. The painting of the Battle of Gettysburg depicted in the cyclorama was an impressive 13 meters high and 115 meters wide, and it is currently displayed at The Gettysburg Museum and Visitor Centre:

> The spectators occupy an elevated stage, access to which is by a gallery that runs under the scaffolding of the foreground, being completely concealed thereby. By winding stairs, the platform is reached, and the result is that the spectator loses all orientation, and. Cannot tell north from south. While looking at the 'picture, he must live in its scene (1886: 296).

Figure 129 - Battle of Gettysburg cyclorama



Source: (Scientific America 1886)

In her article "Speaking in Rama: Panoramic Vision in Cultural Heritage Visualisation" (2014), Sarah Kenderdine asserts that the panorama phenomenon declined in popularity over time. The author suggests several possible causes for its decline. One of the primary reasons was that the panorama

shifted from being a symbol of the Enlightenment to being perceived as a threat associated with societal surveillance. Additionally, it is believed that the development of vertigo-inducing machines, such as roller coasters, may have played a role in the panorama's decline, as these rides were seen as more thrilling and entertaining than educational dome experiences (Kenderdine, 2014: 307).

7.8. Stereoscopic photos

According to Silverman (1993: 729), Charles Wheatstone (1802-1875) demonstrated the human brain's ability to process different two-dimensional images from each eye into a single three-dimensional image through a device that he called a stereoscope. This ground-breaking discovery was published in Wheatstone's work Contributions to the Physiology of Vision (1838). Through the use of the stereoscope, users were able to experience a sense of depth and immersion in a three-dimensional world for the first time.

It being thus established that the mind perceives an object of three dimensions by means of the two dissimilar pictures projected by it on the two retinae, the following question occurs: What would be the visual effect of simultaneously presenting to each eye instead of the object itself its projection on a place surface as it appears to that eye? To pursue this inquiry, it is necessary that means should contrived to make the two pictures, which must necessarily occupy different places, fall on similar parts of both retinae; but it is also evident that two exactly similar objects may be made to fall on similar parts of the two retinae, if they are placed on in the direction of each optic axis, at equal distances before or beyond their intersection (Wheatstone 1838: 373).

Silverman argues that the popularity of the stereoscope would not have been possible without the aid of photography, which at that time was called stereographs. The level of detail and accuracy achievable through this new medium surpassed the efforts of traditional art (Silverman, 1993: 734).

Wheatstone's research was crucial to the development of the lenticular stereoscope, which was created by Sir David Brewster in 1849. The Brewster device was significantly smaller and less

expensive compared to Wheatstone's original stereoscope, making it more accessible to a wider audience:

> This instrument consists of a pyramidal box, blackened inside, and having a lid, C D, for the admission of light when required. The top of the box consists of two parts, in one of which is the right-eye tube, R, containing the lens G, and in the other the left-eye tube. L, containing the lens H. The two parts which hold the lenses, and which form the top of the box, are often made to slide in grooves, so as to suit different persons whose eyes, placed are R, L, are more or less distant (Brewster 1856: 66).

In 1851, during the Great Exhibition in London, the stereoscope was presented to the public and gained popularity due to its ability to recreate three-dimensional perception with high fidelity (Silverman, 1993, p. 736). Subsequently, in 1862, Oliver Wendell Holmes, an American physician, designed a handheld version of Brewster's stereoscope (Figure 130), which became the predominant type used in America (Silverman, 1993, pp. 736-737). Apart from recreational purposes, the stereoscope found use in geography, especially with the advent of remote sensing and photogrammetry. These techniques enabled the measurement of physical phenomena that manifest on the surface, and the stereoscope provided valuable data during the analytical process, including height, depth, and volume. The stereoscopic vision is also imperative to guarantee precision during a surgical process. According to Siscoutto and Soares (2018), Medicine is also an important science where simulation systems are designed to provide training through the creation of surgical intervention.

Figure 130 The Holmes Hand Stereoscope

Source: https://collections.countway.harvard.edu/onview/items/show/6277 (January, 2023)

In 1939, William Gruber created the View-Master for virtual tourism, and its underlying technology is still used in low-budget VR mounted displays for mobiles, according to the Virtual Reality Society (VRS). Additionally, Morton Heilig developed the Sensorama (Figure 131) in the 1950s, which was patented in 1962. The device was an arcade-style theatre cabinet that stimulated all the senses, including smell and touch.

Figure 131 - The Sensorama

Source: (De Faria, Figueiredo and Teixeira, 2015, p. 78 fig. 1)

7.9. The Virtual in Archaeology discipline

Without intending to exhaust all possible applications of VR, I will focus on its use in archaeology which is the subject of my study. There are various nomenclatures used in the field of Archaeology, such as *Digital Archaeology* (DA). Unlike Virtual and Cyber-Archaeologies, DA is not a theory or specialisation, but rather a method. Its primary objective is the preservation of world heritage.

Another variant is *Computational Archaeology*, which is also known as *Archaeological Informatics* or *Archaeoinformatics*. It refers to computer-based data analysis and is considered a branch of both Virtual and Cyber-Archaeology. Since the objectives of these fields are often similar, I will focus only on Virtual Archaeology initially, and later on Cyber-archaeology, which I consider as a broader field. Paul Reilly (1991: 133) was one of the first researchers to use the term "Virtual Archaeology" (VA). According to Reilly, VA involves the recording of changes in the archaeological context over time. Early accounts often provided only a brief description of what was found, but over time, more sophisticated details and illustrations were included, culminating in the use of photographs.

Reilly defines *Virtual Archaeology* as:

> 'An allusion to a model, a replica, the notion that something can act as a surrogate or replacement for an original. In other words, it refers to a description of an archaeological formation of to simulated archaeological formation' (Reilly, 1991: 133).

Archaeology has readily embraced VR technology since this science has always aimed to reconstruct the past (Kroeber 1937, Hawkes 1968, Binford 1972, Joukowsky 1980, Reilly 1991, Renfrew 1991, Hodder 2006, 2011). With this new technology, several virtual "reconstructions" have been made, especially on monumental buildings to three-dimensionally illustrate the feats of Greece and Rome.

Some prominent virtual reconstructions include the virtual reconstruction of Athens (Ancientathens 3D.com), Rome (Virtual Rome Reborn) and Hadrian's villa (Digital Hadrian's Villa Project). Virtual reconstructions of ancient Roman and Greek monuments hold significant importance for various reasons:

Firstly, they contribute to the preservation and documentation of historical architectural masterpieces. These digital recreations provide a means of capturing and safeguarding the original forms and intricate details of structures that may have suffered damage or been lost over time. By digitally preserving these monuments, virtual reconstructions ensure that future generations can appreciate and study them in their intended glory.

Secondly, virtual reconstructions serve as powerful educational tools. Students, researchers, and the general public can engage with these virtual environments to gain a deeper understanding of ancient architectural techniques, spatial arrangements, and historical contexts. The immersive nature of virtual reconstructions enables users to explore and interact with the reconstructed sites, facilitating a more comprehensive and engaging learning experience.

Moreover, these virtual reconstructions play a crucial role in promoting cultural heritage and tourism. By offering captivating and interactive experiences, they attract visitors to historical sites and generate interest in the rich architectural legacy of ancient Rome and Greece. Virtual tours allow individuals from around the world to virtually visit these sites, fostering a greater appreciation for their historical significance and increasing awareness of their cultural value.

In conclusion, virtual reconstructions of ancient Roman and Greek monuments contribute to the preservation, education, and promotion of cultural heritage. Through these digital representations, historical architectural masterpieces are brought to life, providing valuable insights into the past and fostering a deeper connection with our shared cultural legacy.

Already in 2003, Lock raised concerns about the danger of stand-alone images without proper explanations as they can create a distorted version of the past. Lock suggests the need to develop international standards for metadata to accompany each model, carrying with its necessary information (Lock 2003: 155).

Projects as the Athens (Ancientathens 3D.com) are not enough to understand the past. They are undeniably well done; however, it contains a discourse and lack essential information such as the constructive techniques and its inspirations (Figure 132**).** With this type of information, a link between Athens and the rest of the Mediterranean can be developed. There only link, in Antiquity, provided by this project, is with Rome. Why not inform the viewer about how the ideas of construction are circulating around the Mediterranean that collaborate to build the Classical Parthenon? The choice of some visual effects must be considered too, because it creates an idea. The choice of a specific light could create a sense of grandeur into the subject.

Figure 132 - The Parthenon according the AncientAthens3D.com. There are no resources explaining about its construction and constructive techniques, the focus is the monumentality

Source: AncientAthens3D.com

This call resulted in the conception of The London Charter (TLC) in 2006, an initiative that aimed to establish internationally recognised principles by researchers, educators, and cultural heritage organisations (Hermon, Sugimoto, & Mara, 2007, 13). I will present this attempt more properly later.

Reilly's article highlights the potential of virtual reconstructions in archaeological research and emphasizes the importance of embracing new technologies in this field. He believes that virtual reconstructions can provide valuable information for both researchers and visitors, and that archaeologists should be enthusiastic about the progress being made in this area. By using VR technology, it is possible to reconstruct archaeological sites and objects with great accuracy, allowing researchers to explore and analyse them in a way that was not possible before. This technology can also help to preserve archaeological sites and artefacts by creating digital records that can be accessed and studied by researchers all over the world. Reilly's studies was seminal for

later researchers on this topic (e.g. Bílá, Šedina and Housarová, 2015; Lercari *et al.*, 2018; Almuraikhi *et al.*, 2021; Condorelli and Bonetto, 2022; Goodwin and Lercari, 2023).

The use of three-dimensional technology in archaeology has certainly revolutionised the way researchers and the public can interact with the past. It allows for a more immersive experience, giving a better understanding of the scale and relationship of elements within archaeological remains. Additionally, it provides an opportunity to fill in gaps in excavation records and highlight inconsistencies that may have been missed in traditional analysis. Overall, the use of VR and 3D technology in archaeology has tremendous potential for both research and education, and it will be exciting to see how it develops in the future.

According to Rahtz and Reilly (2005), the first three-dimensional reconstruction was the Temple Precinct of Roman Bath, dated from 1984-1985. It attracted a large audience from the public:

> The roman civic bath complex of Bath city is one most visited monuments in England, with the order of a million visitors each year. The computerised model is intended to help visitors comprehend what they are look at. The surviving remains exacerbates the problem. To make matters worse, a great deal of the remains available to the public are housed in the equally important, but in this case distracting, foundations of the Georgian Pump Room. Since most people visit the roman baths only once, and their visit is limited to a relatively short period, the problem of 'instilling more than a modicum of superficial impressions' is a formidable one (Rahtz; Reilly, 2005, 94).

After the success of the Temple Precinct of Roman Bath, several other three-dimensional models were commissioned, such as the Old Minster of Winchester, marking the beginning of a period of great production of such reconstructions. In his book chapter titled "Beyond the Artist's Impression, from Photo-realism to Integrated Reconstruction in Building Archaeology" (2004), Daniels-Dwyer

credits the project's authorship to John Woodwark and Adrian Bowyer of the School of Engineering at the University of Bath (Daniels-Dwyer, 2004, p. 264).

According to Forte (2014: 115), the 1990s marked the emergence of the first three-dimensional reconstructions of archaeological sites, known as Virtual Archaeology. This sub-discipline was designed to reconstruct the past for the purposes of communication and interpretation, with a focus on reconstructive efforts.

The term was popularised by Forte and Siliotti in the 1997 edited volume, Virtual Archaeology: Recreating Ancient Worlds, which helped popularise the application of VR in archaeological reconstruction worldwide. (Forte, 2009). According to Forte, Virtual Archaeology is a process that involves the acquisition, restoration, and presentation of archaeological data with the assistance of computers (Forte, 2009). The 1990s, in which the term was coined, is described by Forte as a "visual age," with the primary goal of Virtual Archaeology being visual reconstruction.

During this period, many other international companies also began investing in the development of digital archaeological models. However, as Maurizio Forte notes in his article "Virtual Reality, Cyberarchaeology, Teleimmersive Archaeology" (2014), most of these initiatives were focused more on advertising the past rather than reconstructing it (2014: 116).

The advancement of new technologies holds the potential to propel Archaeology to new heights. However, to ensure that the reconstructions produced are not simply speculative interpretations of the past, it is necessary to establish standards, as highlighted by Lock (2003, 155). The ultimate goal of this sub-discipline is to be transparent and honest (Forte, 2014: 117) in communicating knowledge to the public and fellow researchers alike, while simultaneously creating models that distinguish what is known from what is unknown. Additionally, virtual reconstructions offer the opportunity to bridge the gap between physical visitors and those who may not have the means to visit archaeological sites in person, ensuring equal access to information. The impact of mass

tourism on archaeological sites is increasingly evident, with issues such as littering, flash photography, graffiti, and overcrowding leading to surface deterioration (Wallace, 2013). In light of these concerns, it is worth considering virtual tools as a means of preserving archaeological heritage. However, this raises important questions about the implications of restricting access to sites solely to researchers. How would such measures affect local communities and their relationship with these sites? Additionally, there is a need to ensure that knowledge is democratised without inadvertently creating new forms of inequality. In the following section, I will explore these questions in more detail.

To Forte "the first 3D models of Rome, Tenochtitlan, Beijing and Çatalhüyük 'were generally based on evocative reconstructions rather than by a meticulous process of documentation, validation and scientific analysis' (Forte 2014: 115).

These models were mainly made to show the architectural achievements of monumental structures. The photorealism of the scenes was imperative and was a way to validate the model as "authentic" (Forte, 2014: 115).

Forte admits that, at first, the archaeology community was sceptical on the use of virtual reality for several reasons, one of them being the difficulties to manage diverse information sources in a single digital arena. The other strong reason was the main consideration of the movement just for a 'tool for didactic and spectacular communication of the past' (Forte, 2014: 116).

However, there were some attempts to simulate a virtual locus where archaeology students could practice excavation, as it happens to other sciences for instance aeronautics and medicine.

Ironically, the primary advantage of this approach – the ability to create breath-taking views of ancient monuments – ultimately led to its downfall. Over time, it became clear that Virtual Archaeology was inadequate for interpreting the archaeological record. This was due to the very foundation of the approach: a focus on improving graphical performance to showcase the

capabilities of the software, rather than scientifically interpreting the archaeological data (Forte, 2014: 116).

7.9.1. Virtual Archaeology, a final balance

Below, I will present some of the advantages and disadvantages of Virtual Archaeology. Its significance cannot be disregarded, as it acted as a gateway to new technologies and provided the conditions for the first virtual "reconstructions," fostering interest from both the public and researchers alike.

Positive aspects:

- Introduced a new level of detail for profile-drawings
- Integration of multi-media systems
- Solid-modelling
- Excavation simulations
- Diffusion of archaeological tour to public
- Exposed inconsistences from the archaeological report

Negatives aspects:

- Focused mainly on the great monuments
- Often rebuilt without the scientific rigour

- Passive users, without interaction
- Static
- Too focused on the graphic capacity

7.10. Cyber-archaeology

Once the term Virtual Archaeology began to be understood as static, oriented towards large monuments, unscientific, and deeply grounded in visual effects, a new conceptualisation emerged to account for aspects that had already taken root in the discipline of Archaeology since the beginning of Post-processual theory during the 1970s and the 1980s, also known as Interpretive Archaeology. The same principles that drove the post-processualism approach, such as multidisciplinarity, human agency, symbolism, cosmology, and landscapes, also came into the orbit of what became known as Cyber-archaeology. Maurizio Forte developed this approach after recognizing the limitations of Virtual Archaeology. How can Cyber-Archaeology be defined? According to Forte (2014: 116), it can be defined as:

> A research path of simulation and communication, whose ecological cybernetic relations organism-environment and informative-communicative feedback constitute the core. The cyber process creates affordances and through them, we are able to generate virtual worlds by interactions and interconnections". The workflow of data generated by Cyber-Archaeology is totally digital and can make reversible the interpretation and reconstruction process: from the fieldwork to virtual realities (Forte 2014: 116).

Forte created this new concept to refer to the capacity to collect, process, input, and output data, as nowadays, data is already born-digital, resulting from devices such as photogrammetry, laser scanners, and remote sensing, among others. He suggests that the cyber process can create affordances that enable us to interact with virtual worlds (Forte, 2014: 116). Currently, a variety of experiments have been conducted using photogrammetry for the display of archaeological heritage (Almuraikhi *et al.*, 2021, p. e.g.; Bertoméu, Corredor and Tortosa, 2022; Keep, 2022; Lang *et al.*, 2022). One emblematic example is the case of the Temple of Apollo Pythios in Gortyn, the settlement of Nora and at the Museo Civico agli Eremitani in Padua conduct by the University of Padua (see Condorelli and Bonetto, 2022). The overall objective of each of these experiments aimed to demonstrate how photogrammetry could be utilised as a support tool both at archaeological sites and inside museums. In the Temple of Apollo Pythios, photogrammetry proved to be cost-effective and enabled the development of virtual tours at this archaeological site. In Nora, users have access to a route and interactive points with information that can be accessed at any time. In the latest study, inside a museum, with the support of photogrammetry, it was possible to create a virtual collection where the history of the artefact in question could be consulted, which is usually challenging to visualise during a guided physical visit. (Condorelli and Bonetto, 2022, p. 56).

Forte argues that the process of creating and inputting data into these digital worlds leads to new outcomes, which can generate hypotheses and new interpretations (see Almagro Vidal, Ramírez González and Clemente San Román, 2015). The key factor, according to him, is the interaction and feedback through a "trigger." This trigger could be our embodiment in the cyberworld, as we can interact within an artificial world (Forte, 2014: 113).

In the new perspective of the Cyber-Archaeology, as stated by Forte (2015: 43), the gathering of various methods of data collection involves interaction, standardisation, administration, and implementation of different types of data for multiple platforms and simulations of environments (for technical informations see Alby, 2015; Bílá, Šedina and Housarová, 2015; Fazio and Lo Brutto,

2020; Savini, Fabbrocino and Marra, 2021; Fazio *et al.*, 2022). However, the author argues that archaeologists were not faced with the revolution caused by the adoption of digital technologies and three-dimensional data. The prefix *cyber* came from Cybernetics, a concept coined by the American mathematician Norbert Wiener (1948). The Greek word κυβερνητική means steersman, and according to Wiener:

> Cybernetics is a word invented to define a new field in science. It combines under one heading the study of what is a human context is sometimes loosely described as thinking and in engineering is known as control and communication. In other words, cybernetics attempts to find the common elements in the functioning of automatic machines and of the human nervous system and to develop a theory which will cover the entire field of control and communication in machines and in living organisms (Wiener 1948: 14).

The author refers to this process as *autopoiesis*, a term borrowed from biology that combines the Greek words αὐτο (meaning self) and ποίησις (meaning creation). This concept refers to the system's capacity to reproduce and maintain itself, as the data can co-evolve in a digital environment. According to Maturana and Varela (1980: 66):

> An autopoietic system is a homeostat. We already know what that is: a device for holding a critical systemic variable within physiological limits. They go on the definitive point: in case of autopoietic homeostasis, the critical carriable is the system's own organisation. It does not matter, it seems, whether every measurable property of that organisational structure change utterly in the system's process of continuous adaptation. It survives.

Jone and Levy define Cyber-Archaeology as "the integration of the latest developments in computer science, engineering, science, and archaeology" (Jones and Levy, 2018: 1).

In the field of archaeology, Cyber-Archaeology has achieved a significant milestone by becoming an integral part of every stage of the archaeological research process. The use of computers to collect field data, drones, GPS devices, and high-quality smartphones to capture images of sites or artefacts in museums has become a commonplace. The multidisciplinary team can now carry out a wide range of analyses in the laboratory, among other things (Jones and Levy, 2018: 1-2).

However, the size of data has increased faster than the analysis process, resulting in a tremendous amount of raw data that Levy has termed the 'data avalanche' (2018: 2). This leads to the equalisation of the Anthropocene to a new phenomenon called 'Datanthroporceno' (Berry, 2018). This accumulation has led to a new problem: how to store these enormous amounts of data? Several potential solutions have been suggested by authors, including the creation of regional site databases such as the Middle Eastern Geodatabase for Antiquities (Jordan), the Digital Archaeological Record (United States and United Kingdom), Open Context (United States), Online Cultural and Historical Research Environment (United States), and Nausitoo (Brazil). According to Jones and Levy (2018: 3), 'these projects represent an important step toward a culture of data sharing that will allow archaeologists to ask large-scale questions'.

The issue of data management also involves the challenge of standardizing different data types due to the idiosyncratic nature of data gathering. Jones and Levy (2018: 4) note that this problem is not new and has been a concern for archaeology since its earliest days. The conventional solution has been to assume that other researchers would have access to shared data and adhere to certain standards. However, this assumption cannot be considered an ideal solution, and new approaches are necessary to create a shared database that is truly standardised.

As highlighted by Colleen (2022, p. 221), there is a growing concern regarding harm reduction and accessibility in Digital Archaeology. These aspects should adhere to ethical standards, addressing issues of heritage and its unequal distribution. According to the author, it is crucial to carefully study practices such as data authenticity verification, privacy standards, the role of social media, and attention to indigenous critiques. Therefore, according to Colleen, ethical and political considerations are necessary in Digital Archaeology, particularly concerning digital data-related issues.

As we have seen previously, standardisation of certain principles to create a "manual of good practices" is a key factor in ensuring scientific rigor. In response to Lock's call regarding this issue (2013, 115), The London Charter for the computer-based visualisation of cultural heritage (TLC) was proposed in 2006, as claimed by the organizers:

> While computer-based visualisation methods are now employed in a wide range of contexts to assist in the research, communication and preservation of cultural heritage, a set of principles is needed that will ensure that digital heritage visualisation is, and is seen to be, at least as intellectually and technically rigorous as longer established cultural heritage research and communication methods. At the same time, such principles must reflect the distinctive properties of computer-based visualisation technologies and methods.

The charter has as its objectives: **1) Provide a benchmark** having widespread recognition among stakeholder; **2) Promote intellectual and technical rigour** in such uses; **3) Ensure that computer-based visualisation processes and outcomes can be properly understood and evaluated** by users; **4) Enable computer-based visualisation authoritatively to contribute** to the study, interpretation and management of cultural heritage assets; **5) Ensure access and sustainability strategies** are determined and applied**; 6) Offer a robust foundation** upon which communities of

practice can build detailed *London Charter Implementation Guidelines* (see www.londoncharter.org for further information).

This initiative is praiseworthy, but it was not developed based on international consensus. Most members of the London Charter are from Europe, particularly the UK, while a minority are from Australia, Japan, and the USA. Unfortunately, there is a notable lack of members or representatives from other regions of the world, even within the London Charter Interest Group. Therefore, it is arbitrary to claim that the charter was intended to be international, given that many nations did not effectively participate in its creation. As Jones and Levy (2018: 4) noted, the parameters of each nation are idiosyncratic, so it is crucial to develop new approaches to create an ideal shared database that considers the unique circumstances and perspectives of various cultures and regions. Where is the Global South representation, for example?

The establishment of regional committees that have the power to discuss and propose amendments would be a positive step towards achieving a more democratic and international approach to the London Charter. It is important that these committees are formed through international discussions that take into account the perspectives and needs of all nations, not just those from Europe and a few other countries. The creation of the charter should involve a process of consensus-building that addresses the points of disagreement among its members and establishes a middle-ground that reflects the diverse interests and needs of different regions. While this will undoubtedly be a challenging task, it is necessary to ensure that the representation of cultural heritage in three-dimensional digital formats is carried out in an equitable and inclusive manner.

Furthermore, given that Cyber-Archaeology advocates for the democratisation of knowledge, it is crucial to highlight that its implementation relies heavily on the computing power of both

hardware[3] and software[4], which are often lacking in underfunded institutions. This raises the question of how Cyber-Archaeology can be truly democratic when it depends on a range of high-tech devices that are inaccessible to many different realities. Even basic devices such as computers require significant processing power and specialised software for analysis, as well as expensive software licenses.

Therefore, the interpretation of data typically remains within the countries that have the resources to conduct archaeological research at all stages, from prospecting and excavation to data collection, analysis, scientific publications, and public knowledge dissemination. As a result, this perpetuates a specific type of discourse. Hence, Cyber-Archaeology still has a considerable distance to travel before it can genuinely be regarded as a democratizing field that focuses on digitally simulating the past.

7.11. Cyber-Archaeology, a final balance

As previously mentioned, it is important to analyse both the advantages and disadvantages of Cyber-Archaeology. While this field has contributed to numerous scientific advances and has brought archaeology closer to society, there are also drawbacks. One significant challenge is the high cost of equipment and software, which can limit knowledge dissemination and favour institutions with greater resources for research. Therefore, new interpretations of archaeological

[3] In the field of electronics, these components constitute a set of tangible physical elements, such as screens, keyboards, and other peripherals, as well as internal devices such as memory, motherboards, video cards, among others. In certain cases, these components can be replaced to enhance the machine's performance in a particular aspect.

[4] A set of logical components that add programs and rules to facilitate the interaction between humans and machines.

data may be limited to these institutions, potentially reinforcing existing power dynamics within the field.

Positive aspects

- Uses scientific rigour to produce new interpretations
- Can generate a lot of data
- Since data can come from many different sources, multidisciplinary is an imperative
- Interactive
- Consider not only the place but its landscape and its changes over time

Negative aspects

- The 'data avalanche' phenomenon
- Difficulty in standardizing shared data
- In general, there is a need for high cost technology devices for analysis and result production
- In the end, the interpretations come largely from the large centres capable of financing the necessary technological apparatus
- Discourse centred on a few poles around the world

7.12. The digital way out

Despite being strongly supported by Forte, the use of the prefix "cyber" in this new sub-discipline was not yet a consensus (see Morgan, 2022 where the author argues about the reclassifications and neologisms). A variety of terms have been used in the literature, including Computational Archaeology (e.g. Bordes *et al.*, 2004; Moreno, Arévalo and Moreno, 2018; Burke, 2021; Johnson, 2022), Digital Archaeology (e.g. Huggett, 2015; Tanasi, 2020; Morgan, 2022), among others, as mentioned earlier. In his article "The obvious or defending the contested: why are we still discussing the 'scientific value' of 3D applications in archaeology" (2004:1), Tim Lanjouw addresses the status of the virtual or cyber sub-disciplines as underdogs to archaeological scepticism, despite being used for over 40 years. Lanjouw argues that since the first 3D archaeological modelling in the 1970s and the subsequent boom of monument modelling in the 1980s, there has been a need to validate the scientific value of this field to academia through conferences, book chapters, papers, and other means.

In his article, Tim Lanjouw proposes the term "Three Dimensions of Archaeology" (3DA) to refer to the new subfield that incorporates 3D modelling in archaeology. He argues that this subfield is not equivalent to Virtual Archaeology, and that the academic community has been sceptical of its scientific value. He suggests that many 3D projects in the past have failed to apply the principles of the London Charter, specifically Principle 2.1:

> It should not be assumed that computer-based visualisation is the most appropriate means of addressing all cultural heritage research or communication aims (London Charter, 2020).

The aim of this document is to ensure the methodological rigor of computer-based visualisation as a means of researching and communicating cultural heritage. This principle is intended to avoid the massive and indiscriminate use of computer-based visualisations. The method should be used when it is the most appropriate available method for the purpose at hand (London Charter, 2020).

According to Laia Pujot Tost in her conference "Does virtual archaeology exist" (2008), presented at the 35th International Conference on Computer Applications and Quantitative Methods in Archaeology, there are four ways to comprehend space: 1) Aristotelian (space as static, hierarchical and tangible); 2) Newtonian (space as a net in which objects and events are located); 3) Leibnizian (space as a system of relations among bodies); and 4) Kantian (space as the way in which the human mind imposes apprehension over an external reality). However, Pujot Tost argues that this new "cyberspace is neither continuous nor ordered" (2008: 102). According to Pujot Tost, these two dimensions are necessary for the sciences that study long-term processes. Due to its static and descriptive approach in geographical studies, the temporal dimension was not given importance to define the conditions of materialisation of human actions in the past. The space had pre-eminence over the abstraction of time.

Pujol's perspective is insightful, although she does not explicitly illustrate what is meant by "handling time." Pujol does not differentiate whether it refers to climatic phenomena, the astronomical position during a specific time period, the alteration of landscapes due to seasons, or the movement of winds during a certain season. Therefore, it is not evident what the implementation of virtual reality signifies for comprehending time.

Even though Pujol Tost was unsuccessful in her explanation, she ranks four useful possibilities uses for VR in Archaeology (2008: 106):

1) **Traditional** – Understand the VR as a conclusive illustration for processes or descriptions.

2) **Empirical** – The application of VR during the first stages of the archaeological excavation.
3) **Experimental** – The VR as a tool for visualisation and data analyses and the verification of hypotheses.
4) **Postmodern** – The VR is focused in the later stages of the archaeological research as a tool to understand the semantics and the symbolism aimed in the multi-vocal narration and in the social identity.

According to Pujot Tost, the last two categories of the 3DA framework, Experimental and Postmodern, emphasize the importance of presence and interactivity, particularly in relation to the externalisation of knowledge, which offers three primary benefits. Firstly, interaction can enhance motivation and shape the discovery process. Secondly, it can demonstrate how archaeological knowledge is obtained and clarify that archaeology does not offer immutable truths but rather discourses that depend on how the researcher interprets the archaeological record. Finally, the replacement of the romantic notion of archaeology with a more rigorous and scientific approach can improve its perception in areas such as funding priorities, professional status, and specific legislation, thereby enhancing its social and political significance.

In addition, Pujol Tost argues that VR applications should first become a virtual record before being considered virtual heritage. She suggests that Archaeology does not necessarily need to be virtual, but it does require virtual tools to be considered a scientific discipline. In conclusion, she advocates for a change in perspective, moving away from reconstructing monuments solely for their artistic qualities and instead using VR to analyse archaeological remains (2007: 107).

Regarding the challenge of presenting Architectural Heritage (AH) in museums, as it may lose its context, the Architecture Representation Computation (ARC) group at the Massachusetts Institute of Technology (MIT) has sought ways to exhibit the features of buildings for better understanding.

In "Simplifying Architectural Heritage Visualisation" (2016), Derya Gulec Ozer et al. present MULTIRAMA, a method developed by their team that uses photogrammetry to represent the architectural heritage of the Parion Theatre in Biga, Turkey. This site has been excavated since 2005 and dates back to the 1st-2nd century CE.

The outcomes of this project are very stimulating. According to the authors, it involves: 1) the use of a low-cost method that utilizes Augmented Reality (AR) to represent digital heritage; 2) the revival of the contextual connection with architectural heritage; 3) an easy interface and visualisation tool for archaeologists to 280ossíve their works in three dimensions; 4) providing tourists with a different perspective while visiting the site; 5) having a user-friendly interface; 6) contributing to the preservation and presentation of Turkey's cultural heritage; and 7) providing a means for the reconstruction of historical architecture (Ozer et al., 2016, p. 527).

These are valid points to consider when evaluating the limitations of the MULTIRAMA method. While it offers an innovative way to visualize architectural heritage, there are certain drawbacks to its use. Firstly, as it requires physical structures to display information, it cannot be accessed remotely from a distant place. Secondly, it does not provide an immersive experience as it only uses the smartphone screen. Thirdly, the reconstruction of historical architecture is displayed on a small screen, which may not provide an accurate representation of the building's size and context. Lastly, the method only displays one interpretation of the building's reconstruction, which may invalidate other possible reconstructions. It is important to acknowledge these limitations and consider alternative approaches that may address them.

The challenge of translating and visualizing theory in Archaeology is a significant issue that has not been fully addressed. The field has often relied on simplistic illustrations (e.g. Virtual Rome by the University of Reading and Royal Ontario Museum) that fail to capture the complexity and nuanced of the archaeological record. Few projects are able to show and explain (e.g. Yacimiento Arqueológico de Gadir in Cádiz, Spain). Even this project keep the focus in show how was the city

appearance and not how it was made and how the different influences interact to its formation. It is crucial to consider the elements that allowed certain interpretations and to avoid essentialist reconstructions that ignore the small material culture dispersed in an archaeological context. The use of VR as a tool in Archaeology must also take into account the modest human paraphernalia scattered in the archaeological site. While monuments may exhibit imperial discourses, it is often the trivial things that provide evidence to the contrary. Therefore, the use of VR should not merely reproduce established narratives but should allow for new, innovative interpretations that consider the entanglement and contact that are inherent in archaeological contexts.

7.13. And now, the consequences of COVID

It is almost unnecessary to describe how terrible was the two years of isolation due the pandemic of COVID-19. Every human-being were affected by the deluged of news on this sad episode. To education, culture and leisure the effects are still being analysed by several authors. These areas suffer the most due its very nature which includes the congregation of people and the exchange of ideas. To deal with anxiety and isolation a considerable number of persons enrolled in online activities such as museum visits (Figure 133). After the Covid-19 pandemic, the need for better data handling has become even more evident.

Figure 133 - Chart over the five years for the online museums. The marked peak represents the weeks of March 15 to 28

Source: Almeida Prado, 2020, fig. 1

During the COVID-19 pandemics it became clear not only the necessity to have digital information available to access but also the access to these places. Archaeological sites are included in the cultural category. Most of them were closed during the pandemics. With this lack of accessibility, the online resources became the main entrance to them.

To de Almeida Prado (de Almeida Prado, 2020) **"**virtual tours get inspiration in the physical exhibition to create an online narrative". The online museums simulate the physical ones in order to place the visitor into a three-dimensional environment. Online tours were offered with predetermined routes. Almeida Prado (2020) considers that the 3D environments is playing the same role as digital catalogues.

On the other hand, Hoffman (Hoffman, 2020, p. 213) noted that are still several issues within this type of exhibition. The so-called "Print-Paradigm" consider that even three-dimensional or online formats have a print publication nature. This reliance on the texts in this type of platform are quite comfortable for the museums. However, the digital and the physical could enhance one another, but few museums are doing it in its favour (Hoffman, 2020, p. 213).

Regarding data access, Morgan (2022, p. 211) discusses the importance of having access to complete digital data, artefacts, or archaeological sites. However, the author also points out that these archives

are not universal and may not always be secure. In this context, it is worth remembering that one of the principles of Digital Archaeology is to democratize knowledge. However, achieving this goal is challenging, considering the issues raised by Morgan (Morgan, 2022). Thus, the realisation of what should be accessible and secure remains a challenge that needs to be overcome.

Chapter 8 – Plural identities, its remains and representation to comprehend the archaeological heritage

8.1. Introduction

8.2. Everybody wants to be Roman

The transformation of archaeological heritage into discourse has been an issue gaining prominence with the consolidation of post-processual approaches since the 1980s and 1990 (Smith, 2003, 2006, 2020; Harrison, 2010, 2013; Smith and Waterton, 2013; Logan and Wijesuriya, 2015; Shanks, 2016; Harrison *et al.*, 2020). While archaeology has been applying interpretive theories to the study of its archaeological sites and material culture, the dissemination of knowledge in these locations has not been occurring at the same pace.

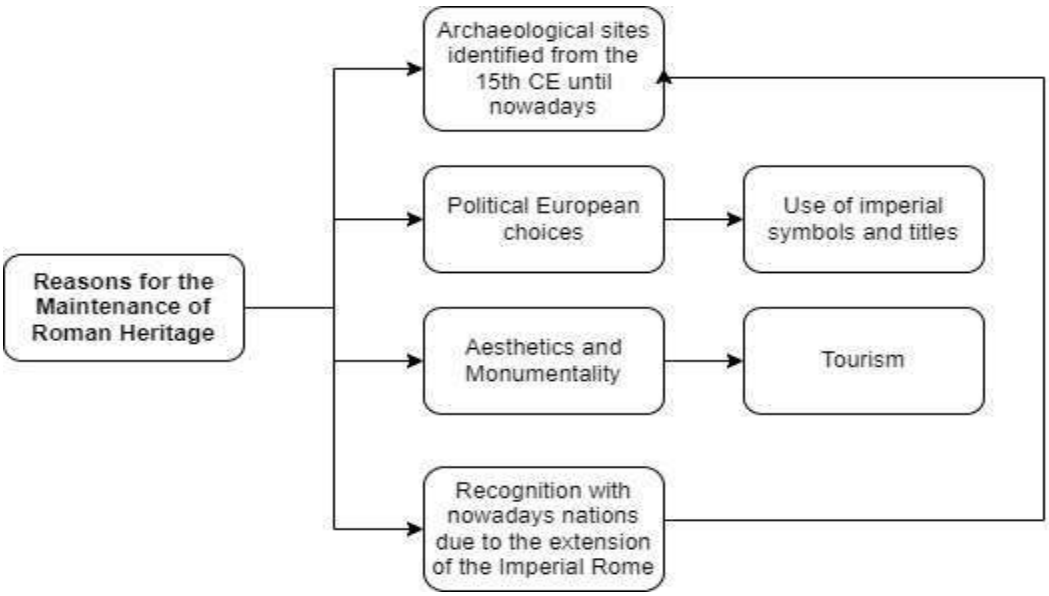
This disharmony mainly occurs due to the flood of scientific outputs that, happening at such a rapid pace, cannot be absorbed at the same rate in the development of new means of knowledge outreach to the public (for a further discussion see Latour, 1987, p. 30, 2012; Shapin, 2018). Adding

to this issue is the serious problem of choosing what is intended to be presented at the archaeological site (Meskell, 2002; Barber, 2006; Smith, 2012; Harrison, 2013; Rathje, Shanks and Witmore, 2013, p. 119). It is worth noting that there is resistance to presenting singular types of experiences and knowledge, as it would challenge the exaltation of a deeply rooted identity (see Joyce, 2008; Colwell, 2017).

As mentioned by Dmitriev (2009, p. 123), the past and the present influence and permeate each other simultaneously.

In European contexts, Roman archaeological heritage is undoubtedly one of those that has gained greater emphasis in this process. The reasons are simple: 1) the monumentality of its constructions (see Zanker, 1988 for an analysis over the visual representation of Augustus) ; 2) the political choice of European nations, still in their formation (for a debate over the shaping of English identity by the Roman heritage, for example see Hingley, 2013); 3) the gains from tourism that its maintenance guarantees (see Park and Stephenson, 2007, pp. 229, 264); 4) it is often found at stratigraphic levels that have already been worked on by archaeologists and explorers from the 18th to the 20th century (e.g. Allison, 2004; Wallace-Hadrill, 2011) (Diagram 6).

Diagram 6 - Diagram on the main reasons for the maintenance of the Roman heritage



Author (2023)

In Diagram 1 it is possible to observe that some elements feed back into each other, such as from the second to the first and from the fifth to the second. This diagram demonstrates how the structure reinforces itself within its own logic. In the case of Rome, there are evident choices. The Empire is a great champion for representing what Rome was in the Mediterranean and Atlantic context, rather than Monarchical or Republican Rome. As long noted (e.g., Morris, 1994) until the 18th century CE, it was the Roman Empire and not Classical Greece (5th – 4th centuries BCE) that was the cradle of Western civilisation. This was reinforced through the maintenance of the Latin language and Christian heritage. The Enlightenment also echoed the ideals of reason over religious dogma. Thus, the Roman Empire was one of the generators of the ancestry of European Nation-States.

The use of the term "Caesar" from Latin is derived from the name of Julius Caesar was during the Modern era. Now, let us remember the interesting case of the Holy Roman Empire, which began in 1512 and lasted until 1806, aiming to revive the Western Christian character that existed in the last moments of the Roman Empire (Wilson, 2016). Other echoes that have come down to us occurred

during the transition from the Enlightenment to Romanticism. Many have an institutional character, such as the reuse of the name "Caesar," (e.g. Tulakova, 2019 discussed how the name of exceptional persons contributed to the development of the European languages) which was transformed into "Kaiser" in German, "Csaszar" in Hungarian and "Tsar" for the identification of the Russian emperor (see Latura, 2016; Brooks, 2019, p. 172). The overall point is to highlight historical examples of attempts to revive or echo aspects of Western. During this period, the perception of France as a "New Rome" went beyond mere cultural and military power. It encompassed a vision of France as a unifying force, bringing together diverse peoples from Europe, Africa, and the Levant. This concept has been well discussed by scholars such as Bernal (Bernal, 1987, p. 205) and Tollfree (1999). The idea of France as a "New Rome" was not unique to France, as other countries also sought to associate themselves with the grandeur and influence of ancient Rome.

One notable example is Portugal during the reign of Manuel I (1495-1521). Manuel I claimed Lisbon as a "New Rome," drawing parallels between the two cities. This comparison served multiple purposes, including promoting Lisbon as a cosmopolitan centre and emphasizing its significance as a hub of commerce. The topography of the city, including the presence of seven hills similar to Rome, further reinforced the association with the ancient capital. Moving to the Iberian Peninsula, Seville also embraced the notion of being a "New Rome" during the sixteenth century. Humanists of that time actively contributed to the creation of Seville's identity as a successor to Rome. This cultural construction aimed to enhance the city's prestige and elevate its status as a centre of learning, art, and power (Bermejo, 2017, pp. 605–612).

The concept of a "New Rome" resonated with various regions and time periods, as seen in the examples provided. This phenomenon reflects a desire to associate oneself with the grandeur and historical significance associated with ancient Rome. By comparing themselves to Rome, these cities sought to establish their own identities as important cultural, commercial, and political centres. This

association allowed them to draw upon the rich legacy of the ancient world and position themselves as inheritors of that legacy (Bermejo, 2017, pp. 605–612).

The comparison with Rome also had political implications and could reinforce rivalries between neighbouring nations. For instance, the rejection of France as a unifying European nation by the Germans led them to choose Classical Greece as the cradle of Western civilisation. This decision reflects the complex dynamics of national identity and competition, where different nations seek to claim prestigious historical and cultural lineages to bolster their own status and influence (Morris, 1994, pp. 15–16).

These examples demonstrate how the symbolic and historical power associated with ancient Rome continues to shape and influence contemporary perceptions and aspirations. The idea of a "New Rome" serves as a powerful tool for cities and nations to position themselves within a broader historical narrative, asserting their cultural and political significance. However, it is important to critically examine the motivations and implications of such comparisons, as they can contribute to the construction of hierarchical and exclusionary narratives that prioritize certain cultures and histories over others.

Gradually, there was an expansion of this interest in antiquity throughout Europe, including in France, Germany, and England. The English Dilettante Society sponsored archaeological research in the Aegean for eighty years (Casson, 1939, pp. 202–205; Trigger, 2004, p. 38).

In the 18th century, French scholars under the command of Napoleon produced the *Description de l'Egypte*, and Jean-François Champollion succeeded in translating the Rosetta Stone, giving greater momentum to research in that region (Trigger, 2004, p. 39).

While Southern Europe drew from Greek and Roman antiquity, Northern Europe focused on constructing a nationalist narrative stimulated by Protestantism. This movement also had its disciples who spread it to the rest of the continent. The English began researching peoples who

lived prior to the arrival of the Romans. Megaliths were considered acceptable substitutes for Greek and Roman antiquity. The nobility of European nations began forming their cabinets of curiosities, forming groups of antiquarians who, at first, did not distinguish between natural and anthropogenic curiosities. The beginning of a systematisation of data did not take long to occur, and numerous monuments were catalogued by John Leland (1503-1552) and William Camden, author of the first topographical survey of England on medieval and Roman ruins. In 1711, with the founding of the Society of Antiquaries of London, English nationalism gained strength. There was a greater interest in the medieval past. This movement soon expanded to the rest of Europe and became known as Romanticism (Trigger, 2004, p. 47).

The Romantic movement was the one to turn towards the "primitive" or "natural" societies of countries such as England, Germany, and Scandinavia. Excavations were carried out in English barrows that sought to develop a national past linked to their folklore (Trigger, 2004, pp. 112–113).

In Germany, the rediscovery of Cornelius Tacitus' work "Germania" led scholars to take an interest in the pre-Roman past. Later, systematic research focused on national history began to develop in Scandinavia. In 19th century Denmark, nationalism was on the rise. It was in this environment that the scholar Christian Jürgensen Thomsen suggested the division of prehistory and history into successive periods. Initially, Thomsen was called upon to join the 'Royal Danish Commission for the Collection and Preservation of Antiquities', where he was tasked with cataloguing the collection. In his attempt to organize the objects, he created the concepts of the Stone Age, Bronze Age, and Iron Age, still used today (Trigger, 2004, pp. 50–73).

These political choices would reinforce rivalries between neighbouring nations, such as between the French and Germans. England and Germany were stages of popular revolts against the French cultural domination (Bernal, 1987, p. 214; Trigger, 2006, p. 111). Even with the decline of study of Classics during the 18th and 19th centuries, the Greek and Roman ideals shaped the perception of Classical Greece. It is important to emphasize that the idealised image of Classical Greece and

Imperial Rome, which bears little resemblance to reality, was primarily constructed by the German Hellenist Johann Joachim Winckelmann and his followers (Bernal, 1987, p. 202; Morris, 1994, pp. 16–18) that partially persists until our days. Some Hellenists such as Alexander von Humboldt, the Education Minister of Germany that instituted the *Bildung* to recover the national morale after the annihilation of the Prussian armies by Napoleon in 1806. The *Bildung* was an attempt to emulate the Greek education system such as the *Gymnasium* and Seminar with the teaching of Latin and Greek in its curriculum. From its inception the system was extended to different social strata. However, after a reactionary student revolt in 1817-1 Classic studies were restricted to elite students (Bernal, 1987, p. 2014; Morris, 1994, pp. 18–19).

On the other side of the English Channel, the British took the Latin term *imperium* (i.e. *Imperium populi romani* was the power used by the Romans over other peoples (Lintott, 1981, p. 54) to generate the concept of "imperialism" developed by John E. Seeley (1871) to refer to the policies of the Second French Republic (Lintott, 1981). From 1850, the term began to be used by British newspapers to refer to British colonial administrations spread throughout the world (Dmitriev, 2009, p. 129). Regarding India, Seeley claimed that domination over that region imposed an intolerable responsibility since it was capable of ending local conflicts, relatively reducing taxes and poverty (Dmitriev, 2009, p. 129). Politicians quickly adhered to these notions, such as Cecil J. Rhodes, who argued that "the more of the world that was inhabited (by the British), the better it would be for the human race" (Dmitriev, 2009, pp. 128–130).

The enthusiasm generated by this view flourished in various newspaper reports, articles, exploration accounts, and adventure novels, becoming embedded in the heart of British identity. Just as Roman imperialism came to be interpreted as beneficial governance, the United Kingdom positioned itself as a benevolent force as well (Bernal, 1987, p. 303; Dmitriev, 2009, pp. 133–134).

Under the broad umbrella of Classical Studies, which encompasses the ancient civilisations of Greece and Rome, the emergence of "Orientalism" played a significant role in shaping the

understanding of Western European civilisation. The term "Orientalism" refers to the scholarly and cultural fascination with the East, particularly the ancient cultures of the Near East, Egypt, and Persia (Morris, 1994; Said, 2007).

In this context, Orientalists were positioned in a subordinate role to the Hellenists, who focused on the study of Greek culture and its influence on Western civilisation. While Hellenists were primarily concerned with uncovering and interpreting the achievements of ancient Greece, Orientalists were drawn to the exotic allure and mystique of the East. They sought to explore and preserve the ancient knowledge and wisdom of Eastern civilisations, often viewing themselves as the saviours or protectors of this knowledge from the Easterners themselves.

Orientalism, as a movement within Classical Studies, was deeply influenced by the colonial and imperialist context of the time. Western powers had established dominance over many Eastern regions, and this hegemonic position allowed Western scholars to exert control over the interpretation and representation of Eastern cultures. This power dynamic often perpetuated a sense of superiority and paternalism, as Orientalists positioned themselves as the custodians of Eastern knowledge and culture.

The Orientalist perspective was not without criticism, as it has been accused of perpetuating stereotypes, biases, and Eurocentric interpretations of Eastern civilisations. It tended to emphasize the "exotic" and "mysterious" aspects of the East, while sometimes overlooking the complexity and diversity of Eastern cultures in their own right.

Overall, the emergence of Orientalism within Classical Studies reflects the broader cultural and intellectual dynamics of the time, where Western European scholars sought to position themselves as the arbiters of knowledge and gatekeepers of civilisation. The relationship between Hellenists and Orientalists represents a complex interplay of power, cultural appropriation, and the desire to uncover and understand the ancient past from a Western perspective.

Although partially replaced by Classical Greece as a representative of western civilisation, the Roman Empire continued to echo mainly during the rise of Nazi-fascism. Mussolini claimed the symbolism of the title of Third Rome (*Terza Roma*) for the city of the seven hills. The title was in competition with Moscow, which, after the fall of Constantinople (the Second Rome or even "New Rome" as stated by Bermejo, 2017, p. 606) into the hands of the Turks, considered itself the successor city of the Byzantines and the seat of the Orthodox Church (Kallis, 2014). This continuation or even revival of the Roman Empire and its most striking elements and successors is a constant in European and world history. There are echoes even in more distant nations, such as the legend of the Roman legionnaires defeated in Carra (present-day Haran, Turkey) in 53 BCE, resettled by the Parthians in "Liqian". This theory was developed and defended by the Oxford professor Homer Dubs (1941), based on vague documentary sources from the Han dynasty (202 BC to 220 BC), dating from 5th CE, regarding a city named Li-jien (over 12,000 km away). However, there is no archaeological evidence of this presence. Is this not an example of the search by a colonizing nation to find its "ancestors" in a colonised nation since the 19th century? It is worth remembering that at the time of Dubs' writings, there were still British possessions in Chinese territory (cf. Dubs, 1941).

Another nation that used the image of the Roman Empire was Spain. Francoism understood that Spain was disorganised into a myriad of languages and races, with no horizon for the conception of a national unity. It was the advance of Rome that ensured the existence of a future nation (Duplá Ansuátegui, 2002, p. 6). Soon after the end of the Civil War and the consolidation of the fascists, many Roman symbols were used to justify acts such as the occupation of Morocco (Franco, 1951). There is a speech by Francisco Franco that illustrates well not only the Spanish mentality, but also the European mentality regarding the use of the Ancient World for the promotion of these nation-states:

> Atenas nos legó las ideas y la medida, Roma la unidad y el Dere- cho; el Cristianismo, la religión y la vida. Como el alma humana, la de Europa encierra también tres potencias inmutables: ideas de Gre- cia, voluntad de Roma, vida cristiana (Franco, 1951 during the Congreso de Cooperación Intelectual en el Palacio del Senado).
>
> Athens bequeathed us ideas and measure, Rome unity and Law; Christianity, religion and life. Like the human soul, that of Europe also contains three immutable powers: the ideas of Greece, the will of Rome, and the Christian life (Franco, 1951during the Congreso de Cooperación Intelectual en el Palacio del Senado, translated by the author).

According to de Frías, the study of the so-called "pre-Roman" peoples in Iberia was based on scientific prejudices given the Spanish political situation and its dictatorial regime. This period was marked by a diffusion of panceltic and iberist studies that sought to link modern Spain with western European Celtic communities and other peoples considered "Aryan." This choice aimed to justify Spain as a single national state, an automatic successor of the peoples of the past. The Roman conquest was part of this strategy and was considered by historians and archaeologists loyal to the regime as a anticipation of the unity promoted by the Catholic Monarchs (de Frías, 2006, pp. 7–8).

It is possible to identify from these examples how Rome and Greece have been used by various nation-states. The abusive reinterpretation of Ancient Rome and Greece still persists to this day. The next section will present how this interpretation of Rome as an almost unique entity for the formation of European identity still endures in the reading of archaeological heritage.

8.2.1. United Kingdom: The case of Hadrian Wall

The interdisciplinary project between Geography and Archaeology entitled "Tales of the Frontier: postcolonial readings of Hadrian's Wall" focused on the narratives chosen to deal with the landscape of Hadrian's Wall in the North of England. The project, which was funded by the UK's Arts, Humanities and Research Council, included an in 2009 exhibition titled "An Archaeology of "Race"" curated by Claire Nesbitt and Divya Tolia-Kelly. The exhibition received an impressive 11,000 visitors and 500 website hits per week from July to October 2009 (Tolia-Kelly, 2011, p. 72). Through a postcolonial approach, it was possible to identify racist elements that consolidated the wall as the work of Emperor Hadrian, to the detriment of other emperors, especially Septimius Severus, a major reformer of this defensive system (Tolia-Kelly, 2011, p. 72). While Hadrian's Wall has often been glorified and celebrated as a symbol of Roman power and civilisation, the postcolonial approach reveals a bias towards attributing its construction solely to Hadrian, overshadowing the contributions and reforms made by other emperors like Septimius Severus.

Through a critical examination of historical records, architectural evidence, and colonial ideologies, scholars like Tolia-Kelly (2011) have argued that this biased representation of Hadrian's Wall perpetuates a Eurocentric narrative that downplays the contributions of non-Western cultures and reinforces the marginalisation of non-European perspectives.

By applying a postcolonial lens, the analysis reveals the underlying racist elements that have influenced the historical interpretation and presentation of Hadrian's Wall. It highlights the need to challenge dominant narratives and broaden the understanding of historical events by acknowledging the diverse actors and complex interactions that shaped the construction and significance of such monuments. However, in favour of the image of a Roman Emperor projected by Hadrian, the North African emperor Septimius Severus was overlooked. This fact is somehow strange

since Severus spent the last days of his life in Britain, trying to expand Roman dominion over the island.

The material culture found retains many characteristics of the period of reforms carried out by the Punic-Berber emperor (Tolia-Kelly, 2011, p. 72). This implies that the archaeological evidence and artefacts discovered at the site reflect the cultural and historical context associated with the reign of this particular emperor. However, there is a contrast between the material culture found and the selection of Hadrian as the representative of the wall. Despite the presence of artefacts and features that align with the period of the Punic-Berber emperor, Hadrian has been historically identified or portrayed as the primary figure associated with the construction or representation of the wall. It is important to note that the passage does not directly address the question of whether Hadrian was the actual builder of the wall. Instead, it focuses on the discrepancy between the material culture found at the site and the representation or attribution of the wall to Hadrian. Tolia-Kelly discusses the material culture and its connection to the period of reforms carried out by the Punic-Berber emperor, highlighting the contrast with the prevalent selection of Hadrian as the representative figure of the wall. In summary, the discussion suggests that despite the presence of material culture associated with a different historical period, the attribution of the wall to Hadrian has overshadowed or ignored the contributions and characteristics of the Punic-Berber emperor. The focus is on the discrepancy between the material evidence and the representation of the wall, rather than the question of who actually built it (Tolia-Kelly, 2011, p. 72).

The national perspectives on the Roman Empire were formed and maintained within a representational field that favours whiteness. As a result, the idea of Black Africans being a part of Roman culture and history is often excluded from the heritage narrative and considered discordant.

As Dyer points out in his work entitled "Whiteness an essay on race", there is a difficulty in analysing whiteness as an ethnic group. Whiteness is often taken for granted. Therefore, it is very natural to fit a white history into Antiquity in Europe, which has been classifying other human communities since

the seventeenth century. Ethnic group analysis applies to others (e.g. Africans, Asians, Indigenous peoples, among others) (Bonnett, 1997, p. 196). When a "non-white" person is presented to this consolidated set of racist perspectives, they inevitably become contested (for a deeper discussion see Dyer, 2013).

The concept of whiteness, as highlighted by Dyer, poses challenges when it comes to analysing it as an ethnic group. Whiteness is often considered the norm or default, and its privileges and assumptions are taken for granted. This normalisation of whiteness in historical narratives leads to a natural inclination to fit a white history into the context of Antiquity in Europe, where the categorisation and classification of other human communities based on race and ethnicity have been prevalent since the seventeenth century.

In contrast, ethnic group analysis tends to be applied primarily to non-white groups, such as Africans, Asians, Indigenous peoples, and others. This discrepancy perpetuates the exclusion of diverse narratives and experiences from the dominant heritage narrative, reinforcing a limited and distorted understanding of the past.

By acknowledging the influence of whiteness in shaping historical perspectives and heritage narratives, it becomes evident that there is a need to critically examine and challenge the existing representations. This involves questioning the assumptions and biases that underlie the narratives and striving for a more inclusive and accurate portrayal of history that recognizes the contributions and presence of all individuals and communities, regardless of their racial or ethnic backgrounds.

To return to the case of Hadrian's Wall, therefore, the decision to construct the wall was made by Emperor Hadrian. However, there is an evident segregation when the archaeological record points in one direction and the dissemination of heritage points in another. This choice, which continues to be in force, has its origins in the antiquarianism of the 18th century. The main objective of this movement was to establish the British national project as an imperialistic force similar to the way

the Roman Empire consolidated in the past. However, this movement was joined by ideals particularly aimed at valuing: a) the myth of Rome and its beneficial imperialistic force; b) the European man and his superiority, and; c) the myth of white superiority (Tolia-Kelly, 2011, p. 71).

It is not inaccurate to say that the narratives of Romanity, Europeanness, and Whiteness still prevail today. In the case of Hadrian's Wall, this frontier region is a stage where sensitive issues regarding heritage, landscape, and English and British national culture intersect. In this case, these themes are presented in literature on Roman heritage that use the image of Emperor Hadrian. Often, these themes are presented to the public through ideological lenses of British imperialism and its agents, such as the British Museum during the exhibition titled "Hadrian: Empire and Conflict. Life, Love and Legacy" held in 2008 (see Figure 134) (Tolia-Kelly, 2011, p. 76).

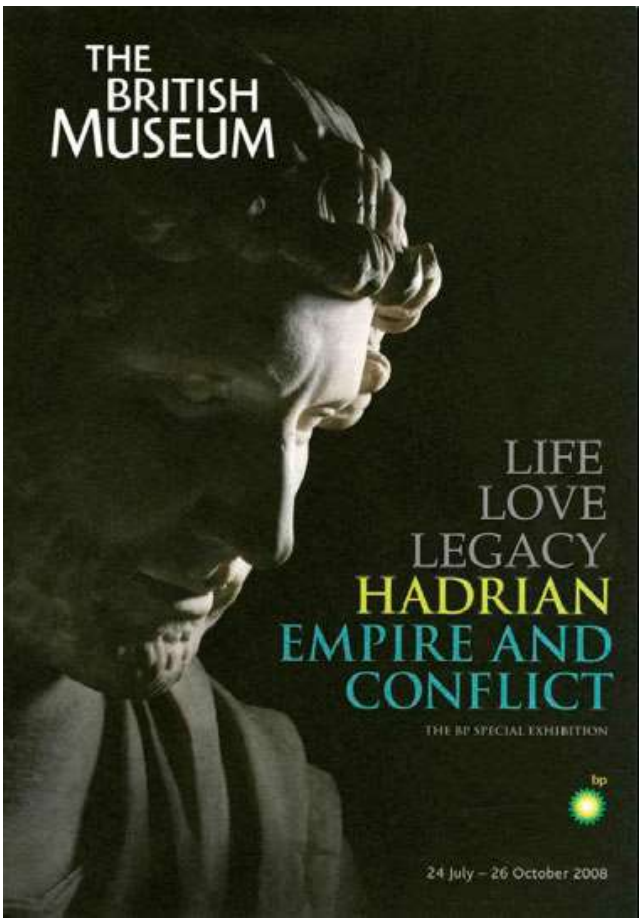
The exhibition held at the British Museum aimed to showcase the extent and diversity of the Roman Empire during the reign of Emperor Hadrian (117-138 BCE). Its subtitle, "Life, Love, Legacy," also sought to present the private life of the emperor by providing details about his relationship with his lover Antinous (Boatwright 2009, 121).

Overall, the exhibition presented two types of achievements by Hadrian: architectural, which included showcasing developments such as the Pantheon (which inspired the construction of the Reading Room in the British Museum itself), and political, which involved securing the power of Rome by abandoning conflict-ridden territories invaded by his predecessor Trajan. The exhibition highlighted the delimitation of the Empire through the construction of Hadrian's Wall and the assurance of two subsequent dynasties (Antoninus Pius and Marcus Aurelius) (Boatwright 2009, 121-125).

With 180 objects from various countries, the exhibition also aimed to demonstrate that within this secure framework there were moments of conflict with the "others," such as the "barbarians" north of Hadrian's Wall and Jewish rebellions in Judea (Boatwright 2009, 121-123).

Aesthetically, the exhibition presented grandiose objects to represent Hadrian's period, such as his marble statue from Cyrene depicting him wearing a himation instead of a Roman toga, presenting him as a Hellenophile, as his own nickname "Graeculus" (Little Greek) suggests. Other architectural elements of grandeur from this period were his villa in Tivoli. Three-dimensional objects from excavations, such as Egyptian-style sculptures and a part of a wall with hieroglyphic inscriptions, were also on display. According to Boatwright (2009, 127), "the British Museum's exhibition and catalogue strikingly add to our understanding of this man who overcame personal and public conflicts to guide the Roman Empire so impressively."

Figure 134 - Brochure of the exhibition



Source: Tolia-Kelly 2008, 77, pl. 2

Tolia-Kelly (Tolia-Kelly, 2011, p. 76) argues that even the aesthetic choices for representing Hadrian (such as lighting, colours, and selected cultural materials) aim for a positive interpretation that involves grandeur and timeless power. Today, this type of heritage promotion can still be found, such as the "1900 Festival", which celebrates 1900 years since the construction of Hadrian's Wall[5]. The festival celebrates the 1900th anniversary of the beginning of the building of Hadrian's wall.

The website (https://1900.hadrianswallcountry.co.uk/events/) coordinated by the Hadrian's Wall Partnership, funded by the Heritage Fund and supported by the Arts Council England, Historic England and by the Northumberland County Council has different events and activities through the year, however it orbits around Hadrian's legacy. What is striking is the celebration of the monument itself and not the life of the work that lasted until the death of Hadrian. Later, in 142 CE, the emperor Antoninus Pius did not make any efforts to maintain the wall. He ordered the construction of a new one, 160 km farther north, known as the Antonine Wall. This second defensive system lasted for almost 20 years until the Romans were pushed back again by the Picts to Hadrian's Wall in 162 CE.

The photographic selection for the exhibition on Hadrian, by the British Museum, reflects the grandeur of the defensive system, much like the brochure (Figure 135).

[5] The festival celebrates the 1900th anniversary of the beginning of the building of Hadrian's wall. The site (https://1900.hadrianswallcountry.co.uk/events/) have different events and activities through the year, however it orbits around Hadrian's legacy.

Figure 135 - Homepage of the "1900 Festival" website

Source: Available at: https://1900.hadrianswallcountry.co.uk/, [Accessed on 2nd December 2022]

It is possible to find traces of a past imperialist history in the organisation of events along the wall, such as the celebration of Queen Elizabeth's Jubilee.

The Queen's Jubilee was a celebration hold to commemorate the anniversary of the monarch's reign. The celebration holds historical and cultural significance as it commemorates a milestone in the monarch's reign. However, the nature of the Jubilee and its organisation along the wall can be seen as problematic due to its implications and the lack of comprehensive representation.

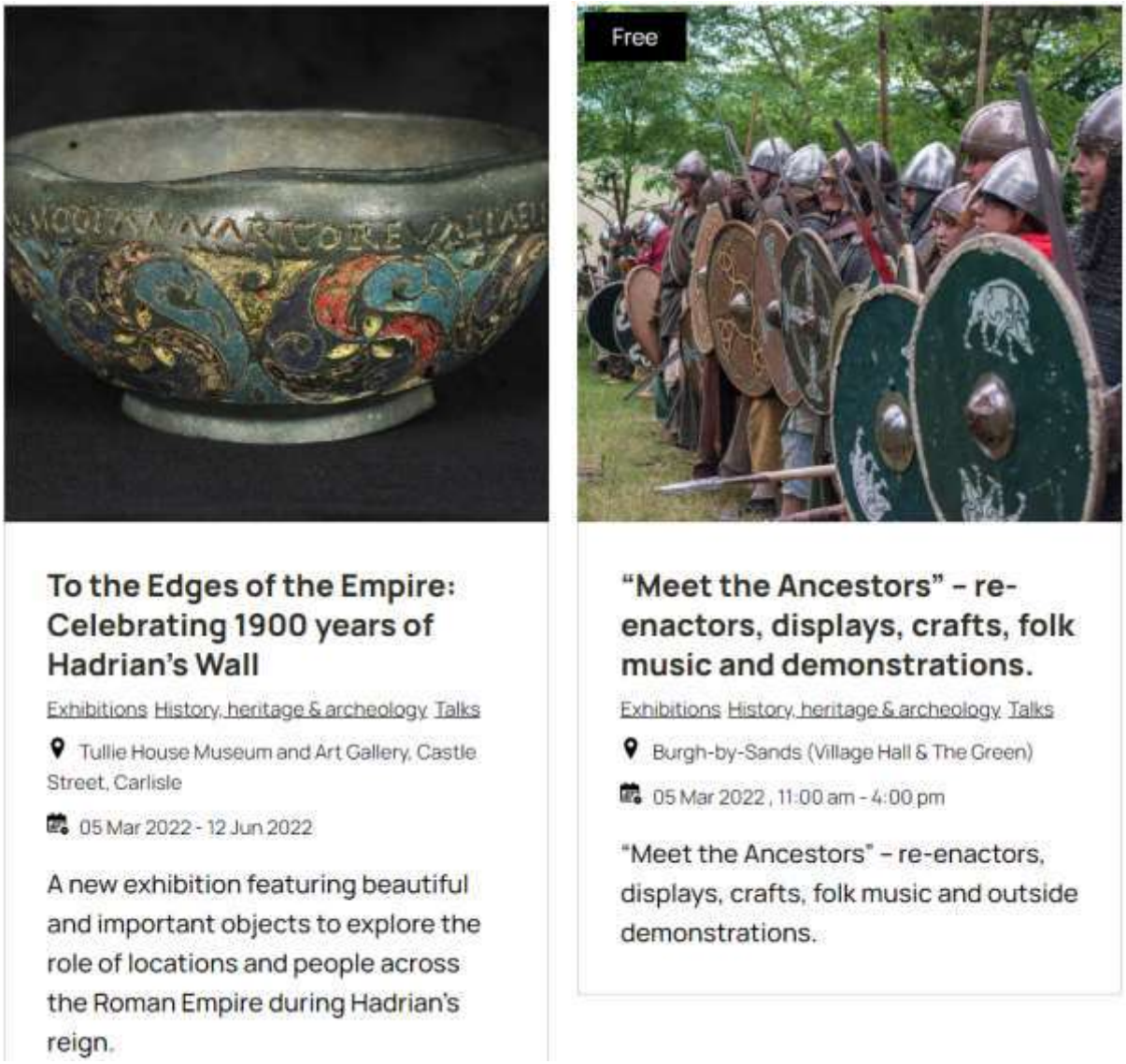
Firstly, the Jubilee's focus on the aesthetic and military aspects of the wall reinforces a narrow and selective view of its historical significance. By highlighting these aspects, other crucial dimensions, such as the social, economic, and cultural interactions associated with the wall, are downplayed or overlooked. This approach perpetuates a limited understanding of the wall's role within the broader context of the Roman Empire and its connections with various cultures and communities.

Furthermore, the lack of significant mentions about the life of the wall, its cross-cultural interactions, and its relation to the rest of the empire on the festival's website indicates a missed opportunity for a more comprehensive exploration of its historical significance. By emphasizing the Romans and

even the Vikings, the Jubilee reinforces a hierarchy of historical importance, neglecting the contributions and experiences of other communities and cultures that were connected to the wall.

This selective representation and emphasis on certain aspects of the wall's history align with a past imperialist history, where dominant narratives and perspectives have often marginalised or erased the experiences of marginalised groups. It reflects a historical framing that prioritizes certain voices and perpetuates an exclusionary view of heritage. As stated by Bonacchi et al. (Bonacchi, Altaweel and Krzyzanska, 2018, p. 175), the pre-modern legacies of Europe warrant further investigation, as they permeate numerous aspects of life and serve as the foundation for widespread myth-making practices across European territories and beyond. To address this, it is crucial to promote a more inclusive and nuanced understanding of the wall's history and its broader significance. This can be achieved by actively engaging with diverse perspectives, highlighting the cross-cultural interactions, and acknowledging the contributions of all communities connected to the wall. By broadening the narrative and challenging the dominant discourse, the Jubilee and similar events can become opportunities for fostering dialogue, understanding, and a more comprehensive exploration of the past. However, the content on the festival's website is lacking, with no significant mentions about the life of the wall, its relation to the rest of the empire its cross-cultural interactions. The importance given to the aesthetic and military is outstanding and, of course, the Romans and the even the Vikings (cf. event description) are the "chosen ones" (Figure 136).

Figure 136 - Examples of events sponsored by the 1900 festival



Source: Available at https://1900.hadrianswallcountry.co.uk/, [Accessed in 30/03/2023]

In addition to the issue of archaeological heritage, there is a very intimate relationship between British society and its countryside, which began in the 18th century that it will be exposed in the following.

There were 200 years of aesthetic construction through art and literature (Tuan, 1979, p. 92). Tuan asserts that this consolidation was so profound that it even elicited a physical response to the stimuli of the surrounding landscape. Hawkes (1951, p. 143) notes that before the 18th century, the

landscape still exerted a dominating force over the English community. It was only with the Industrial Revolution that the balance of power shifted towards humans. With the advent of the first national parks (e.g. Yellowstone in 1872, in the United States), the world began to change its view of its landscape. The first initiatives in United Kingdom started in 1884 introduced by the member of parliament (MP) James Bryce that introduced the Access to Mountains Bill. However this attempt failed without debate (Ranlett, 1983, p. 203; Anderson and Ingold, 2022, p. 74).

However, for the next century, the English population start to appreciate great outdoors and the scape that the open air offered in response of the industrialisation process. During the 1930s mass trespass happened opposing landowners and the public which were demanding the creation of National Parks. It was only in 1950s that the UK announced its first 10 national parks (e.g. Peak District in 1951, Lake District, Snowdonia, Dartmoor, Pembrokeshire Coast, North York Moors, Yorkshire Dales, Exmoor, Northumberland, Brecon Beacons). The English countryside was re-signified and instilled in the national affective memory as a place to pause and contemplate. This approach was a result of the critical conditions in cities, such as overpopulation, pollution, and criminality. With that being said, life in the English countryside was idealised as a place of spiritual seclusion and rest not only for the upper classes but also for the common people of the first industrialised nation (see Hawkes, 1951, p. 143; as deepened by Thomas, 1991, p. 12; Diegues, 1996, p. 25).

Figure 137 - Man dressed as a Roman legionnaire, holding a banner with the royal monogram "ER" (Elizabeth Regina)

Source: Available from: https://1900.hadrianswallcountry.co.uk/events/the-queens-platinum-jubilee-beacons/, [Accessed on 2nd December 2022]

8.2.2. Spain: the Romanisation ghost

Moving to Spain, the process of Roman expansion over the Iberian Peninsula began in 195 BCE in Emporion (now Ampurias). Therefore, Pina Polo (2011, p. 39) alerts us that the Romans, unlike the Greeks and the Phoenicians, did not have prior knowledge of the geography and the communities in Iberia, but they knew it was not a *terra nullius*.

Both the Semitic and Hellenic expansions already had an accumulation of knowledge about the Far West. One of the few surviving records, in the Latin language, about this knowledge is the Periplus of Pseudo-Silax and the expeditions of Himilcon, who supposedly reached the British Isles (Oestrymnides?). This account can be found in Rufus Avienus (100, 380, 400) (BCE century) and is briefly mentioned in Pliny the Elder (Natural History 2.67.8) (1st CE century). These authors would

have drawn from Greek sources, which in turn may have had their original version in the Carthaginian Annals (Ora Maritima, 400) in Phoenician-Punic. Thus, what has reached us is a version of a version.

As can be noted from the written sources, the Romans had knowledge about the Iberian Peninsula only from those who had frequented it. When Rome, still in its Republican period, arrives on the Peninsula, numerous challenges arise in the face of the unknown "other." There were a thousand unknown communities there, as reported by the Greeks, such as the Kelts, Keltiberians, Cantabrians, Gallicians, Turdetanians, Tartessians, as well as the Phoenicians, Greeks, and so on (Geography 3.4.16).

Even though there are myriad complex communities, Pina Polo (2011, p. 44) argues that when Rome began its conquest in Hispania, "it is evident that the level of urban development was inferior to that of the Italian peninsula." This type of argument reveals that there is still a ghost of the concept of Romanisation lingering in academia. In the case of Spain, the presence of Rome has always been understood as something beneficial and necessary. Even without using the term Romanisation, it implies in it. The author notes that Roman domination influenced the restructuring of indigenous Iberian peoples, and two factors led to this outcome: 1) the context of wars and conquests subjugating the peoples, and 2) the foundation and refoundation of new cities modifying the Iberian urban landscape (Pina Polo, 2011, pp. 45–46). (Pina Polo, 2011, pp. 45–46). Now, if this process is not conditioned by the paradigm of Romanisation, is it still underlying?

Thus, it is necessary to comment on the concept of Romanisation and the current state of the debate. The term "Romanisation" remains in use and is widely employed to explain the process of Roman expansion in the Iberian Peninsula and its cultural and social consequences (Carrasco Serrano, 2003; Valiño Arcos, 2010; e.g. Gámiz-Castro, 2016; Ruiz Osuna, 2016; Teruel, 2016; Mañanes, 2018; Mayoral Herrera, 2018; Enríquez, 2019; Cubilla Agüera, 2020).

Mata argues that it is "increasingly absurd to deny the varying degrees of the process of Romanisation" (for a further discussion see Mata, 2015, p. 13).

With the same impetus, there are museums that use Romanisation as a means of promotion, such as the case of the Museum of Romanisation in Calahorra (MDC), which makes it more explicit in its name. Others continue to hold exhibitions that depict Romanisation as a beneficial and progressive process, such as the Museum of Archaeology of Álava with its catalogue "Romanisation in Álava" (Nieva, Zubillaga and de Arqueología, 2000).

Given the ethnic diversity present in the Iberian Peninsula, this region becomes an ideal environment for the application of studies on theories that stem from the rejection of "Romanisation." Among these theories, the one with the greatest potential is undoubtedly globalisation, which can be applied to understand the connections between different cultures and objects in motion amidst the interactions between Romans and Iberians. The theory of globalisation, also applicable to the present day, has the ability to overcome the limitations of the "Romanisation" approach through the study and analysis of human mobility (Augé, 2009).

According Versluys (2014), in the Anglo-Saxon world, there is a consensus in challenging the concept of "Romanisation." There is a revisionist movement among scholars who aim to break away from the old paradigms that view Rome as a positive and necessary force (for a further discussion see Woolf, 1997; Pieterse, 2015; Van Oyen, 2015; Millett, Revell and Moore, 2016).

This group of researchers believes that the theory of globalisation provides alternative approaches to understanding Rome, its cultural and social impacts (e.g. Hodos, 2015, 2017) and in the study of material culture (e.g. Ulf, 2014).

Through these approaches, it is possible to examine the dynamics of the phenomenon of Roman expansion by exploring the complex relationships between things and humans. This extensive network of connections has the capacity to challenge the narratives of Romanisation and its residual

traces in academic discourse. The main reason for this is precisely the study of things, which have the ability to exhibit the many connectivities developed during their period within their systemic context. From this perspective, it is possible to have a different understanding, without primarily relying on historical interpretations that often reduce things to expressions of identity and illustrations of "Romanisation" (Versluys, 2014, p. 1; Pieterse, 2015, p. 228).

This movement aims to go beyond representation and, in fact, embrace the archaeological perspective for a better understanding of Roman expansion. Thus, things (i.e., material culture) would have their materiality and agency valued, becoming central in the analysis of Mediterranean connectivity. This paradigm shift enables the comprehension of Rome and its relationship with the diverse communities it interacted with. The theoretical position within Anglo-Saxon Roman archaeology has undergone changes over time. Initially, the discipline was primarily focused on landscape archaeology, adopting a strictly archaeological approach that was, in a way, even anti-Classical (Versluys, 2014, p. 40).

In the past, the discipline was much more focused on Landscape Archaeology, showing a greater interest in studying the physical environment. However, from a non-colonial perspective, there has been a greater openness to the study of other types of factors such as demography, colonisation, and economics. It is within this context that a more archaeologically oriented approach will solidify, where objects, which were previously reduced to mere illustrations, will truly become the centre of study (Versluys, 2014, p. 40).

However, despite these changes, the dialogues are more limited within the English and Dutch academic communities. These two have reached a "consensus" to abandon the use of the term "Romanisation."

However, the term still prevails in the academic discourse of many countries, often being both explicitly and implicitly present in articles and books.

Globalisation is not about Roman power destroying and imposing itself upon local and authentic cultures. The goal of this theoretical approach is to investigate diversity within a single cultural framework, with complex power structures among different groups that have constantly shifting boundaries, but also with unintended outcomes of connectivity and communication.

There are several studies that effectively apply the theory of globalisation in various contexts (e.g. for the Andean cultures: Jennings, 2017; for the Minoans Knappett, 2017, pp. 33–37; for the transmission between Mesopotamia and the Mediterranean see Hodos *et al.*, 2020).

The study presented by these authors demonstrates how the theory of globalisation can help understand the connections and interactions between different cultures and objects in movement in ancient times. Therefore, it is necessary to present these networks of connection to the non-academic community, which form diverse identities when we talk about Rome in other territories.

The concept of Romanisation was developed in Roman archaeology to explain how local cultures were transformed and influenced by the Roman presence in different parts of the ancient world. Romanisation was originally conceived as a one-way process, in which Roman culture was imposed on local cultures through military conquest and colonisation. However, this view has been criticised by many archaeologists and historians, who argue that Romanisation was a more complex and multifaceted process involving interaction and negotiation between different cultures and social groups. Romanisation has also been criticised for being Eurocentric and assuming that Roman culture was superior to local cultures. As a result, many archaeologists and historians now prefer to use more complex and contextualised approaches to understand the interactions between different cultures and social groups in antiquity.

8.3. Challenging Exclusionary Narratives

The assertion made by Tolia-Kelly (2011) and regarding the current historical moment highlights the intersection of nationalist and fascist echoes with issues of identity and nationality. There is a minority that harbours fears and concerns about the presence of immigrants, which contributes to shaping their perceptions and attitudes. However, Tolia-Kelly emphasizes that Europe tends to forget its own history, particularly in antiquity, when migratory flows allowed for continuous cultural contact with others (Tolia-Kelly, 2011, p. 2).

This presents an opportunity for reflection on how archaeological heritage has been utilised to perpetuate racist notions. By examining the archaeological evidence, we can gain insights into the interconnectedness of cultures and the contributions made by diverse groups. One such example is the discovery of vaulting tubes, known as *tubi fittili* in Latin, during the reforms carried out by Severus on Hadrian's Wall (Figure 138).

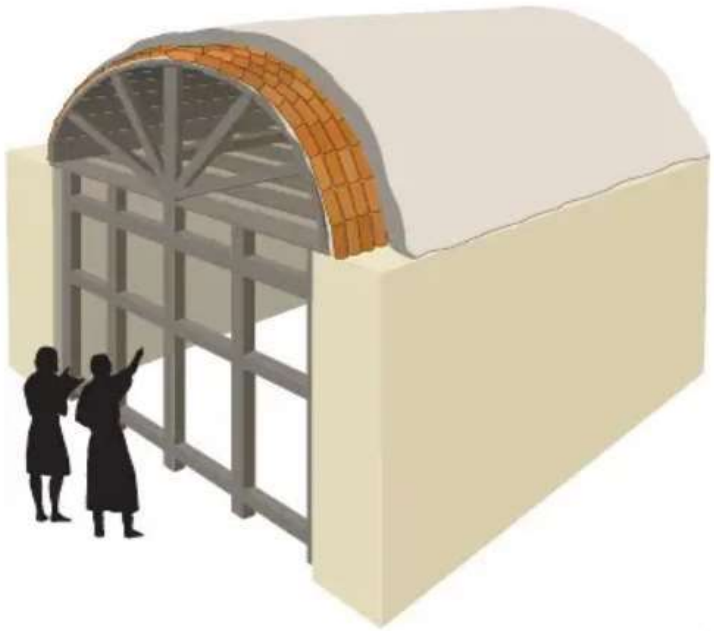
These vaulting tubes, of North African origin, were widely used between the 2nd and 7th centuries CE. They were hollow terracotta pipes utilised in the construction of vault structures. The presence of these African-developed architectural elements along the defensive system challenges the dominant narrative that often focuses solely on the contributions of figures like Hadrian. Additionally, the discovery of African typology ceramics further supports the notion of cultural exchange and influence (Padley, 2014, p. 64).

Also, the extensive material culture found in the archaeological record provides valuable insights into the vibrant tapestry of ancient societies. Through the discovery of lead seals, bricks, coins, spoons, knives, kitchen utensils, and gravestones (Figure 139**)** a diverse range of cultural elements comes to light. These artefacts not only reveal the presence of North African influences but also bear witness to the contributions of Gaul's, Germans, and Romans (Tolia-Kelly and Nesbitt, 2009, p. 3).

Such a diverse assemblage challenges the prevailing exclusionary narratives that have perpetuated racist ideas.

By highlighting these archaeological findings, we can shed light on the diverse and interconnected nature of ancient societies, challenging the exclusionary narratives that have perpetuated racist ideas. It calls for a broader understanding and appreciation of the contributions made by various cultures, transcending nationalistic and exclusionary perspectives.

Figure 138 - Example of the constructive techniques of vaulting tubes



Source: Tolia-Kelly; Nesbitt, 2009

By examining and showcasing these archaeological findings, we have the opportunity to unravel the interconnected nature of ancient societies. This exploration serves as a powerful counterpoint to the narrow and exclusive perspectives that have been propagated. It calls for a broader understanding and appreciation of the multifaceted contributions made by various cultures,

transcending the limitations of nationalistic and exclusionary ideologies. Through this lens, we can celebrate the rich tapestry of human history and foster a more inclusive and tolerant worldview (Tolia-Kelly and Nesbitt, 2009, p. 3).

Figure 139 - Tomb of Regina. The tomb suggests that she was a native Breton from Catuvellauni (Hertfordshire). Her gravestone reports that she had been enslaved until she married a Syrian named Barates

Source: Tolia-Kelly 2009, 5

8.4. Conclusions

In this chapter, our aim was to discuss how the issue of European nationalism fostered specific historical choices to affirm its own identity to the world, using its archaeological sites. As mentioned by Dmitriev (2009, p. 123), past and present influence each other:

'Past and present simultaneously influence and permeate each other: past moulds and fashions what eventually becomes modern, whereas present retrospectively gives new meanings to past events' (Dmitriev, 2009, p. 123).

In this sense the Roman archaeological heritage was one of the main vectors for the construction of a European supremacist identity in relation to its areas of influence and colonisation.

Many European nations made use of this cultural heritage to varying degrees, such as France, Germany, Russia, and England. The latter used the discourse of Roman imperialism to consolidate itself as a nation. The term imperialism, coined by Seeley (1869), aimed to explain the beneficial expansion of the Anglo-Saxon dominion over colonial areas.

The English territory is not exempt from the process of reaffirming a grandeur of the past and cultural heritage used as a factor of superiority over other peoples. The "Hadrian's Wall," as the Roman defensive system built on the border with present-day Scotland was named, is still the subject *of ad nauseam* reaffirmation of white European superiority. The choice of Hadrian goes beyond the fact that he was the emperor who built it. The figure of his great reformer, Septimius Severus, was erased, mainly due to his Punic-Berber North African origin. Also, all North African elements present in the archaeological record of the wall are not adequately considered, demonstrating the selection of specific elements that valued the figure of the white European man (Tolia-Kelly 2010).

The same phenomenon occurs in other European countries that had large colonial dominions in the past. In Spain, Imperial Rome was deeply linked to the emerging fascist movements. This same discourse also attempted to maintain spaces that were on the brink of becoming independent, as happened in Morocco. Until recently, the Roman archaeological heritage has had prominence over the other communities that inhabited the Iberian Peninsula but were considered less sophisticated.

The exhibition "An Archaeology of "Race"" aimed to present alternative ways of showcasing Roman archaeological heritage, beyond the colonial discourse that presents the Roman Empire solely as a European legacy. Its objective was to demonstrate the international exchange within the empire and how different ways of life from other regions (such as North Africa) made their way to the borders of the so-called "Hadrian's Wall" in present-day England. In the words of the author, the exhibition aimed to "demythologize" the northern border as a homogeneous space of English populations shielded from external influences (Tolya-Kelly 2009, 2).

More initiatives of this type and scope are still needed to present the cultural variability that was in transit in the Mediterranean and its associated areas to break the myth of an untouched white European racial unity by migrations and the dissemination of new technologies from other parts of the Ancient World. Moreover, the text suggests that the theory of globalisation can aid in moving beyond mere representation in our understanding of antiquity, making it genuinely archaeological. It emphasizes the importance of placing material culture at the centre of analyses.

9. Chapter 9 – Methodology

9.1. Introduction

To collect the necessary data for the research, it was necessary to conduct fieldwork in Carteia (San Roque, Spain). This research was carried out during our overseas internship in Bristol, United Kingdom, under the co-supervision of Professor Tamar Hodos.

Between the 12th and 24th of October 2021, we conducted fieldwork, a technical visit to access unpublished materials on excavations, and consulted a library in Spain. The fieldwork, aimed at data collection, took place from the 12th to the 17th of October 2021 in San Roque (Andalusia), a municipality near the archaeological site of Carteia. The authorisation for data collection issued by the "Consejería de Cultura y Patrimonio Histórico of the Junta de Andalucía" is attached in the annexes. The objectives of the fieldwork were: 1) Collection of bibliographic and archaeological materials to advance the research; 2) Visit to the archaeological site of Carteia and non-invasive collection of photographic material for the database; 3) Photogrammetric work of part of the city wall and temple area. As a result, we obtained 121 GB (12,164 files) of data for the next phase, where we will use the photogrammetric technique for the three-dimensional modelling of the site. From the 17th to the 24th of October 2021, we consulted the "Servicio de Difusión del Instituto Andaluz del Patrimonio Histórico" to access unpublished materials on the excavations of the walls of Carteia.

9.2. The VAR (Virtual Augmented Reality)

9.1.1. What is the VAR?

To address the issues surrounding the dissemination of construction techniques throughout the Phoenician-Punic Mediterranean, as suggested by Professor Romero Tori (Poli-USP), a virtualisation model has been proposed, entitled Virtual Augmented Reality (VAR). The main objective of this representational model is not only to focus on the construction itself but also to bring forth the means of construction for discussion. By employing photogrammetry at the archaeological site of Carteia, it became possible to remodel a potential interpretation of the city's walls and temple.

As a representational model, VAR makes use of affordable and easily accessible cardboard devices available in the market, which can be assembled at home. This representational model aims to provide a sensory experience of a reconstructed environment for audiences who are geographically distant from a specific archaeological site. For example, it allows someone in Brazil to virtually visit an archaeological site in Spain through virtual reality headsets attached to cardboard adapters (Figure 140).

Figure 140 - Example of virtual Reality Cardboard adapters

Source: Available from https://instock.pk/google-cardboard-virtual-reality-vr-box-for-3d-gaming-and-imax-movies.html, [Accessed in 2nd June 2023]

By using a smartphone, users will be able to download the publicly available application. Once installed on their mobile devices and integrated with the cardboard, users gain access to a representation of the prototype of Carteia's temple and walls. This type of representational model was conceived in response to the need to address more profound questions related to heritage and how an object or structure from a specific location connects with others through its means of construction, while simultaneously innovating and preserving local traditions. Existing models tend to essentialize cultural heritage into rigid categories without acknowledging the plurality of experiences that, together, create heritage.

Additionally, VAR aims to introduce the application of entanglement theories and globalisation to the public, as a means of transcending the confines of academia.

The final apk developed for Android is available for analysis at the following link https://drive.google.com/drive/folders/1segEy3bBQLP1Ftfayp0Rz047_B4UKHFE?usp=drive_link and will be accessible with authorisation from the research.

9.2. First Phase

9.2.1. The fieldwork data collection and field tools

During the field trip, between 12-17 October 2021, the data collection was made in situ at Carteia. The recollected data are based in photography material extracted from specific angles for the later three-dimensional modelling using Photogrammetry techniques.

To take the pictures it was used a camera model Canon EOS 2000D + EF-S 18-55mm IS II Lens +Backpack + SD card.

According to Lachamber (2017, p. 3), photogrammetry is:

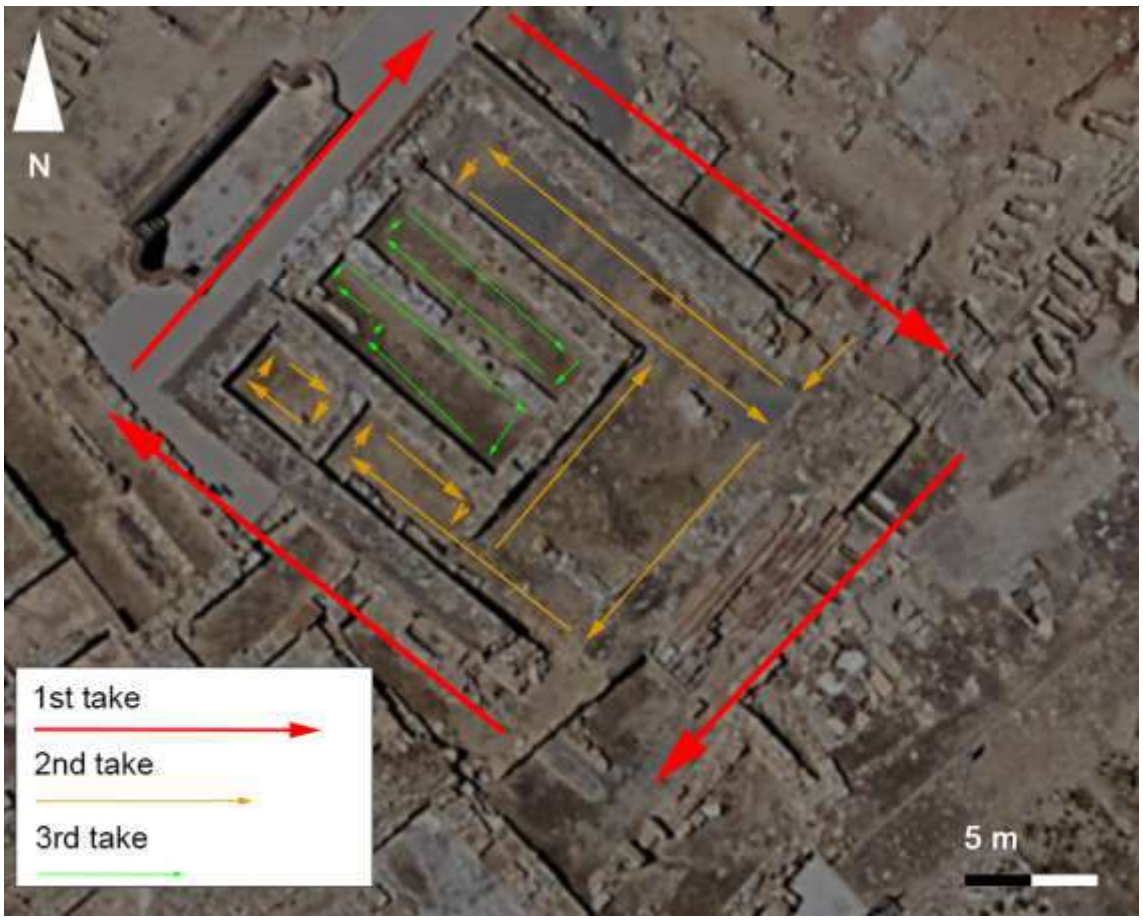
> Is the process of authoring a digital asset using multiple photos of the original real-world object. There are different uses of photogrammetry, and the workflow can vary depending on the context (Lachambre, Lagarde and Jover, 2017, p. 3).

The image collection was performed in automatic mode, the camera itself adjusted to the strong sunlight in the area during that period. This option was chosen due to the brightness at the archaeological site. During the fieldwork, there was a lot of sunlight and the camera's automatic adjustments were able to balance the brightness more effectively. The first location within the site to have its data extracted was the sacred area of the city, specifically the Roman Republican temple (coordinates: ~36.185518745899586, -5.412052992360766).

A total of 563 photos were taken from the temple, amounting to 6.69 GB of data. These images were catalogued and stored in a folder named "TEMPLECANON" on the notebook. Additionally, we created a backup copy of this file and others on Google Drive, as we maintain a direct affiliation with the University of São Paulo, which provides unlimited storage for the USP community. The photos have dimensions of 6000 x 4000 with a resolution of 72 dpi, 24-bit intensity, and the camera flash was not used. The camera had a focal distance of 18mm, and the angle was maintained at 110º.

To catalogue the structure of the temple (Figure 141) the path followed respected the boundaries of the structure's walls. As we had special authorisation and access to the structure, we were able to photograph elements that were not easily visible in other materials published on the site.

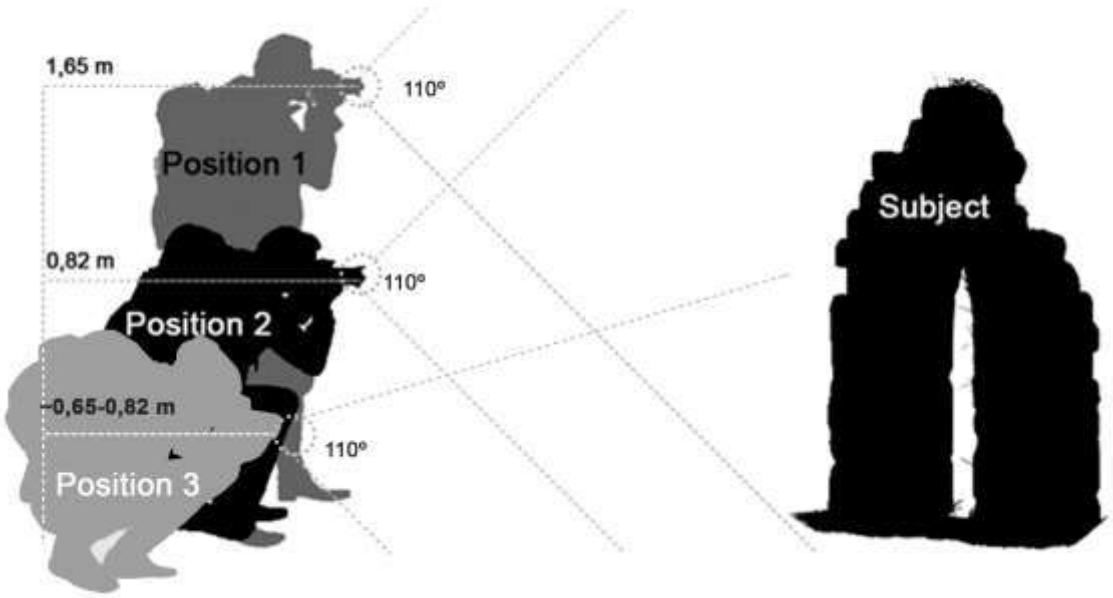
Figure 141 - Route used for capturing the photos



Source: Created by the author (2023)

The photographs were taken from an initial standing position (Figure 142) to a secondary position, using the knee for levelling (Figure 142). The object in the photo remained within the camera frame. For shots where the object was on the ground or the ground itself was the focus of interest (Figure 142), I crouched down while maintaining the same distance from the camera. (i.e., 110º).

Figure 142 - Position 1, 2 and 3 to take the photos



Source: Created by the author (2023)

Multiple photos were taken from these two different angles, and for the photogrammetric model generation, it was necessary to overlap one image with another. The purpose of the overlap was to provide a reference point to the program's algorithm for creating the three-dimensional model, which will be discussed in the next section.

After taking photos in the temple area, we conducted a second round of photography in the area where defensive structures such as the city gate, watchtowers, and casemates were accumulated along the Punic wall curtain (~40 meters away from the Roman Republican temple).

9.3. Subjects

The areas chosen for the development of the prototypes were specifically the religious area and a portion of the defensive system of the city of Carteia. The choice of these two locations is due to their cultural intertwining since their founding moments in the 6th century BC until the period of Augustus. As explained in Chapter 6 in section 6.1.1, part of the Phoenician-Punic structures of the defensive system continues in use. On the other hand, in the area of the Roman forum, where the temple of Carteia is located, there is a continuity in its religious use since it was the site of development of the Phoenician-Punic rites.

9.3.1. Settings

Operating System Used: Windows 111 Single Language Version 22H2

Software version used: Agisoft Metashape Professional Version 1.8.0 build 13794 (64 bits)

Hardware settings: Intel EM Core EM i7-7700HQ CPU 2.80GHz. Installed Ram 16,0 GB (45,9 GB).

9.3.2. Used settings

For the production of the three-dimensional models, we used the highest quality settings of the software. This choice is due to the fact that this work aims to uncover the traces of construction

techniques that may not be readily apparent at first glance. The settings will be provided in the next section, at the end of each topic.

9.4. Second Phase

9.4.1. Data processing

After collecting field data, a preliminary photogrammetry was performed in the field to verify the material. The data collected from the temple and the casemate wall was then processed using Agisoft Metashape Professional software. The choice of this program is due to its reference in photogrammetric data production and its ease of use. Despite having a very clear interface, the program is still methodical. To achieve the expected final results of photogrammetry (i.e., the surface of a three-dimensional model), five processes are required. These processes are:

9.4.1.1. Selection of the folder or files containing the data

As the name of this process suggests, the photos must be inserted either within a folder or separately. The option chosen was to select a previously created folder named "TEMPLECANON," where all the photos of the object, such as the ruins of the Republican temple, were located.

9.4.1.2. The first process is photo alignment

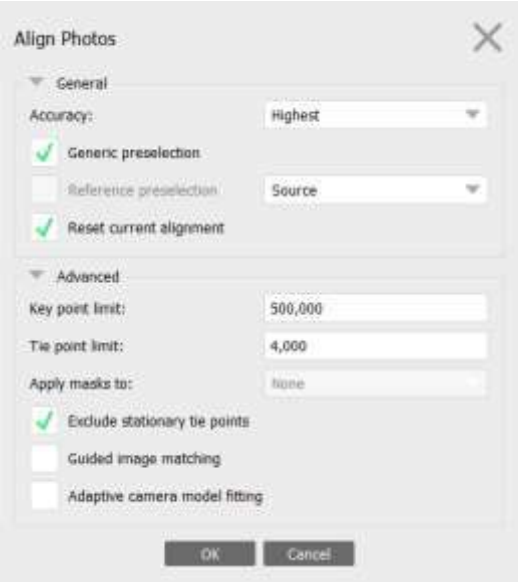
In this initial stage, the collected data must be aligned by the software. The alignment process is necessary because it is at this stage that the software will “stitch” the photos together. The stitching process, also known as pair preselection, depending on the collected data and the desired final quality, is one of the most time-consuming processes because its algorithm calculates the angles and points from where the photograph was taken (Agisoft, 2019, p. 22). For the ruins of the temple of Carteia, the entire process took a total of four days to produce a high-quality point cloud (Figure 143).

Figure 143 - Example of a photo of the temple's foundations superimposed on the point cloud

Source: Created by the author (2023)

The configuration used is shown below Figure 144). As mentioned earlier, the entire processing took 4 uninterrupted days.

Figure 144 - Settings used for image alignment

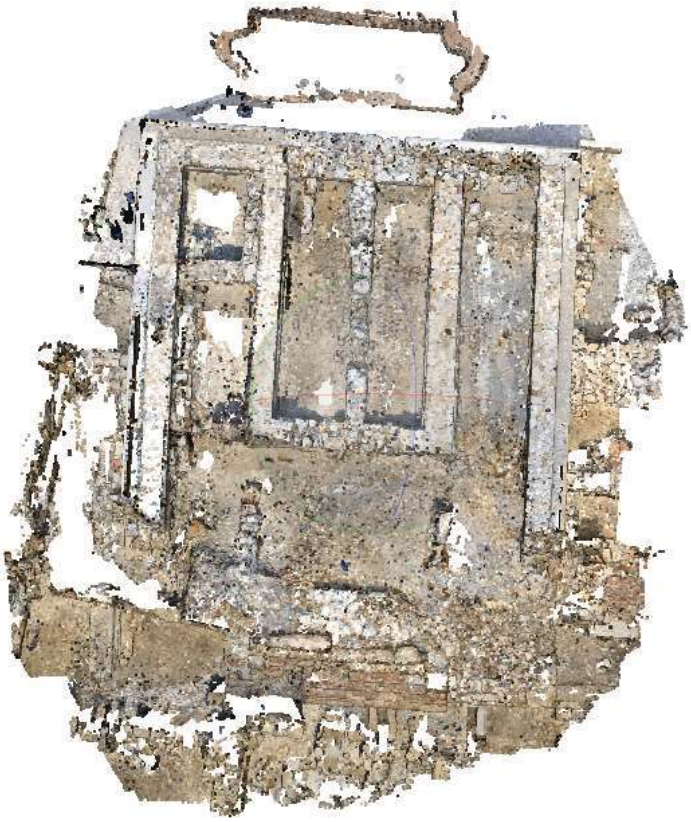


Source: Created by the author (2023)

9.4.2. Build a Dense Cloud

After aligning the photographs, it is possible to obtain an initial understanding of the three-dimensional spatiality of the object (Agisoft, 2019, p. 25). After the Alignment process and before the Dense Cloud construction, an image clean-up was performed as remnants of unwanted objects appeared outside the main object. The Dense Cloud construction is a process that estimates and calculates the depth information for each angle of the photographed object. The purpose of this process is to create a single concentrated point cloud that allows for a clear visualisation of the object. (Figure 145). These remnants reduced the quality of the material and increased the processing time of the object.

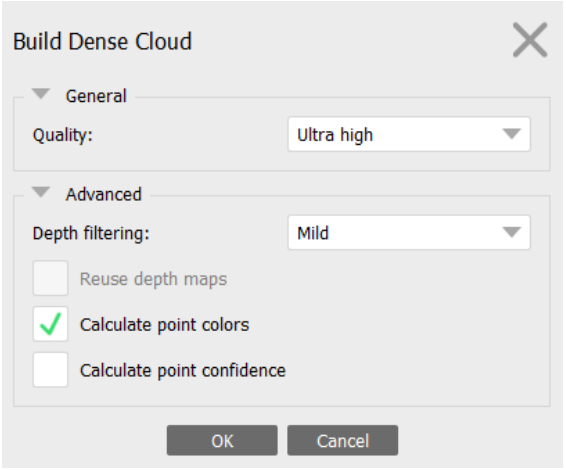
Figure 145 - Dense Cloud from the temple of Carteia



Source: Created by the author (2023)

The used setting could be seen in Figure 146. The entire processing was carried out continuously for one week.

Figure 146 - Settings used for creating the dense point cloud



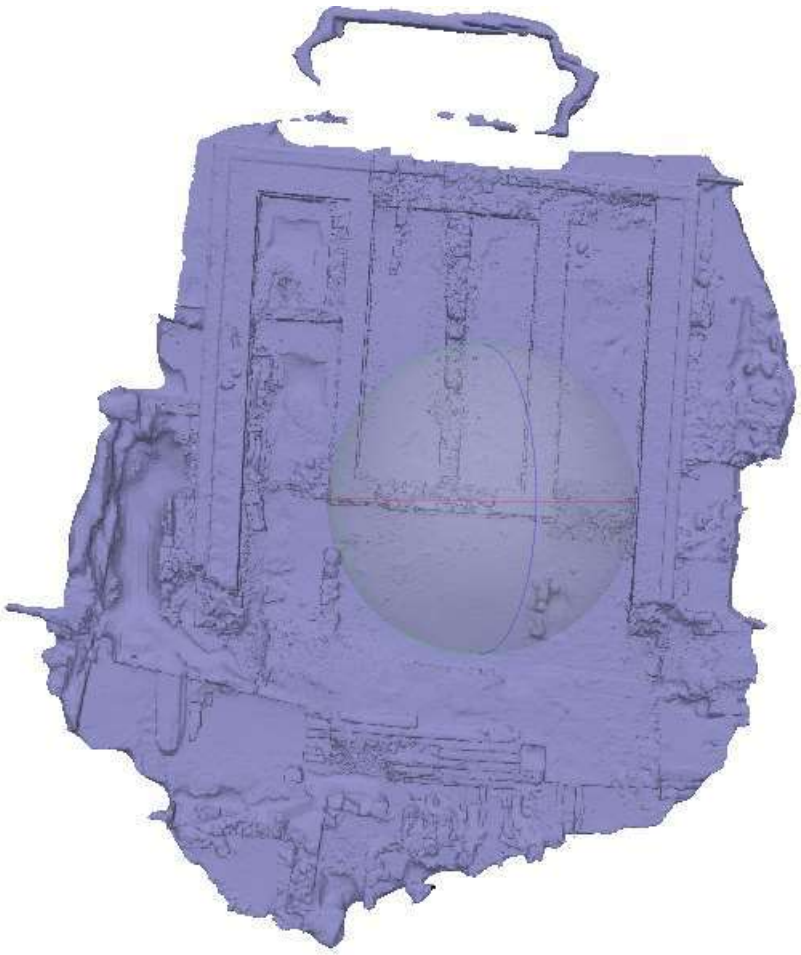
Source: Created by the author (2023)

9.4.3. Build Mesh

The process of building a mesh has the ability, itself, to polygonally reconstruct the information provided by the previous processing (Agisoft, 2019, p. 26).

This polygonal reconstruction is already a solid three-dimensional model that can be zoomed in and out without losing the quality of visualizing its structure. However, it remains without information about its texture (Figure 147).

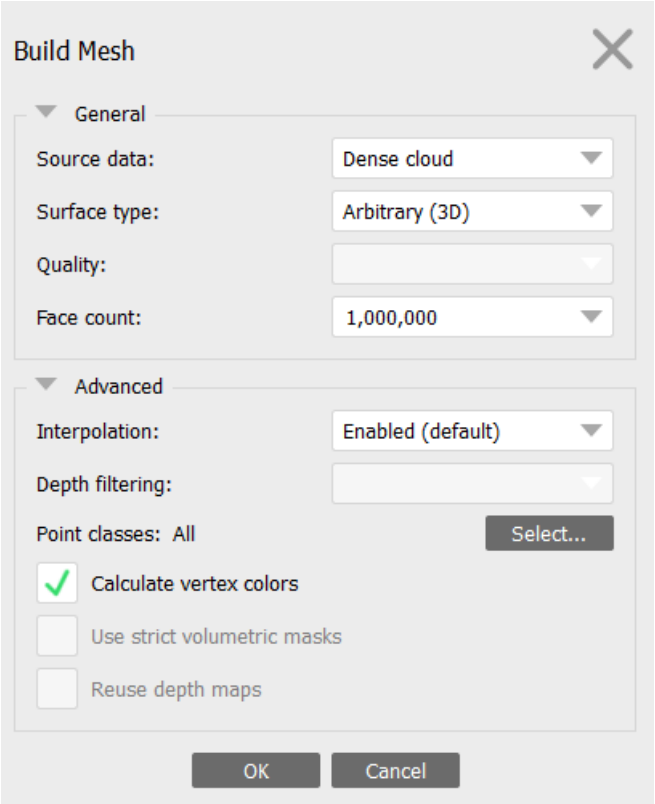
Figure 147 - Mesh produced from the Temple of Carteia



Source: Created by the author (2023)

The configuration used is in Figure 148. The process took approximately 2 weeks. One day, there was a failure, and it was necessary to perform a new processing from the beginning.

Figure 148 - Settings used for creating the mesh



Source: Created by the author (2023)

9.4.4. Build texture

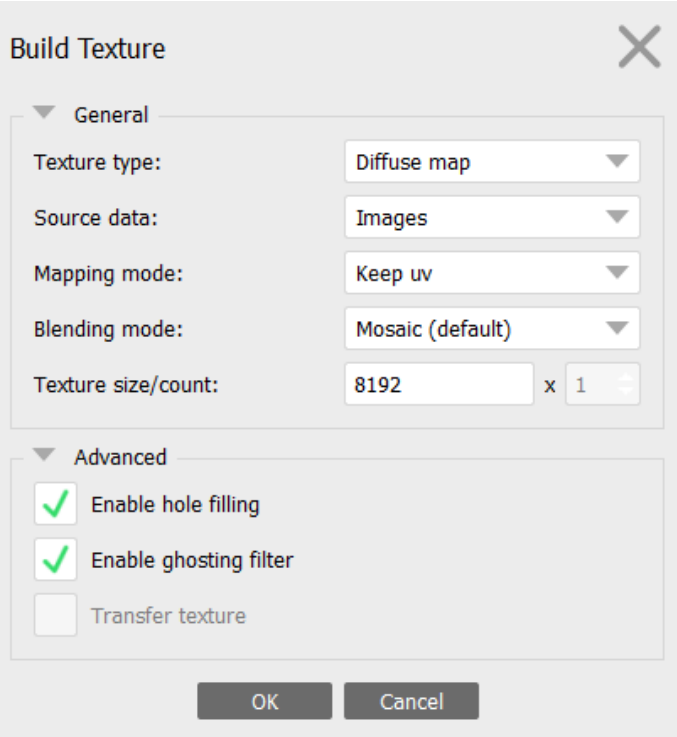
The texture construction process, or texturing, will apply to the previous solid model all the information about the original colours of the photos. This process is also known as texture mapping mode, which determines where the texture will be applied in the image. Its application helps in obtaining textures, consequently assisting in a better visualisation of the final model (Figure 149).

Figure 149 - Texture mapping applied to the mesh of the Temple of Carteia

Source: Created by the author (2023)

The configuration used is in Figure 150. It took 1 week to complete the texturing.

Figure 150 -Settings used for texture mapping



Source: Created by the author (2023)

9.5. Third Phase

9.5.1. Blender

9.5.1.1. Aims

1) Using photogrammetry as a basis for creating three-dimensional models;
2) Modeling the construction techniques used during the phases of occupation of the city of Carteia;

3) Detail these techniques and explaining them in interactive captions;

9.5.1.2. Modelling

After creating the models (of the religious and defensive spaces), the process of modelling began using Blender version 3.5.0, chosen for its intuitive interface, notable quality, and being a free program. The process started with the temple area. As it was the most complex model among the periods studied in this research, it was decided to model the temple based on the photogrammetry base already performed.

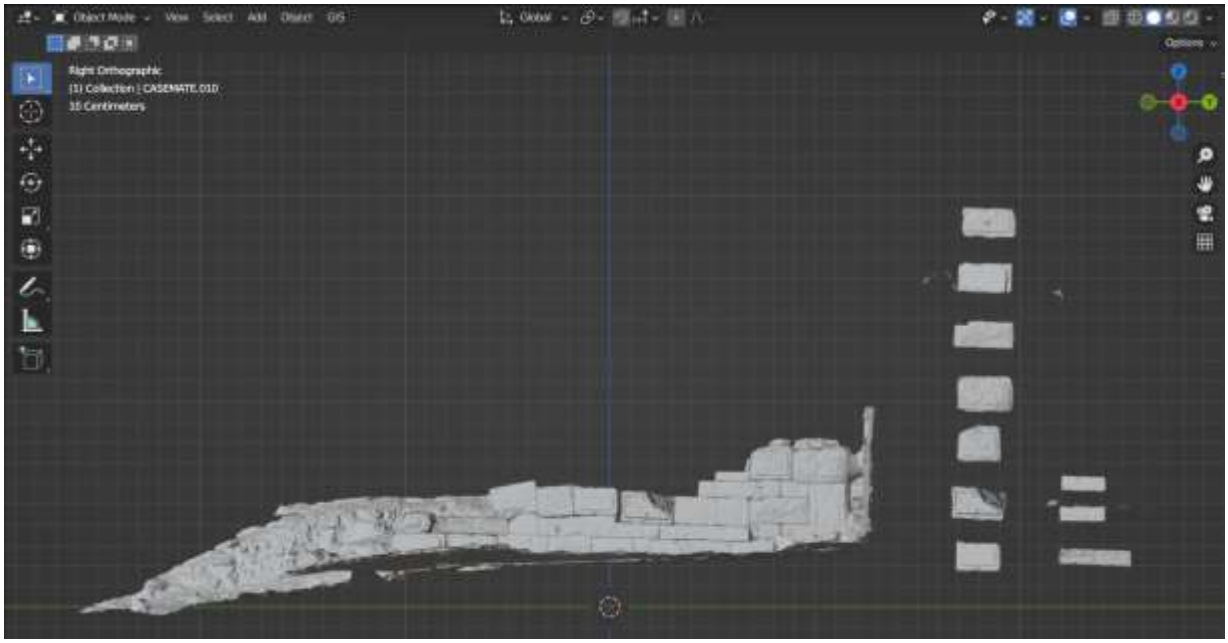
Overall, all environments followed the following process of three-dimensional:

1. The installation of primitives, without decoration or any specific detailed elements, solely for the visualisation of the area to be modelled.;

2. Based on the implementation of this primitive and with the support of our database and specific literature about each space, we began a more in-depth process where initial details were worked on based on hypotheses about how these structures might have been;

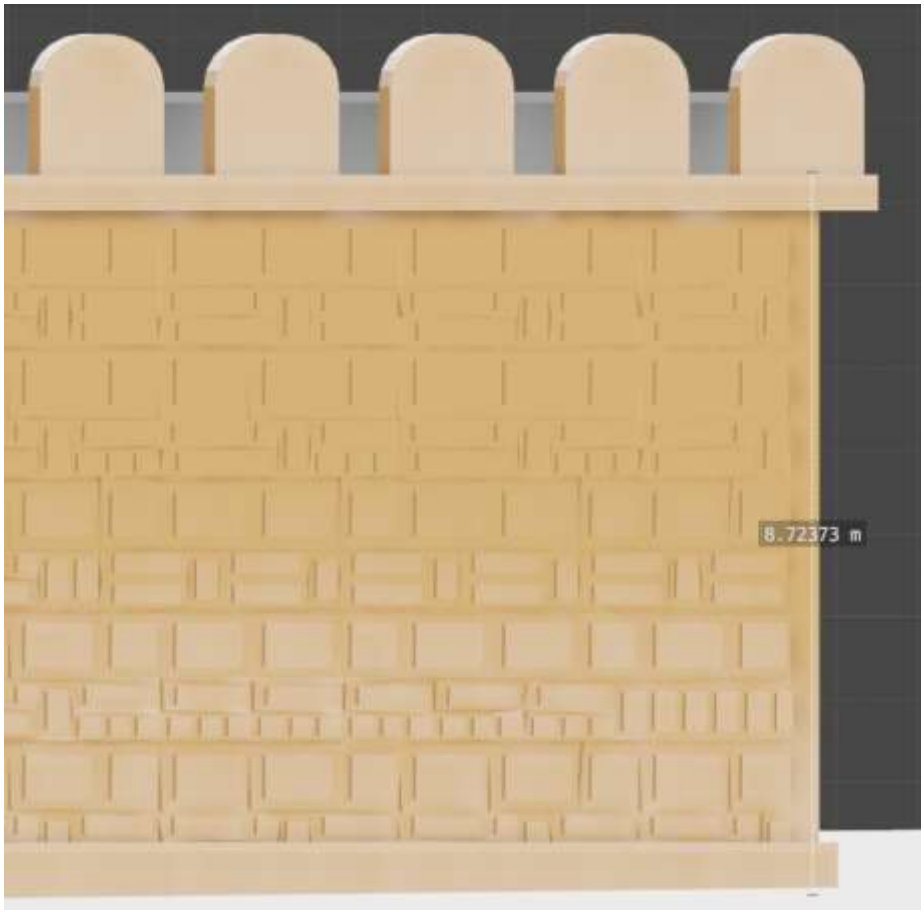
3. Reusing construction materials already captured by the photogrammetry process for the understanding (Figure 151) and (Figure 152) of the objects that will be part of the virtualisation.;

Figure 151 - Photogrammetry of the casemate wall of Carteia. Analysis of the stonework that composed it for subsequent modeling



Source: Created by the author (2023)

Figure 152 - Example of the three-dimensional reconstruction of the wall, inspired by the parts recorded through photogrammetry. Figure without texture



Source: Created by the author (2023)

4. Texturing the models was a phase of great importance, as there was a need to search online for textures that could correspond to the archaeological evidence of the materials used in the construction of the spaces;

9.4.5.4. Coding

9.4.5.4.1. Unity

1) Setup the system;

In this initial phase the Google Cardboard tutorial was the following;

Setting up your development environment

Software requirements:

1. Unity 2020.3.36f1 or later

1.2. Make sure to include Android and iOS Build Support during installation.

2. Git must be installed and the git executable must be on the PATH environment variable. See Unity's package manager git support docs for more details.

Import the SDK and create a new project

Follow these steps to import the Unity SDK and create a new project.

3. Open Unity and create a new **3D** project.

4. In Unity, go to **Window** > **Package Manager**.

5. Click **+** and select **Add package from git URL**.

6. Paste https://github.com/googlevr/cardboard-xr-plugin.git into the text entry field. The package should be added to the installed packages.

7. Navigate to the **Google Cardboard XR Plugin for Unity** package. In the **Samples** section, choose **Import into Project**.
The sample assets should be loaded into Assets/Samples/Google Cardboard/<version>/Hello Cardboard.

Note: <version> is the **X.Y.Z** semantic version number of the released package (for example, **1.1.0**).

9.4.5.4.1.1. Configuring HelloCardboard scene

1. Navigate to Assets/Samples/Google Cardboard/<version>/Hello Cardboard/Scenes, select **Add Open Scenes**, and choose **HelloCardboard** to open the sample scene.

2. Open the **Layers** menu and select **Edit Layers...**.

3. Define a new layer called "Interactive".

4. Click on the **Treasure** GameObject to open the Inspector window. Set its layer to be "Interactive". If a pop up window appears asking if you want to set layer to Interactive for all child objects as well, click on "Yes, change children".

5. Click on the **Player > Camera > CardboardReticlePointer** GameObject to open the Inspector window. In the "Carboard reticle pointer" script, select "Interactive" as the **Reticle Interaction Layer Mask**.

9.4.5.4.1.2. Configuring Android project settings

1. Navigate to **File** > **Build Settings**.

2. Select **Android** and choose **Switch Platform**.

3. Select **Add Open Scenes** and choose **HelloCardboard**.

9.4.5.4.1.3. Player Settings - Resolution and Presentation

1. Navigate to **Project Settings** > **Player** > **Resolution and Presentation**.

2. Set the **Default Orientation** to **Landscape Left** or **Landscape Right**.

3. Disable **Optimised Frame Pacing**.

Note: While supported by the Cardboard XR plugin, the **Portrait** and **Portrait Upside Down** orientations may not provide enough room for eye rendering on devices.

Other Settings

4. Navigate to **Project Settings** > **Player** > **Other Settings**.

5. Choose OpenGLES2, OpenGLES3, or Vulkan, or any combination of them in **Graphics APIs**.

6. Select Android 7.0 'Nougat' (API level 24) or higher in **Minimum API Level**.

7. Select API level 31 or higher in **Target API Level**.

8. Select IL2CPP in **Scripting Backend**.

9. Select desired architectures by choosing ARMv7, ARM64, or both in **Target Architectures**.

10. Select Require in **Internet Access**.

11. Specify your company domain under **Package Name**.

12. If Vulkan was selected as **Graphics API**:

13. Uncheck **Apply display rotation during rendering** checkbox in **Vulkan Settings**.

14. If the Unity version is 2021.2 or above, Select ETC2 in **Texture compression format**.

Note: It's possible to use a lower minimum API level by changing rendering API compatibility. For more information, see the SDK's **build.gradle**.**Note:** In case you are experiencing issues when selecting Vulkan as the graphics API, check the **Development Build** box in **Build Settings** and analyze the runtime logs looking for driver compatibility errors.

9.4.5.4.1.4. Publishing Settings

1. Navigate to **Project Settings** > **Player** > **Publishing Settings**.

2. In the **Build** section, select Custom Main Gradle Template and Custom Gradle Properties Template.

3. Add the following lines to the dependencies section of Assets/Plugins/Android/mainTemplate.gradle:

```
implementation 'androidx.appcompat:appcompat:1.4.2'
implementation 'com.google.android.gms:play-services-vision:20.1.3'
implementation 'com.google.android.material:material:1.6.1'
implementation 'com.google.protobuf:protobuf-javalite:3.19.4'
```

4. Add the following lines to Assets/Plugins/Android/gradleTemplate.properties:

```
android.enableJetifier=true
android.useAndroidX=true
```

Note: The dependencies needed may change between versions. If you want to use a version different from the most recent release, take a look at the history of the dependencies section in sdk/build.gradle of the Cardboard SDK repository.

9.4.5.4.1.5 XR Plug-in Management Settings

1. Navigate to **Project Settings** > **XR Plug-in Management**.

2. Select Cardboard XR Plugin under **Plug-in Providers**.

3. Build your project

4. Navigate to **File** > **Build Settings**.

5. Select **Build**, or choose a device and select **Build and Run;**

1) Importation of the models;
2) Organisation of scales and spaces;
3) Programming the main cameras with the following script called "Teleporter";

```
1. using System.Collections;
2. using System.Collections.Generic;
3. using UnityEngine;
4. using Unity.VisualScripting;
5.
6. public class Teleporter : MonoBehaviour
7. {
8.     [SerializeField] private Color inactiveColor;
9.     [SerializeField] private Color GazeAtColor;
10.    [SerializeField] private GameObject playerCameraGameObject;
11.
```

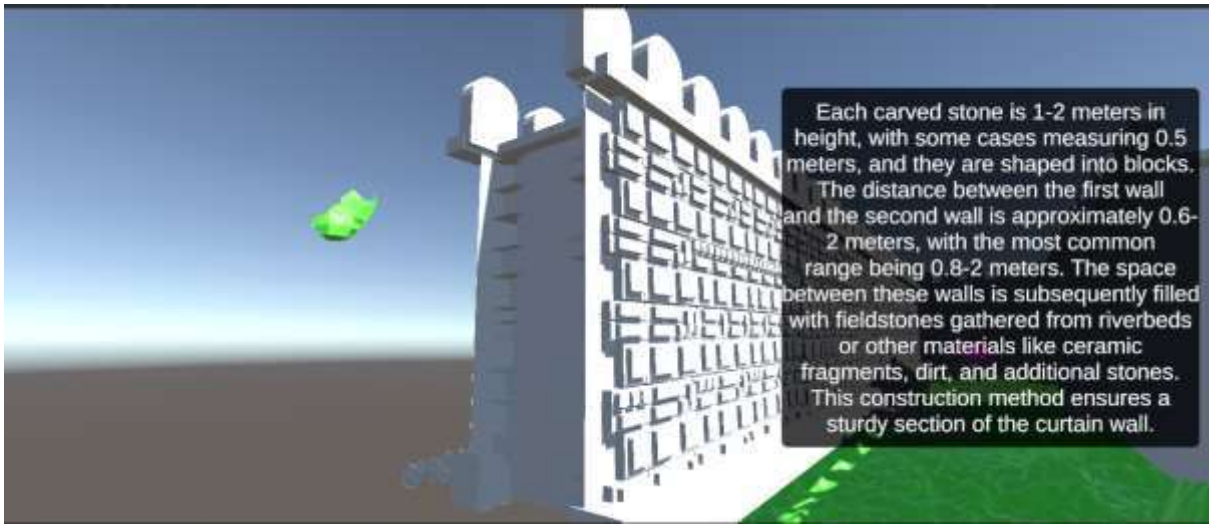
```
12.     private MeshRenderer myRenderer;
13.
14.     private bool colorChanging = false;
15.
16.     private float myTimer = 0f;
17.
18.     void Start()
19.     {
20.         myRenderer = GetComponent<MeshRenderer>();
21.         myRenderer.material.color = inactiveColor;
22.     }
23.
24.     void Update()
25.     {
26.         if (colorChanging)
27.         {
28.             myRenderer.material.color =
    Color.Lerp(myRenderer.material.color, GazeAtColor, Time.deltaTime / 2f);
29.             myTimer += Time.deltaTime;
30.             if (myTimer > 2f)
31.             {
32.                 // Teleporta o jogador para a posição do TeleportPoint,
    ajustando a altura da câmera
33.                 Vector3 teleportPosition = new
    Vector3(transform.position.x, transform.position.y,
    transform.position.z);
34.                 playerCameraGameObject.transform.position =
    teleportPosition;
35.             }
36.         }
```

```
37.     }
38.
39.     public void OnPointerEnter()
40.     {
41.         GazeAt(true);
42.     }
43.
44.     public void OnPointerExit()
45.     {
46.         GazeAt(false);
47.     }
48.
49.     public void GazeAt(bool gazing)
50.     {
51.         if (gazing)
52.         {
53.             colorChanging = true;
54.         }
55.         else
56.         {
57.             myTimer = 0f;
58.             colorChanging = false;
59.             myRenderer.material.color = inactiveColor;
60.         }
61.     }
62.}
```

The script “Teleporter” was made to turn possible the movement through the scenario. This choice was made due the movement through Google Cardboard limitation, we opted for teleportation to

allow the user to move around and access the developed information and models (Figure 153 and Figure 154).

Figure 153 - Example of one of the triggers at the wall



Source: Created by the author (2023)

Figure 154 - Example of one of the triggers at the temple

Source: Created by the author (2023)

4) Creation of 3D Spheres to serve as a point of teleportation (Figure 155);

Figure 155 – Final scenario map with the teleportation points and texts

Source: Created by the author (2023)

The ultimate outcome of the programming process has been consolidated within a file, affording the opportunity to peruse the archaeological site of Carteia. This rendering of Carteia's archaeological site, as captured by José Javier Martínez García (2021) through the method of photogrammetry. The model produced by García was CC Attribution-NonCommercial-ShareAlike, and has been systematically organised (accessible at https://sketchfab.com/3d-models/foro-de-carteia-cadiz-d11d62502b7c496086bbfd7c10190da5, accessed on 18/08/2023). The resultant representation encapsulates both the meticulously modelled and colourised depictions of the

pertinent architectural features, specifically the focal structures of inquiry within this study—namely, the fortifications and the temple.

Figure 156 - Final model of the site with the walls and the temple. The temporary red cubes were the information triggers

Source: Authors (2023)

10. Chapter 10 – Database organisation

10.1. Introduction

This methodology outlines the utilisation of FileMaker Pro Advanced 17.0.0.1.143 software for database organisation, strategically designed to address the complex demands of archaeological data management. The choice of this software stems from its user-friendly interface and adaptability, catering to users with varying technical skills.

The organisation framework is structured around three key sections: header, body, and footer. The header provides contextual metadata, establishing an overarching perspective. The body houses data records, reflecting actual archaeological entities, while accommodating logical categorisation. The footer complements by presenting supplementary insights, enhancing the analytical capacity of the database. The database is available at the Appendix 2 Database.

This methodology harmonizes simplicity, adaptability, and systematic organisation to facilitate intuitive scholarly engagement, optimizing the exploration and interpretation of the archaeological dataset. In summation, the employed methodology encapsulates a deliberate and strategic approach to address the complexities inherent in archaeological data management. Through the amalgamation of user-friendly software and a meticulous division into header, body, and footer segments, the methodology seeks to foster an environment of scholarly engagement that is both intuitive and comprehensive. By manifesting the principles of simplicity, flexibility, and systematic structuring, this methodology endeavours to optimize the exploration, interpretation, and utilisation of the archaeological dataset in the pursuit of scholarly inquiry.

10.2. Development

The choice of using FileMaker Pro Advanced 17.0.0.1.143 software for organizing the database is based on several factors such as:

Simplicity: FileMaker Pro Advanced is known for its user-friendly interface and ease of use. It provides a straightforward approach to organizing data, making it suitable for users with varying levels of technical expertise. This simplicity ensures that the organisation process is efficient and accessible to all users.

Flexibility: FileMaker Pro Advanced offers a high degree of flexibility in organizing data. It allows users to create custom layouts, define fields and tables, and establish relationships between different records. This flexibility enables the database to be tailored to specific requirements, ensuring that it can adapt to changing needs and evolving data structures (Figure 157).

The organisation of the database follows a systematic arrangement of records, ensuring clarity and ease of navigation. The database is divided into three main sections: the header, the body, and the footer. Each section serves a specific purpose:

Header: The header section contains essential information related to the theoretical aspects of the database. It typically includes metadata such as the database title, creation date, author, version number, and any other relevant details. The header provides an overview and context for the entire database.

Body: The body section is the core of the database, where the majority of the records are stored. This section houses the actual data entries, such as individual records or related sets of records. The body can be further divided into logical categories or tables based on the nature of the data. This division helps in organizing and retrieving information efficiently.

Footer: The footer section contains additional information or summary data that complements the body section. It may include aggregate calculations, statistical summaries, or other relevant data derived from the records in the body section. The footer can serve as a quick reference point for key insights or metrics related to the database content.

By dividing the database into these three sections, the organisation process ensures a clear separation of different types of information, improving the overall structure and usability of the database. This arrangement helps users locate and navigate through the records with ease and facilitates effective data management.

Overall, the choice of FileMaker Pro Advanced and the systematic arrangement of records into the header, body, and footer sections optimize the organisation process by providing simplicity, flexibility, and a logical structure for efficient data management.

10.3. Header

Registration number: This field serves as a unique identifier for each record, making it easier to reference and retrieve specific entries. It helps in maintaining data integrity and facilitates efficient search and sorting operations.

Responsible parties: Including the individuals or organisations responsible for the excavation or research project associated with each record provides important attribution and accountability. It helps track the contributors and stakeholders involved in the archaeological work.

Name and number of the excavated unit: Assigning a specific name or number to each excavated unit allows for clear identification and differentiation between multiple units within the database. It aids in organizing and categorizing the records effectively.

Conservation status: Documenting the conservation status of the excavated unit helps in understanding its current condition and determining any necessary preservation efforts. It provides valuable information for future conservation work or studies.

Official project name: Mentioning the official name or title of the archaeological project associated with each record establishes a clear connection between the excavated unit and the broader research initiative. It aids in contextualizing the data within the larger project.

Location: Recording the geographical location where the excavated unit was found is crucial for spatial analysis, mapping, and understanding regional patterns. It enables researchers to study the distribution of archaeological sites and their relationships with the surrounding environment.

10.4. Body

Structure: Describing the structural characteristics of the excavated unit helps in reconstructing its architecture and understanding its spatial layout. It provides insights into the purpose and design of the unit.

Use: Documenting the purpose or function of the excavated unit contributes to the understanding of its role within the archaeological site or settlement. It helps in interpreting the activities that took place there.

Quota: Noting the position, elevation, or level of the excavated unit relative to its surroundings is crucial for the stratigraphy and spatial organisation of the site. It assists in understanding the unit's context within the broader archaeological context.

Dimension: Recording measurements and dimensions of the excavated unit provides valuable quantitative data for comparative analysis, typology studies, and understanding the scale of the structure.

Construction technique: Documenting the techniques and methods used in constructing the unit helps in identifying construction practices, technological advancements, and cultural influences. It aids in exploring the craftsmanship and engineering of the structure.

Figures 1 and 2: Including visual representations, such as diagrams or photographs, allows for a clearer visualisation of the excavated unit. It helps in communicating the visual aspects and physical characteristics of the structure.

Comments: Allowing for additional notes or observations provides a space to capture any specific details, peculiarities, or exceptional features of the excavated unit. It enables comprehensive documentation and facilitates a more nuanced analysis.

Archaeologists' comments: Including comments or analysis provided by archaeologists or researchers involved in the excavation or study of the unit adds expert insights and interpretations to the recorded data. It contributes to a more comprehensive understanding of the site.

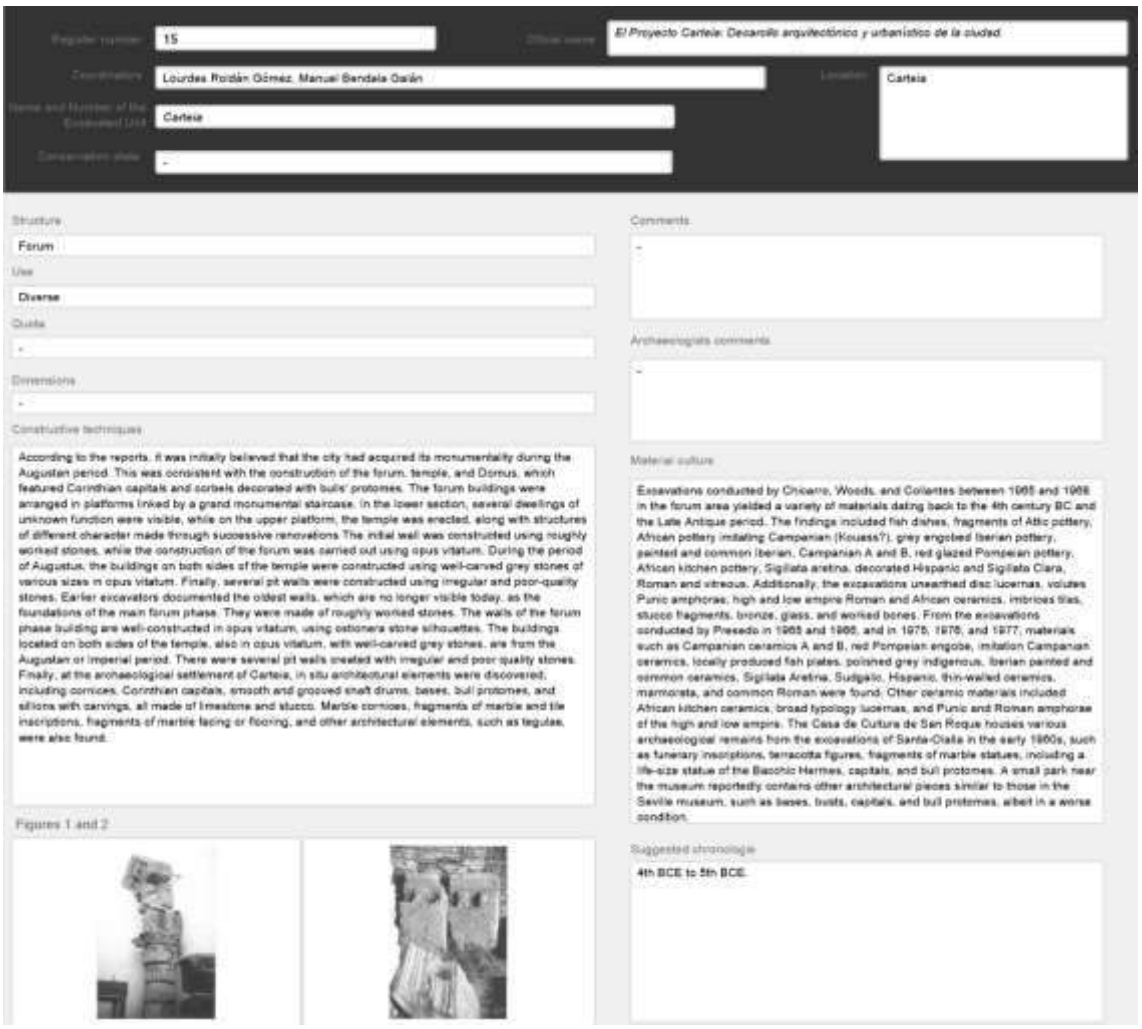
Material culture: Documenting information about artefacts, objects, or material culture associated with the excavated unit provides essential evidence for studying ancient societies, trade networks, and cultural practices. It contributes to the interpretation of the unit's significance and its relationship with broader archaeological contexts.

Suggested chronology: Proposing a chronological framework for the excavated unit based on available evidence helps in dating the structure and understanding its temporal context. It aids in exploring historical timelines and cultural changes.

10.5. Footer

References: Including a category for references allows for proper citation and acknowledgment of sources used while documenting the excavated unit. It ensures transparency, scholarly integrity, and facilitates further research and verification

Figure 157 - Exampe of register



Source: Created by the author (2023)

11. Chapter 11– Final discussion

The archaeological site of Carteia, through the analysis of its defensive and religious architecture, presents a plurality of identities that contribute to its configuration. In a broader context, the city is situated in an important meeting point, which inherently makes it a site of cultural intermingling. In a more specific context, three cultural groups can be identified as having inhabited the area from the 7th century BCE to the 1st century BCE. The local groups (Iberians) are sparsely represented in the archaeological record at the lower levels. In the middle levels, the Phoenicians emerge as a significant presence in the formation of both old and new Carteia. At this level, a potential shift or even a new foundation of Carteia, the new settlement, can be observed, likely due to the siltation of the Guadarranque River and the navigational difficulties faced by sailors in reaching the old Carteia. It is in this location that the first indications of Punic presence in the area emerged. Small-scale excavations in the 1970s provided some insight into the configuration of the city. The city, situated on the Cerro del Prado, which is now disappeared, presented limited evidence of Phoenician organisation. In general terms, the settlement in the 7th century BCE: 1) was located in front of a navigable river; 2) was situated on an island or peninsula; 3) exhibited evidence of a defensive system; 4) there are photographic records of a possible port near the settlement. In more specific terms, the presence of a kiln beneath the potential dwellings also provides an important indicator of a presence predating the 8th century BCE. It was also observed that the walls were constructed using roughly cut stones, tending towards rectangular shape (~0.30 cm), bonded together with clay mortar.

This configuration already presents evidence of the transmission of Levantine construction techniques to the Iberian Peninsula. The organisation of a wall with irregular stones bonded by mortar during the 8th to 7th century BCE indicates the Phoenician settlement's need for a defensive system from its early stages, distinguishing it from other Mediterranean cultures. From the 6th

century BCE onward, the Punic presence, which had been growing, becomes more prominent. It is during this period that the city is refounded closer to the coast on the Cerro del Rocadillo. Under the political domination of Carthage, Carteia's importance intensifies. According to sources, Carteia becomes a significant port for Carthaginian activities. In Carteia, the new settlement, the connectivity of Semitic techniques will be more pronounced. The archaeological site has only been partially excavated, leaving great potential for further exploration in other areas. The uncovered area pertains to what was once the ancient Roman forum. There, evidence of Phoenician-Punic construction techniques can be found, even during the Roman period. Within the forum area, the Roman temple from the Republican period (Record 36-37) is situated directly on top of the ancient Punic sanctuary (Record 45). This location demonstrates the continuity of worship dedicated to an unknown deity, evidenced by the presence of two stepped sacred altars, with the first being the older one and the second dating back to the Punic period.

The temple site constitutes a religious centre of great importance for the inhabitants of Carteia dating back to earlier times (around the 4th century BCE). It is noteworthy that the temple is oriented towards the Rock of Gibraltar, another significant Phoenician cult site since approximately the 8th century BCE. Little is known about the possible configuration of the Punic sanctuary. It is believed that it may have been an open-air sanctuary. However, there are walls located in the same stratigraphic layer as the aforementioned altars. Could these be small chapels or even a larger structure? Further extensive excavations would be necessary to explore this possibility. Nevertheless, the few remnants that have reached us provide evidence of a certain continuity in construction techniques. The Roman Republican temple features a podium constructed in opus signinum, a type of pavement that was common in Phoenician-Punic environments, particularly in North African cities such as Carthage and Kerkouane. Opus signinum was a popular, durable, and versatile technique due to its use of hydraulic concrete. Its permeability allowed for water drainage, reducing accumulation on the surface. Traces of this pavement type can be observed in both earlier periods and the Republican era. Both the stairs and the podium of the Roman Republican temple

are constructed using this material, contributing to a distinctive appearance compared to other temples of the same period. Subsequently, during the early Imperial period under Augustus, opus signinum continued to be widely employed (Records 1-2, 29-35, 42-52, 61, and 65). This specificity can be understood as a transmission of previous pavement techniques into the Roman period, indicating that there was not a sharp division between the Punic and Roman periods. Another element of construction and finishing techniques is the use of white stucco for coating structures. The use of lime for the protection of structures was spread across all areas influenced by Phoenician-Punic expansion. This type of treatment was widespread since the Bronze Age, found in domestic, religious (such as temple facades and interior benches), defensive (e.g., examples in Byblos, Tel Dor, Castillo de Doña Blanca), and even in road and street pavement (e.g., the ring road surrounding Kerkouane). This treatment can also appear in red, as seen in the pavement of the Phoenician sanctuary in Málaga. Another innovation introduced by Phoenician communities in the Iberian Peninsula is the use of *ostionera* rock. This type of porous sedimentary rock, commonly found in the Andalusia region heavily influenced by the Phoenicians, is formed by marine shells and eroded stones. Due to its composition, it is highly resistant to weathering and effective for water containment. In the Punic period of the Roman Republican temple area, the sanctuary's channelling was constructed using this type of material. All architectural elements of the Roman Republican temple and subsequently the Augustan period were also made from this rock. It is worth noting that for the creation of architectural details such as Corinthian columns, *ostionera* rock proved to be a challenging surface to carve. Once the carving was completed, the entire piece was coated with lime to achieve a homogeneous and whitened appearance. The defensive system, built around the 4th century BCE, which features a wall constructed using carved stone blocks, is still awaiting further exploration. The responsible archaeologists believe that this wall does not follow the pier-and-rubble pattern, which would be a novelty as this system, originating in the Bronze Age, seems to have been a canon for the construction of Phoenician cities. However, more excavations are needed to fully explore the space of this first line of defence.

The second phase of this wall involves the construction of a new wall facing the interior of the city, located 2.70 meters from the first wall. It is at this point that the space between the two walls is filled with clay and debris, thus forming the pier-and-rubble system. The installation of other perpendicular walls allowed for the organisation of a line of casemates within the city. The casemates had dimensions of approximately 2.70 meters in depth and 3.30 meters in width, approaching the measurement of 6 Punic cubits, a modular system that can also be found in Cartagena and Castillo de Doña Blanca in the 3rd century BCE. Access to the casemates was provided through narrow doors measuring only 0.40 cm in width. The use of Punic cubit measurements may indicate an attempt to establish a pattern, at least in the Iberian Peninsula. The casemates in Motya deviate slightly from this standard, measuring approximately 4.20 x 3 meters. During this second phase, there is a monumentalisation of the defensive system, with hewn blocks of *ostionera* rock treated with bossing, organised in a pseudo-isodomic technique. Part of the known internal pavement also follows the opus signinum pattern.

It can be inferred that Phoenician-Punic techniques spread throughout the Mediterranean, assimilating certain poliorcetic knowledge. Motya is an interesting example of a context deeply influenced by warfare, where it is still possible to identify, in the archaeological record, the functioning of the city walls and their components during times of conflict. The city retained an element that seemed to be essential: the casemates, and to some extent, the glacis.

In the Iberian Peninsula, casemates can be considered a Phoenician element that was also assimilated by the indigenous world, becoming an integral part of their reality from the arrival of the Phoenicians and their definitive establishment in the 7th century BCE.

All of this technical mobilisation can be viewed through the lens of the theory of globalisation in the Ancient Mediterranean, considering that its essence lies in the incorporation of shared practices or knowledge. One can also observe the intensification of communications and collaborations, which, instead of promoting homogeneity, foster cultural heterogeneity, as mentioned by Hodos.

The term "entanglement" was chosen precisely because it is less binary than other concepts such as hybridisation, which assumes the existence of something pure and something not. This concept seeks to describe the phenomena of cultural contact and has the potential to prevent the advancement of racist movements that often rely on a romanticised past, believing that ancient cultures were separate and confined entities.

This type of interpretation, as seen in Chapter 8, is problematic from the standpoint that it assumes an ideal for the whole. The presentation of the "Hadrian's Wall" was a demonstration of the need to value the changes that occurred beyond its foundation. While it is true that the Wall was constructed under Hadrian, what about the rest of the life of this defensive system? How do we treat the periods of renovation? How is the Hadrian period used as political discourse when we see an actor dressed as a Roman soldier holding a banner of Queen Elizabeth II of England?

Heritage should be understood as an entanglement during its period of use, throughout the life of the object or structure. This type of presentation of heritage has the potential to showcase the mobility of human ideas and their cultural contacts, helping to minimize racist or nationalist biases.

Using this perspective for Carteia, we can see it as an entanglement. There are significant evidences in its structures, as presented (i.e., religious and defensive). The way of life of the inhabitants of Carteia cannot be assumed as "typically" Roman, as there is no such thing as a "typical Roman". Carteia demonstrates the continuation of construction techniques predating the Romans, which were part of the lived experience and preferences of its people. Some of these techniques, such as the wall, were not discarded but reused in other important constructions, such as the temple, and were also maintained. At times, the new Roman walls of the city were incorporated into them in a later period. We can speak of Roman citizenship, but we cannot assume an archaeological site as purely Roman, as often happens, because there are elements beyond a single culture.

Based on the presented three-dimensional model, it is possible (and necessary) to provide information about Mediterranean networks of connections, so that theories of globalisation and entanglement can extend beyond academia. The three-dimensional visualisation using Augmented Virtual Reality prototypes allows individuals from different locations to virtually visit a specific site, providing a higher degree of immersion compared to simply accessing the site online on a computer screen. This development also highlights different ways of life, prompting the audience to ask deeper questions instead of assuming what is being presented. The presentation of entanglement raises questions, as suggested by Hodder, and when combined with immersive visualisation, it makes the understanding of the past much more dynamic, as one has to consider how a particular technique reached another place and continued to thrive even under foreign domination. As a Brazilian, speaking from the Global South, I strongly reinforce that this perspective has the potential to challenge old propositions that force a particular archaeological site into a specific cultural category. I believe that by providing the public with information about the transmission of these networks of cultural knowledge, their maintenance, and innovation, we can contribute, even in a small way, to help the public perceive themselves not as confined to a box, classified as one thing, but rather as an entanglement that continues to transform over time.

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13. Appendix

Appendix 1

The written sources on the Pillars of Heracles/Hercules and Carteia

Many authors of Antiquity find it challenging to locate these Columns precisely (or even define what these columns were). This Far West is reserved as the place of the Pillars, regardless of the accuracy of their location.

According to Pappa (Pappa, 2010, p. 258), concerning the concept of "Pillars of Heracles", the term was not an allusion to the rocky outcrops framing the entrance to the Mediterranean on either side, but a poetic play on words about the temples erected by the Phoenicians.

Campo de Gibraltar's geographical characteristics, the surrounding area on the Strait Iberian side, contributed considerably to its insertion in Mediterranean communities' mental landscape. According to Roldán Gómez and Blánquez Pérez (2011, p. 27), the choice of the Bay of Gibraltar as a possible landmark was not accidental.

The height of the northern pillar (Calpe Mons) (1855 3. 1, Pliny the Elder. The Natural History) the nowadays Rock of Gibraltar could have driven the sacralisation and occupation of landmarks in the Far West. On the African side, it is not clear if the southern pillar known as Abila mons was Monte Hacho (Ceuta) or Jebel Musa (Morocco) (*Natural History* 3.0) The societies of the Final Bronze Age, used this place for the accomplishment of their mortuary practices (e.g. Guzmán *et al.*, 2005) and later by the Greeks and Romans given the considerable catalogue of descriptions, comments on the Pillars of Heracles during Antiquity (Gutiérrez López *et al.*, 2014, p. 2005).

Concerning the term "Pillars of Heracles", there is an extensive record of commentaries on this place. The location is maintained throughout several narratives, from the Greeks to the Romans,

guaranteeing a symbolic consistency for this landscape over the centuries. These reports display this place as part of the cosmologies of various Mediterranean communities during historical times.

Table 1 - Ancient authors on the Pillars of Heracles

Authors	**Title**	**Date**
Pindar, Olympian Odes	§3.25 reaches the farthest point by his native excellence; he touches the **pillars of Heracles**. Beyond that the wise cannot set foot; nor can the unskilled	6th BCE
Pindar, Nemean Odes	§3.1 manliness, it is not easy to cross the trackless sea beyond the **pillars of Heracles**, which that hero and god set up as famous witnesses to	6th BCE
Pindar, Isthmian Odes	§4.1 manly deeds they reached from home to touch the farthest limit, the **pillars of Heracles** – do not pursue excellence any farther than that! And they became	6th BCE
Periplus of Hanno	§1 To the Libyan regions of the earth beyond the **Pillars of Hercules**, which he dedicated also in the Temple of Kronos, declaring the	5th BCE
Herodotus, Histories	§1.203 all that Sea which the Hellenes navigate, and the Sea beyond the **Pillars**, which is called Atlantis, and the Erythraean Sea are in fact	5th BCE
Aristotelian Corpus, On Marvellous Things Heard	§27.84 In the sea outside the **Pillars** of Heracles they say that a desert island was found by the	4th BCE

Aristotelian Corpus, On Marvellous Things Heard	§27.136 Phoenicians who live in what is called Gades, on sailing outside the **Pillars of Heracles** with an east wind for four days, came to some desert lands,	4th BCE
Plato, Phaedo	§109 the earth is very large and that we who dwell between the **pillars of Hercules** and the river Phasis live in a small part of it about	4th BCE
Pseudo Scylax, Periplous	§1 the pillars of Herakles in Libya and until the tall Ethiopians. The **pillars of Herakles** are opposite each other and a day's sail apart. Beyond the pillars	4th BCE
Isocrates 20, To Philip	§111 their armies. When he had done these things, he set up the **Pillars of Heracles**, as they are called, to be a trophy of victory over	4th BCE
Isocrates 21, Panathenaicus	§250 what is written in Athens than to what is said beyond the **Pillars of Heracles**,	4th BCE
Theophrastus, Enquiry Into Plants	§4.6.4 Again in the ocean about the **pillars of Heracles** there is a kind of marvellous size, they say, which is larger,	4th BCE
Theophrastus, Enquiry Into Plants	§4.7.1 In the outer sea near the **pillars of Heracles** grows the 'sea-leek,' as has been said; also the well known 'plants	4th BCE
Pseudo Scymnus or Pausanias of Damascus, Circuit of the Earth	§137 from each other about 30 stades. They are called by some the **Pillars of Herakles** . Near one of them is a Massaliote city called Mainake. This	2nd BCE

Polybius, Histories	§3.37.1 boundaries are the river Tanais, the Nile, and the straits at the **Pillars of Hercules**. 4 Asia lies between the Nile and Tanais and falls under	2nd BCE
Polybius, Histories	§10.40.1 largest and finest part Libya from the altars of Philaenus to the **pillars of Heracles**, when he had reduced Asia and overthrown the kings of Syria	2nd BCE
Diodorus Siculus, Library 1-7	§3.55.1 when he visited the regions to the West and set up his **Pillars** in Libya, since he felt that it would ill accord with his	1st BCE
Diodorus Siculus, Library 8-40	§25.10.1 empire of his country and ranged by sea as far as the **Pillars of Heracles**, Gadeira, and the ocean. Now the city of Gadeira is a	1st BCE
Cicero, Letters to his Friends	§Fam.10.32 without even paying the soldiers, and after being detained three days off **Calpe** by bad weather, on the 1st of June crossed into the kingdom	1st BCE
Diodorus Siculus, Library 8-40	§17.113.1 Libyphoenicians and all those who inhabit the coast as far as the **Pillars of Heracles**; from Europe, the Greek cities and the Macedonians also sent embassies,	1st BCE
Strabo, Geography	§1.1.10 fully describes, was likewise well acquainted with the Mediterranean. Starting from the **Pillars**, this sea is encompassed by Libya, Egypt, and Phoenicia, then by	1st BCE

Dionysius of Halicarnassus, Roman Antiquities	§14.1 meridian and the south wind, by the sea that lies beyond the **Pillars of Hercules** on the West, and by the Scythian and Thracian nations toward the	1st BCE
Cicero, de Oratore (on the Orator)	§3.180 for safety only, but also for the delight afforded by the spectacle. **Pillars** support temples and porticoes, and yet have not more of utility than	1st BCE
Statius, Thebaid	§10.296 his life passes to the shades, saving the pains of cruel death. **Calpe** tus, lying on the cold ground beneath his trusty chariot-wheels, scared with	1st CE
Plutarch, Life of Antony	§61 part extending opposite to Italy, Gaul, and Iberia as far as the **pillars of Hercules**, belonged to Caesar; the part extending from Cyrene as far as	1st CE
Plutarch, Life of Nicias	§12 possession of both Libya and of all the sea this side the **Pillars of Heracles**. Since, therefore, their hearts were fixed on this, Nicias, in his	1st CE
Plutarch, Life of Timoleon	§20 that they have collected an army and are come hither from the **pillars of Heracles** and the Atlantic sea in order to risk their lives in behalf	1st CE
Plutarch, Life of Pompey	§25 the law gave him dominion over the sea this side of the **pillars of Hercules**, over all the mainland to the distance of four hundred furlongs	1st CE
Lucan, Pharsalia	§4.70 Though weighed with vapour. North and south alike Were showerless, for on **Calpe**'s rock alone	1st CE

Tacitus, Germania	§34 ocean waves themselves, and tradition suggests that there are equivalents to the **Pillars** of Hercules beyond, either because Hercules was actually there, or because we	1st CE
Pomponius Mela, Chorographia	§1.27 the one on the far side Calpe; they call them together the **Pillars of Hercules** . Oral tradition goes on to give the story of the name:	1st CE
Plutarch, Life of Aemilius Paullus	§6 and were robbing and destroying merchandise, sailing out as far as the **pillars of Hercules** . 4 Accordingly, when Aemilius came against them, they withstood him with	1st CE
Silius Italicus, Punica	§1.134 his design of war concealed in his secret heart, and made for **Calpe** and Gades, the limit of the world; but, while carrying the standards	1st CE
Plutarch, Life of Aratus	§Ara.14 Hellas, which this man has displayed, are known as far as the **Pillars of Heracles** ; but we who achieved our return through thee, Aratus, for thy	1st CE
Pliny the Elder, Natural History 1-11	§2.112.1 longest extent is from East to West, i.e. from India to the **Pillars** consecrated to Hercules at Cadiz, a distance of 8,568 miles according to	1st CE
Appian, Civil Wars	§2.11.73 conquerors. These men, fellow-soldiers, are the same that we met at the **Pillars of Hercules**, the same that we drove out of Italy. They are the	2nd CE

Arrian, Anabasis of Alexander	§5.26 Gulf our expedition will sail round into Libya as far as the **Pillars of Heracles** . From the pillars all the interior of Libya becomes ours, and	2nd CE
Appian, Mithridatic Wars	§14.93 now not only the Eastern waters, but the whole Mediterranean to the **Pillars of Hercules** . They vanquished some of the Roman praetors in naval engagements, and	2nd CE
Dionysius of Alexandria, Guide to the Inhabited World	§60 beginning in order from the Western Ocean. Here, by the boundaries the **Pillars of Heracles** stand, a great marvel, beside outermost Gades, beneath the high peak of	2nd CE
Florus, Epitome of Roman History	§1.22 whole of Spain (an almost incredible feat) from the Pyrenees to the **Pillars of Hercules**, 38 that land of warriors, so famous for its heroes and	2nd CE
Athenaeus, Deipnosophists	§2.61 He also says that in the region of the sea round the **Pillars of Heracles**, whenever it rains copiously, mushrooms grow by the sea which are	2nd CE
Athenaeus, Deipnosophists	§7.315 says that the horse-mackerels made their way from the ocean at the **Pillars of Heracles** clear through to our own sea; hence a great many are caught	2nd CE
Aelian, Characteristics of Animals	§17.14 then they may believe Eudoxus when he says that after passing the **Pillars of Heracles** he saw	2nd CE

	upon some meres certain birds larger than oxen. That his	
Aelian, Varia Historia	§5.3 Aristotle affirms that those **Pillars** which are now called of Hercules, were first called the Pillars of	2nd CE
Flavius Josephus, Jewish War	§2.345 the ancient inhabitants. Nay, the Romans have extended their arms beyond the **Pillars** of Hercules, and have walked among the clouds, upon the Pyrenean mountains,	2nd CE
Ptolemaeus, Geography (II-VI)	§2.4.6 Transducta 6°40′. 36°20′ Barbesola 7°15′. 36°10′ Cartaia 7°15′. 36°10′ **Calpe** mountain and pillar of the Inner sea. 7°30′. 36°15′	2nd CE
Aelius Aristides 13, Panathenaicus	§180 themselves acquire a share in the good life at your side. The **Pillars** of Heracles do not limit this power, nor is it bounded by	2nd CE
Ampelius, Liber Memorialis	§6 Gaul and Italy, the Pyrenees between Gaul and Spain, Atlas in Africa, **Calpe** in the Strait of the Ocean. The most famous rivers on Planet	2nd CE
Anonymous, Antonine Itinerary	§405 Suel – 21 miles Cilniana – 24 miles Barbariana – 24 miles **Calpe** Carteia – 10 miles Portu albo – 6 miles Mellaria – 12	2nd CE
Dio Cassius, Histories	§13.21.1 It extends for a great distance along the inner sea, past the **Pillars of Hercules**, and along the Ocean itself; furthermore, it includes the regions inland	3rd CE

Solinus, Polyhistor	§23.13 on the left and Africa on the right. He divides the mountains **Calpe** and Abinna, which they call the Pillars of Hercules, and pours between	3rd CE
Dio Cassius, Histories	§53.8 to me, I, who am supreme over the entire sea within the **Pillars of Hercules** except for a few tribes, I who possess both cities and provinces	3rd CE
Anonymous Stadiasmus of the Great Sea	§127 From Utika … [text missing from Utika to the **Pillars of Hercules** and from Alexandreia to Karnai]	3rd CE
Anonymous Stadiasmus of the Great Sea	§0.2 (lighthouse) of Alexandreia, [I will narrate the Libyan coast up to the **pillars of Hercules**, then Asia, again beginning from the Pharos of Alexandreia] up	3rd CE
Philostratus, Life of Apollonius of Tyana	§4.47 Western regions of the earth, which they say are bounded by the **Pillars**, because he wished to visit and behold the ebb and flow	3rd CE
Anonymous Stadiasmus of the Great Sea	§0.2 in the Pontos, and then Europe from Hieron by Chalkedon until the **Pillars of Hercules** and Gades, wishing to benefit all people. I will reveal the transverses	3rd CE
Marcianus, Epitome of Menippus' Periplus	§3 nor did he manage to get to know the areas around the **Heraclean Strait** nor our sea nor the Outer Sea. He had the same	4th CE

Eusebius, Preparation of the Gospels	§11.37.1 it is of vast size, and that we who live between the **Pillars of Hercules** and the Phasis occupy a very small part of it, dwelling round	4th CE
Avienus, Ora Maritima	§80 previously called Tartessus; Here are the pillars of unyielding Hercules, Abila and **Calpe**. Calpe is on the left of the land I have spoken	4th CE
Sidonius Apollinaris, Letters	§8.12 If so, your memory is short; how long ago was it that **Calpe** was conquered by your bold foot? Or that your camp was pitched	5th CE
Orphic Argonautica	§1237 and we came through the mouth of Tartessus, and we approached the **Pillars of Heracles**, and we completed our circuit around the sacred headland of King	5th CE
Procopius, History of the Wars	§3.1 of Asia, beginning at Gadira and at the southern of the two **Pillars of Heracles** . Septem is the name given by the natives to the fort	6th CE
Stephanus of Byzantium, Ethnica	§A60.8 Akkabikon teichos: Ἀκκαβικὸν τεῖχος, πόλις περὶ τὰς **Ἡρακλείας στήλας**, ἣν ἔκτισαν Καρχηδόνιοι, ὡς ἐροῦμεν ἐν τῷ περὶ Σαλμύκης. ὁ πολίτης	6th CE
Greek Anthology Books 1-6	§4.3 fearless too over the dark lands of the West, and seek the **Pillars of Heracles** ; rest unalarmed on the sands of Spain where, above the threshold	10th CE

Suda Encyclopedia	§si.710 mathematician and man of letters. [He wrote] Circumnavigation of Places Outside the **Pillars of Herakles** ; The Story of Herakleides King of the Mylasians; Circuit of the	10th CE
Niketas Choniates, Annals	§160 to sea but also from the boundaries of the East to the **Pillars** of the West. Manuel shared his ambitions [summer 1168] with Amalric, king	13th CE

Source: topostext 2021

It is possible to conclude that so many commentaries on the Strait reveal that the Pillars of Hercules were part of diverse Mediterranean communities' mental landscape.

As it happens to the Pillar of Hercules, the ancient author also has difficulty in identifying the site of Carteia. It will be possible to identify in Table 2 that Carteia is recognised as Tartessos/Tartessus. The city is referred to as an important naval base. Another significant part of the accounts is relating the town with the Roman Civil War.

Table 2 – Mentions on Carteia

Authors	**Title**	**Date**
Silius Italicus, Punica	§3.381 and nightly Maenads, who wear the sacred fawn-skin and the mystic vine-leaf. **Carteia** sent to war the children of Arganthonius; king over their ancestors, he	3rd BCE

Livy, History of Rome	§28.30 going on at the Baetis Laelius sailed westward and brought up at **Carteia**, a city situated on that part of the coast where the	3rd BCE
Livy, History of Rome	§28.30 just entering the Straits when Laelius sailed out of the harbour of **Carteia** in another quinquereme followed by seven triremes. He bore straight down upon	3rd BCE
Livy, History of Rome	§28.31 After his victory Laelius returned to **Carteia** where he learnt what had been going on at Gades, how the	3rd BCE
Livy, History of Rome	§43.3 L. Canuleius, and they should be settled on the ocean shore at **Carteia**, and any of the Carteians who wished to remain there should	2nd BCE
Anonymous/Caesar, Spanish War	§32 pressed forward on the other hand to the naval fortified base of **Carteia**, a town which lies one hundred and seventy miles away from	1st BCE
Anonymous/Caesar, Spanish War	§32 miles away from Corduba. When he had reached the eighth milestone from **Carteia**, P. Caucilius, who had formerly been in command of Pompeius' camp,	1st BCE
Anonymous/Caesar, Spanish War	§32 town. A litter and bearers were despatched, and Pompeius was carried to **Carteia** . His partisans forgathered at the house to which he had been	1st BCE

Anonymous/Caesar, Spanish War	§36 In the course of these proceedings envoys from **Carteia** duly reported that they had Pompeius in their hands. They thought they	1st BCE
Anonymous/Caesar, Spanish War	§37 was on the move and attacking the remaining towns, the men of **Carteia** began to fall out on the question of Pompeius. There was the	1st BCE
Anonymous/Caesar, Spanish War	§37 command of a squadron, he forthwith began to give chase; and from **Carteia** too the hunt was likewise taken up forthwith by infantry and cavalry	1st BCE
Anonymous/Caesar, Spanish War	§37 they had been ill provided and without water when they sailed from **Carteia** . While they were getting water Didius hastened up with his fleet,	1st BCE
Cicero, Letters to Atticus	§Att.12.44 does this mean, pray? Philotimus reports that Pompeius is not invested at **Carteia**, and that a serious war remains to be fought. Oppius and	1st BCE
Appian, Civil Wars	§2.15.105 himself fled from the scene of his defeat with 150 horsemen toward **Carteia**, where he had a fleet, and entered the dockyard secretly as	1st BCE
Dio Cassius, Histories	§43.31.3 hostile to him, and Varus was defeated in a naval battle near **Carteia** by Didius; indeed, had he not escaped to the land and sunk	1st BCE
Dio Cassius, Histories	§43.40 the sea, intending to use the fleet that lay at anchor at **Carteia**, but found that the men had gone over to the victor's	1st BCE

Cicero, Letters to Atticus	§Att.15.20 is entirely to blame. You say that Pompeius has been received at **Carteia**, so we shall presently see an army sent against him. Which	1st BCE
Strabo, Geography	§3.1.7 40 stadia from this [mountain] is the considerable and ancient city of **Carteia**, formerly a marine arsenal of the Iberians. Some assert that it	1st BCE
Strabo, Geography	§3.2.2 as the metropolis of the whole district. This place is distant from **Carteia** 1400 stadia, and it was here that Cnaeus fled after his defeat,	1st BCE
Strabo, Geography	§3.2.7 many other fish of the same kind. It is said that in **Carteia** there are kerukae and cuttle-fish which would contain as much as ten	1st BCE
Strabo, Geography	§3.2.14 in Tartessus.' Some writers are of opinion that Tartessus is the present **Carteia** .	1st BCE
Pomponius Mela, Chorographia	§1.27 on this side they call Abila, the one on the far side **Calpe** ; they call them together the Pillars of Hercules. Oral tradition goes	1st BCE
Pomponius Mela, Chorographia	§2.96 There is a bay beyond that point, and on it is **Carteia** . Carteia, some think, used to be Tartessos. Tingentera, which Phoenicians who	1st BCE
Pomponius Mela, Chorographia	§2.96 There is a bay beyond that point, and on it is Carteia. **Carteia**, some think, used to be Tartessos. Tingentera, which Phoenicians who crossed	1st BCE

Pliny the Elder, Natural History 1-11	§3.3.3 Boelo and Mellaria, at which latter begin the Straits of the Atlantic; **Carteia**, called by the Greeks Tartessos; and the mountain of Calpe.	1st BCE
Pliny the Elder, Natural History 1-11	§3.3.14 the sea-coast, twenty-five miles more. The breadth, measured from the coast of **Carteia**, is 234 miles. Who is there that can entertain the belief	1st BCE
Pliny the Elder, Natural History 1-11	§6.39.4 Peloponnesus, Syracuse, Catina, the middle of Sicily, the southern parts of Sardinia, **Carteia**, and Gades. A gnomon, one hundred inches in length, throws a	1st BCE
Pliny the Elder, Natural History 1-11	§9.48.1 possibly be thought to approximate to the miraculous. In the fishponds at **Carteia** a polyp was in the habit of getting into their uncovered tanks	1st BCE
Pliny the Elder, Natural History 12-37	§31.43.1 that make it. The scomber is caught also in Mauretania and at **Carteia** in Baetica; the scomber enters the Mediterranean from the Atlantic, but it	1st BCE
Ptolemaeus, Geography (II-VI)	§2.4.6 Menralia 6°30′. 36°30′ Transducta 6°40′. 36°20′ Barbesola 7°15′. 36°10′ **Cartaia** 7°15′. 36°10′ Calpe mountain and pillar of the Inner sea. 7°30′	2nd CE
Anonymous, Antonine Itinerary	§405 - 21 miles Cilniana – 24 miles Barbariana – 24 miles Calpe **Carteia** – 10 miles Portu albo – 6 miles Mellaria – 12 miles	3rd CE

Source: Topostext 2021

Chronology of reports and excavations in Carteia la Nueva

In this section, a brief chronology of reports and excavations at the site of Carteia la Nueva will be presented.

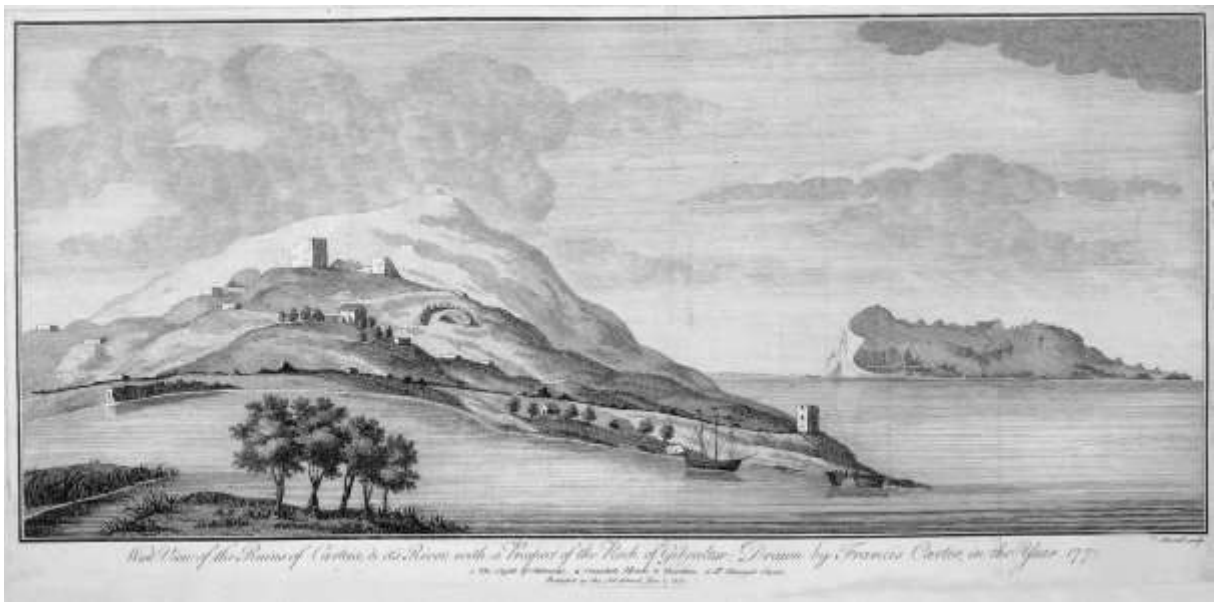
The year 1600 – Reports of Fariñas de Corral in Gibraltar

Francisco Maria Montero (Montero, 1860, p. 75) claims that a previous antiquarian named Macario Fariñas de Corral Tavares y Macareñas (1603-1663), a member of the Royal Academia de la Historia, reported many structures on the Carteia site. However, Macareñas did not draw what he saw in his time.

The years of 1719 and 1777 – John Conduitt's and Francis Carter accounts

After the British conquest of Gibraltar in 1713, John Conduitt, an English captain who served during the capture of the city in an Anglo-Dutch fleet, visited the area of present-day Rocadillo. There he located Carteia and identified it as an archaeological site. On his return to London, Conduitt presented a report to the Royal Society of London entitled "A discourse tending to shew the situation of the ancient Carteia, and some other Roman towns near it" (1719), a work in which the author points out the historical potential of the area (cf. Conduitt, 1719) (Figure 158)

Figure 158 - West view of the Carteia ruins, the river and a prospect of the Rock of Gibraltar



Source: Carter, 1777

Figure 159 - Sections of the Punic wall in Francis Carter depiction

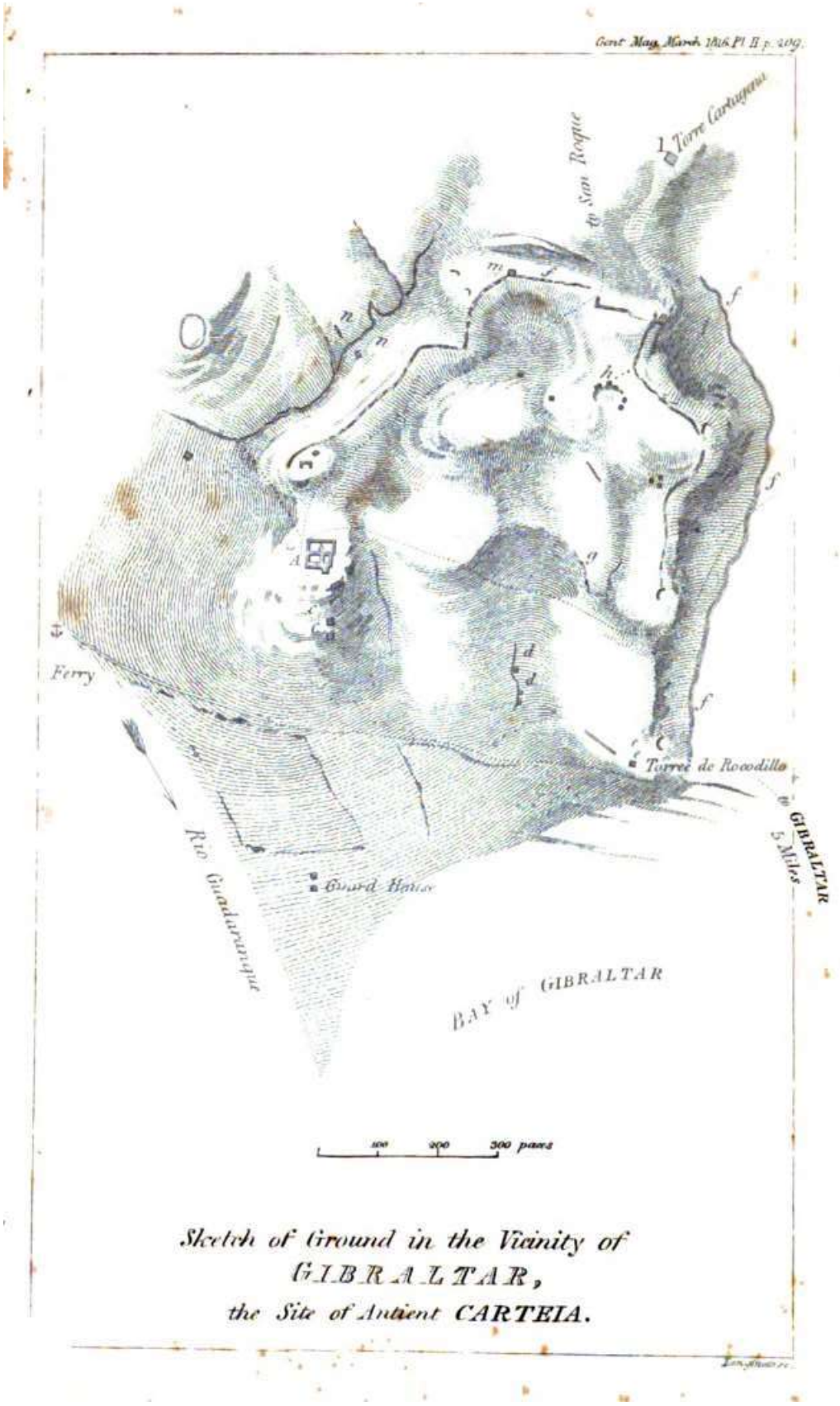
Figure 160 - Cortijo de Rocadillo, the forum area

Figure 161 - The ancient harbour of the city, still visible during the times of Carter

Figure 162 - Amphitheatre area in ruins during the times of Carter

Conduitt's recognition coincided with another Englishman's third trip to Spain in 1716. The classicist John Durant Breval who visited the Carteia site, collected an unknown number of ancient coins, pottery fragments and mosaic pieces. His voyages were documented at Calpe: or Gibraltar (1727) and Remarks on several parts of Europe (1738). Unlike the previous travels with a military purpose, this third one is significant since Breval returned to Carteia as a researcher. In his works, Breval made some accounts over the parts of the city walls, the amphitheatre, a jetty and even an aqueduct. He sent his information to the Gentleman's Magazine (1816). The material was published under the name of Silvanus Urban, the editor of that publication and was accompanied by a plan of the site (Figure 163).

Figure 163 - Carteia plan at Breval's time



Source: Urban, 1816, fig. V

Thirty-seven years later, Francis Carter, another Englishman antiquarian that lived in Spain, wrote about Carteia. He was also the author of *A Journey from Gibraltar to Malaga with a view of that Garrison and its Environs* (Carter, 1777). Carter lived there since the age of twelve and, during his adulthood, reported and detailed an artistic panorama of the city and Gibraltar (Figure 158). Carter also reported that he collected numerous coins from the site.

Another interesting account of his trip concerns parts of the walls (Figure 159), which were still standing in his time, as well as on the banks of the Guadarrenque; it was still possible to glimpse the ruins of an ancient port in the city (Figure 161). The amphitheatre was also in ruins at the time, and nowadays, only its marks on the ground remain (Figure 162). Cortijo de Rocadillo, the area of the Roman forum, can also be identified on the map (Figure 160). From 'Carter's time, a detailed painting shows the city of Carteia (Rodríguez Oliva, 2011, p. 124).

The years of 1810s – Excavation of Admiral Heming

In 1814, three hundred years after Fariñas' reports and ninety-one years after Conduitt's announcement, the first attempt to excavate Carteia was made by British Admiral Heming during his stay in Gibraltar. Authorised by the Spanish authorities, Heming recovered from his interventions marble and bronze statues, medallions and other objects that he took to London as spoils:

> El almirante Heming que mandaba la escuadra inglesa del Mediterráneo por los años de 1814, durante su estancia en Gibraltar, mandó practicar con licencia de nuestras autoridades grandes excavaciones, y sacó muchas preciosidades en estatuas de mármol y bronce, medallas y otros objetos que se llevó a Londres (Montero, 1860, p. 76).

The years of 1900 to 1930 – The Monumental Catalog of Spain

According to María Lourdes Roldán Gómez et al. in their compilations on Carteia (2011, p. 29), the first Spanish work that officially mentions the city was the *Catálogo Monumental de España Volume 54. Província de Cádiz (1908-1909)* elaborated by *Comisión mixta de las Academias de la Historia y de Bellas Arte de San Fernando* by order of *Ministerio* da *Instrucción Pública y Bellas Artes.* Referred to as Carteya, the city is commented as having an important shipyard and a vast merchant navy (Romero de Torres, 1909, p. 247). This publication brings together photographs and images by Enrique Romero de Torres, who was selected to prepare the catalogue. Consequently, this essay deals with historical and artistic monuments throughout the province of Cadiz. The repertoire was structured in three major sections: the first on the province's prehistoric monuments; the second on the city of Cadiz itself; and the third on the province's populations with their judicial parties. The catalogue was completed in 1909, but it was only published in 1934.

In *Catálogo Monumental,* Carteia was registered as a place where "coins, gravestones, other objects and ruins stand out over the surface of the soil in the fertile fields of Rocadillo" (Romero de Torres, 1983: 223 apud Roldán and Blánquez Pérez, 2011, p. 58). This statement was based on an earlier 1909 work by Romero de Torres in the publication of *Boletín de la Real Academia de la Historia.* As identified by Roldán Gómez et al. (2011, p. 30), comments on archaeological sites or findings are minimal. The main inclusion criteria in the volume appear to have been the historical and/or monumental significance of the archaeological discoveries of the site. An example of this perspective can be seen by choosing a marble sarcophagus in bas-relief (Figure 164 and Figure 165), that was located in the extramural area known at the time as Huerto del Gallo (Carteia).

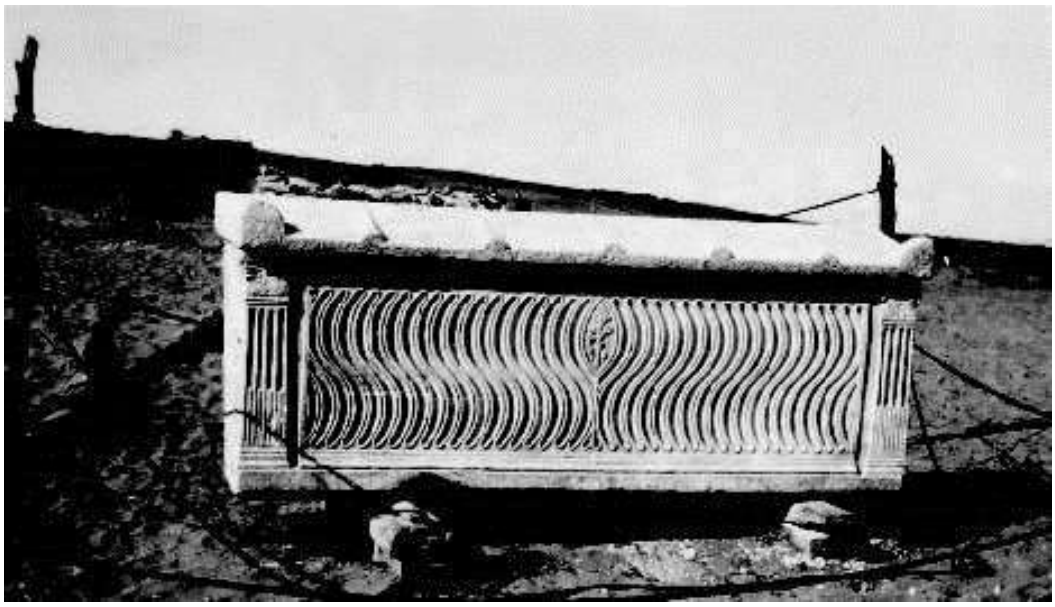
According to the Colleciones en Red of the Red Digital de Colecciones de Museos de España (CERES) the so-called palaeochristian sarcophagus could be dated from the 3rd-4th CE. The main argument for this dating is the iconography showing the lamb and the tree of life and death (Figure 164). The

absence of the Chi-Rho from the Cristian Faith could indicate the first times of Christianism. This Information is available at http://ceres.mcu.es/. Consulting the inventory number of CE04877 Accessed at 29/032021.

Figure 164 - The so-called palaeochristian sarcophagus

Source: (Roldán Gómez, Lourdes, Blánquez Pérez and Martínez Lillo, 2013, p. 45 fig. 11)

Figure 165 - Another view of the Huerto del Gallo sarcophagus in bas-relief



Source: (Roldán and Blánquez Pérez, 2011, p. 36 fig. 9)

The early years of 1950-1960 – The Excavation of Julio Martínez Santa-Olalla

According to Roldán Gómez *et* al (2011, pp. 32–33), between 1953 and 1962, Julio Martínez Santa-Olalla opened new scientific research on the city and its interior.

With the support of Bernardo Sáez, Santa-Ollala placed Carteia within the debate of the Spanish academic community and initiated academic research that persists until today. Educated in the practices of the German Archaeological School, under the supervision of Hugo Obermaier, Santa-Olalla applied new techniques of excavation in this archaeological site, which included the use of square units, the recording of the most significant findings contextualised in planimetry, and photographic documentation of the excavation processes, with the support of Base Marina Rota. Different from other European countries, Spain developed ballooning and aerial observation late. This postpones the technical progress of techniques of Spanish archaeological research. The support from the Armed Forces in Spain was intense during the Francoist dictatorship (1936-1975).

Santa-Olalla and many other researchers benefited due to their allegiance and collaboration with the new regime (for a further debate see de Lima, 2020; Alonso, 2021).

The Santa-Olalla excavation was centred around the Roman baths. And to aggravate the problem, his entire manuscript of the excavation dated 1953 is only a compilation of copies of previous fragmented authors from the 18-19th centuries who commented on Carteia (Bendala Galán *et al.*, 1994, p. 84; Rodríguez Oliva, 2011, p. 11). His archaeological intervention, known as Santa-Olalla Collection, is located today in the *Museo Municipal de San Roque.*

The Late 1960s – The excavation of the Bryant foundation

> Promovidas por la Fundación Bryant, las excavaciones lideradas por Daniel Woods, Antonio Collantes y Concepción Fernández-Chicarro investigaron Carteia entre 1964 y 1967. Estas se llevaron a cabo tanto en el área urbana como en el interior. Se excavaron 27 hectáreas en el área urbana y se descubrieron nuevas áreas de producción en el suroeste de la ciudad, como las cetariae. Aunque las excavaciones inicialmente tenían como objetivo demostrar que Carteia era la mítica ciudad de Tartessos, realizaron una contribución sustancial al proporcionar, por primera vez, una identificación de la secuencia estratigráfica del sitio.
>
> La participación de la Fundación Bryant, decidida a ampliar su mecenazgo arqueológico a la parte meridional de la Península, jugó un papel crucial en la atracción de recursos y atención, a pesar de enfrentar desafíos significativos. Por lo tanto, constituye uno de los problemas más fascinantes en la protohistoria española: la localización de Tartessos, la capital del imperio español más remoto con resonancias extrapeninsulares. (Woods and Collantes de Teran y Delorme, 1967, p. 3).
>
> Promoted by the Bryant Foundation, excavations conducted by Daniel Woods, Antonio Collantes, and Concepción Fernández-Chicarro investigated Carteia between 1964 and 1967. These excavations took place both in the urban area

> and internally. A total of 27 hectares were excavated in the urban area, and new production areas, such as cetariae, were discovered in the southwest of the city. Despite the fact that the excavations were initially aimed at proving that Carteia was the mythical city of Tartessos, they made a substantial contribution by providing the first identification of the stratigraphic site.
>
> The involvement of the Bryant Foundation, which was determined to expand its archaeological patronage to the southern part of the Peninsula, played a crucial role in attracting resources and attention, even though it faced significant challenges. Thus, it constitutes one of the most fascinating issues in Spanish protohistory: the location of Tartessos, the capital of the most distant Spanish empire with extrapeninsular resonances (Woods and Collantes de Teran y Delorme, 1967, p. 3).

Elsewhere in this same publication, Daniel Woods et al. (1967, p. 4) use the comments of classical authors as a basis to defend the notion of Carteia as Tartessos, the mythical civilised society in the Far West:

> Así Strabón dice que algunos creen hoy que esta Tartessos es la ciudad de Carteia; Mela se limita a recoger que algunos testimonios estimaban que Carteia había sido en otros tiempos Tartessos, y Plinio cree poder precisar algo más diciendo que Carteia fui nombrada Tartessos por los griegos. En cuanto a Silio Itálico, en su poema "De bello punico", al enumerar los pueblos hispánicos que formaban en el ejército de Aníbal, dice: Arganthoniacos armat Carteia nepotes … con lo que parece aceptar la identidad Tartessos-Carteia (Woods and Collantes de Teran y Delorme, 1967, p. 4).
>
> So Strabon said that some believe that Tartessos is the city of Carteia; on the other hand, Mela just recollects some testimonies over Carteia as Tartessos in Antiquity and Pliny believes that Carteia was named Tartessos by the Greeks. Silius Italicus in "De bello punico" numerate the Spanish people that integrated the army of Hannibal saying: Arganthoniacos armat Carteia nepotes…

> Supposedly assuming the Tartessos-Carteia 'identity' (Woods and Collantes de Teran y Delorme, 1967, p. 4).

The years of 1970-the 1980s – The excavation of Francisco Presedo Velo and the beginning of yearly reports of the Anuarios Arqueologicos de Andalusia

During the years 1971-1985, the University of Seville, in collaboration with Professor of Ancient History Francisco Presedo Velo, made further excavations in Carteia. With government support, the site received the status of *Yacimiciento Arqueológico* (i.e. the official status of the archaeological site) and then as a *Monumento Nacional e Bien de Interesse Cultural* (i.e. cultural heritage).

Although the Spanish "economic miracle" from the 1950s to the 1970s increased the excavation budget to expand interventions in Carteia to larger areas, the objective remained the same: the excavation of monumental buildings. The Roman forum, the temple, the macellum and a new walled sector were discovered, establishing the current archaeological site (Roldán and Blánquez Pérez, 2011, p. 36).

Although these substantial archaeological activities at the site, the publication of the results were minimal, with only a few provisional articles and a single *Memoria de Excavación* (Presedo *et al.*, 1982).

Still, from this period, the *Anuarios Arqueologicos de Andalusia* was launched, publishing the results of urgent and systematic archaeological excavations beginning in 1985 covering all the activities in the province of Andalusia. This publication is the result of a the mandatory necessity to published since 1985.

The 1990s until today

Phase I: 1994-1999

From 1994 to 1999, a systematic intervention called Proyecto Carteia began. Supported by the Universidad Autónoma de Madrid, new systematic excavations were made focusing on the urban and extra-urban areas. The first phase enabled a new interpretation of the stratigraphic sequence of the site to be developed, specifically in the Cortijo del Rocadillo (the Roman forum area). This intervention established the chronology of the site by excavating the Roman temple, the necropolis, the macellum, a domus and the city walls that were interpreted as the Punic walls of Carteia (Roldán and Blánquez Pérez, 2011, p. 38). Even excavating the walled area of the city, another excavation outside the walls revealed a craft district also equipped with a small port. What emerged showed a specialised area containing a *horrea* (warehouse), a port (transferred to the regional museum), a purple production workshop, the cetariae, the necropolis and a salt production area (Roldán and Blánquez Pérez, 2011, p. 40).

Phase II: The years of 2006-2011 extended until 2012

This new phase was mainly focused on the urban area of the site. To collect more data, excavations were made in new spaces, using a methodology similar to the previous works. The walled Punic sector was discovered in good condition; 3 m of the wall were excavated, and a monumental building from the time of August near the Republican Temple was identified. Outside the city, using historical cartography, archaeologists used Geographic Information Systems to identify the region's morphological characteristics in Antiquity.

Appendix 2

Database

REGISTER NUMBER	1
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	-
STATE	-

SIDE A

STRUCTURE

Roman forum

USE

Diverse

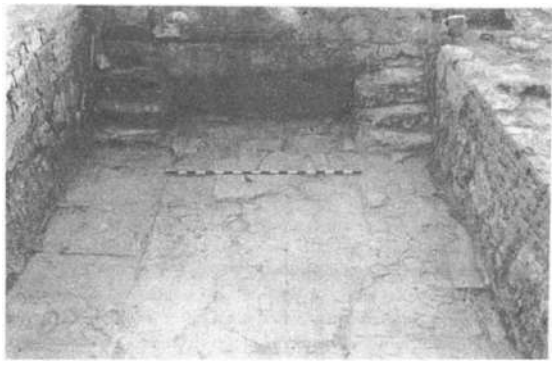
QUOTA

-

DIMENSIONS

-

FIGURE A



CONSTRUCTIVE TECHNIQUES

According to the reports, it was initially believed that the city had acquired its monumentality during the Augustan period. This was consistent with the construction of the forum, temple, and Domus, which featured Corinthian capitals and corbels decorated with bulls' protomes. The forum buildings were arranged in platforms linked by a grand monumental staircase. In the lower section, several dwellings of unknown function were visible, while on the upper platform, the temple was erected, along with structures of different character made through successive renovations The initial wall was constructed using roughly worked stones, while the construction of the forum was carried out using opus vitatum. During the period of Augustus, the buildings on both sides of the temple were constructed using well-carved grey stones of various sizes in opus vitatum. Finally, several pit walls were constructed using irregular and poor-quality stones. Earlier excavators documented the oldest walls, which are no longer visible today, as the foundations of the main forum phase. They were made of roughly worked stones. The walls of the forum phase building are well-constructed in opus vitatum, using ostionera stone silhouettes. The buildings located on both sides of the temple, also in opus vitatum, with well-carved grey stones, are from the Augustan or Imperial period. There were several pit walls created with irregular and poor quality stones. Finally, at the archaeological settlement of Carteia, in situ architectural elements were discovered, including cornices, Corinthian capitals, smooth and grooved shaft drums, bases, bull protomes, and sillions with carvings, all made of limestone and stucco. Marble cornices, fragments of marble and tile inscriptions, fragments of marble facing or flooring, and other architectural elements, such as tegulae, were also found.

BIBLIOGRAPHY

AAA 1985 - Atividades sistemáticas

REGISTER NUMBER 1

SIDE B

OFICIAL NAME Informe de la campaña arqueologica de 1985 en el Yacimiento de Carteia (San Roque, Cadiz)

LOCATION In the Cortijo del Rocadillo area, in the ancient forum.

CHRONOLOGY

1 BCE.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

The shafts that surround the well were obtained from the columns of the demolished Cortijo, which was constructed with materials from Roman ruins (spolia). Some of these shafts were repurposed as columns while others were used to enclose a cattle enclosure. The courtyard was constructed using Roman stones, including common ceramics and tiles. After excavating 20 cm further, fragments of lucerne, Sigillata Clara B, illegible coins, probably from different eras, and an opus signium were discovered at the same depth as the tiles. Deeper excavations revealed black earth with large stone blocks without squares or carvings. Among these blocks, archaeologists found modern kitchen ceramics, a medieval Castilian coin, Sigillata hispanica, and blue tesserae. At a depth of 60 cm, ceramics from the 1st century CE were accompanied by oysters.

REGISTER NUMBER	2
COORDINATORS	Francisco Jose Presedo Velo, Antonio Caballos Rufino
EXCAVATED UNIT	(No oficial name) Ancient Cortijo del Rocadillo
STATE	Poor

SIDE A

STRUCTURE

Part of the wall line

USE

Defensive

QUOTA

1 m

DIMENSIONS

60 cm width

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists lime covering was used only in few places and not in the vast majority of the space. The rest was documented by the use of Opus Signinum. There is a fragmented lime covering on the ground. The late wall would have been 60 cm wide. The stone wall has been dried out and there is a fragmented lime covering on the ground.

BIBLIOGRAPHY

AAA 1985 - Atividades sistemáticas

REGISTER NUMBER 2

SIDE B

OFICIAL NAME Informe de la campaña arqueologica de 1985 en el Yacimiento de Carteia (San Roque, Cadiz)

LOCATION In the Cortijo del Rocadillo area, in the ancient forum.

CHRONOLOGY

-

FIGURE B

COMMENTS

According to the archaeologists lime covering was used only in few places and not in the vast majority of the space. The rest was documented by the use of Opus Signinum. There is a fragmented lime covering on the ground. The late wall would have been 60 cm wide. The stone wall has been dried out and there is a fragmented lime covering on the ground.

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	3
COORDINATORS	Francisco Jose Presedo Velo, Antonio Caballos Rufino
EXCAVATED UNIT	(No oficial name or number) Ancient Cortijo del Rocadillo
STATE	Poor

SIDE A

STRUCTURE

Capitoline temple?

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, in 1983, access to the temple was discovered from the square or forum by S. Simultaneously, Palaeo-Christian tombs from the Visigothic or Byzantine eras were also unearthed through the discovery of pottery. The Cortijo was found to be located above the tomb.

BIBLIOGRAPHY

AAA 1985 - Atividades sistemáticas

REGISTER NUMBER	3	**SIDE B**
OFICIAL NAME	Informe de la campaña arqueologica de 1985 en el Yacimiento de Carteia (San Roque, Cadiz)	
LOCATION	In the Cortijo del Rocadillo area, in the ancient forum.	

CHRONOLOGY

1st BCE to the 6th BCE.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

During the excavation, the archaeologists came across a Greek Byzantine inscription and Hispanic Sigillata pottery with the URTIS mark. Furthermore, an ancient tile with the inscription M. PETRVICIDIVS M. F. LEG. PRO. PR. M. LICI. was also discovered.

REGISTER NUMBER	4
COORDINATORS	Francisco Jose Presedo Velo, Antonio Caballos Rufino
EXCAVATED UNIT	(No oficial name or number) Ancient Cortijo del Rocadillo
STATE	Good

SIDE A

STRUCTURE

Temple podium

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

All access points to the temple have been identified. The temple features a stone lateral staircase of 7 steps covered with opus that corresponds exactly to the width of the central cell of the temple. Additionally, a staircase with two steps is situated to the left of the central staircase.

BIBLIOGRAPHY

AAA 1985 - Atividades sistemáticas

REGISTER NUMBER 4

SIDE B

OFICIAL NAME Informe de la campaña arqueologica de 1985 en el Yacimiento de Carteia (San Roque, Cadiz)

LOCATION In the Cortijo del Rocadillo area, in the ancient forum.

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

A bull-shaped protome, made of low-quality stone and covered in stucco, was discovered.

REGISTER NUMBER 5

SIDE A

COORDINATORS Francisco Jose Presedo Velo, Antonio Caballos Rufino

EXCAVATED UNIT (No oficial name or number) Ancient Cortijo del Rocadillo

STATE -

STRUCTURE

Buildings surrounding the temple

USE

Unknown

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The buildings located to the southwest appear to be older than the rest, dating back to the late republic, and featuring late reconstructions that were possibly carried out during the 5th century or later. Interestingly, it seems that the same temple was later transformed into a church, with some burials discovered on the site.

BIBLIOGRAPHY

AAA 1985 - Atividades sistemáticas

REGISTER NUMBER 5

SIDE B

OFICIAL NAME Informe de la campaña arqueologica de 1985 en el Yacimiento de Carteia (San Roque, Cadiz)

LOCATION In the Cortijo del Rocadillo area, in the ancient forum.

CHRONOLOGY

Late Republic until 6th BCE or later.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	6
COORDINATORS	Francisco Jose Presedo Velo, Antonio Caballos Rufino
EXCAVATED UNIT	(No oficial name or number) Ancient Cortijo del Rocadillo
STATE	Excelent

SIDE A

STRUCTURE

Baptisterium?

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

BIBLIOGRAPHY

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REGISTER NUMBER 6

SIDE B

OFICIAL NAME Informe de la campaña arqueologica de 1985 en el Yacimiento de Carteia (San Roque, Cadiz)

LOCATION In the Cortijo del Rocadillo area, behind the Republican temple.

CHRONOLOGY

Moments before the 5th - 6th BCE?

FIGURE B

COMMENTS

In loco, I was informed by the administrators of the archaeological site that some authors consider this structure to be older than the time of the advance of Catholicism.

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	7
COORDINATORS	Francisco Jose Presedo Velo, Antonio Caballos Rufino
EXCAVATED UNIT	(No oficial name or number) Antigo Cortijo del Rocadillo
STATE	-

SIDE A

STRUCTURE

Roman forum

USE

Diverse

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists there are Imperial shafts and bases, from the Imperial period, inside the walls.

BIBLIOGRAPHY

AAA 1985 - Atividades sistemáticas

REGISTER NUMBER 7

SIDE B

OFICIAL NAME Informe de la campaña arqueologica de 1985 en el Yacimiento de Carteia (San Roque, Cadiz)

LOCATION In the Cortijo del Rocadillo area, at the ancient forum.

CHRONOLOGY

Roman empire

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

According to the archaeologists there are Imperial shafts and bases, from the Imperial period, inside the walls.

REGISTER NUMBER	8
COORDINATORS	Carlos Alonso Villalobos
EXCAVATED UNIT	San Roque
STATE	-

SIDE A

STRUCTURE

Unknown

USE

Unknown

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The report indicates that the town of Carteia once extended to the current area occupied by the CEPSA (Compañía Española de Petroleos) refinery, where archaeologists uncovered two dupondios - one belonging to Antonio Pio and the other to Comodo - and a medallion featuring the effigy of Emperor Flavius. In the vicinity of Albalate, located 2 km from the town of San Roque, there is a village that contains an abundance of stained glass windows and painted ceramics of Arabic origin, as well as fragments of Hispanic Sigillata. Oral records suggest the existence of a buried pottery kiln in the area. Furthermore, the San Roque Museum houses a collection of Roman objects retrieved from both Carteia and Barbésula, including various inscriptions, a Roman portrait from the Republican era, fragments of a statue of Apollo, as well as Sigillata vases and fragments from Carteia and Barbésula. The museum also features fragments and pieces of painted stucco, terracotta, and small sculptures, along with a noteworthy bronze Visigothic lamp of San Pablo.

BIBLIOGRAPHY

AAA 1986 - Atividades sistemáticas

REGISTER NUMBER 8

SIDE B

OFICIAL NAME Prospeccion para la localizacion de yacimientos de produccion anforica de epoca romana. Cádiz.

LOCATION El Riconcillo

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	9
COORDINATORS	Carlos Alonso Villalobos
EXCAVATED UNIT	Gibraltar
STATE	-

SIDE A

STRUCTURE

Natural

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

There is no evidence of Roman buildings ever having been discovered in Gibraltar. It appears just in the nearest town to the Rock at the time (i.e. Carteia)

BIBLIOGRAPHY

AAA 1986 - Atividades sistemáticas

REGISTER NUMBER	9	**SIDE B**
OFICIAL NAME	Prospeccion para la localizacion de yacimientos de produccion anforica de epoca romana. Cádiz.	
LOCATION	Gibraltar	

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

According to the 1986 report, the Gibraltar Museum possesses a notable collection of artifacts from Carteia, including a votive marble foot, as well as coins of various types that the authors have identified as Hispano-Roman, originating from sites such as Carteia, Sexi, Uilia, and Traducta. Additionally, an anchor and an amphora found on the island of Perejil, located off the coast of Morocco, are also present in the collection. Furthermore, the Gibraltar Museum is home to a Carthaginian glass amphora, which is considered the symbol of the museum.

REGISTER NUMBER	10
COORDINATORS	-
EXCAVATED UNIT	Carteia
STATE	-

SIDE A

STRUCTURE

-

USE

-

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The AAA Summary provides information on the spatial planning of the settlement, including details on the weeding that took place in order to close it. The report also indicates that the intervention in the Forum area was focused on reducing the removal of dispersed material on the surface, while also aiding in the consolidation of some structures. In the thermal zone, the perimeter slopes were channeled.
Furthermore, during the excavation process, archaeological material was discovered and subsequently stored in El Cortijo del Rocadillo. The ultimate goal of these works was to maintain the settlement in a safe and suitable condition, while also preserving its overall integrity.

BIBLIOGRAPHY

AAA 1989 - Sumário

REGISTER NUMBER 10

SIDE B

OFICIAL NAME Limpieza, consolidación y mantenimiento

LOCATION Carteia

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	11
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Cerro del Prado
STATE	Destroyed

SIDE A

STRUCTURE

Settlement

USE

Diverse

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The authors of the report provide insight into the first settlement of Carteia, known as Cerro del Prado, which was located 2 km northwest of Roman Carteia on the left bank of the Guadarranque River. The surface materials documented at the site cover a chronology ranging from the 8th to 7th century BC to the 5th to 4th century BC, after which the settlement was abandoned. According to the authors, the reasons for abandonment were due to the topographic character of the location, as the alluvial sedimentation of the river caused it to lose its condition as a port. As a result, the settlement was moved to Carteia, which was closer to the coast.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 11

SIDE B

OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad.

LOCATION Cerro del Prado

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	12
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Carteia
STATE	Good

SIDE A

STRUCTURE

Roman forum

USE

Diverse

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The archaeologists reported that 21 stratigraphic cuts were made during consecutive excavation campaigns in 1965 and 1985, under the direction of Woods, Collantes, and Chicarro. Among these, the most significant is the one located in the enclosure of Cortijo del Rocadillo. In this area, the archaeologists were able to obtain results of a large building that was interpreted as a temple and the beginning of the monumental area of the forum. The levels found here overlapped from the Iberian period to the republican and imperial times, providing valuable insights into the history of the site.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 12

SIDE B

OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad.

LOCATION Carteia

CHRONOLOGY

Iberian to Republican and Imperial times

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	13
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Carteia
STATE	Good

SIDE A

STRUCTURE

Forum, temple and termae

USE

Diverse

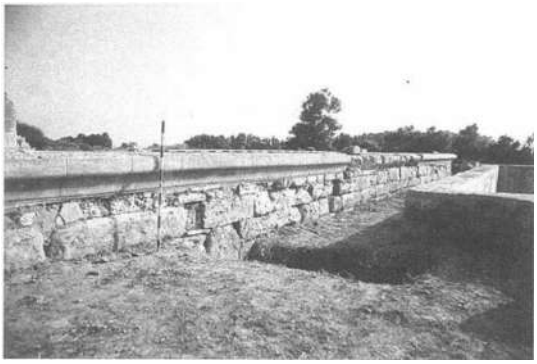
QUOTA

-

DIMENSIONS

-

FIGURE A



CONSTRUCTIVE TECHNIQUES

Between 1971 and 1985, under the direction of Presedo, the excavations were carried out with the aim of discovering the forum area, the monumental temple, and the thermal structure.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 13

SIDE B

OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad

LOCATION Carteia

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	14
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Carteia
STATE	-

SIDE A

STRUCTURE

-

USE

-

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to reports, an analysis of the visible buildings began in 1987, and in 1993, permission was requested from the Junta de Andalucía to review the materials from the excavations that were dispersed in various museums throughout the Andalusian Community.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 14

SIDE B

OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad

LOCATION Carteia

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	15
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Carteia
STATE	-

SIDE A

STRUCTURE

Roman forum

USE

Diverse

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the reports, it was initially believed that the city had acquired its monumentality during the Augustan period. This was consistent with the construction of the forum, temple, and Domus, which featured Corinthian capitals and corbels decorated with bulls' protomes. The forum buildings were arranged in platforms linked by a grand monumental staircase. In the lower section, several dwellings of unknown function were visible, while on the upper platform, the temple was erected, along with structures of different character made through successive renovations The initial wall was constructed using roughly worked stones, while the construction of the forum was carried out using opus vitatum. During the period of Augustus, the buildings on both sides of the temple were constructed using well-carved grey stones of various sizes in opus vitatum. Finally, several pit walls were constructed using irregular and poor-quality stones. Earlier excavators documented the oldest walls, which are no longer visible today, as the foundations of the main forum phase. They were made of roughly worked stones. The walls of the forum phase building are well-constructed in opus vitatum, using ostionera stone silhouettes. The buildings located on both sides of the temple, also in opus vitatum, with well-carved grey stones, are from the Augustan or Imperial period. There were several pit walls created with irregular and poor quality stones. Finally, at the archaeological settlement of Carteia, in situ architectural elements were discovered, including cornices, Corinthian capitals, smooth and grooved shaft drums, bases, bull protomes, and sillions with carvings, all made of limestone and stucco. Marble cornices, fragments of marble and tile inscriptions, fragments of marble facing or flooring, and other architectural elements, such as tegulae, were also found.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 15

SIDE B

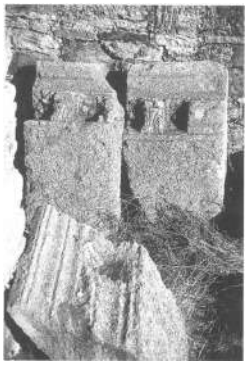
OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad

LOCATION Carteia

CHRONOLOGY

4th BCE to 5th BCE.

FIGURE B



COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

Excavations conducted by Chicarro, Woods, and Collantes between 1965 and 1968 in the forum area yielded a variety of materials dating back to the 4th century BC and the Late Antique period. The findings included fish dishes, fragments of Attic pottery, African pottery imitating Campanian (Kouass?), grey engobed Iberian pottery, painted and common Iberian, Campanian A and B, red glazed Pompeian pottery, African kitchen pottery, Sigillata aretina, decorated Hispanic and Sigillata Clara, Roman and vitreous. Additionally, the excavations unearthed disc lucernas, volutes Punic amphorae, high and low empire Roman and African ceramics, imbrices tiles, stucco fragments, bronze, glass, and worked bones. From the excavations conducted by Presedo in 1965 and 1966, and in 1975, 1976, and 1977, materials such as Campanian ceramics A and B, red Pompeian engobe, imitation Campanian ceramics, locally produced fish plates, polished grey indigenous, Iberian painted and common ceramics, Sigillata Aretina, Sudgalic, Hispanic, thin-walled ceramics, marmorata, and common Roman were found. Other ceramic materials included African kitchen ceramics, bread typology, lucernas, and Punic and Roman amphoras of the

REGISTER NUMBER	16
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Muros Púnicos
STATE	Poor

SIDE A

STRUCTURE

Punic wall

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, the construction characteristics of these walls are different from those of the rest of the forum structure. The Punic walls were found at a lower stratigraphic level than the forum platform. The structures above the wall date to the Augustan or Imperial period and were constructed using different techniques, representing the Republican phase. Façade created using the bossing technique. The archaeologists identified two oblique walls that appeared to define an outer space or a street measuring 10 feet wide. The walls were constructed using a square, nested dry bossing technique that was common in Punic and Greek-Hellenistic environments, such as in Carthage, Lixus, Sala, Tamuda, Sulcis, Motya, Volubilis, and Castillo de Doña Blanca, among other sites.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 16

SIDE B

OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad

LOCATION Carteia

CHRONOLOGY

3rd - 2nd BCE

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	17
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Podium
STATE	-

SIDE A

STRUCTURE

Podium

USE

Diverse

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The completion of the temple, according to the archaeologists, occurred at the end of the Republican era.According to the authors, it has been confirmed that the foundation of the temple begins 1.50 meters below the cornice limit, which suggests that the podium was relatively low in comparison to Roman temples, and that there was no cornice at the base.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 17

SIDE B

OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad

LOCATION Carteia

CHRONOLOGY

3rd BCE to Imperial?

FIGURE B

COMMENTS

The completion of the temple, according to the archaeologists, occurred at the end of the Republican era.According to the authors, it has been confirmed that the foundation of the temple begins 1.50 meters below the cornice limit, which suggests that the podium was relatively low in comparison to Roman temples, and that there was no cornice at the base.

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

Various materials of different chronological periods were identified, but the majority of them belong to the imperial period. The authors suggest that the Punic amphorae from the 3rd century BCE, which have been found, are probably from a period predating the construction of the temple.

REGISTER NUMBER	18
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Templo
STATE	-

SIDE A

STRUCTURE

Temple

USE

Religious

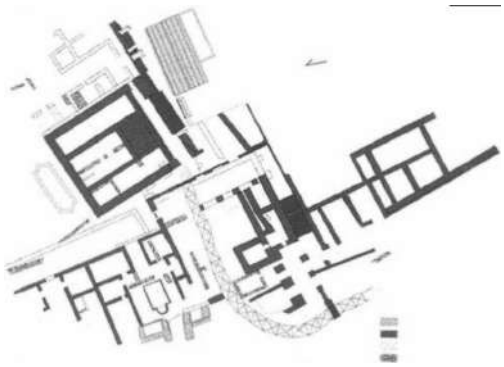
QUOTA

-

DIMENSIONS

-

FIGURE A



CONSTRUCTIVE TECHNIQUES

According to the archaeologists, the building is rectangular in plan and overlooks the forum situated at its highest point. Its orientation does not follow the layout of the monumental staggered access of the forum and the structures of the upper platform. The frontal access appears to be composed of two sections of staircases, of which only the lower one is preserved, covering the width of the cell. Typically, the temple is considered an ancient building that does not correspond to a capitol, but rather to a single temple cella with lateral allies. It is similar to Temple C of Largo Argentina in late 4th century BC Rome and the northern temple of the Forum Olitorio, though older than the Temple of Juno in Gabii.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 18

SIDE B

OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad

LOCATION Carteia

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

There are Corinthian capitals and cornices alternately decorated with palettes, rose windows and ox horns which indicate its grandeur and decorative richness.

REGISTER NUMBER	19
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Escalera Central
STATE	Average

SIDE A

STRUCTURE

Central staircase

USE

Street

QUOTA

DIMENSIONS

FIGURE A

CONSTRUCTIVE TECHNIQUES

The staircase blocks would be mostly 2 m wide, clad in opus signium.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 19

SIDE B

OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad

LOCATION Carteia

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	20
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala Galán
EXCAVATED UNIT	Muros del podium
STATE	Poor

SIDE A

STRUCTURE

Wall outline

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

Archaeological findings indicate that the aforementioned structure underwent several modifications during later periods. Specifically, walls were added inside the cell and wings were constructed using inferior techniques. As a result of subsequent burials, materials were reused or existing structures were exploited, which ultimately impeded access to the front of the building. Notably, a baptistery was erected at the rear of the temple. It is believed that this structure could have served as either a pool or cistern related to an unknown building. Furthermore, evidence suggests that the baptistery was constructed after the temple had already been destroyed.
The exterior walls were constructed using large rocks such as ostioneras, as well as limestone and sandstone of both square and irregular sizes.
In certain instances, the slabs were interlocked to ensure horizontal alignment. The walls were likely constructed on an irregular stone foundation using an ample amount of bonding mortar. The exterior of the walls would have been plastered, while the interior was likely filled with small, irregular stones.

BIBLIOGRAPHY

AAA 1994 - Atividades sistemáticas

REGISTER NUMBER 20

SIDE B

OFICIAL NAME El Proyecto Carteia: Desarollo arquitectónico y urbanístico de la ciudad

LOCATION Carteia

CHRONOLOGY

-

FIGURE B

COMMENTS

-.

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	21
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Los trabajos arqueológicos en el sector púnico. Excavación de la cuadrícula N°2 (2° Año)
STATE	Good

SIDE A

STRUCTURE

Punic wall and streets

USE

Defensive and civil

QUOTA

-

DIMENSIONS

According to the archaeoogists, the walls reached 1.21 m in

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, the sectors explored by Presedo were excavated during the 1970s when the area was known for its great stratigraphic potential in the hillside. This area was designated as sector B by the researchers and contained numerous walls, some of which were built in bossing silhouettes. The excavated unit M° 2 was defined by two large walls with bossing fronts that were oriented N-S. These two walls limited the trapezoidal plan in an E-W direction. Additionally, a street from the Punic period was identified within the area. In their conclusions, the excavators proposed that after the cleaning and excavation works in sector B of Carteia, it was possible to establish a solid reconstructive hypothesis of the original topography of the settlement. This original topography was gradually modified and, above all, concealed by the urbanistic process throughout the centuries. The authors suggest that it is evident that a new settlement was built on a natural elevation of compacted sand after the abandonment of Cerro del Prado.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 21

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B.

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	22
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Muro E
STATE	Good

SIDE A

STRUCTURE

Punic Wall E

USE

Defensive

QUOTA

-

DIMENSIONS

1.20 m wide and 0.65 m deep

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the excavators, both the G and E walls bordered a Punic street. The walls mentioned were constructed using ashlars and were built on a foundation that reused a portion of the base of a previous wall. Some remains discovered within the wall suggest the possible existence of a street located within. Both (Wall E and G) had overlapping ashlars modules, which differed in their orientation. Associated to walls B, G, K, L and M.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 22

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B.

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	23
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Muro G
STATE	Good

SIDE A

STRUCTURE

Punic Wall G

USE

Defensive

QUOTA

-

DIMENSIONS

0.85 m wide and 0.34 m deep.

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, both the G and E walls bordered a Punic street. According to the archaeologists, large stones were introduced into the pit of wall G during construction. The raising of the wall was achieved through the use of square and dry silliers. These ashlars were cut in situ, as evidenced by the sandstone chips found in the foundations of the ancient walls. The interior of the walls was filled with earth and irregular stones, which the authors suggest are unique characteristics of the Punic world. Both (Wall E and G) had overlapping ashlars modules, which differed in their orientation. Ashlar in some cases cast in bossage.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 23

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B.

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	24
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Muro A
STATE	Good

SIDE A

STRUCTURE

Punic Wall A

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, walls A and F are believed to be some of the first foundation walls of the city. Wall A contains a foundational pit with fragments of black glazed pottery that are likely from the mid-4th century BC. The excavators suggest that sector B of Carteia displays a stratigraphy of the different habitation levels from the early Punic era to the present day, including the Roman Republican period. Later, the structures were given a more monumental treatment with silver padded bossing. Lastly the ashlars on the façade were made in bossage. Irregular masonry

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 24

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B

CHRONOLOGY

Punic-Turdetanic (3rd BCE).

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	25
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Muro F
STATE	Good

SIDE A

STRUCTURE

Punic Wall A

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, walls A and F are believed to be among the first foundation walls of the city. Wall A contains a foundational pit with fragments of black glazed pottery that are likely from the mid-4th century BCE. The excavators suggest that sector B of Carteia displays a stratigraphy of the different habitation levels from the early Punic period to the present day, including the Roman Republican era. Later on, the structures received a more monumental treatment, featuring silver padded bossing. Lastly the ashlars on the façade were made in bossage. Irregular masonry

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 25

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B.

CHRONOLOGY

Punic-Turdetanic (3rd BCE).

FIGURE B

COMMENTS

Ashlars with facades made of bossage.

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	26
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Muro B
STATE	Bom

SIDE A

STRUCTURE

Punic Wall B

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, walls A and F are believed to be among the first foundation walls of the city. Wall A contains a foundational pit with fragments of black glazed pottery that likely date back to the mid-4th century BCE. The excavators suggest that sector B of Carteia exhibits a stratigraphy of the various habitation levels from the early Punic era to the present day, including the Roman Republican period. Later on, the structures were given a more monumental treatment, featuring silver padded bossing. Lastly the ashlars on the façade were made in bossage. Associated to walls E, G, K, L and M.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 26

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B

CHRONOLOGY

Punic-Turdetanic (3rd BCE).

FIGURE B

COMMENTS

Ashlars with facades made of bossage.

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	27
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Muro K
STATE	Good

SIDE A

STRUCTURE

Punic Wall K

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, walls A and F are believed to be among the first foundation walls of the city. Wall A contains a foundational pit with fragments of black glazed pottery that likely date back to the mid-4th century BC. The excavators suggest that sector B of Carteia exhibits a stratigraphy of the various habitation levels from the early Punic era to the present day, including the Roman Republican period. Later on, the structures were given a more monumental treatment, featuring silver padded bossing. Lastly the ashlars on the façade were made in bossage. Associated to walls E, B, G, L and M.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 27

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B.

CHRONOLOGY

Punic-Turdetanic (3rd BCE).

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	28
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Muro L
STATE	Good

SIDE A

STRUCTURE

Punic Wall L

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, walls A and F are believed to be among the first foundation walls of the city. A foundational pit with fragments of black glazed pottery dating back to the mid 4th century BC was discovered in one of the walls. The excavators also noted that sector B of the Carteia presents a stratigraphy of the different habitational levels, ranging from the first Punic moments to the present times, including the Roman Republican era. Later, the structures underwent a more monumental treatment, featuring silver padded bossing. Lastly the ashlars on the façade were made in bossage.Associated with wall E, B, G, L and M.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 28

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B.

CHRONOLOGY

Punic-Turdetanic (3rd BCE).

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	29
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Muro M
STATE	Good

SIDE A

STRUCTURE

Punic Wall M

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, both wall A and F are believed to be among the first foundation walls of the city. In one of them, a foundational pit containing fragments of black glazed pottery, which probably dates back to the mid 4th century BCE, was discovered. The sector B of the Carteia has revealed a stratigraphy of the various habitational levels, ranging from the first Punic period to the present times, including the Roman Republican era. Later on, the structures were given a more monumental treatment, characterized by the use of silver padded bossing. Lastly the ashlars on the façade were made in bossage.Associated with wall E, B, G, K and L.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 29

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B.

CHRONOLOGY

Punic-Turdetanic (3rd BCE).

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	30
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Espacio 2
STATE	Bad

SIDE A

STRUCTURE

Punic space 2

USE

Unknown

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, there is a noticeable difference in construction techniques and the use of imported materials in the Roman Republican building phase, indicating a possible date of the 2nd century BCE. The Augustean or imperial buildings built on these walls after the terrace feature an opus signinum pavement that sets them apart. The excavators suggest that these buildings were also constructed during the 2nd century BCE.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 30

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995.

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B.

CHRONOLOGY

Punic-Turdetanic (3rd BCE).

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	31
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Espacio 3
STATE	Bad

SIDE A

STRUCTURE

Punic space 3

USE

Unknown

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The archaeologists have observed that Roman Republican building techniques exhibit a marked difference in construction methods and the use of imported materials, suggesting that this phase dates back to the 2nd century BCE. Moreover, the Augustan or imperial buildings constructed on these walls after the terrace stand out due to their opus signinum pavement. The excavators postulate that these buildings were constructed during the 2nd century BCE.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 31

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION It is located on the southwest side of the forum, on a hillside. Referred to as sector B.

CHRONOLOGY

Punic-Turdetanic (3rd BCE).

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	32
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Estructura C
STATE	Good

SIDE A

STRUCTURE

Roman Republican Wall C

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The archaeologists suggest that the Roman Republican building techniques exhibited distinct differences in terms of construction techniques and the use of imported materials, indicating that this phase dates back to the 2nd century BCE. Additionally, the Augustan or imperial buildings constructed on these walls after the terrace are notable for their opus signinum pavement. The excavators believe that these buildings were constructed during the 2nd century BCE.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 32

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

Augustan or Imperial Period.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	33
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Estructura D
STATE	Good

SIDE A

STRUCTURE

Roman Republican Wall D

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, the building techniques employed during the Roman Republican era were significantly different in terms of construction methods and the use of imported materials, which suggests that this phase dates back to the 2nd century BCE. Furthermore, the Augustan or imperial buildings that were constructed on these walls after the terrace are particularly noteworthy due to their opus signinum pavement. The excavators maintain that these buildings were constructed during the 2nd century BCE.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 33

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

Augustan or Imperial Period

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	34
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Estructura H
STATE	

SIDE A

STRUCTURE

Roman Republican Wall H

USE

Defensive

QUOTA

DIMENSIONS

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the excavators, the Roman Republican building techniques presented a clear differentiation with regard to the construction techniques and the imported materials, which may establish the period of this phase in the 2nd century BCE. After the terrace on these walls, the Augustan or imperial buildings are distinguished by their opus signinum pavement. The excavators suggest that these buildings were constructed during the 2nd century BCE.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 34

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

Augustan or Imperial Period

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	35
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Estructura I
STATE	Good

SIDE A

STRUCTURE

Roman Republican Wall I

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, the Roman Republican building techniques presented a clear differentiation with regard to the construction techniques and again by the imported materials, a fact that may establish the period of this phase in the 2nd century BCE. Still on these walls, after the terrace, the August or imperial buildings stand out by the opus signinum pavement. As a period, the archaeologists believe the 2nd century BCE as the time of their construction.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 35

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION

CHRONOLOGY

Augustan or Imperial Period

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	36
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Templo Republicano
STATE	Bad

SIDE A

STRUCTURE

Republican temple

USE

Religious

QUOTA

-

DIMENSIONS

18 m

FIGURE A

CONSTRUCTIVE TECHNIQUES

As previously stated, the 18-meter side temple consists of only a cell with side wings, retaining the walls of the podium base. The front of the temple has not been preserved in situ. The building's base is constructed of irregular medium and small stones, with much mortar used to join them. The outer facade of the podium is made up of large ostioneras of scrub, limestone, and sandstone, which were laid without the use of mortar. The inside of the wall was filled with irregular pebbles and mortar. The remaining plaster of one of the podium walls was preserved. The temple features a single cell with flanking wings that support the walls of the podium base.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 36

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

Roman Republican

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	37
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Estructura N
STATE	Good

SIDE A

STRUCTURE

Roman Republican Wall N

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The archaeologists suggest that the Roman Republican building techniques exhibited distinct variations in both construction techniques and the use of imported materials, indicating that this phase dates back to the 2nd century BCE. Additionally, the Augustan or imperial buildings that were constructed on these walls after the terrace stand out due to their opus signinum pavement. As for the time of their construction, the excavators believe it to be during the 2nd century BCE.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 37

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

Augustan or Imperial Period

REGISTER NUMBER	38
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Templo Republicano
STATE	Bad

SIDE A

STRUCTURE

Internal walls of the temple

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

In front of the temple, archaeologists uncovered remnants of walls that are believed to have been part of the pronaos, as well as a small and poorly preserved staircase that served as the access to the cell. The staircase likely had four steps and was constructed with a 2-meter wide limestone material. In front of the staircase, there was thought to be a square, but the area has not been excavated yet. Despite only one cella being excavated, earlier archaeologists regarded the structure as a Capitolium. Later on, it was interpreted as a temple of ancient typology, featuring a cella and alae on the sides, similar to Temple C of Largo Argentina in Rome, built in 4 BC, or the temples of the Forum of Olitorio and Juno in Gabii. The walls of this internal part were made in opus vittatum with small stones.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 38

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

Roman Republican

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	39
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Recinto del toros
STATE	Bad

SIDE A

STRUCTURE

Republican Temple

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

After analyzing the architectural features, the archaeologists interpreted this building as a monumental structure constructed using the traditional piedra ostionera (limestone) technique, similar to that used in Baelo Claudia. The use of plastering on the architectural features allowed for greater precision in finishing the decorative elements, resulting in an improved surface finish on the ostionera limestone.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 39

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

Roman Republican

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

In front of the temple, architectural elements of this religious structure were unearthed. Many of these were found in an area called "Recinto de los Toros" during Woods' excavations in 1967-1968. Subsequently, the remains of cornices, bases, shafts, and capitals were repurposed in Visigothic homes and tombs.

REGISTER NUMBER	40
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Las basas
STATE	Poor

SIDE A

STRUCTURE

Republican Temple

USE

Religious

QUOTA

-

DIMENSIONS

54 cm high and a diameter of 64 cm.

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the excavators, the bases of the architectural elements discovered in front of the temple were described as featuring a bull framed by two fillets. According to the archaeologists, this type of base was common during the early Hispano-Roman architecture.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 40

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	41
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Los capiteles
STATE	Poor

SIDE A

STRUCTURE

Republican Temple

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The capitals were constructed using two blocks that corresponded to the Corinthian type, which is a variant of the Corinthian order that features volutes in a vegetal form, following the kalathos scheme.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 41

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	42
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Prótomo de toro
STATE	Poor

SIDE A

STRUCTURE

Republican Temple

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The archaeological site houses some samples of the protome, while others can be found in the Museum of Seville and the Museum of San Felipe in San Roque (Cádiz). According to the archaeologists, this type of decoration was not common, as there are only a few instances of bull capitals found in the Pition of Delos built in the III B.C and in the stoa of Antigonus also in Delos. Additionally, the temple is unique in that it features an arched lintel, which is preserved in both the archaeological site and the Seville museum.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 42

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

Roman Republican

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	43
COORDINATORS	Lourdes Roldán Gómez, Manuel Bendala, Juan Blánquez, Sergio Martínez
EXCAVATED UNIT	Sondeo estatigráficos en el podium del templo
STATE	Good

SIDE A

STRUCTURE

Podium of the Republican Temple

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

In order to establish the chronology of the temple, a transverse survey was conducted by the excavators on the north wall of the podium. The archaeological evidence from this intervention was brief, revealing the existence of pre-Roman levels, including Punic and Turdetani materials. The excavators described large, irregular stones (Level I) associated with pre-Roman artifacts, such as painted pottery and some amphorae. Following a sequence of planing, a structure was built in Opus Signium, which was interpreted as being from the Punic period. Ceramic materials found at this level included Campanian pottery, common pottery, and amphorae from the Republican era. According to the excavators, much later, in the 2nd century BC, the monumental construction of the temple occurred. After this period, not much was documented as the temple and the fill levels were destroyed. (Level I) - Large irregular stones were found in the Turdetan period, and after this level, there were opus signinum structures, which were possibly from the Punic period. Opus Signium during the Punic to the Republican.

BIBLIOGRAPHY

AAA 1995 - Atividades sistemáticas

REGISTER NUMBER 43

SIDE B

OFICIAL NAME Nuevas investigaciones en Carteia. Campaña de 1995

LOCATION -

CHRONOLOGY

From the Turdetan period to the imperial period

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

The excavators recorded large irregular stones (Level I), which were associated with pre-Roman materials, such as painted pottery and some amphorae. After some planning, a structure was made using Opus Signium, which was interpreted as being from the Punic period. Ceramic materials, such as Campanian pottery, common pottery, and amphorae from the Republican period, were found to be associated with this moment.

REGISTER NUMBER	44
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	Sector Púnico - Finalización del Corte 1
STATE	Bad

SIDE A

STRUCTURE

Punic sector structure

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, the west and north profiles of the excavation area designated as C1 reveal a sequence of the Punic and Roman (republican) phases. Above the latter level, an Augustan domus from the imperial period was discovered in the 1980s. In C1, black lacquer and Campanian B pottery were found. The north profile exhibited continuity from the 4th century BC to the Late Antiquity and Visigothic times. It was possible to identify a Punic monument associated with Kouass pottery from the north profile, although the excavators did not report the exact number of Kouass pottery found. Monumental structures during the Punic phase made in very well carved ashlars. Monumental structures during the Punic phase made in very well carved ashlars.

BIBLIOGRAPHY

AAA 1997 - Atividades sistemáticas

REGISTER NUMBER 44

SIDE B

OFICIAL NAME Actuaciones realizadas em Carteia em el año 1997

LOCATION At the south end of the archaeological site.

CHRONOLOGY

Punic to Roman Republican

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

During the excavations in C1, the W and N profiles showed the same sequence of Punic and Roman (Republican) phases. Above the latter level, there was an Augustan domus from the imperial period, which was excavated in the 1980s. Black lacquer and Campanian B pottery were found in C1. The N profile revealed continuity from the 4th century BC to Late Antiquity. The excavators were able to identify a Punic monument associated with Kouass pottery from the N profile, but they did not record how many Kouass pieces were found.

REGISTER NUMBER	45
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	Sector Púnico - Excavación del Corte 2
STATE	Good

SIDE A

STRUCTURE

Punic sector structure

USE

Defensive

QUOTA

-

DIMENSIONS

15 m long and 3 m wide

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, this sector of the site surpasses scientific expectations due to its constructional and spatial complexities. Notably, there is a significant slope on the outside of the walls, which may indicate the proximity of the sea. The walls themselves were constructed to a thickness of 3.5 meters, with six horizontal rows of tiles and a further four rows carved at right angles, indicating the presence of a keep on this site. However, previous excavations by Chicarro, Bosques, and Presedo have altered the original relief of the area. Despite this, the excavators in the current year believe that the wall continues to the west.
In addition to the walls, the archaeologists also documented a structure made with irregular stones, well-anchored and positioned parallel to the wall, separated by a distance of 3 meters. There is another wall that could potentially indicate the presence of a casemate, a common feature of Punic defensive architecture in the Iberian Peninsula (e.g. Cartagena, Castillo de Doña Blanca). Above these walls, a rectangular space with its original floor from the first Punic phase was discovered. The excavators identified two sequenced Punic moments that maintained the urban axis, referred to as Phase I and Phase II. There is also evidence of a port located outside the walls.The walls exhibited a thickness of 3.5 meters and consisted of six horizontal rows of tiles, with an additional four rows carved at right angles, indicating the existence of a keep at the site. Unfortunately, the original relief was modified due to the excavations conducted by Chicarro, Bosques, and Presedo. Nonetheless, the recent excavations conducted this year have led the excavators to believe that the rampart extends towards the west. In parallel to the rampart, and positioned at a distance of 3 meters, a structure made of irregular stones was documented by the team of excavators. Notably, this structure was firmly anchored and presented a remarkable level of architectural sophistication.
Possible Punic wall with guardhouses in relation to the access street to the city. Considered a quality work by archaeologists.

BIBLIOGRAPHY

AAA 1997 - Atividades sistemáticas

REGISTER NUMBER 45

SIDE B

OFICIAL NAME Actuaciones realizadas em Carteia em el año 1997

LOCATION On a steep slope of the archaeological site.

CHRONOLOGY

Punic I to Punic II

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

Irregular but well anchored and good quality.

MATERIAL CULTURE

The archaeologists discovered Kouass pottery and black lacquer pottery during the excavation.

REGISTER NUMBER	46
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	Sector Romano
STATE	Good

SIDE A

STRUCTURE

Punic altar

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The archaeological team aimed to clear the area and uncover a potential Punic altar. Their primary focus was to gain a deeper understanding of the access to the temple and to document the potential utilization of opus signinum. Additionally, they recorded the Visigothic tombs present in the area.

BIBLIOGRAPHY

AAA 1997 - Atividades sistemáticas

REGISTER NUMBER 46

SIDE B

OFICIAL NAME Actuaciones realizadas em Carteia em el año 1997

LOCATION In E of C.2

CHRONOLOGY

Punic Roman period.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	47
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	Sondeo en el interior del podium
STATE	Good

SIDE A

STRUCTURE

Punic altar

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, the main goal of the excavation was to clear the area and locate a possible Punic altar. Once geological levels were reached, a chronological sequence was established. The first level uncovered greedy brown clay with a ferruginous core and ceramic material, potentially indicating the arrival of the Punics (Phase 1) and the beginning of wall construction. The discovered structure had an east-west orientation with two stones in a horizontal course settled in the glutinous brown clay. This structure continued northward to form right angles, potentially indicating a new wall, and to the south, a new horizontal line of stones emerged, perhaps indicating an altar. These walls may have defined an enclosed space (Wall G, G', and G'').
The archaeological level was marked by a 6 cm deep burn with lime stains and intrusions of adobe, charcoal, or sand. The surface was flattened for the previous use of the opus signinum structure, with a core made of taipa and a 2 cm stucco surface. A 40 cm wide staircase in opus signinum with rounded corners was also discovered. This structure was cut by the podium walls above. The archaeologists interpreted the first level as the initial occupation of the city (4th BCE).
The second level revealed an unseen structure with clay and lime cladding, potentially an altar with red or violet clay soil. The final level uncovered the republican temple built above the possible altar. The podium was constructed using very regular walls filled with small irregular stones mixed with earth, and the ashlars of the Punic walls with bossing were reused for its construction. (Phase 1) - Horizontal structures made of irregular stones

BIBLIOGRAPHY

AAA 1997 - Atividades sistemáticas

REGISTER NUMBER	47
OFICIAL NAME	Actuaciones realizadas em Carteia em el año 1997
LOCATION	Inside the podium.

SIDE B

CHRONOLOGY

Punic to Roman Republican.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

The ceramic material from the first phase was not extensively discussed by the excavators, and the quantity of objects associated with this structure was not mentioned. However, they did note that the possible origin of the ceramics was African cooking pottery, possibly of the Kouass type, as well as late Roman black bowls. Additionally, Campanian A and Kouass type fish dish were found, which are indicative of the city being reformed during the Augustan period, possibly around 100 BCE.

REGISTER NUMBER	48
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	Sondeo al exterior del podium (C.3)
STATE	Poor

SIDE A

STRUCTURE

Structure of the Roman sector

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The main objective in this area was to analyze the destruction of the temple, which has been associated with the Late Republic period. Previous levels within this structure revealed fragments of Dressel IB or C amphorae, dating back to the 1st century BCE. One of these pottery fragments was found within the stones of this level, indicating a connection to the earlier phases of the temple's construction. In C.4 many examples of opus signinum were found on adobe and burnt levels. Possible foundation.

BIBLIOGRAPHY

AAA 1997 - Atividades sistemáticas

REGISTER NUMBER 48

SIDE B

OFICIAL NAME Actuaciones realizadas em Carteia em el año 1997

LOCATION North of the podium

CHRONOLOGY

Late Republican

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

Fragments of Dressel IB or C from I BCE.

REGISTER NUMBER	49
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	Sondeo al exterior del podium (C.3)
STATE	Poor

SIDE A

STRUCTURE

USE

QUOTA

DIMENSIONS

CONSTRUCTIVE TECHNIQUES

FIGURE A

The main objective in this area was to analyze the destruction of the temple, which has been associated with the Late Republic period. Previous levels within this structure revealed fragments of Dressel IB or C amphorae, dating back to the 1st century BCE. One of these pottery fragments was found within the stones of this level, indicating a connection to the earlier phases of the temple's construction. In C.4 many examples of opus signinum were found on adobe and burnt levels. Possible foundation.

BIBLIOGRAPHY

AAA 1997 - Atividades sistemáticas

REGISTER NUMBER 49

SIDE B

OFICIAL NAME Actuaciones realizadas em Carteia em el año 1997

LOCATION On the north facade of the podium.

CHRONOLOGY

2nd BCE.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

Punic ceramics, painted ceramics, Punic amphorae with black lacquer and common amphorae.

REGISTER NUMBER	50
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	2.2.. Actuaciones em el Frente del templo
STATE	Good

SIDE A

STRUCTURE

Structure of the Roman sector

USE

Religious

QUOTA

-

DIMENSIONS

The dimensions of the temple were established by the

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, the clearance of this area provided a better view of the entire sector. They found another staircase built in limestone daggers covered with stucco above the smaller ostionera stone staircase, indicating that the latter was a remodelling of the previous limestone slabs. On the south side of the temple, silhouettes were found that suggest the use of Punic pottery in the 2nd century BC. The facade of silhares was covered in stucco, and four steps, each 20 cm in height, may have been lost. A structure, possibly a macellus, was discovered on the north side of the temple. The remodeling of the second new staircase was made using limestones recovered by Opus Signinum. This temple could be of the type of a cell with allae on the sides. It is a peripteros sine postico similar to Temple C of Largo Argentina in Rome from the 4th century BC, the temple of Janus in the Forum Holitorium of the 3rd century BC, and the temple of Juno in Gabii of the 2nd century BCE, which are chronologically very close to Carteia. Stones covered with mortar and ostionera stone. Possible foundation. The minor staircase of the temple was constructed using piedra ostionera and Opus Signinum.

BIBLIOGRAPHY

AAA 1997 - Atividades sistemáticas

REGISTER NUMBER 50

SIDE B

OFICIAL NAME Actuaciones realizadas em Carteia em el año 1997

LOCATION On the north facade of the podium.

CHRONOLOGY

2nd BCE.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

Punic ceramics, painted ceramics, Punic amphorae with black lacquer and common amphorae.

REGISTER NUMBER	51
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	1. Sector Punico
STATE	Good

SIDE A

STRUCTURE

Interior wall spaces

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The archaeologists reported the discovery of important aspects of the Punic city in relation to its walled perimeter. The defensive walls were constructed using large stones of 30-40cm in size, with a facade of pseudo-ashlars, and bound together with reddish clay mortar. Additionally, guardhouses were constructed to complement this defensive system. Pseudo-ashlars for the stones and reddish mortar to accommodate the stones. Punic Walls and Casamate W (U.E.7). Pseudo-ashlars.

BIBLIOGRAPHY

AAA 1998 - Atividades sistemáticas.

REGISTER NUMBER 51

SIDE B

OFICIAL NAME Novedades arqueológicas em Carteia (San Roque, Cádiz).Campaña de 1998.

LOCATION Punic Walls - C-5

CHRONOLOGY

Punic period.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

Pseudo-ashlars with 30-40 cm.

MATERIAL CULTURE

The archaeologists did not specify the materials.

REGISTER NUMBER	52
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	1. Sector Punico
STATE	Poor

SIDE A

STRUCTURE

Wall

USE

Defensive

QUOTA

-

DIMENSIONS

The excavation unit was 3.50x15 cm to the west

FIGURE A

CONSTRUCTIVE TECHNIQUES

The archaeologists have defined three distinct phases of the site. Phase 1, which is believed to be of Punic origin, served as the foundation for Phase 2, likely constructed during the Roman Republican period. Finally, Phase 3 is marked by a black earth level which may indicate a period of destruction. A small Roman cistern was found inside this unit with the outer face covered with Opus Signinum. Three-phase wall (Phase1EU23) (Phase2EU22and15) (EU24E18?). Foundation in ashlars.

BIBLIOGRAPHY

AAA 1998 - Atividades sistemáticas.

REGISTER NUMBER 52

SIDE B

OFICIAL NAME Novedades arqueológicas em Carteia (San Roque, Cádiz).Campaña de 1998

LOCATION Punic Walls - C.6

CHRONOLOGY

Punic to Roman Republican.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

Construction made in ashlars.

MATERIAL CULTURE

The excavators reported that Phase 3 yielded a considerable amount of material culture, but they did not provide specific information regarding the types or origins of the artifacts found.

REGISTER NUMBER	53
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	2. Sector Romano
STATE	Good

SIDE A

STRUCTURE

Punic altar 1 and 2

USE

Religious

QUOTA

30 cm

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeologists, the discovery of an amphora prompted them to excavate down to the geological level, where they discovered a possible sacred deposit containing a ceramic vessel with grey earth and bones inside. Two flint teeth were also found beneath the pottery. This geological level contained a grey fill with a ferruginous core and a pit. The excavation of the Punic walls revealed that the temple podium did not have a foundation pit, and instead was settled on the Punic walls. New walls were built over the previous ones, with a level of grey earth between these two phases. This wall preserved an irregular row of medium to large stones made of clay with its elevation made of adobe.
During phase I (Ib), the adobe bricks showed destruction marks on both sides under the ground, marked by burnt ground. A level of irregular destroyed stones (possibly the first votive altar) was identified on the east and north sides, similar to that preserved in Opus Sigininum (possibly the second altar). The earliest altar was on a stucco and plaster level and could be the first Semitic altar based on the associated ceramic material deposited as a religious practice. This first altar could correspond to the Semitic type in an open-air temenos surrounded by a wall where offerings were deposited on the ash altar during its first and second phase (Ic and IIa). During the great phase of Punic monumentalization (II), corresponding to Hellenistic times, a padded wall of the south access to the city was associated with the second altar in Opus Signinum (altar 2), which was built on successive levels of destruction. A small staircase, also in Opus Signinum, was associated with this altar. In summary, the stones of the base of the Roman temple were adhered to the edge of the trench and next to the Punic altar. The excavators identified three phases, with phase 1 likely Punic and used as a base for phase 2, probably Roman of republican times, and phase 3 possibly a level of destruction. Abundant materials were found in phase 3, but the material culture was not specified. Two Punic altars were found in the Opus Signinum (Phase I and Phase II) where the Roman temple is located. The first altar is also believed to have been made in Opus Signinum

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REGISTER NUMBER 53

SIDE B

OFICIAL NAME Novedades arqueológicas em Carteia (San Roque, Cádiz).Campaña de 1998

LOCATION Punic Walls - C.6

CHRONOLOGY

Punic to Roman Republican.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

Construction made in ashlars.

MATERIAL CULTURE

The excavators reported that Phase 3 yielded a considerable amount of material culture, but they did not provide specific information regarding the types or origins of the artifacts found.

REGISTER NUMBER	54
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	2. Sector Romano
STATE	Poor

SIDE A

STRUCTURE

Wall and canalisation

USE

Defensive and civil

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The archaeologists reported the discovery of a pipe running in an east-west direction during the initial stages of the temple's construction. This pipe was found to be associated with Punic walls and a fragmented Opus Signinum floor (U.E.4). A canalisation during Punic times (E-W), still at this stage a pavement in Opus Signinum.

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REGISTER NUMBER 54

SIDE B

OFICIAL NAME Novedades arqueológicas em Carteia (San Roque, Cádiz).Campaña de 1998

LOCATION North wing of the temple podium (C.5)

CHRONOLOGY

Punic to Roman Republican.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

They do not describe the materials associated during the Punic moment.

MATERIAL CULTURE

REGISTER NUMBER	55
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	2. Sector Romano
STATE	Poor

SIDE A

STRUCTURE

Altar?

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the excavators, they observed signs of destruction on the podium and a structure, which could possibly be a pedestal made of ostionera stone. At the level of this pedestal, they discovered a compact sandy layer containing remnants of stucco, pottery, and some bone fragments (UE 8). The presence of Punic and Greco-Italic pottery indicates that this layer dates back to the 2nd century BC. Made with reused ashlars. Punic walls, podium and possible altar.

BIBLIOGRAPHY

AAA 1998 - Atividades sistemáticas

REGISTER NUMBER 55

SIDE B

OFICIAL NAME Novedades arqueológicas em Carteia (San Roque, Cádiz).Campaña de 1998

LOCATION South wing of the temple podium (C.6)

CHRONOLOGY

Punic.

FIGURE B

COMMENTS

The archaeologists reported the discovery of a pipe running in an east-west direction during the initial stages of the temple's construction. This pipe was found to be associated with Punic walls and a fragmented Opus Signinum floor (U.E.4). A canalisation during Punic times (E-W), still at this stage a pavement in Opus Signinum.

ARCHAEOLOGISTS COMMENTS

Ashlars, ostionera stone and remains of stucco.

MATERIAL CULTURE

Ceramic material, osteological remains and remains of stucco.

REGISTER NUMBER	56
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	II. Tareas de documentación arqueológica : II.1. Sector Púnico
STATE	Average

SIDE A

STRUCTURE

Walls, monumental gate and the sacred area

USE

Defensive and religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

According to the archaeological team, two stratigraphic sections, designated as C.4 and C.5, have provided documentation of the city's evolution during the period from the second half of the fourth century BCE to the second century BCE. Additionally, the team created a drawing of the bunkers of the Punic wall, and the wall was photographed using photogrammetry techniques by researchers from the Universidad Autónoma de Madrid. The entire Punic sector was consolidated into a single area rather than being divided into multiple sections. Through a study of the topography and paleotopography, the team has constructed a hypothetical representation of the ancient city landscape. Punic walls and casemate.

BIBLIOGRAPHY

AAA 1999 - Atividades sistemáticas

REGISTER NUMBER	54
OFICIAL NAME	Trabajos Arqueológicos em Carteia em 1999
LOCATION	II.1 Punic Sector

SIDE B

CHRONOLOGY

Punic.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

Unregistered ceramic and decorative materials were found during the excavation. A variety of Kouass type black glaze ceramics were among them, as well as Greco-Italian, Republican Dressel 1, some from Betica, and an abundance of African ceramics. Punic, Hellenistic, and Republican lucerns were also identified. The siginatas, mostly African kitchen types A and D, were predominant, with Gauls and Iberians present in lesser amounts.

REGISTER NUMBER	55
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo, Manuel Bendala
EXCAVATED UNIT	II. Tareas de documentación arqueológica : II.2. Sector Romano
STATE	Poor

SIDE A

STRUCTURE

Temple

USE

Religious

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

After cleaning the C.5 and C.6 sections and the walls of the temple, the archaeologists created plans and photographs to study the architectural composition of the structure. However, they did not provide any significant information about this particular excavation. Additionally, they undertook the consolidation of the architectural elements of the podium. Temple and Wall.

BIBLIOGRAPHY

AAA 1999 - Atividades sistemáticas

REGISTER NUMBER 55

SIDE B

OFICIAL NAME Actividades arqueológicas sistemáticas. Año 2000

LOCATION -

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	56
COORDINATORS	Lourdes Roldán Gómez
EXCAVATED UNIT	-
STATE	-

SIDE A

STRUCTURE

-

USE

-

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

The excavation summary records only indicate that Lourdes Roldán Gómez conducted a study of the material, planimetry, and photography. However, this information is not included in the systematic activities record.

BIBLIOGRAPHY

AAA 2000 - Sumario

REGISTER NUMBER	56
OFICIAL NAME	Vigilancia arqueológica en Guadarranque (San Roque, Cádiz)
LOCATION	3. Summary of previous interventions in Sector A

SIDE B

CHRONOLOGY

Phoenician until the 4th century BCE.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

They found wheel-made pottery, not described.

REGISTER NUMBER	57
COORDINATORS	Francisca Piñatel Vera
EXCAVATED UNIT	Sector A
STATE	

SIDE A

STRUCTURE

Settlement

USE

Urban

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

These records aim to support the development of the industrial area in the Bay of Gibraltar and to protect the archaeological sites in the region. The Cerro del Prado site was relocated to a nearby area after it was destroyed. The records do not provide any information regarding the port structures in the vicinity of the site, except to state that there were none. During the construction, sedimentation was identified as the cause for the foundation of a new city (Carteia) in the IV century BC.

BIBLIOGRAPHY

AAA 2001.1 - III Actividades de Urgencia Volumen

REGISTER NUMBER	57	**SIDE B**
OFICIAL NAME	Intervención Arqueológica en la Ciudad Punica, Romana Y Medieval de Carteia. Proyecto Carteia.	
LOCATION	Carteia	

CHRONOLOGY

Punic to Augustean period.

FIGURE B

COMMENTS

The excavation summary records only indicate that Lourdes Roldán Gómez conducted a study of the material, planimetry, and photography. However, this information is not included in the systematic activities record.

ARCHAEOLOGISTS COMMENTS

From this sector, 30 m of the curtain wall was recovere, during the 2007 campaign. However the possible ditch in front of the structure was not detected (Blánquez 2008; Blánquez y Roldán 2007 and 2009). The archaeologists believe that the Punic Gate coincided with the Roman one.

MATERIAL CULTURE

-

REGISTER NUMBER	58
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo
EXCAVATED UNIT	Excavación de la muralla (Área 113)
STATE	Good

SIDE A

STRUCTURE

Punic and Roman wall

USE

Defensive

QUOTA

-

DIMENSIONS

~30 m length

FIGURE A

CONSTRUCTIVE TECHNIQUES

The monumental remains of the city walls, with their high quality of the Punic monuments on the Iberian Peninsula. of Punic monuments on the Iberian Peninsula. Both the 4th-century BC wall and the major remodelling, along Hellenistic lines, carried out by Hellenistic style, carried out in the Barca period at the end of the 3rd century BC. 3rd century BC. In this sense, the discovery of almost 30 metres more of the wall during the of almost 30 metres more of the wall during the 2007 Campaign allowed us to ratify and
improved the knowledge we had of it. Consistent with this In line with this, in the 2008 campaign we carried out a study of the ceramic the ceramic materials from the 2007 excavation of the Punic wall.
excavation at the Punic wall, as well as the materials obtained in the C.1.
The Punic wall (U.E. 113.001) had 8.65 m of its length and with 2.12 m deep exacavated. In parallel to the Punic wall, but the east (20 m away), the Roman wall was oriented from south to north. In this line a kiln was found, probably from a bastion (U.E. 113.003). The Roman wall had 3 m of width and was made by the use of biocalcarenite ashlars. Due a slope in front of it, its foundation was built scaled. During the year the use of its materials for another buidings deteriorated the structure. These are three rectangular areas rectangular areas, perpendicular to the potential route of the Roman wall. wall, obviously intended to precisely locate the precise location of the Roman of the Roman wall to the south of the city which, at present, has not been preserved is no longer preserved.

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REGISTER NUMBER	58	**SIDE B**
OFICIAL NAME	Sector Romano	
LOCATION	Between the republican temple and the republican domus.	

CHRONOLOGY

Augustean period.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	59
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo
EXCAVATED UNIT	Área 113
STATE	Average

SIDE A

STRUCTURE

Punic and Roman wall

USE

Defensive

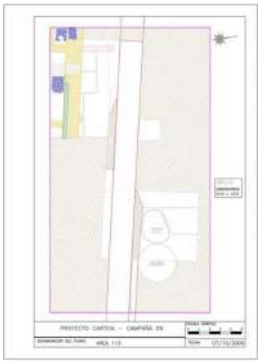
QUOTA

-

DIMENSIONS

9 m lenght to 3 m width

FIGURE A



CONSTRUCTIVE TECHNIQUES

The purpose of the work carried out in Area 113 was to investigate the Roman walls and associated structures. The walls were found to cross the entire area from south to north, parallel to the Punic wall but situated slightly further west and separated from it physically. The excavation of a limekiln was also conducted in the same area, which was identified on the surface as the remains of a possible bastion.
The Roman wall, which was documented to be three meters thick, was found in three stages of conservation, running from south to north at the level of the footing, the foundations on the elevation, and the elevation itself. The upper section was constructed using well-squared biocalcarenite ashlars. However, due to degradation caused by stone plundering, the southernmost area provided a good opportunity to study its foundation system. The foundation footing was found to be oval in section, filling the hollow excavated in the earth on the inside. On the outside, due to the steep slope, it was built in steps, creating a misleading "façade" that was not actually a façade.
The Roman wall's alignment, more than 20 meters parallel to the Punic wall, deviated to the east of the formal alignment. According to the archaeologists, this deviation suggests that the access gate of the Roman city would coincide with the Punic gate, and both gates would be located close to the current boundary of Area 113. The excavation provided crucial information on the architectural order of the structure and the foundation system of the Roman walls.

BIBLIOGRAPHY

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REGISTER NUMBER 59

SIDE B

OFICIAL NAME Intervención Arqueológica en la Ciudad Punica, Romana Y Medieval de Carteia. Proyecto Carteia.

LOCATION Area 113.

CHRONOLOGY

Punic period.

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	60
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo
EXCAVATED UNIT	Área 113
STATE	Good

SIDE A

STRUCTURE

Punic Wall

USE

Defensive

QUOTA

-

DIMENSIONS

9 m lenght

FIGURE A

CONSTRUCTIVE TECHNIQUES

In 113, a new line of the Punic wall was identified. As in the area of the forum, the wall was built with well-carved blocks of biocalcarenite (ostionera stone) of different sizes. On its internal facade (to the east), it was possible to identify two perpendicular walls and a third one with opus signignum pavement. The distance from the opus signignum pavement was symmetrical, measuring 3.30 m, which confirms the presence of casemate walls. Ashlars of piedra ostionera.

BIBLIOGRAPHY

AAA - 2009.

REGISTER NUMBER 60

SIDE B

OFICIAL NAME Intervención Arqueológica en la Ciudad Punica, Romana Y Medieval de Carteia. Proyecto Carteia.

LOCATION Area 113.

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	61
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo
EXCAVATED UNIT	Área 113
STATE	Good

SIDE A

STRUCTURE

Punic Wall

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

Another level of opus signinum pavement was identified further to the south. This structure (U.E 113.027) directly covered the Punic wall (U.E. 113.001) at its end and formed a square area of 0.80 m on each side.

BIBLIOGRAPHY

AAA - 2009.

REGISTER NUMBER 61

SIDE B

OFICIAL NAME Intervención Arqueológica en la Ciudad Punica, Romana Y Medieval de Carteia. Proyecto Carteia.

LOCATION Area 113.

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	62
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo
EXCAVATED UNIT	Área 113
STATE	Poor

SIDE A

STRUCTURE

Punic Wall

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

Inside the southeast corner of area 113, a new level was excavated (U.E. 113.014) with similar characteristics to U.E. 113.010, and it was possible to document a new wall perpendicular to the Punic wall to the west. Due to its construction technique, it was interpreted as belonging to a later period.

BIBLIOGRAPHY

AAA - 2009.

REGISTER NUMBER 62

SIDE B

OFICIAL NAME Inside the southeast corner of area 113, a new level was excavated (U.E. 113.014) with similar

LOCATION Area 113.

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	63
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo
EXCAVATED UNIT	Sector Romano (Área 13)
STATE	Poor

SIDE A

STRUCTURE

Augustan period building.

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

An excavation was carried out to gain a better understanding of the stratigraphy of the Augustan period building. It was possible to identify foundations from the Punic period (4th century BCE), which were reconstructed and expanded during the reign of Augustus.

BIBLIOGRAPHY

AAA - 2009.

REGISTER NUMBER 63

SIDE B

OFICIAL NAME Intervención Arqueológica en la Ciudad Punica, Romana Y Medieval de Carteia. Proyecto Carteia.

LOCATION Area 113.

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	64
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo
EXCAVATED UNIT	Sector Romano (Área 13)
STATE	Poor

SIDE A

STRUCTURE

Augustan period building

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

Prior to the construction of the Augustan period building, several walls dating back to the Punic period (4th century BCE) were identified. At its deepest part, aligned stones that formed several walls were documented. Wall A preserves remnants of red adobe and its upper section. The walls from this period were constructed using limestone of varying qualities, likely with adobe foundations.

BIBLIOGRAPHY

AAA - 2009.

REGISTER NUMBER 64

SIDE B

OFICIAL NAME Intervención Arqueológica en la Ciudad Punica, Romana Y Medieval de Carteia. Proyecto Carteia.

LOCATION Area 113.

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	65
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo
EXCAVATED UNIT	Sector Romano (Área 13)
STATE	Poor

SIDE A

STRUCTURE

Punic Wal

USE

Defensive

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

Subsequently to the previous phase, a sturdy Punic wall dating back to the 3rd century BCE was discovered, intersected by a wall made of opus vittatum that served as the boundary of the Augustan period building. Behind the building, a pavement made of opus signinum was identified, covering the levels from the Augustan period. The pavement has been destroyed, perhaps due to Presedo's excavations in the 1970s. The area is currently filled with large stones and contemporary dirt.

BIBLIOGRAPHY

AAA - 2009.

REGISTER NUMBER 65

SIDE B

OFICIAL NAME Intervención Arqueológica en la Ciudad Punica, Romana Y Medieval de Carteia. Proyecto Carteia.

LOCATION East side of Area 113

CHRONOLOGY

-

FIGURE B

COMMENTS

-

ARCHAEOLOGISTS COMMENTS

-

MATERIAL CULTURE

-

REGISTER NUMBER	66
COORDINATORS	Lourdes Roldán Gómez, Juan Blánquez Pérez, Sergio Martínez Lillo
EXCAVATED UNIT	-
STATE	Poor

SIDE A

STRUCTURE

Roman Wall

USE

-

QUOTA

-

DIMENSIONS

-

FIGURE A

CONSTRUCTIVE TECHNIQUES

A robust wall constructed in opus vittatum during Augustus' renovation period was documented, aligned in a North-South direction. Square stones were discovered in its lower part in the southern area, resting on irregular stones, suggesting reinforcement due to geological pressure on that side of the site. The excavation allowed for a better understanding of the structure of the Augustan period building. It was possible to understand that the building was supported by older structures and pillars in its northern part. The platform that supported it was configured as an open or enclosed porticoed space, while another part was reserved for possible storage.

BIBLIOGRAPHY

AAA - 2009.

REGISTER NUMBER 66

SIDE B

OFICIAL NAME

LOCATION

CHRONOLOGY

AAA - 2009.

FIGURE B

COMMENTS

A robust wall constructed in opus vittatum during Augustus' renovation period was documented, aligned in a North-South direction. Square stones were discovered in its lower part in the southern area, resting on irregular stones, suggesting reinforcement due to geological pressure on that side of the site. The excavation allowed for a better understanding of the structure of the Augustan period building. It was possible to understand that the building was supported by older structures and pillars in its northern part. The platform that supported it was configured as an open or enclosed porticoed space, while another part was reserved for possible storage.

ARCHAEOLOGISTS COMMENTS

MATERIAL CULTURE