

## PHOENICIAN AND PUNIC AMPHORAE IN WESTERN MEDITERRANEAN

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*Amphorae from the Phoenician world of the Far West and the Atlantic sphere have been extensively studied over the last few decades, laying the foundations for a solid chronological and typological dataset that today allows to use these items as a primary source for (proto)historical research in the region. There remain, however, many production sites to be identified and characterised, as well as remarkable deficits in the technological and scientific study of many series and types. Early Iron Age amphorae were versions of Levantine series and defined a new craft tradition, becoming the forerunners of most of the major western repertoires of the following centuries. Between the 6<sup>th</sup> and 3<sup>rd</sup> centuries BC, however, the main reference were Carthage and its various related manufacturing areas (from Ibiza to Western Sicily), which influenced technically and formally the main western types, and were key to modify their production processes, their managing features (stamps, dipinti, etc.) and even their capacity standards.*

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## 1. AGAIN, AMPHORAE. AN INTRODUCTION

The well-known abundance of ceramics in ancient archaeological sites, and especially of amphorae, has led to an exponential increase in the attention paid to these (non-monumental) artifacts over the last few decades, to the point of overestimating their importance as key tools for the analysis of ancient economies (land and maritime trade, the production and circulation of food surpluses, the consumption patterns of the different communities, etc.). This (anti)methodological tendency is particularly pronounced in relation to cultures that have left scarce or no written records, including direct and indirect evidence, and are therefore almost entirely dependent on material evidence as a source for historical research. As A. Bevan<sup>1</sup> pointed out, the ancient Mediterranean and its peripheral connections to east and west, north and south, were a culturally and economically «*containerized*» world. In it, the transfer of products transported in amphorae was one of the engines that - directly or indirectly - generated more volume of activity linked to multiple sectors, becoming a decisive and distinctive feature to archaeologically understand and characterize many social and economic aspects of the numerous interacting cultural spheres located within this huge, diverse and extremely complex scenario.

In the same way that the abundance of amphorae - due to their frequent good preservation and sometimes the presence of epigraphy - has stimulated an overestimation of their instrumental role in deciphering, quantifying and understanding the economies of Antiquity, the need to order and systematize the countless productions detected throughout the Mediterranean has meant that for decades attention to amphorae has focused on typological studies and the examination of stamped, painted or incised marks. The primary target has been, therefore, to identify types, establish chronologies, determine provenances and all that constitutes the outstanding collective database available nowadays. This typological language, through numerous (thematic, regional, local, etc.) “dialects”, can be considered as

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<sup>1</sup> Bevan 2014.

a “vehicular language”, valuable to try to deepen the historical debate thanks to a more precise use, in multiple senses, of these archaeological finds. Phoenician and Punic amphorae from the far western Mediterranean and its Atlantic extension (fig. 1, top) have been the subject of a significant number of studies, both at the local/regional level<sup>2</sup> and as part of more far-reaching efforts.<sup>3</sup> Altogether, albeit asymmetrically, they have laid the basis to organizing and understanding both the productions of this sector and to characterize the dynamics of consumption and circulation of packaged products.<sup>4</sup>

Consequently, in this paper we do not intend to go further along these topics, stopping at the mere typological overview and traditional debates, which are already amply addressed in the reference academic literature. We propose an approach to the study of western pre-Roman amphorae from different perspectives, focusing on significant issues that until now have occupied a secondary place: on the one hand, paying attention to the production processes and the implications of the “operational sequences” in the formal design of the series and types, both considering the essential and secondary features; on the other hand, tackling the close relationship that must have existed between morphometry and capacity standards, and how the changes in both variables seem to go hand in hand with differences observed in chronology, and cultural and economic spheres. This analysis is approached from a chronological perspective, offering a journey from the first steps of amphora production in the West to the integration of the regional repertoires in the Hellenistic distribution circuits.

## 2. AN OVERVIEW OF THE WESTERN PRODUCTION

In this case we will not deal with what J. Ramon<sup>5</sup> defined as the “pre-self-production phase”, that is, the time during which the Phoenician presence or frequentation is confirmed but there is no sufficiently robust material evidence to certify a western ceramic production). The chronological span and real scope of this stage are far from being satisfactorily defined, as is graphically illustrated by the heated debate on the Méndez Núñez / Plaza de las Monjas de Huelva contexts, and the endless stream of works published on the so-called Phoenician “pre-colonization” of the Iberian Peninsula. In any case, this phase might be placed in the 9<sup>th</sup> century BC, and linked to possible contacts prior to that moment, since there is no doubt that since the 8<sup>th</sup> century BC the “Levantine type” peninsular pottery workshops, established within the coastal settlements or in the heart of “Orientalized” nuclei (from Santa Olaia to, at least, Peña Negra), regularly manufactured pottery on the wheel and considerable quantities of transport amphorae.

### 2.1. *The first western amphorae*

The oldest productions can now be identified thanks mainly to several archaeometric projects, which make it possible to confirm the manufacture of several models of amphorae genuinely designed by the western Phoenicians, giving rise to new forms and not exact replicas - in dimensions, features and capacity - of the Levantine amphorae of the 8<sup>th</sup> century BC (especially of series such as the Aznar 9A or the Sagona 7B). This is certainly not a minor

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<sup>2</sup> Muñoz Vicente 1993; Sáez Romero 2008a; 2008b; Mateo Corredor 2015, among many other contributions.

<sup>3</sup> In particular, Ramon Torres 1995.

<sup>4</sup> Recently synthesized in Sáez Romero 2018; Sáez Romero - Luaces 2020.

<sup>5</sup> Ramon Torres 2006, 191-192.

detail, nor is the fact that this birth of a distinct branch in the West (from the joint trunk of Phoenician amphorae) is just another addition to the divergent regional traditions identified in Ibiza, Sardinia, Sicily, Tunisia and Malta, morphometric twigs of Phoenician amphora production that would continue to separate their paths even further during the following centuries.

In the case of the Far West, although the existence of a multiplicity of manufacturing hubs is indirectly noticed (archaeometric results,<sup>6</sup> presence of prisms,<sup>7</sup> and bicameral kilns or complete complex workshops,<sup>8</sup> specific typologies of certain regional environments, etc.), the truth is that the most numerous and convincing indicators correspond to the Phoenician coastal port cities of the Bay of Malaga and the small river estuaries of Velez-Malaga. As J. Ramon<sup>9</sup> already underlined, the production capacity and commercial outreach of these first pottery workshops fully created with a Phoenician technological configuration was already remarkable, particularly since the last decades of the 8<sup>th</sup> century BC, so it is not surprising that the distribution of amphorae with fabrics from these two hubs was quite significant both across the Atlantic area as well as in the Mediterranean and in the interior of southern and eastern Iberia.

Unfortunately, no workshop, among the little published so far, could have been explicitly connected to the first models of western Phoenician amphorae. These, defined by J. Ramon as T-10311 (fig. 1:1), have been mainly identified far from Malaga, to the east and west, and usually in a very fragmentary condition. Thus, it is not possible to determine with certainty specific workshops associated with this initial moment (named “Mezquitilla B1 phase” by Ramon<sup>10</sup>), nor to determine if the small T-10311 were the only model or if they are part of a series with greater morphometric diversity (i.e., that they were only a small version of the true “standard units”). Their capacity, as can be determined by the example documented in Calle Cánovas del Castillo (Cádiz), is a few liters, which suggests that other larger versions must have been created quickly or in parallel for the transport of wine, oil and other foodstuffs (the T-10111 from the middle of the 8<sup>th</sup> century BC, or related models) (fig. 1:2). In any case, we cannot rule out the possibility that in these early times other types of vessels, such as *pithoi* and jars (“Cruz del Negro”, neck-amphorae, etc.), may have served as a complement to the T-10311 amphoras for commercial transport.

In any case, there is no doubt that, from its beginnings, western production had its own personality in terms of morphometry, giving rise to a series (T-10311 and T-10111) clearly differentiated from its Levantine and Central Mediterranean contemporaries. These genuinely western prototypes maintained their “personality” in the following centuries, establishing a first link in a long chain of models evolved from the initial design.

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<sup>6</sup> Behrendt - Mielke 2011; Johnston 2015.

<sup>7</sup> Gutiérrez López - Sáez Romero - Reinoso 2014 (kiln furniture, supports and stacking tools).

<sup>8</sup> Delgado Hervás 2011.

<sup>9</sup> Ramon Torres 2006.

<sup>10</sup> Ramon Torres 2010.

## 2.2. *The productions of the mid/late archaic period*

The consolidation and expansion of the Phoenician presence occurred in the West from the last decades of the 8<sup>th</sup> century BC and throughout the 7<sup>th</sup> century BC. Much of the latter century and the first decades of the 6<sup>th</sup> century BC seem to have been connected almost exclusively to a new type, the T-10121<sup>11</sup> (1: 3-4), which, based on the shape of the T-10111, introduced greater diversity in the morphology of the profiles of the bodies (which range from ovoid-cylindrical to proto-biconical), in the handles (which were enlarged), in the curvature and span of the back (which widened and grew), and in the rims (which become more massive, and in general more triangular, robust and adapted to the placement of ceramic or organic lids for the sealing of the containers). They are generally around 24-26 liters in capacity, sharing the same metric system in coastal environments throughout the period, but also a similar methodology for their production: manufactured separately in two pieces, to which the handles are added later, and using ropes to keep the pieces together and stable during the drying process.

The first stamped marks on the western containers are documented on them. Simple circles,<sup>12</sup> cruciform motifs and other simple stamps,<sup>13</sup> not epigraphic, which do not yet define organized production management systems through these stamps. Neither do the few examples of documented epigraphic graffiti, nor other incised marks, both before and after firing,<sup>14</sup> seem to have had this function. The occasional imitation of Greek containers, mainly Corinthian and Ionian, possibly complemented in some areas the manufacture of this main series, although there are still few solid arguments to support its production beyond the Malaga area. It is also probable that forms, such as the large *pithoi* with two and four handles, participated with a relevant role in the transport of packaged products, both on land and sea routes, thus giving rise to flat-bottomed or umbilicated series that would develop separately throughout the 6<sup>th</sup>-5<sup>th</sup> centuries BC until they became the seed of later very successful amphorae types (such as T-9111).

One of the most outstanding characteristics of the amphora production of the time is that it also became widespread in the main settlements of the indigenous areas of Iberia, from the northwest to the northeast, the Meseta and the south. Advanced workshops with Phoenician technological roots were built in numerous areas of diverse cultural spheres, which adapted and reinterpreted the coastal repertoires and their own until giving rise to countless local traditions. In the case of amphorae, a novel concept of specific “disposable containers” for many of these communities, the prototype of the T-10121, was adopted with enormous success, but within a few decades many variants were created, as numerous as the pottery workshops that produced them. This series is therefore the essential forerunner of the multiple families of Iberian amphorae from the northeast and southeast regions, from the south of the Meseta and eastern Andalusia, from Turdetania, and even from the later Lusitania, including the productions of the areas of influence of Lisbon-Almada and Santa Olaia (central and northern Portugal).

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<sup>11</sup> Ramon Torres 1995, 230-231, 462-463.

<sup>12</sup> Martín Córdoba - Ramírez- Recio 2006; González Prats 2011.

<sup>13</sup> Mata - Soria 1997; Soria - Mata 2015.

<sup>14</sup> Ruiz Cabrero - Mederos Martín 2002. See also note 13.

### 2.3. The “crisis” of the 6<sup>th</sup> century BC and its “amphoric consequences”

This period has made rivers of ink flow and inspired animated debates concerning the reasons that led to a far-reaching transformation of the settlement patterns, of Phoenician-indigenous relations, and of the economic dynamics that had begun to evolve since the 9<sup>th</sup>-8<sup>th</sup> century BC. Conflicts, peripheral migrations and displacement of already settled communities, the strengthening of the Greek (Phocaeen) presence/interference, the conquest of Tyre and the Levant by Assyrians and Persians, the rise of Carthage as a suprarregional power, and other possible triggers have been the warhorses of this inexhaustible and stimulating discussion. Certainly, it is likely that a confluence of these and other factors is the most plausible explanation, since it does not seem possible to blame only a (partial, temporary) disconnection with the East for a reorganization of the western Phoenician settlement of this magnitude and with permanent consequences.

Be that as it may, certain patterns have been observed, such as abandoning extreme peripheral locations, small communities and/or those settled in minority in “Orientalized” areas or sites, concentrating the Phoenician population in a much smaller number of port towns on the coast, whose landscape and urban weight grew and was transformed in parallel, also configuring since then actual rural territories and areas of influence associated to these incipient cities. The population of these nuclei would be more numerous than that of the preceding phase, bringing together previously dispersed and diverse communities, so that the capacity for production, occupation and exploitation of these territories and the outreach of their manufactures would be notably superior to that achieved by their archaic precedents.

In the peninsular coastal area, an explicit example of this transformation process, suitable for the discussion of the evolution of western amphora production, is provided by the Bay of Malaga. In the archaic phase it seems that around Cerro del Villar there may have been small artisanal, cult and funerary “satellites”, although on a very limited scale, with a truly scarce capacity of occupation and exploitation of the double valley of the Guadalhorce and the Guadalmedina.<sup>15</sup> However, towards the end of the 7<sup>th</sup> century BC, slightly before or at the beginning of the “crisis” phase, Malaka was founded on the site of present-day Malaga,<sup>16</sup> abandoning Cerro del Villar shortly afterwards, and dismantling the original network of secondary settlements, to give rise to a pattern of occupation and exploitation of the new territory that then was defined around Malaka, and which would include craft facilities (mainly pottery workshops) that even reoccupied sites such as La Rebanadilla or Cerro del Villar itself. Although the data are still incomplete, it can be inferred that the implementation of the new city entailed a complete redesign in both the urban and rural strategies,<sup>17</sup> and surely also the enhancement of certain sectors and economic activities, as a fundamental part of the civic identity and its subsistence bases. The production of amphorae in these decades probably continued to be important, providing the Bay of Malaga, together with the area of Velez-Algarrobo,<sup>18</sup> key indicators, very stimulating, on the effects of the transformations resulting from the “crisis” in relation to transport containers.

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<sup>15</sup> Aubet *et al.* 1999.

<sup>16</sup> García Alfonso 2018; Suárez Padilla *et al.* 2020.

<sup>17</sup> Arancibia - Mora - Sáez Romero 2021.

<sup>18</sup> Martín Córdoba - Ramírez - Recio 2006.

During the 6<sup>th</sup> century BC, what seems to be the most significant feature and with the greatest subsequent repercussion is the typological evolution of the main group (T-10121), almost unique until then, and its transformation throughout the century into a family of variants, each one with new characteristics and distinctive features (morphometric and capacity), which probably emphasize the rise of differentiated artisanal - and technological - identities for the main amphora-producing sites of the Far West. The transition process between the T-10121 and the T-11210<sup>19</sup> type, whose first prototypes were already fully designed around 520/510 BC, remains one of the main debates currently open around the western amphora production of Phoenician tradition. Several questions are key in this regard: was it a transitional phenomenon initiated in a singular site, which was followed by others, or was there an almost synchronic process of change in the main coastal cities? Which were the types that served as a bridge between the series of the late 7<sup>th</sup> century BC and those of the beginning of the 5<sup>th</sup> century BC? Why these changes in amphorae dimensions and concepts happened in that precise moment? And, are they connected with similar phenomena, contemporary or earlier, in other Mediterranean areas? Did the process lead to changes in production methods and capacity standards, giving rise to local identities more differentiated than the archaic ones?

At present, the available information does not allow us to produce conclusive or comprehensive answers to these questions, although it is possible to sketch out some hypotheses and a first panoramic view of the transformation process and its historical entanglement. The data suggest that the coast of present-day Malaga was probably the main (and initial) laboratory in which the transformation of the T-10121 took place, evolving towards more elongated and biconical prototypes, of greater capacity (more than double), which might have been produced mainly during the central third of the 6<sup>th</sup> century BC (defined by Ramon<sup>20</sup> as T-10211 and T-10221) (fig 1:5). For now, the scarcity of excavated and published contexts corresponding to this century in other key areas, such as the Bay of Cadiz, does not allow us to elucidate whether the evolution in this sense was a general trend of the western workshops or if, on the contrary, Gadir and its powerful artisanal infrastructure, related to salted-fish trade, started in a later stage to produce their first versions of the T-11213 (fig. 1: 6-8), without going through the same transitional stage as the kiln sites of Malaka or Maenoba. Considering the published data, the large-scale development of the so-called “fish-processing industry” might have had its first focal point, with archaic roots, on the Malaga coast of the 6<sup>th</sup> century BC, with Gadir coming to the forefront regionally and internationally only from the end of the century, in a process of change of leadership and identities in the Strait of Gibraltar region that has not been sufficiently discussed and archaeologically characterized (and where sanctuaries, such as the shrine of Melqart at Gadir, probably had a key role as new religious and economic landmarks).

The more cylindrical/biconical morphology of the T-10221<sup>21</sup> (and then of the T-11210 vessels) was not a fanciful change, but rather the result of deliberate redesigns of the entire production-marketing strategy, with the focus on a more optimized stacking within the kilns and ships, and a production based on prefabricated parts that also allowed improving the

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<sup>19</sup> Ramon Torres 1995, 234-237, 468-477.

<sup>20</sup> Ramon Torres 1995, 231-232, 464-466.

<sup>21</sup> Type 1 of the Fonteta V-VI phases: González Prats 2011, 294-295, fig. 35.

“operational sequence” and facilitating a standardized production in much larger quantities. But, if the T-10121 had been a model of remarkable success and kilns, transport means and official/social metric standards were adapted in the West to this model, why changing it all? The specific reasons, unfortunately, cannot be defined yet, but it seems that the parallel process of “acylindricalization” and growth in length/capacity of some coetaneous Carthaginian series must have had a connection with this significant transformation in the West. Thus, in the late-archaic colonial Phoenician sphere, the foundations were laid on which the later evolution of all the amphorae repertoires of the central-western Mediterranean would be based, including the later evolution from the “Greco-Italic” types (spinning tops) to the Dressel 1 variants (almost cylindrical bodies). There is still a world to explore in this regard, but it is important not to lose sight on parallel processes in the eastern Mediterranean, such as the evolution of the Chiot repertoires (with a very wide distribution towards the central Mediterranean in the late 6<sup>th</sup> and the 5<sup>th</sup> centuries BC). Chiot transport amphorae evolved throughout those decades from prototypes with ovoid-spinner-like bodies to rather cylindrical and elongated bodies much more easily stackable and assemblable (made in pieces). In which directions the technological transfers took place, whether they were multi- or unidirectional, is difficult to be determined, but what does seem clear is that, from the 6<sup>th</sup> century BC onwards, most of the main amphora-producing areas of the Mediterranean - and their extensions to the east and west - followed a single path of “acylindricalization”, optimization and convergence of formal languages and capacity standards.

#### 2.4. *Classical and Late Classical Periods*

The 5<sup>th</sup> century BC can be considered, with regard to the production of amphorae in the West, a flourishing and splendid century almost entirely, intimately linked to salted fish trade. It took over the helm from the last decades of the 6<sup>th</sup> century BC, although with a notable change of setting both concerning its regional leading cities and also the commercial distribution of the amphorae, which would now exceed even the limits of the resounding success of the T-10121 during part of the 7<sup>th</sup> century BC. However, the end of the 5<sup>th</sup> century BC and the first half of the 4<sup>th</sup> century BC can be considered as a completely different phase, in which the extra-regional outreach of the western amphorae contracted rapidly until it was reduced to a distribution restricted to the Strait of Gibraltar-Alboran Sea and the Atlantic, and to the main river valleys of the region. The “crisis” that is perceived to have existed in those decades of transition between the 5<sup>th</sup> and 4<sup>th</sup> centuries BC had an evident reflection in the manufacturing facilities, and also in the types, in their morphometry, in the capacity standards of the containers and in the configuration of different and more diversified production circumstances.<sup>22</sup>

The facilities developed from the second half of the 6<sup>th</sup> century BC, after the “crisis”, and especially the artisanal models and procedures, had to be customized to more stable and articulated environmental contexts and civic territories, and they lasted longer in activity and increased their capacity significantly when compared to the archaic kiln sites. In fact, the archaeometric analyses carried out in both Cadiz and Malaga in recent years<sup>23</sup> indicate that, at a local scale and both for amphorae and for other ceramic groups, the sources for clay

<sup>22</sup> Sáez Romero 2018.

<sup>23</sup> Johnston 2015; Mateo Corredor 2015; Fantuzzi *et al.* 2020.

collection, the processing of the pastes for their refinement and modification, and the conditions of temperature and firing atmospheres were similar throughout the entire so-called Punic stage (main fabrics in fig. 2: C1-C3, Cádiz area; Malaka, M1-M3; Vélez-Málaga, VM-1-VM2). The same technical parameters and selection of resources persisted until the beginning of Roman rule in the region (till at least the mid or second half of the 2<sup>nd</sup> century BC, depending on the case). Examination of the amphora wheel-turning processes reveals a similar continuity, following the same production steps (using parts and cordage, or fingering for attaching the handles), which are attested in all the main workshop sites.<sup>24</sup> Perhaps the most notable differences can be observed in the kilns, also coming from the same shared eastern technical tradition. However, the noticeable divergences (such as the use or not of flat-convex adobe bars and stones as construction material, the shape of the holed-floors and central pillars/columns, etc.) might be the result of the limited archaeological data available so far. As has already been noted about the formal diversification of the T-11210 and T-12110 types, it is evident that from circa 400 BC there was a tendency towards developing local adaptations of the concepts, strategies and procedures of the archaic artisanal tradition. Similarly, there was more permeability to technological “Carthaginization” in the Mediterranean side of the region, although the innovations and influences also arrived by sea to Gadir and the Atlantic, consistently, in particular since the second half of the 4<sup>th</sup> century BC.

Probably Malaka, the coast of Velez-Malaga and the Bay of Cadiz continued to be the main production areas in the Far West, all of them closely linked to the fish-processing sector (although certainly not only to it), which produced most of the contents for their containers. However, the available archaeological information is asymmetrical, given that there is much more abundant and explicit published data for Malaka and, above all, for the case of Gadir. The latter must have been the main head of the exports and the one that would order the maritime traffic, as the last great port-sanctuary beyond the Columns, the Atlantic-Mediterranean contacts with the secondary routes of local and regional range. Malaka was undoubtedly the key city of the Alboran area, along with Baria at its eastern end (as well as Russadir, Tipasa and other cities on the southern shore). In that Mediterranean strip of southern Iberia and Mauretania different dynamics can be observed when compared with the rest of the West, as probably these cities were much closely linked to Ibiza-Carthage and their affairs. The Bay of Cadiz became a very powerful production and export machine during the 5<sup>th</sup> century BC, with a multiplication of fish-salting facilities, pottery workshops and supplementary craft resources. A similar development, at different scales, probably took place in Malaka,<sup>25</sup> Maenoba/Vélez, and in other regional coastal cities. Apparently, there were shared interests, routes and “markets” among them, something that has been noticed in several consumption contexts of the contemporary Greek world, from Ampurias to the well-known *Punic Amphora Building* (PAB) excavated at Corinth,<sup>26</sup> and through wrecks (or possible wrecks) that transported the entire range of the T-11210 type in a single load (such as Tagomago 1, finds from the Aeolian Islands and southeastern Sardinia, etc.).

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<sup>24</sup> Sáez Romero - Belizón - Albuquerque 2021.

<sup>25</sup> Sáez Romero *et al.* 2021.

<sup>26</sup> Fantuzzi *et al.* 2020.



The study of the kiln sites of the Bays of Cadiz and Malaga/Velez, as well as the results of archaeometric approaches, suggests that the diversity of the T-11210 was the result of a multiplicity of production hubs that reinterpreted in different ways the design of the T-10221 and, more precisely, of the early variants of the T-11213. This last type was shipped widespread throughout the region around 500 BC, although soon the different local technical and metric needs led to variants that gave rise, in just over two generations, to the T-11214, T-11215 and T-11216,<sup>27</sup> already fully configured since the last decades of the 5<sup>th</sup> century BC. In all cases, throughout that century a trend towards increasingly elongated, angled and stylized profiles can be observed, something that crystallized with the evolution towards the countless regional variants of the T-12111 developed during the 4<sup>th</sup> century BC.<sup>28</sup> All these types share an evident family affinity and the continuity of the biconical pattern, which find its roots in the archaic T-10121. Almost all variants of the T-11210 were manufactured in Gadir as well as in Malaka/Vélez and other areas, though the T-11216 probably was specific from the Bay of Málaga and its surroundings. As for their capacities, also throughout the 5<sup>th</sup> century BC both sides of the western region followed isolated paths, although for now only a few complete containers have been measured: on one side, the Gadiritan T-11210s initially carried circa 51-53 liters and increased to roughly 60 during the “crisis period” of around 400 BC (although later the T-12111s would return to the standard of 52 liters) (fig. 2, top); on the other, the Malacitan T-11210s had much more significant capacity oscillations, ranging between 40 liters (T-11214) to 43-48 liters (T-11216) (fig. 2: a-c).

After the end of the 5<sup>th</sup> century BC, the repertoire diversified even more, besides the changes already described in the main traditional series. On the one hand, the *pithei* or their post-archaic evolved versions, which had already participated in the archaic commercial maritime transport, continued to change, then provided with enlarged handles and more cylindrical and longer bodies, while maintaining the flat bases, suitable for their support on horizontal surfaces without using reels. The role and specific typology of this series of amphoroid jars is still only partially known, but in the case of the productions of Gadir, their presence can be mentioned in destinations as far away as Corinth (PAB), in very small quantities, and in underwater local port contexts, which are both significant indication of their role in the trade promoted from the Atlantic city. These flat-bottomed containers would lay the foundations of the Hellenistic type T-9110, already fully configured (in various sizes) in the 3<sup>rd</sup> century B.C. On the other hand, another series of cylindrical amphorae (T-8211),<sup>29</sup> probably inspired by contemporary Ibiza/Carthaginian profiles, emerged as a third branch of the western repertoires. The earliest evidence of their production has been identified in the Bay of Cadiz, although there are indicators that suggest that their manufacture in the 4<sup>th</sup>-3<sup>rd</sup> centuries BC took place in many other coastal cities/areas such as Carteia, Malaka, the Mauretania shore, the northern side of the Alboran region, and perhaps even across the Lower Guadalquivir valley. The capacity standards of these two secondary series followed the same pattern as the T-11210 and T-12111, although with half or less liters than the main series. As in previous phases, in parallel to the “normal size” containers other small versions, dividers of the three series, or even miniaturized, were created in the same workshops.

<sup>27</sup> Ramon Torres 1995, 236-237, 472-477.

<sup>28</sup> Ramon Torres 1995, 237-239, 478-481; Sáez Romero 2008a; 2008b.

<sup>29</sup> Ramon Torres 1995, 225-226, 453.

Almost all the studied cases from Gadir suggest that these were not exceptions or unplanned whims, and measurements of their morphometry reveal that they were also designed to match the established capacity standard based on the circa 6,7 liters unit.

### 2.5. *Amphorae from the Hellenistic period*

The aforementioned typological diversification of amphorae production intensified after the regional “crisis” at the end of the 5<sup>th</sup> century BC, and was standardized around the coexistence of 3-4 main series until the final decades of the 3<sup>rd</sup> century BC, with imitations of Greek or “Greco-Italic” variants always in the minority. This process of expansion of the repertoires of Gadir, Malaka, Carteia and other regional port hubs finds a recognizable equivalent in the production of Carthage and its allies during the 4<sup>th</sup>-3<sup>rd</sup> century BC. As noted regarding the early stages of the “acylindricalization” process with the transition between T-10121/T-11210, the amphora production in the central Mediterranean was probably the reference to configure the western repertoires, in a transfer of technologies, strategies and management models for the commercialization of foodstuffs packed in amphorae that included many other aspects (such as changes in the kilns and the features of the workshops, the introduction and development of stamps, etc.). Therefore, the evolution of the post-archaic western amphorae repertoires can be defined according to two impulses, one in the central decades of the 6<sup>th</sup> century BC and the other around 425-375 BC, which had in common the marked technical (kilns, workshops), morphometric (“cylindrical” bodies, metric standards) and administrative (stamps,<sup>30</sup> *dipinti*) influence of the Carthaginian area, as well as the progressive consolidation of partially divergent intra-regional trajectories in terms of the variety of types and their specific features. In any case, the scope of this Carthaginian influence was limited, probably aimed more at gaining competitiveness and optimizing manufacturing processes in order to fully re-connect with the commercial circuits of the rest of the Mediterranean.

The 4<sup>th</sup> - 3<sup>rd</sup> centuries were to a large extent a prolongation and strengthening of the trends already described for the previous phase, with a growing influence of Carthage and its area concerning the capacity of the western productions to be distributed towards the Mediterranean “markets”. Thus, even Malaka and the most powerful cities of the Alboran area had to concentrate their activity in the regional setting, or slightly afar, leaving the western amphorae generally outside the key Mediterranean circuits and routes until the Roman expansion of the very late 3<sup>rd</sup> century BC and the early 2<sup>nd</sup> century BC. Gadir had to completely redesign its maritime trade strategies, limiting its area of influence and main distribution to the regional sphere and the peripheral Atlantic routes. However, the western repertoires did not suffer substantial typological or metric modifications over more than a century and a half, and the production of the three series already described for the previous phase (T-12110, T-8211, T-9110<sup>31</sup>) continued in parallel, as well as minority versions of Greek or “Greco-Italic” containers.

The situation at the time of the Roman conquest and assimilation of these western Phoenician cities and territories, between the end of the 3<sup>rd</sup> century BC and the 2<sup>nd</sup> century BC, was therefore much more diverse and complex than in previous stages (in terms of types

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<sup>30</sup> Sáez Romero 2008a; Sáez Romero *et al.* 2022.

<sup>31</sup> Ramon Torres 1995, 226-228, 455-457.

and characteristics of the facilities that produced them). Generally, the formal languages of western amphorae easily fitted both the logistical trends in vogue (optimized stacking, due to “acylindricalization”) and the capacity standards that Rome gradually imposed across the *Mare Nostrum* and its peripheries over the late Republican phase (western amphorae quickly adapting to the Roman weight and metric system). As suggested by the kilns, potter's wheels and the examination of amphora manufacturing procedures (prefabricated parts, serialized placement of handles, external engobes, etc.), until the end of the Republic no truly substantial changes took place both in the geography of production and in the types and essential technological aspects, so it seems likely that - masked under “Romanized” infrastructures and types - the Punic craft traditions largely survived until the 1<sup>st</sup> century BC, at which time ovoid profiles that would mark the provincial repertoires of the Augustan-Imperial phase gained momentum.<sup>32</sup>

Again, in this transformation process it is possible to notice different speeds and distinctive choices defined in the local context, with clearly divergent trajectories for the Atlantic façade, Gades, western Mauretania, and the eastern side of the Strait of Gibraltar region (with Malaca as the main reference). The available data suggest the existence of a later, progressive and less achieved “Romanization” in the Mauretanian and Lusitanian cases, a development of more “Romanized” amphorae repertoires from Carteia to Cartagena<sup>33</sup> (with Dr. 1, 21/22 and other central-Mediterranean series as distinctive features) and differentiated typological strategies in the paleo-estuary of the Guadalquivir and the Bay of Cadiz<sup>34</sup> (including the persistence of some Punic types, the early development of important ovoid series following Italic patterns, etc.).

In any case, there are still many blank spaces, totally or partially empty of data, in relation to this sequence of almost a millennium of production and commercialization of amphorae in the western Mediterranean periphery and its Atlantic extension. For this reason, and due to the imperative conciseness of this text, the overview presented here is necessarily incomplete and provisional, and will be surely nuanced in the near future with further contributions that should come from the comprehensive analysis of many of the sites already mentioned and many others, specifically considering unpublished contexts and amphorae, and based on the results of the excavations of workshops dating to the 2<sup>nd</sup>-1<sup>st</sup> centuries BC and earlier periods.

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<sup>32</sup> See several papers on the topic, in García Vargas *et al.* eds. 2019.

<sup>33</sup> Mateo Corredor 2015; 2016; Sáez Romero *et al.* 2022.

<sup>34</sup> Again, recently synthesized in several papers included in the volume García Vargas *et al.* eds. 2019.

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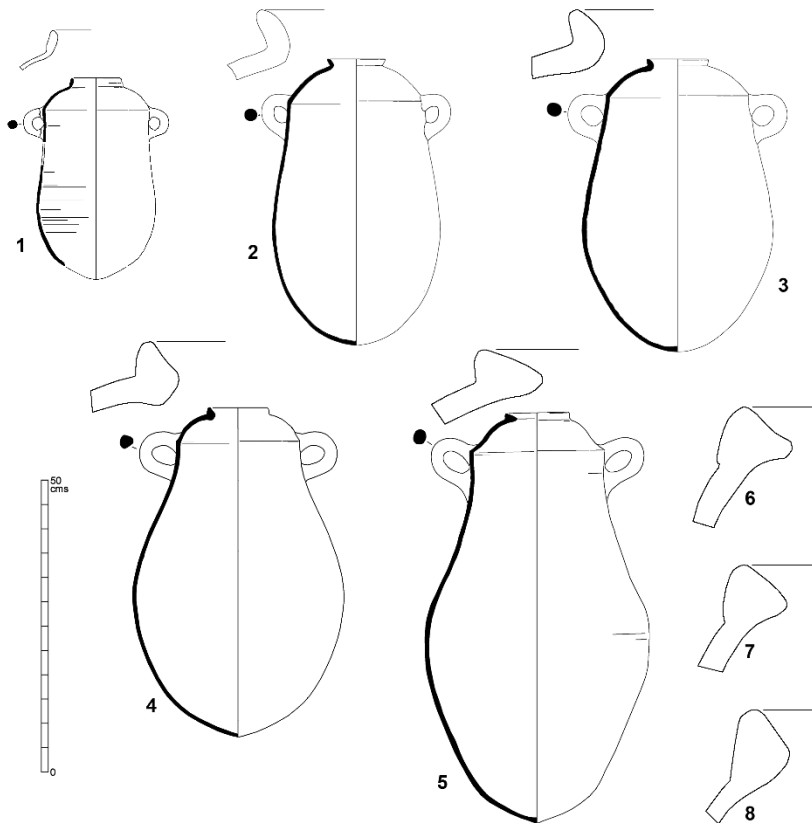


Fig. 1 - Main western sites mentioned in the text (top), and amphora types dated from the early 8<sup>th</sup> to mid 6<sup>th</sup> century BC: T-103111 (1), T-10111 (2), T-10121 (3-4) and T-10221 (5). Note the evolution of sizes, capacities and main typological features, which can be compared with the rims of the late 6<sup>th</sup> and early 5<sup>th</sup> century BC T-11213 type (6-8).

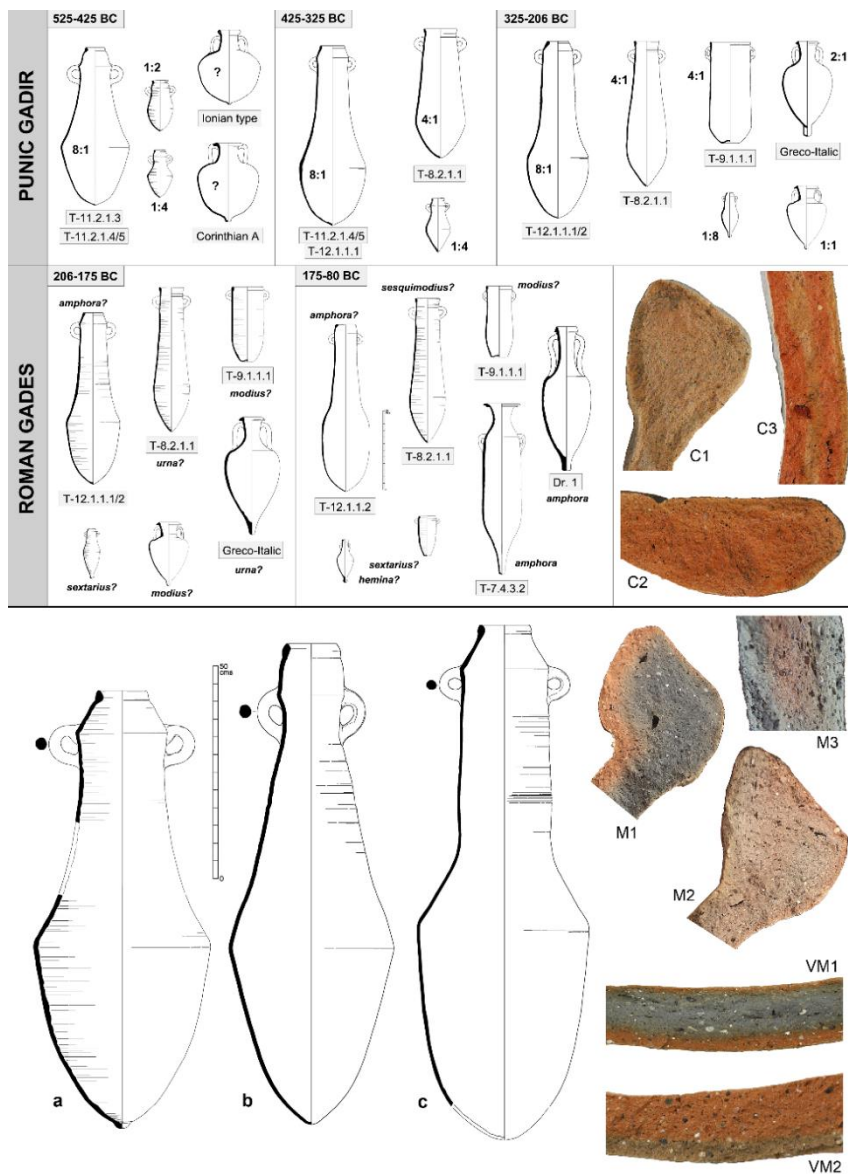


Fig. 2 - Evolution of amphora production in the Bay of Cadiz between the 5<sup>th</sup> century BC and the beginning of the 1<sup>st</sup> century BC, and photographs of the distinctive fabrics of that area (C1 to C3). Below, main types manufactured between the 5<sup>th</sup> and 3<sup>rd</sup> century BC on the coast of Málaga: T-11214/5 (a), T-11216 (b) and T-12111 (c), and photographs of the fabrics from Cerro del Villar (M1 and M2), the suburban area around Málaga (M3) and Vélez-Málaga (VM1 and VM2).