SICILIAN AMPHORAE (1st–6th centuries AD): TYPOLOGY, PRODUCTION AND TRADE

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ABSTRACT OF THE THESIS

This thesis is a comprehensive investigation of the transport containers produced in Roman Sicily over a chronological period composed of five phases: Early Roman period (30 BC–AD 100); Middle Roman period (AD 100–300); Late Roman period (AD 300–440); Vandal Perios (AD 440/535) and Early Byzantine period (AD 536/600). The research investigates the production and transportation of Sicilian foodstuffs (especially wine) from the major ports of the island to Mediterranean ports and northern Europe. The results demonstrate the wide distribution of Sicilian amphorae and their important role within the wider economy of the Roman Empire.

The importance of this research lies in the fact that, despite the agricultural prosperity of Sicily in the Roman Period and its strategic topographical position, transport amphorae remain understudied especially in economic terms. In regards to typology, chronology and distribution, our current knowledge of regional containers has not reached a level comparable to that of amphorae manufactured in other territories.

The key discussion focuses on the commercial dynamics of Roman Sicilian amphorae from local, regional and Mediterranean-wide perspectives. The research aims to outline the distribution trends of Sicilian amphorae, looking at the different relative quantities of each amphora type and consequently the extent to which they are present in regions inside and outside Sicily, while considering presences and absences within the more general and homogeneous context of the Mediterranean basin.

The organisation of Sicilian amphora production is also tackled through the presentation of probable production sites and excavated kilns. Using these examples, the study investigates the management of production of these containers on the island. The initial data obtained by this research represents a first step in determining differences between Sicilian amphorae workshops producing amphorae — therefore trading wine — for Mediterranean export and manufacturing sites specializing in local/regional trade.

Other key achievements include the creation of a new illustrated typology with profile drawings of all the amphora forms and a summary and catalogue of Sicilian amphorae fabrics.

In the thesis, the results of archaeometric analysis (thin-sections) carried out on more than 120 Sicilian amphora samples, provided by numerous institutions in Sicily and abroad, are presented. These results add significantly to our knowledge of the fabric

composition, manufacture technology, origin and consequently movement of these amphorae around the Mediterranean over six centuries.

More generally the research shows that the study of Sicilian material culture along with archaeological evidence is essential for recording the economic dynamics of Sicily, with the intent of dispelling the stereotype that Sicily's primary role was as a grain supplier to Rome. Besides grain — widely produced and exported throughout the imperial period, as attested by ancient sources and inscriptions — the archaeological evidence clearly indicates the export of foodstuffs, especially wine, at an inter-provincial level from the 1st until the second half of the 6th century AD.

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CONVENTIONS

SA = Sicilian Amphorae acronym which indicates the thin-sectioned amphora samples analysed within this study.

SIC = Shortened form for 'Sicilian' which indicates the thin-sectioned amphora samples analysed within the CASR project.

NE Sicilian amphorae = amphorae produced in several workshops located along the north eastern Tyrrhenian coast of Sicily.

Catania region amphorae = amphorae produced within the volcanic region of Catania.

'Strait of Messina' amphorae/Keay 52 = amphorae which may have been produced either at the NE tip of the island (the territory of present-day Messina) or in southern Calabria. Petrography in this case does not allow us to distinguish between the two productions.

ACW = Roman African cookwares.

ARS = African Red Slip Ware.

Chronology

Early Roman Period = 30 BC–AD 100

Middle Roman Period = AD 100–300

Late Roman Period = AD 300–440

Vandal Period = AD 440–535

Early Byzantine Period = AD 536–600

Geographical Areas in Sicily

Area 1 = North eastern coast from Tusa to Milazzo.

Area 2 = Messina Strait area and Ionian coast up to Giardini Naxos.

Area 3 = Central Ionian coast and hinterland of Catania.

Area 4 = Syracuse and south eastern tip of Sicily.

Area 5 = Central Sicily.

Area 6 = Southern coast of Sicily between Marina di Ragusa and Licata.

Area 7 = Central southern coast (area of Agrigento up to Sciacca on the west side) and its hinterland.

Area 8 = West coast and inner area of western Sicily (Entella and Segesta region).

Area 9 = North western coast of Sicily (from Palermo to Cefalù).

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I deeply appreciate the technical assistance of my friend Cettina Idonea and, for helping with proof-reading an early version of the thesis, my friend Victoria Leitch. I thank Erika Milburn for revising my English text.

In this thesis I have aimed to celebrate my Sicilian origins and the image of a hard-working and enterprising ancient Sicily, geared towards agricultural production and trade, far removed from today's sleepy island.

My research is dedicated to my family in London and my larger Sicilian family. My most heartfelt thanks go to my husband Shalinder, for his constant support, patience and generosity. I am indebted to my parents, Vito Franco and Rosetta Lanza, for passing on to me their interest in the classical world and in history. To my brother-in-law Shekhar a special thanks for his practical and spiritual help. Finally, my thoughts are with my small children, Veer Dilbagh Rai and Aria Rose, that they may come to love what I love and forgive me for not having played with them as much as I would have liked.

Sai cos'è la nostra vita? La tua e la mia?
Un sogno fatto in Sicilia.
Forse stiamo ancora lì e stiamo sognando.
Leonardo Sciascia

Do you know what our life is? Yours and mine?
A dream we dreamt in Sicily.
Maybe we are still there, dreaming.

INTRODUCTION

Cogitate nunc, cum illa Sicilia sit, hoc est insula quae undique exitus maritimos habeat, quid ex ceteris locis exportatum putetis, quid Agrigento, quid Lilybaeo, quid Panhormo, quid Thermos, quid Halaesa, quid Catina, quid ex ceteris oppidis, quid vero Messana […]

Cic., *Ver*., 2.186:

'Consider now, since Sicily is an island, having on all sides access to the sea, what you suppose was exported from other places, from Agrigento, from Marsala, from Palermo, from Terme, from Alesa, from Catania and from the other cities, indeed from Messana'.

I.1. RESEARCH AIMS

This thesis is a comprehensive investigation of the chronological typology, production and trade of transport containers carrying foodstuffs[1] manufactured in Sicily over a chronological range composed of five periods: the Early Roman Period (30 BC–AD 100); Middle Roman Period (AD 100–300); Late Roman Period (AD 300–440); Vandal Period (AD 440–535) and the Early Byzantine Period (AD 536–600). The discussion focuses on the commercial dynamics of Roman Sicilian amphorae from local, regional and Mediterranean-wide perspectives. The results offer important additions to our knowledge of the fabric composition, manufacturing technology, origin and consequently movement of these amphorae around the Mediterranean and northern Europe over six centuries.

The chronological parameters begin with the production of Sicilian amphorae during the Late Republican period,[2] right through to the Imperial and late Roman period, the Vandal incursions of the island and the Early Byzantine period.[3] The

[1] The analysis does not include the Richborough 527 amphorae, so-called Lipari 1–2 amphorae, produced in the *municipium* of *Lipara* during the early Imperial period and intended for transporting alum have been studied by Borgard and Capelli 2005. Lipari is one of the Aeolian islands, off the north eastern corner of Sicily, in the modern-day province of Messina.

[2] The study will not take into specific account the heterogeneous wine amphora group of the so-called MGS amphorae (Van der Mersch 1994) a type of which was still produced at the time the island was annexed as the first province of Rome in 241 BC and until (at least) the fall of the Kingdom of Syracuse once ruled by Hieron II (270–215 BC). This group of amphorae, in fact, was definitely Greek in its conception and differs in shape and measurement of capacities from the Sicilian Roman period containers (see Chapter 1 on remarks on this amphorae class).

[3] Between the 7th and the 8th century AD our knowledge of local pottery production and short/long-distance trade mechanisms in Sicily is still not detailed. For an analysis of cultural continuity and changes

relatively lengthy period chosen for this study was made necessary by the slow evolution of amphora forms. Furthermore, this long view enables a better understanding of the diversities and analogies between amphora production systems and trade in different periods and areas.

Insufficient questions have been asked of the data published and there are no publications specifically devoted to Roman and Late Roman Sicilian amphorae and their role in trade and the economy. A series of questions can be asked about amphora production in Roman Sicily. What processes lay behind the development of amphora production in Sicily from the end of the 1st century BC onwards? How it is connected to the previous Hellenistic amphora production? (Chapter 1). What do we know so far about Sicilian pottery installations from the late Hellenistic to the Roman period? (Chapter 2). What do we know about the role and number of production centres on the island? How do Sicilian amphorae relate to other imported wares? There are questions about the geographic pattern of production: which amphora types come from Eastern Sicily, and which come from the western area? (Chapter 2). What kind of archaeometric information can provide clear guidelines for recognizing local products and imitations? (Chapter 3 and 6). How many Sicilian amphora types were produced on the island? (Chapter 4). What are the stratigraphic contexts of discoveries? How much was distribution affected by ease of transport (sea, river and road transport)? (Chapter 7). To what extent can the archaeological data on amphora production in Sicily be linked to larger research questions about Sicilian economy in the Roman period? (Chapter 8).

The research outlines the distribution trends of Sicilian amphorae, looking at the different relative quantities of each amphora type and consequently the level of occurrence in regions inside and outside Sicily, while considering presences and absences within the more general context of the Mediterranean basin. The systematic examination of the published and unpublished data has made it possible to construct a map of the distribution of Sicilian amphorae, never before attempted, and to establish the preferential channels of trade and the areas in which these classes of materials were distributed.

More generally, this study shows that the analysis of Sicilian material culture along with archaeological evidence is essential for recording the economic dynamics of Sicily, with the intent of dispelling the existing misplaced focus upon cereal production.

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between the import of different classes of material in specific archaeological Sicilian contexts dating back to the same period, see Ardizzone 2000.

Besides grain — which was widely produced and exported throughout the imperial period, as attested by ancient sources and inscriptions — Sicilian amphorae were distributed across the Western and Eastern Mediterranean and therefore reflect the broader, complex phenomena of long-distance trade in the Mediterranean basin.

I.2. OUTLINE

The first chapter is an introductory discussion of the existing Romano-centric models of the productive landscape in Sicily, which so far have been largely focused on cereal production excluding *de facto* other large-scale foodstuff production, such as wine and fish. The discussion also looks at how the new data on pottery and amphora production can change the existing historical and economic assessment of the island.

In the second chapter, individual Sicilian kiln sites, workshops and suggested areas of amphora production in urban and rural areas are presented in order to define the economic role of each artisanal area and discuss spatial trends. This discussion also includes fine, common ware and building material production to ascertain whether transport amphorae were manufactured independently or with other wares and give a wider reflection of the production patterns of artisanal production in Sicily. The data obtained enabled a differentiation between amphorae workshops producing containers — and therefore trading foodstuffs — for Mediterranean export, and manufacturing sites specializing in local and/or regional trade.

Chapter three illustrates the results of archaeometric analyses (thin-sections) carried out on more than 200 amphora samples, provided by numerous institutions in Sicily and abroad, for provenancing Sicilian amphorae and furthering our understanding of production technologies. Five main fabric groups with dissimilar geographical source were differentiated. A fabric catalogue and photographic documentation of thin-sections are included in Catalogue I.

Chapter four defines flat-bottomed amphora forms and denominations and works in conjunction with a new illustrated typological repertoire (Catalogue I), which aims at eliminating divergent typologies and the excess of terminologies. In Catalogue I all the finds analysed for this study are illustrated within their geographical area of production. The new Sicilian amphora typology represents an effort to apply more meaningful parameters to tangible objects (the containers) that can help to reconstruct

specific ceramic traditions and cultural systems within several sub-areas of Sicily. It is concerned with questions that address amphora production and distribution, and more generally, is tied into the wider socio-economic dynamics of the Roman economy.

The discussion in Chapter five focuses on the clarification of the nature of the primary content of the flat-bottomed containers as provided by a variety of evidence, epigraphic, literary, scientific and archaeological. The general discussion investigates whether there was a connection between the shape and the quality of wine and suggestions for the possible type of wine transported in these containers are explored. The chapter also illustrates the main literary sources related to wine production in Sicily.

Chapter six presents the important results gathered in regard to the clarification of the origin of the Mid Roman 1 amphora class (Riley 1979, 177–179) giving clear evidence for its production in the region of Catania, in central eastern Sicily. The discussion also examines the implications of the phenomena of imitations of the late stage of development of the class in different regions, such as Germany and Cyrenaica. In the discussion I suggest that the imitation of this amphora type resulted from an awareness of the origin and possibly the type/taste of the wine stored in it, which was acquired by the buyers through the wide-spread export of the container. I present the idea that the customers, e.g. the last part of the chain of production, distribution and consumption, may have affected the process of imitation of containers carrying a certain types of wine.

The seventh chapter examines the wide-spread distribution of Sicilian amphorae in Sicily and abroad with associated tables (Catalogue II), including shipwrecks and three detailed studies of regional distribution. Distribution maps have been created in order to illustrate change and variability or similarities over time and across Sicily and abroad from both temporal and typological perspectives. Distribution maps of chronological phases aim to compare the presence of Sicilian amphora types in an area over different periods; while the distribution maps of amphora types are useful for the identification of preferred distribution areas and for the analysis of regional variation within a wider Mediterranean context.

Chapter eight outlines the development of Sicilian wine amphora production examining its peak and decline considering the different social and political situations that contributed to their economic patterns of *floruit* and decline. Overall, this last part emphasizes the uninterrupted continuity of Sicilian wine exports during the Roman

Period and into the 6th century and is an appraisal of what this study has contributed to archaeological research on Roman Sicily.

I.3. GEOGRAPHICAL AREAS IN SICILY

The analysis of the location of amphora workshops and local amphora distribution in this work takes into account the complex geographical nature of Sicily. Sicily is, in fact, a very large island,[4] with a range of different climatic and geo-morphological characteristics.

To attempt a micro-regional analysis of the production and distribution of specific Sicilian amphora types, in order better to understand, evaluate and interpret their commercial networks and trade routes within Roman Sicily, the island was divided into seven geographic areas (see Fig. I: Sicily, Areas 1–9).[5] These areas do not correspond to modern administrative provinces, and are defined by both physical boundaries — such as rivers, mountains, extensive fertile plains and coastlines — and by artificial communication zones — such as harbours and roads — used in the Roman period. Each of these areas represent an independent geographical and cultural entitity within the more varied geography of Sicily. The numbering of the areas (1–9) follows the order used in the CASR Project.[6]

Several phenomena of variation in the location of amphora workshop and distribution of local amphorae (notably chronological and quantitative changes) within different geographical areas can be observed within each of these territorial entities and will be illustrated in the course of the dissertation.

It is important to note that there is not exact correspondence between these seven geographical areas identified in Sicily and the more numerous different geological formations of the Island (See Chapter 3, Fig. 3.3). The implication is that in different 'sub-regional' areas the geology may be similar, such as in the case of Naxos and Catania, respectively in Area 2 and Area 3, which share the same geology of basaltic

[4] It is in fact the largest island of the Mediterraean.
[5] Fig. I shows the boundaries of the seven geographical areas recognised in Sicily, and must be distinguished from Fig. 3.3 (Chapter 3), which, instead, indicates diversified geological areas of the island.
[6] The CASR project, '*Ceramica Africana nella Sicilia Romana'*, in which the present author has participated, has identified different patterns in trade and circulation of fine wares (ARS) and African common wares and amphorae in each of the seven areas. On the aims of the project see Malfitana, Bonifay and Capelli 2007.

rocks formation (see Fig. 3.3, Area a). On the other side, the same geographical area encompasses different geological district. This is the case of the territory of present-day Messina and Naxos, both involved in amphora production, which, although being part of the same geographical area (Area 2), are located in two different geological formations, respectively an area of metamorphic rocks (see Fig. 3.3, Area b) and an area of basaltic rocks formation (see Fig. 3.3, Area a).

AREA 1:Corresponds to the north eastern coast of Sicily, from Tusa to Milazzo. On the north eastern coast of the island from the eastern border of the province of Messina (municipality of Tusa) to the north western tip of the island (town of Milazzo). The coastal strip is very narrow, due to the presence of the Nebrodi Mountains, which constitute the southern boundary of this area. To the north Area 1 includes, from a cultural and social point of view, the Aeolian archipelago, which lyes no more than 20 kilometres from the coast. In this area the West and the East of the Empire met, justifying the significant description of this sub-region as a '*concentrato di mediterraneità*'.[7] The economy of this area is particularly varied: *Lipara* produced alum during the early imperial period,[8] Milazzo produced salted fish,[9] and the coastal towns on the Tyrrhenian Sea produced wine transported in flat-bottomed containers[10] (see Chapter 4, 4.10 on the amphora types produced within this area).

[7] De Salvo 2002, 365.
[8] Borgard 2000.
[9] Tigano 2003, 281–295.
[10] Spigo, Ollà and Capelli 2006; Bonanno and Sudano 2007.

AREA 2: Corresponds to the Strait of Messina and the Ionian coast up to Giardini Naxos. The area is delimited to the east by the Peloritan Mountain. It includes the Strait of Messina, the cities of *Messana* and *Tauromenion*, and the northern Ionian coast up to present-day Giardini Naxos. The south boundary is constituted by the modern province of Catania. The role of the town of Naxos is connected to the activities of local amphora kilns in use from the Hellenistic to the late Roman period.[11] It includes a series of small rural settlements in the southern region of Naxos, a territory between Mt. Etna's slopes and the Ionian Sea, and said to be located along the inner road of the *Via Pompeia.*[12]

AREA 3: Corresponds to central Ionian coast and the hinterland of Catania. This area consists of the central Ionian coast, the *colonia Catina* characterized by a harbour area, projecting towards the Eastern Mediterranean, and by its vast rural basin, located inland immediately behind it, which in antiquity reached as far as the modern town of Lentini. This area extended from the southern hinterland near Etna to the Margi valley and was characterized by the existence of expansive and rich private properties.[13] The eastern and southern limits are the foothills of the Nebrodes Mountains, the Erean and Hyblean Mountains and the cities of Centuripe, Morgantina and Lentini. This area includes the pottery and amphorae workshop of S. Venera al Pozzo — sited along the *Via Pompeia*.[14]

AREA 4: Includes the city of Syracuse and the south eastern tip of Sicily. Extends around the colony of *Syracusae*, one of the most important harbour cities in the Roman period, which had manufacturing industries from the Hellenistic period onwards.[15] It extends across the southern area of the eastern coast, from present-day town of Augusta to the North to Pachino-Capo Passero. Capo Passero was the southernmost point of Sicily, and important centre for the production of salted fish and the trade of goods along the Eastern route of the Mediterranean Sea.[16] The area is bounded to the west by the Hyblean Mountains.

[11] Lentini 2001.
[12] Uggeri 2004, 205–206.
[13] Bonacini 2007.
[14] Branciforti 2006.
[15] Malfitana *et al.* 2014.
[16] Bacci 1982–1983, 345–347; Wilson 2005, 232.

AREA 5: Corrisponds to central Sicily. The area corresponds to the inland central area of Sicily and includes several medium-sized rural settlements located on the southern slopes of the Erean mountains and sited north of the Roman road from *Catina* to *Agrigentum*.[17] It also includes Piazza Armerina, Sofiana, Gerace, Pietraperzia and Caltanissetta.

AREA 6: It is composed by the southern central coast of Sicily, between Marina di Ragusa and Licata. Includes the eastern part of the southern coast, straddling the present province of Ragusa and the southern region of the province of Caltanissetta, up to the border of the province of Agrigento. Its hinterland includes the southern slopes of the Hyblean mountains (up to Chiaramonte Gulfi) and Erean Mountains (up to Butera). The region presents different geological characteristics with fertile plains with rivers, such as the Gela, the Maroglio and the Salso, and high and moderate hills. The generally favourable conditions encouraged the long-term presence of urban and rural agglomerations which from the Roman period onwards were located in particular along the routes signalled in the *Itinerarium Antonini* and in the *Tabula Peutingeriana.*[18]

AREA 7: Includes the central southern coast of Sicily, from the presnt day Agrigento up to the town of Sciacca on the west side, and its hinterland. This area corresponds to the central portion of the southern coast, and covers the entire coastal area of the modern-day province of Agrigento. It includes several medium and large rural settlements such Montallegro — near the district of Campanaio, known for pottery and amphora production.

AREA 8: Corresponds to the western coast and inner area of western Sicily (Entella and Segesta region). It includes the western tip of the island, including the inner zone of Entella up to the west coast. This area includes villages/*vici* with an economy that shows signs of agricultural self-sufficiency in Roman period.[19] In the area of Trapani, evidence for amphora production comes from the quarter called Foggia, in the modern

[17] Uggeri 2004, 251–272.
[18] Uggeri 2004, 251–272.
[19] Cambi 2005 (evidence of *trapeta* and *torcularia*).

city of Alcamo Marina, which produced Dressel 21–22 amphorae in the 1st century AD.[20]

AREA 9: North western coast of Sicily (from Palermo to Cefalù) The north western coast of Sicily includes several coastal cities, such as Palermo, Solunto, Termini Imerese and Cefalù all located on the ancient *Via Valeria*.[21] The importance of the cities is very much connected to their topographical positions and to the presence of their ports and their connection to maritime trade across the Tyrrhenian Sea. The inland territory coincides with most of the present day province of Palermo.

[20] Giorgetti 2006; Botte 2009.
[21] Uggeri 2004, 117–162.

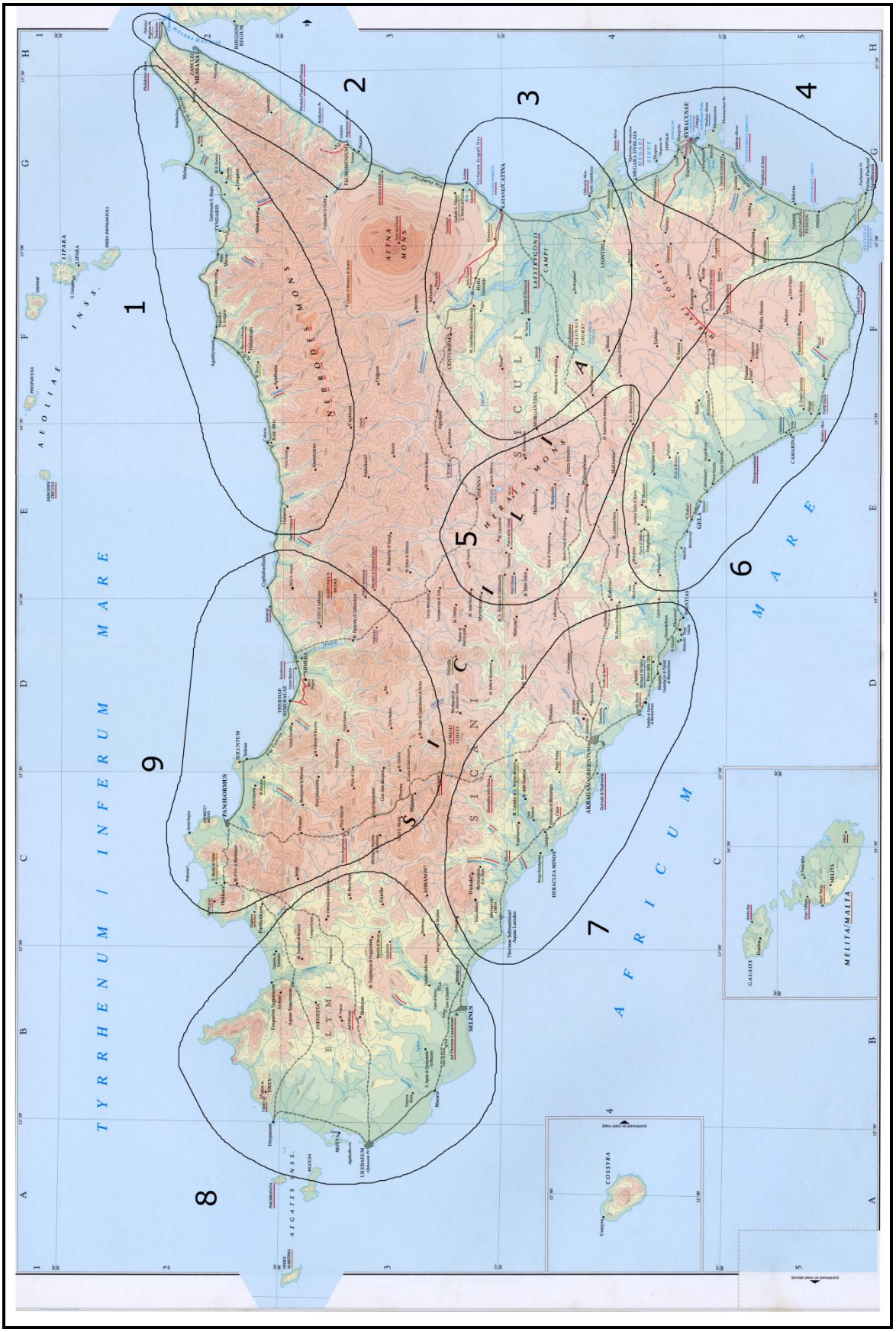


Fig. I: Geographical areas in Sicily: Areas 1–9, according to the divisions adopted in this study (Sicily from Map 47: *Barrington Atlas of the Greek and Roman World*).

I.4. ROMAN SICILIAN AMPHORAE: FRAMING THE ISSUE

The analysis of amphorae for the distribution of foodstuffs takes on particular importance in defining the structure of economic and commercial relationships in a given society.[22] The indestructibility of amphorae has meant that their study has been the starting point of research aimed at the reconstruction of the trade of a wide variety of commodities, although it is well known that other types of containers, such as skins and barrels, were also commonly used in antiquity to carry and distribute these same goods from the places of production to those of consumption.[23]

Interest in Sicilian amphorae and their economic importance is a relatively recent phenomenon,[24] previously hampered by the lack of scientific excavations in production areas of manufacture, and by a general assumption that locally-made amphorae were for trading commodities on a local scale.[25] The lack of knowledge about Sicilian transport containers is visually evident in the monograph on Roman Sicily by R.J.A. Wilson where the question of local amphorae is covered in just over two pages.[26] Wilson summarized the issue of lack of data on regional transport containers as 'There are, however, some amphora type which must be regarded as Sicilian, although their identification has not generally been recognized'.[27]

In more recent years conferences have addressed the need of studies focused on ceramics in Roman and Late-Roman times in Sicily (see Chapter 1, 1.2). Furthermore, the publication of craft activities, kilns and amphorae wasters in several areas of Sicily, such as in Alcamo Marina, in the complex of S. Venera al Pozzo and in Naxos (see Chapter 2 with relevant bibliography) have improved our understading of the local pottery production in Sicily.

If on the one hand these archaeological investigations have uncovered evidence of amphora industry in several areas of Sicily,[28] on the other these studies were limited

[22] For the economic aspects of transport amphorae there is a extremely large bibliography: see as illustrative all the Ostia publications: Ostia I (1968); Ostia III (1973); Ostia IV (1977). The lines of research of C. Panella on several types of amphora production (Panella 1993 and 2001 with a relatively exhaustive bibliography) and the studies of A. Tchernia (2011). The studies of M. Bonifay on African amphorae (and pottery) (Bonifay 2004) and P. Reynolds mainly on spanish and eastern containers (1995 and 2010a). See also the approach of A. Wilson (Bowman and Wilson 2009).
[23] Marlière 2002 and 2007.
[24] Wilson 1990, 263–264.
[25] Belvedere *et al*. 1993.
[26] Wilson 1990, 263–264.
[27] Wilson 1990, 263.
[28] North eastern coast; north eastern tip; western corner; central area.

essentially to the illustration of a few amphora specimens found within the production area with no effort to reconstruct and trace typologies or carefully observe fabrics in combination with typological detail (Chapter 4). Furthermore, these few studies did not include the commercial aspects of amphora production and trade (Chapter 7).

Before this dissertation the only overview of transport containers was published by the writer within the programme of the Roman Sicily Project (RSP), initiated in 2006 by D. Malfitana's team and the Istituto per i Beni e Archeologici Monumentali of the Italian CNR.[29] It remains, however, the case that most of the previously published literature dealing with amphorae is very difficult to use because of the lack of quantitative data, lack of illustration and correct identification.

Notwithstanding these recent contributions and the known agricultural prosperity of Sicily in the Roman Period as evident from literary and historical sources (see Chapter 5), our current knowledge in regard to typology, chronology and archaeometric data available for the amphorae produced in Sicily during the Roman period has not reached a level comparable to that of amphorae manufactured in other territories[30] (e.g. Italian, Gallic and Spanish amphora production).

I.5. METHODOLOGY

Tackling problems related to the study of transport amphorae and commercial mechanisms in Roman Sicily was a difficult task, which necessarily resulted in different approaches. Sicilian amphorae and material culture in general have been considered within a historical perspective. For the period under review, which experienced three different political systems,[31] a socio-economic approach to amphora production is necessary in order to reconstruct the distribution network of goods and the various production models present on the island.

The approach chosen follows an interdisciplinary direction, in which attention to the historical documentation and the new evidence of amphora production, contributes to the understanding of the development of Sicilian economic history in the Roman period, previously only partially understood through the analysis of historical-literary sources. The project's methodological approach includes a typological analysis of

[29] A. L. Palazzo and C. Franco in Malfitana *et al.* 2008. See in partic. 174–180, Plate 1 (C. Franco).
[30] More accurate information is available on the production of Sicilian Dressel 21, Botte 2009.
[31] Roman Late Republic (from the end of the Second Punic war); Roman Empire (27 BC–AD 476), Byzantine Period (in AD 535, Emperor Justinian I made the island a Byzantine province).

Sicilian amphorae and their social and economic implications in exchange mechanisms. The rural landscape in Sicily was examined in a diachronic sense taking into account the use of local resources[32] and short-distance trade.

In terms of sources of information all the available published material on Sicilian commercial amphorae was used. Unpublished data obtained by the Sicily Archaeological Soprintendenze and other institutes are also included.

I.6. SCIENTIFIC ANALYSIS AND SAMPLE SELECTION

In order to improve the understanding of the properties and provenance of Sicilian amphorae, petrographic analyses were carried out to help contribute to the definition of Sicilian amphorae fabric groups (Chapter 3, in partic. section 3.5. and 3.6.). The amphora samples for thin-section analyses were chosen from more than 20 consumption sites[33] (19 terrestrial and ca. 10 underwater contexts, see Chapter 3, section 3.4.2.) that might indicate the movement of Sicilian amphorae within the Mediterranean and northern Europe. The sites in Sicily (ca. 20), both consumption[34] sites and six suggested production centres,[35] were analysed in 2008/2009 as part of a joint research project, *Ceramica Africana nella Sicilia Romana* (CASR), carried out as a collaboration between the Italian IBAM-CNR and the French CCJ-CNRS (See Fig. 3.3 and Chapter 3, section 3.2). The sites abroad were mainly selected for the quality of the published information (for well-excavated urban or rural stratigraphic contexts). Nevertheless the material also derives from occasional finds, museum collections and material recovered from underwater. The selection was aimed at ensuring that different types of location from coastal to rural to underwater were represented for looking at the nature of distribution networks. In the contexts examined not only have I defined the presence/absence and quantity of Sicilian amphora types with the intent to define regional patterns and variations in their distribution; I have also examined the evidence

[32] Data connected to the cultivation and agricultural production, data on the activities tied to the sea.
[33] Main terrestrial sites: London; Krefeld-Gellep; Cologne; Mainz; Bad Kreuznach; Basel-Landschaft; Augst; Lyon; Arles; Saintes-Maries-de-la-Mer; Marseille; Narbonne; Quatrina; Tarragona; Valencia; Tróia; Tourega; Carthage and Lepcis Magna.
[34] For the Areas, see Fig. I. Tindari (Area 1); Catania and Mineo (Area 3); Piazza Armerina and Enna/Gerace (Area 5); Santa Croce Camerina (Area 6); Carabollace, Verdura, Carboj and Vito Soldano (Area 7); Contessa Entellina, Segesta and Mazara del Vallo (underwater recoveries) (Area 8); Castronovo di Sicilia and Termini Imerese (Area 9).
[35] For the Areas, see Fig. I. Naxos (Area 2); S. Venera al Pozzo (Area 3); Caronia Marina; Capo d'Orlando and Furnari Tonnarella (Area 1); and Gerace (Area 5).

of other amphora-borne commodities from different areas of the Roman Empire in order better to evaluate Sicilian wine export and distribution through comparison with other wine containers.

I.7. QUANTIFICATION

'A pottery type is only significant when it can be related to the total quantity of pottery associated with it'.[36]

The practice of quantification of artefactual evidence, such as amphorae, is important when looking at placing them in the broader context of distribution pattern across sites, and understainding the size of supply and demand in the market.[37] The statistical analysis of quantified data in pottery assemblages has been in use in the scholarship from the end of 50s of the last century.[38] Various approaches have been used by scholars to extrapolate the original total of ceramic imports from recovered assemblages. The most used quantification methods have encompassed the examination of sherd weights,[39] the rim count, the counting of all the sherds that joins or are similar in fabric (MNI),[40] and the estimate of the frequency of vessel types based on fractions of vessels (EVE).[41]

For this study a combination of different quantification methods has been used with the aim of recognizing general distribution trends and emphasizing the relative proportion of Sicilian types in selected deposits.[42] A full quantification of Sicilian amphorae has been undertaken for all the excavation contexts analysed. I have followed the method of counting 'rim, base and handle' sherds (RBH). In some larger

[36] Riley 1979, 99.
[37] With reference to amphorae, to achieve a reliable analysis of the relative proportion of the volumes of foodstuff (traded in ceramic containers) in specific pottery assemblages, one should also look both at the average capacity of a amphora form and its typical content. See Ejstrud 2005 on the use of quantitative data from amphorae found in several northern European context and in Rome as a mean to calculate the relative proportions of the volumes of wine, oil, and garum imports.
[38] Burgh was the first to introduce the concept of 'minimum number of vessels' Burgh 1959, 192. On the pratice of pottery quantification from ceramic assemblages see Orton and Tyers 1990; 1992. For a review on the variety and features of several methods of calculating quantified figures in pottery assemblages, see Orton 1993; Orton, Tyers and Vince 1993, 166-181. See also Peña 2007c, on the quantitative analysis of pottery from the Palatine East in Rome.
[39] Baumhoff and Heizer 1959, 309 and Solheim 1960.
[40] Identification of the 'minimum number of individuals', Orton, Tyers and Vince 1993, 172.
[41] Identification of the 'estimated vessel equivalent', Orton, Tyers and Vince 1993, 168-173.
[42] Quantification by number of sherds; by Minimal Number of individuals; number of diagnostic sherds (handles, rims, spikes) and body sherds were used in the available bibliography studied.

archaeological contexts, such as Thermes du Levant in Lepcis Magna, the Tarragona city dumps, and a few contexts in Southern France I had access to quantified figures, which took into account all of the amphorae recovered, including the body sherds (RBHS).

I.8. CONCLUDING REMARKS

Overall, this study aims to present a set of data useful for the analysis of Sicilian transport containers with questions that address production, distribution and the economic impact of Sicilian foodstuffs in Sicily and abroad. A chronological assessment of the evolution of Sicilian flat-bottom amphorae from the beginning of the 1st to the 6th century AD reveals their significant contribution to tracing major stages in the evolution and development of Sicilian economic systems between the Augustan age until the Early Byzantine period.

CHAPTER 1

FLAT-BOTTOMED AMPHORAE IN SICILY: AN 'AUGUSTAN' PHENOMENON?

[*Sicilia*] *Prima omnium, id quod ornamentum imperii est, provincia est appellata. Prima docuit maiores nostros quam praeclarum esset exteris gentibus imperare*.

Cic., *Ver*. II. 1.2

(Sicily) was the first to be called a province; and the provinces are a great ornament to the empire. She was the first who taught our ancestors how glorious a thing it was to rule over foreign nations. [Translation by Charles D. Yonge, 1888]

1.1. INTRODUCTION

This chapter begins with a brief survey of intellectual debates on Roman Sicily, and of the most recent studies on regional pottery production with a special focus on the Late Republican and Early Imperial periods. As concerns the production of amphorae, despite the difficulty of tracing a unitary vision of 'Roman Sicily', I ask if and to what extent it is possible to shed light on the relations between the re-emergence of workshops for transport amphorae in north eastern and central eastern Sicily — after the end of the period of the Graeco-Italic amphora production of Van der Mersch's MGS type V and VI in the final years of the 3rd century BC (Early Hellenistic period/Middle Roman Republican period) — and the social and productive transformations taking place in Sicily especially from the late Republican period and in the transition towards the Augustan period. The discussion will cover a variety of historical, literary and archaeological data with the aim of demonstrating that the renewed production of transport containers, between the end of the 1st century BC and the early 1st century AD, coincides with the island's full adoption of Augustan policies and ideology. This phase follows the first period of Roman rule in Sicily which was strongly influenced by the Hellenistic culture on the island. This lack of 'Romanization' in Republican Sicily has been noted in previous scholarly work which have emphasised the persistence and strength of regional Sicilian identity.[43]

[43] See especially Wilson 2000a and Campagna 2006 for the expressions of civic identity in Roman Sicily through the physical expression of buildings and architecture; Prag 2007b on the epigraphic evidence and Prag 2009a on the strength of a 'Sicilian Identity' in Republican Sicily and its consequence on the Roman rule on the island.

1.2. HISTORIOGRAPHIC TRENDS AND CURRENT STUDIES ON ROMAN SICILY

La storia antica dell'isola non è soltanto una storia dei Greci e dei Punici.[44]

Sicily's unique topographical position (Fig. 1.1), at the crossroads of the Mediterranean, and therefore between the two halves of the Roman Empire, makes the island a privileged observation point for socio-economic, cultural and political processes, and fostered the development of specific ethnic and linguistic identities.



Fig. 1.1 Location of Sicily within the Mediterranean (C. Franco)

Overall, the study of Roman Sicily has in the past been overshadowed by the classical view of a predominantly Greek Sicily and has suffered from a sort of disconnect between the study of Hellenistic Sicily and Roman Sicily.[45] Scholars writing histories of Sicily around the end of the 19th century wrote in a context which considered Greek Sicily to be the island's most important and productive historical phase from a cultural, political and social point of view. An example is E. Freeman 'the greatness of Sicily was essentially a «Greek» colonial greatness'[46], as compared to a Roman phase characterized by a *triste pace* and a *lugubre silenzio della morte*.[47]

Several scholars of the second half of the 20th recognized the persistence of the Greek legacy on the island in the Roman period, noticeable, for instance, from the

[44] 'Ancient Sicily is not solely a Greek or Punic Sicily', Carandini, Ricci and De Vos 1982, 11.
[45] Prag 2007a, 69.
[46] See for example Freeman 1891; Pais 1888.
[47] Pais 1888, 128

relationship between Hellenized Sicily and Republican Rome at the time of Hieron II.[48] M. Mazza[49] and G. Manganaro[50] both emphasized the Hellenistic aspects of Republican Sicily. Mazza, in particular, questioned the decline of the island during the Roman Empire, suggesting instead that an urbanization process took place in the towns of the Imperial Period. He was one of the first to point out the flourishing of coastal towns with close relations with North Africa between the 2nd and 3rd century AD.[51] More generally, opposing ideologies have either emphasized the island's strategic importance in the Roman period or conversely its political marginality[52] and 'suburban character' i.e. *suburbanitas,* citing Cicero's idealistic image of Sicily.[53] G. Clemente observed the existence of optimistic and pessimistic conceptions of Roman Sicily in the existing historiography on the island.[54] In the available literature, attention has concentrated on specific periods, such as Republican Sicily.[55] Relevant in the studies is the end of the 1st century BC, especially the knowledge of the Sicilian contexts through the Ciceronian Verrines. Our present knowledge of Late Antique period is also advanced.[56] Other studies have taken into consideration archaeological evidence concerning, for example, the complex road network,[57] on an island where *portoria*[58] and markets were surely vital.

In recent years much effort has gone into creating a more nuanced picture of the island's Roman history.[59] These new studies complement and take into consideration in their historical conclusions a 'huge growth in the publication of epigraphy, archaeology, and numismatics from the island'.[60]

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[48] Rizzo F.P. 2002, with bibliography cited.
[49] Mazza 1980–1981.
[50] Manganaro 1988.
[51] Mazza 1986, 50.
[52] Clemente 1979, 472; Cracco-Ruggini 1980, 3.
[53] Cic. *In Verr*., II,2,7: *et quondam quasi quaedam praedia popoli romani sunt vectgalia nostra atque provinciae, quem ad modum vos propinquis praediis maxime delectamini, sic populo romano iucunda suburbanitas est huiusce provinciae.* 'And since our tributes and our provinces are, in a sence, farms belonging to the Roman people; therefore just as one is most pleased with such estates which are nearest (to Rome), so too the nearness of this province is very pleasant to the Roman people' (author translation). On the different position of historians on Republican Sicily see the excellent survey in Campagna 2003.
[54] Clemente 1980–1981, 194–197.
[55] Prag 2009a.
[56] Such as the lines of research of L. Cracco Ruggini.
[57] Uggeri 2004 (with bibliography).
[58] De Salvo 1992.
[59] Campagna 2003; Portale 2006; Pinzone 2006 and J. Prag studies (Prag 2007a; b and c; 2009a and b; 2012).
[60] Prag 2009b, 135 with bibliography on the most recent published books and papers on Roman Sicily especially Republican Sicily.

For the late Republican phase, the recent critical approaches of A. Portale[61], A. Pinzone[62] and J.R.W. Prag[63] have suggested the existence of a specifically Sicilian identity as a *provincia* distinct from the Italian peninsula already from the second half of the 3rd century BC. Other, archaeological, studies have highlighted the vitality of the island's most important towns during the late Republican period.[64] Overall, these recent studies have tried to avoid preconceived notions of events in Roman Sicily, thereby overcoming the idea of a socio-economic decline,[65] Marxist interpretations[66] and Romano-centric views.[67]

A number of studies have joined the lively and intense debate over processes of 'Romanization'.[68] The traditional concept of a superior Roman culture, as opposed to primitive communities, has encountered scepticism and has been surpassed by more balanced approaches that focused on the variety of responses from different societies and ethinic groups to the Roman political and cultural entity.[69]

With regard to 'Romanization' in Sicily, some attempts have tried to avoid overstating local cultural peculiarities or 'resistance' phenomena within some Sicilian local communities.[70] E. C. Portale has on several occasions suggested abandoning the usual label of 'Romanization' understood as the application of hegemonic models, proposing instead the more flexible concept of '*interazione culturale*' with the power of Rome.[71] L. Campagna, speaking of the ways in which some Roman architectural typologies were adopted suggests the possibility that some Sicilian local communities deliberately used these, with reference to the concept of '*self-romanization*'. More closely connected with the features of pottery, D. Malfitana has introduced for Sicily the concept of '*emulation'* i.e. the adaptation of the material culture and cultural features of

[61] Portale 2006.
[62] Pinzone 2006.
[63] Prag 2009a and 2009b.
[64] Wilson 2000a; Campagna 2006; Prag 2007a
[65] Calderone, 1964–1965, 63. Sartori, 1980–1981, 291: '[...] *l'età romana occupa uno spazio minore di quello riservato alle età precedenti. Ma ciò non è senza ragione, perché il governo romano, mirando a forme omogenee di vita amministrativa, finì con il contrarre e soffocare manifestazioni di vita prima diverse da città a città, sicché la documentazione del periodo romano non offre oggi se non un panorama piuttosto uniforme, povero di fatti e fenomeni degni di particolare attenzione'*.
[66] Mazza 1981.
[67] Gabba 1986.
[68] There is a vast bibliography on Romanization. Among recent studies I restrict myself here to Mattingly 2004 with bibliography there cited. With special reference to Sicily: Wilson 1990, 313–329; Campagna 2003; Portale 2007; Perkins 2007, esp. 34–35.
[69] Keay and Terrenato 2001.
[70] Examples of the critical approaches to previous historiography on Hellenistic and Roman Sicily are Portale 2006 and Pinzone 2006.
[71] Portale 2006; 2007, 150–151.

Greek/Hellenistic identity to take on aspects of the new Roman material culture.[72] Turning to the regional ring-footed amphora types,[73] the object of this study, I question whether the shape chosen is another tangible piece of evidence of 'Romanization' (see below).

1.3. REGIONAL POTTERY PRODUCTION IN ROMAN SICILY: FRAMING THE ISSUE

[…] *far conoscere gli umili materiali ceramici romani in terre ideologicamente refrattarie alla romanità, come la grecità di Madrepatria e delle colonie d'Occidente.*[74]

Although we do not yet have a comprehensive picture of the main production sites and pottery production, recent years have seen important attempts to improve our interpretation of the society, economy and culture of Roman Sicily in conjunction with its material culture.[75] A wide-ranging and comprehensive project, in which the writer is involved, focusing on the economic trends evidenced by the production and import of pottery in Roman Sicily, is being developed within the international research project *Roman Sicily Project: Ceramics and Trade.*[76] The first published results have clarified the economic trends of specific periods, such as the Severan Age,[77] and for specific territories[78] in order to define micro- and macro-economic aspects and the regional economic patterns which existed in the Sicilian province.

Previous important studies on the archaeology of Imperial Sicily include the comprehensive overview by R.J.A. Wilson[79] and by E.C. Portale.[80] Wilson and Portale's studies incorporate the long and lively debate about the economy of Roman Sicily, introducing the idea that scholarship has perhaps focused too much on the organization of arable land destined for the production of grain and less on the production of pottery and production of foodstuffs which were traded in ceramic containers. The significance of the latter, in particular, could open a new potential for debate about the social and

[72] Malfitana 2006.
[73] Henceforth defined as 'flat-bottomed'.
[74] 'Let the scholarship know about the humble Roman pottery [...]', M. Torelli in Fiorini and Torelli 2007, 75–106. esp. 97.
[75] Malfitana, Poblome and Lund 2006; Malfitana *et al.* 2011.
[76] Results of the projects are published in Malfitana *et al.* 2008; 2011; 2014; Malfitana and Franco 2011 and 2012.
[77] Malfitana, Franco and Di Mauro 2013.
[78] Malfitana and Cacciaguerra 2011; Franco 2011.
[79] Wilson 1990.
[80] Portale 2005.

infrastructural accelerators that underlay the growth in agriculture that was linked to the trade of amphorae born commodities.

Generally, scholars dealing with material culture in ancient Sicily have devoted far less attention to Roman pottery production than to the Archaic, Classical Greek[81] and medieval periods.[82] This might be due to the relatively good state of preservation of Greek and medieval kiln sites. However, it may also be due to the fact that the Roman ceramics produced on the island — mainly undecorated amphorae, common and cooking wares — were traditionally considered to possess far less aesthetic value than figurative Greek pottery. In many cases, Roman regional pottery has been neglected in academic studies and in important excavation reports despite the numerous appeals launched by various scholars to encourage the development of this field of research.[83] This is particularly true of the long–lived Late Hellenistic and Roman pottery workshop at Syracuse (Fig. I, Area 4),[84] not yet fully published, which has been overshadowed by the classical view of a predominantly Greek city, leading to a real lack of documentation on the wider sphere of ceramic production within the Roman Empire. Specifically, Portale writes '*gravosi limiti valgono ancora per lo studio della cultura materiale, malgrado il recente interesse volto al tema delle manifatture ceramiche. Anche qui i ritardi nell'edizione scientifica dei principali complessi, come il Ceramico di Siracusa condizionano la validità dei risultati*'[85] thus stressing the importance of studying the production sites currently known in Sicily, in parallel with pottery and amphora distribution. The need for a better–defined picture of Sicilian fine ware production is also evident for the Late Republican workshop in the town of Centuripe (Fig. I, Area 3)[86] — between the Eastern coast of Sicily and its hinterland – and Tyndaris (Fig. I., Area 1)[87] — on the island's Tyrrhenian coast. In the Roman colony of Tyndaris, despite the lack of archaeological remains of kilns, a probable pottery workshop within the

[81] There is a vast bibliography on the Sicilian pottery and terracotta figurines produced in several of the island's Greek settlements between the 6th and the 3rd century BC. Among the most studied production are the workshops of Camarina (Pisani, Pelagatti and Di Stefano 2008), Agrigento (Fiorentini *et al.* 2003); and Centuripe (Libertini 1934).
[82] For an example of the medieval pottery kilns found in Agrigento, see Bonacasa Carra and Ardizzone 2007.
[83] Pelagatti 1969–1970, 76, 80; Wilson 1988, 207–305; Portale 2005, 110; Malfitana 2006a; Malfitana *et al.* 2008, 128–129.
[84] For the first available data published see Agnello 1954, 53 ff.; Fallico 1971. For an overview of the Syracuse workshop see Malfitana 2011, 188–189 and, as last, Malfitana *et al*. 2014.
[85] Portale 2005, 110.
[86] *Civitas sine foedere, immunis ac libera* (Cic., 2, *Verr*., III 13; IV 20). The workshop produced mainly fine wares, Biondi 2002.
[87] *Colonia Augusta Tyndaritanorum* (Diod. Sic., *Biblioteca Storica*, XXIII, 18; Plin., *Nat. Hist*., III, 90).

town has been suggested based on the discovery of a Megarian bowl mould[88] and several other moulds for relief vases stored in the local Archaeological Antiquarium.[89] More detailed information is available for the region between Palermo and Termini Imerese (Fig. I, Area 9), where the existence of several black–gloss ware workshops, dating from the Late Hellenistic Period, has been suggested by petrographic analyses.[90] (Fig. 1.2)

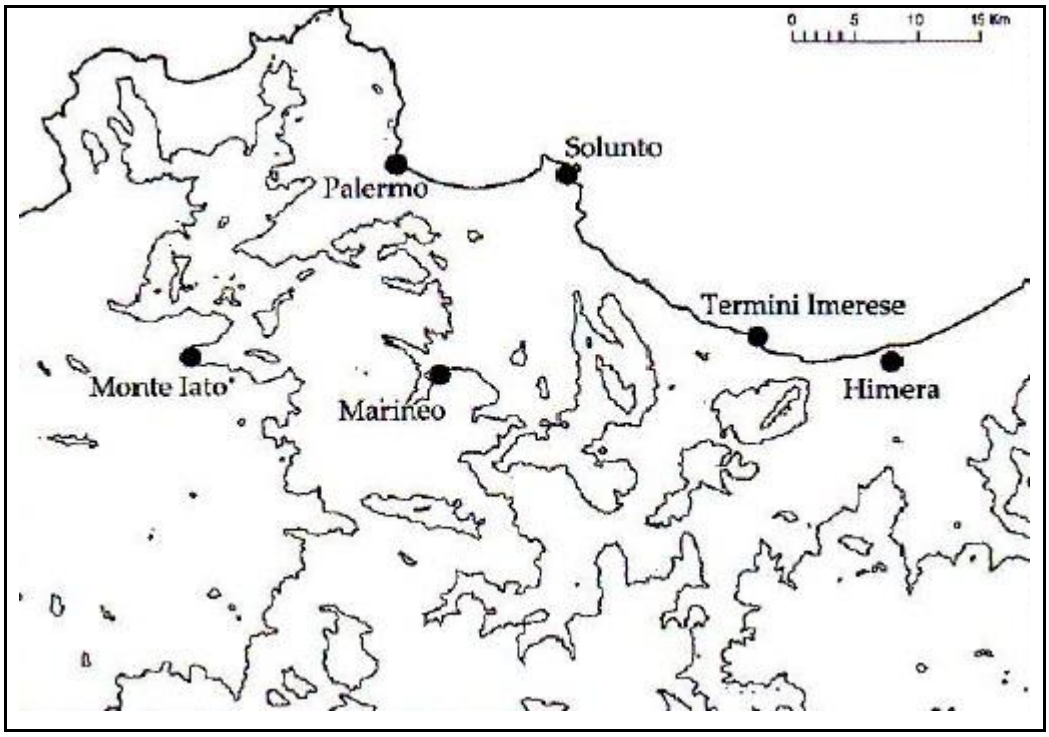


Fig. 1.2 Production centres of black gloss ware along the North western Tyrrhenian coast of Sicily (Belvedere *et al.* 2006).

Over the last 15 years, there has been significant interest in the available scientific documentation on studies focusing on manufacture and technology in regards to Sicilian pottery [91] with an emphasis on the lively debate on ceramic petrology.[92] On Sicilian craftworking productions of the Roman period it is worth noting the recent publication of a series of studies on some ceramic classes,[93] including Late Republican and Proto-Imperial productions such as fine red-gloss wares known as '*pre-sigillata*'

[88] Falco 2000.
[89] *Antiquarium* of Tindari, room 4, case 9.
[90] Belvedere *et al.* 2006.
[91] For an up-to-date discussion see Malfitana 2012 with bibliography cited.
[92] Malfitana, Bonifay and Capelli 2007.
[93] See the up-to-date review in Malfitana 2011 with bibliography.

(Fig. 1.3),[94] thin-walled ware,[95] black-glaze Campana C[96] and the 'Campana C' Syracusan black gloss.[97]

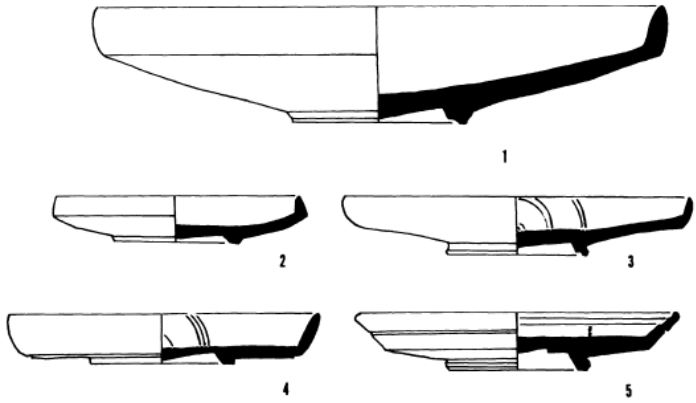


Fig. 1.3 A selection of red tablewares produced at Morgantina around the 1st century BC (Stone 1987a, Fig. 6).

To sum up the published information, these studies paint a picture for Late Republican Sicily of a solid and long-lasting craft tradition, characterized by Mediterranean economic and productive dynamics which appear to contract to local and extra-regional markets only with the arrival of Italian terra sigillata ware from the late 1st century BC. Between the late 2nd and mid-1st century BC the island sees the formal and stylistic adaptation of the tableware which links the island's major production centres — such as Siracusa, Morgantina, Centuripe, Segesta and other centres in western Sicily — to the broader traditions of mainland black and red glazed wares.

The same process of formal 'adaptation' can be seen in the adoption of the flat base in the earliest Sicilian amphora productions (i.e. the flat-bottomed Dressel 2–4 type and the Naxos Early Roman Type). After these early experiments the island's amphora workshops develop their own specific formal register. For the Middle and Late Imperial period the results of this research project have shown a significant and widespread production of transport amphorae which find their way into imter-provincial trade circuits.

[94] So called 'presigillata' produced in Morgantina, Tindari and Termini Imerese, see also Malfitana and Franco 2012 with previous bibliography.
[95] Manufactured in Morgantina until the third quarter of the 1st century BC (Stone 1981; Stone 1987b; Stone 2002, 144), Syracuse (Pelagatti 1969–1970, 78); Alcamo Marina (Giorgetti 2006, 94), Segesta (Denaro 2008). The kilns of Morgantina also produced cooking, coarse ware and lamps.
[96] Morgantina workshop.
[97] As last, Malfitana *et al.* 2014.

Finally, the as yet unpublished results of another wide-ranging project, CASR*: Ceramica Africana nella Sicilia Romana*, in which the present author has participated, have identified significant phenomena of regional imitation of fine wares (ARS) and African common wares, hitherto not identified by published studies; a forthcoming publication will deal in depth with their reception on the domestic market and distribution dynamics.[98]

1.4. The Forerunners of Flat-Bottomed Amphorae: MGS V and VI amphorae and Punic amphorae produced in Hellenistic Sicily

In the previous section, we briefly showed that the manufacturing of table ware between the 3rd and mid-1st century BC in Sicily developed in accordance with the Hellenistic Greek tradition. The same phenomenon of formal adherence to the Hellenized world can be seen in the production of Sicilian wine amphorae between the 4th and 3rd century BC. Several workshops, mainly located in the Greek area of Sicily, made wine transport containers already from the 5th century BC, with a greater intensity in the 4th and 3rd centuries BC. These amphorae have a complex terminology and belonged to a series of disparate containers whose typology and chronological development remains problematic, in part due to the numerous workshops that made them contemporaneously (many of which have still not been investigated in the field). C. Panella has recently studied this amphora family, proposing some new typological identifications.[99] C. van der Mersch twenty years ago dealt specifically with these amphorae, dividing this complex family of containers into six main types named MGS I–VI.[100] The acronym MGS stands for 'Magna Graecia/Sicilian amphorae'. Van der Mersch's study comprised the Italian regions south of the Silaris/Sele in modern-day Campania and Sicily from the 5th century to the fall of Syracuse in 211 BC. The amphorae of types MGS V[101] (300–265/250 BC**)** and MGS VI[102] (260–240/220 BC onwards) (Fig. 1.4) belong to a group traditionally termed 'Greco-Italic' amphorae in scholarship; the name aimed to make explicit the relationship of this amphora family of the Hellenistic period, deriving from a 'Greek formal model', with the earliest productions of similar forms in the Romanized

[98] On the project see Malfitana, Bonifay and Capelli 2007.
[99] Panella 2010, Appendice I.
[100] Van der Mersch 1994. On the evidence of the stamps on this amphora class see now Garozzo 2011, 359–505.
[101] Van der Mersch 1994, 77, Fig. A, from Lipari.
[102] Van der Mersch 1994, 77, Fig. B, from Panarea.

Italian peninsula.[103] The manufacture of this group is attested already during the 4th century in Campania (Ischia, *Neapolis*), and in a vast area of the Tyrrhenian (Lazio, Etruria)[104] and Adriatic coasts of the Italian peninsula (Brindisi or Lecce as possible production centres).[105]

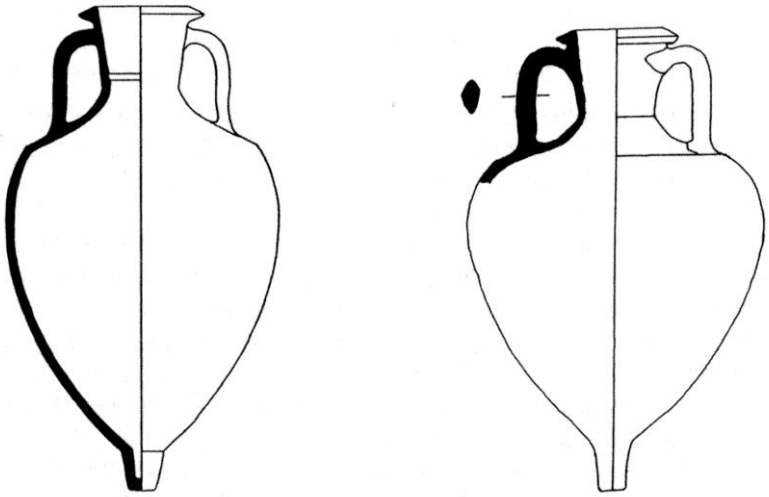


Fig. 1.4 Van der Mersch MGS V and MGS VI (Panella 2011, Fig. 1, nos. 1–2)

Turning to Sicily, MGS Types V and VI were certainly manufactured in the Late Hellenistic Greek cities of Naxos and in the Gela/Agrigento area[106] and perhaps in other places that have not yet been identified.[107] During this phase, the island was from an administrative — and economic — point of view in the Roman orbit: more than three quarters of Sicily were annexed as the first province of Rome in 241 BC, after the end of the First Punic War. By the end of the Second Punic War (215–210 BC), the whole of Sicily was incorporated into the Roman Province with the fall of the Kingdom of Syracuse once ruled by Hieron II (270–215 BC).

From an economic viewpoint, the manufacture of these amphorae in Sicily for at least three centuries demonstrates the persistence of important viticulture and a constant capacity for the commercial penetration of Sicilian wine into extra-regional markets

[103] For its first use see Benoit 1957, 251–256. Other definitions include 'grecoitalica antica' (Ancient Greco-Italic amphora) and 'grecoitalica tarda o recente' (Late Greco-Italic amphora), terms coined by D. Manacorda (Manacorda 1986).
[104] More recently, Van der Mersch defined the amphorae produced in these territories, Latium *vetus* and *Latium adiectum/Novum,* with the acronym RMR 'Mid-Republican Roman amphorae' because of their more genuinely Roman origin, Van der Mersch 2001.
[105] Van der Mersch 2001; Panella 2010 with specific bibliography.
[106] Naxos: Lentini 2001. For the Gela/Agrigento specimens see the *c.* 300 amphorae found in a deposit in Camarina (Pelagatti 1984–1985, 687–692), dated by C. van der Mersch to around 260 BC.
[107] On possible Sicilian production areas in general see Van der Mersch 1994, 85–86.

after the classical Greek phase (5th century BC).[108] Probably underlying the Mediterranean export of these containers were relations between important Roman families,[109] as indicated by the broad repertoire of stamps in Latin letters,[110] and those of former Greek regions (such as Naples and Sicily), probably with the mediation of Greek merchants, considering the evidence of stamps in Greek letters on 'Greco-Italic' amphorae.[111]

In recent years the picture emerging for Sicily from new archaeological evidence is of a well-integrated and more complex system of production of 'Greco-Italic' amphorae. It appears that the Greek colonies of Sicily did not have the monopoly on producing recognizable 'Greek-style amphora types', which were in fact also manufactured in some sites of Punic Sicily. In Solunto, on the northern coast of Sicily, one of the island's three Phoenician settlements, there is interesting evidence for a production of several *non*-Punic amphora shapes[112] such as Van der Mersch's MGS V[113] (Fig. 1.5) and VI.[114] *Lilybaeum*/Marsala, the focal point of trade towards North Africa and the south western Mediterranean, has also been suggested as a production centre for western Greek amphorae, but without any definitive proof.[115] A similar phenomenon of economic contacts between Punic and Greek cities in the Hellenistic period is attested by the study of amphorae from the ancient Greek city of Euesperides (Benghazi) in Cyrenaica. In the city there is evidence of imports of regional Cyrenaican amphora types similar in shape to the common Greco-Italic amphorae Van der Mersch's MGS IV–V.[116] Similar amphorae were also imported to the city from the Punic city of Sabratha.[117]

[108] Found, as documented by underwater finds, particularly in the north western Mediterranean: see Panella 2010.
[109] As the stamps in Latin letters referring to the *gens Valeria*, Van der Mersch 2001, 197-198.
[110] A list of stamps in Latin letters on 'Greco-Italic' amphorae is in Van der Mersch 2001, 194-199.
[111] On the evidence of Greek stamps on 'Greco-Italic' amphorae see a list in Van der Mersch 1994, 159 ss. On the greek stamps on amphorae MGS Types V and VI found in Sicily see now Garozzo 2008, 587-588, 57-82, with bibliography cited.
[112] On the Bechtold 2011.
[113] Polizzi 1997, 97–98, 103, figs. 4–5.
[114] Bechtold 2011, 6.
[115] Bechtold and Valente 1990.
[116] Cyrenaican Amphora 4 with everted, projecting and triangular rim, Göransson 2012, 222, Fig. 5.
[117] Wilson 2003, 1666.

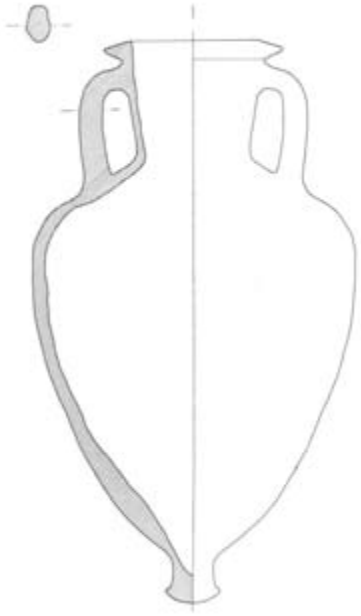


Fig. 1.5 Van der Mersch MGS V produced in Punic Solunto (Polizzi 1997, 99, Fig. 5,19).

It seems plausible that in the case of western, Punic, Sicily the production and export of Greco-Italic amphorae — local or otherwise — was mediated by Carthaginian or Punic Sicilian merchants. The active involvement of economic powers of Punic origin in the trade in Greco-Italic and Rhodian amphorae was already clear from the discovery of large numbers of stamps belonging to these two amphora families at Erice (Fig. I, Area 8).[118] This city, home to a famous sanctuary of Venus and overlooking the city of *Drepanon*/Trapani, has been suggested as a redistribution centre for goods and foodstuffs towards Punic/western Sicily,[119] just like nearby *Lilybaeum*/Marsala.[120]

What emerges in Sicily in the period between the 4th and the end of the 3rd century BC (a more precise chronology is currently unavailable) is the significant coexistence of several production areas located on the two sides of the island, Greek and Punic, though their ethnic and cultural horizons differed, they made amphorae of similar shapes. We must therefore acknowledge a significant convergence of the *figuli* of both areas towards the decision to produce a container whose shape becomes a '*paradigm*' of commercial relations directed to maritime trade across the Mediterranean. Those commercial traffics were not solely aimed at Rome and its trade routes, nevertheless it is not unlikely that they were primarily mediated by the city and the territories closely linked to Rome (from an administrative and/or commercial point of view). The choice

[118] Brugnone 1986; Pinzone 2000, 878, no. 80 with bibliography.
[119] See the considerations in Panella 2001.
[120] Brugnone 1986 on the stamps on Greco-Italic amphorae found in the coastal city.

to make Greco-Italic amphora shapes at several production sites in the two areas of Sicily shows also that amphora production in Hellenistic Sicily was not dependent on ethnic choices and that the amphorae trade was not regionally bounded. This type of evidence attests the development and exploitation of wine producing territories and may be connected to Roman expansion of economic interests in Sicily from the 3rd century BC onwards.

We again see the same amphora type being made at different production sites in the later manufacture of flat-bottomed amphorae in the early 1st century AD in a very different historical and economic context, that of a *Provincia* closely integrated with the Early Roman Imperial economy. This took place first in precisely those towns of Greek origin, like Naxos/*Tauromenium* e *Catina*, whose original Greek social structure had been more strongly changed with the addition of Italic and Roman components (see below).

More generally, the widespread adoption, especially from the 3rd century BC, of the Greco-Italic type in Italy (from the Ionian Sea to Sicily, from the Tyrrhenian to the Adriatic) shows a desire to conform to the model *par excellence* of the Hellenistic period, instantly recognizable and universally accepted on the Mediterranean markets both in terms of shape and with reference to standardized measuring systems. It is significant that the earliest productions of genuinely 'Roman' flat-bottomed amphorae are clearly distinct in terms of capacity from their predecessors, indicating that the two forms belonged to two different historical, productive and commercial contexts. The small flat-bottomed amphorae correspond to roughly a half *amphora* or slightly more and differ in terms of formal standards from the containers of Magna Graecia.[121] In Hellenistic Sicily and Magna Graecia the capacities of transport containers of the MGS type were based on the χούς (3.24 litres) and its multiples.[122] In Roman period amphorae, the volume is based on the *sextarius* (ca. 0.54 litres) and its multiples like the *amphora* (= 48 *sextarii*, ca 26 litres).[123]

[121] Van der Mersch 1994; Van der Mersch 2001.
[122] Van der Mersch 1994, 112.
[123] Also *metreta* (=1,5 *amphorae*) and *culleus* (=20 *amphorae*), see De Sena 2005, 136–137.

1.5. THE END OF THE GRECO-ITALIC MODEL AND THE 'DARK AGE' OF WINE AMPHORA PRODUCTION IN SICILY

It appears that when the production of the late development of Greco-Italic amphorae came to an end, with the disappearance of the MGS VI type and its descendants, amphora types Will 1c and Will 1e[124] (Fig. 1.6), the *Provincia* of Sicilia saw an apparent decrease in the production of wine amphorae lasting for about two centuries, until the end of the 1st century BC/early years of the 1st century AD. The Sicilian wine amphora series make a reappearance on the regional and extra-regional markets from the Augustan period onwards with first small Roman-style flat-bottomed amphorae that are the object of this study. The export of fish in the 2nd century BC, especially to the eastern Mediterranean, is suggested by Botte for the 'Punic tubular amphora type'[125] (see *infra* and Chapter 2, section 2.2.3.2, Fig. 2.18).

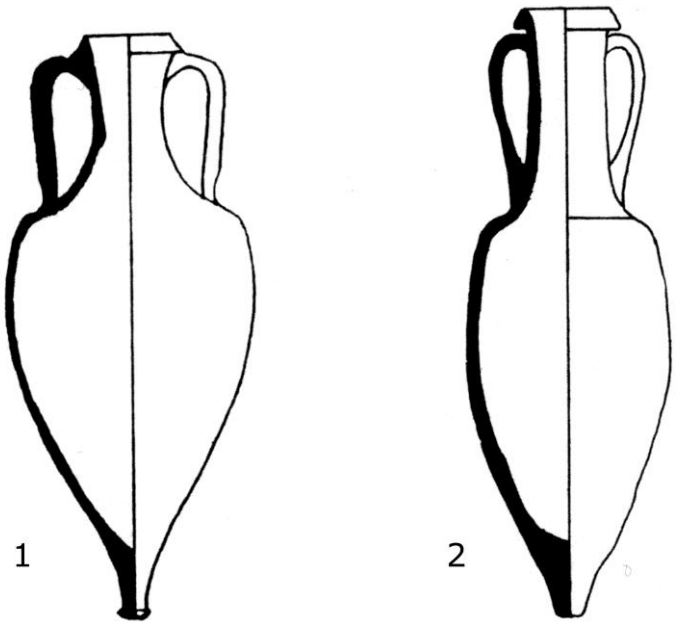


Fig. 1.6 Amphora type Will 1c (no. 1) and Will 1e (no. 2) 2nd-century BC successor of MGS type VI (Panella 2011, Fig. 3, nos. 8–9).

Other parts of the Italian peninsula, including areas near Rome,[126] but also *Bruttium*, present-day Calabria,[127] present a far more complex picture, with evidence for the increasing production and commercialization of agricultural and manufactured

[124] For the descendants of type MGS VI in the 2nd century AD see Panella 2001, appendix I: Form Will 1C and Will 1 e (after E. L Will's amphorae typology: Will 1982).
[125] Botte 2012.
[126] For an overview see Jolivet *et al.* 2009 and Panella 2010 with bibliography.
[127] Corrado 2009.

goods that is becoming clearer thanks to studies of amphorae materials and agricultural production facilities and kilns. Already from the mid-2nd century BC/third quarter of the 1st century BC, the same workshops that made Greco-Italic amphorae began to manufacture the new Italic wine container *par excellence*, the Dressel 1.[128] Later, from the Augustan period, some workshops on the Tyrrhenian coast (*ager Cosanus*, Fondi, *Sinuessa*/ Mondragone, Pompeii) converted their production of Dressel 1 to a new form: the Dressel 2–4, inspired by the wine amphora of the Aegean island of Cos. On the Adriatic coast — where Greco-Italic amphorae were also manufactured in the late Hellenistic period — the kilns that produced the Lamboglia 2 were followed by the Dressel 6A (see Fig. 1.7, nos. 1–4 for the general appearance of these containers).

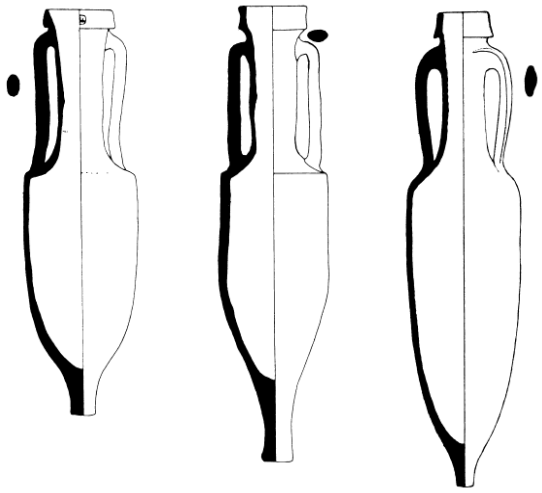


Fig. 1.7.1 Examples of Dressel 1A, 1B and 1C ca. 130–25 BC (Peacock and Williams 1986).

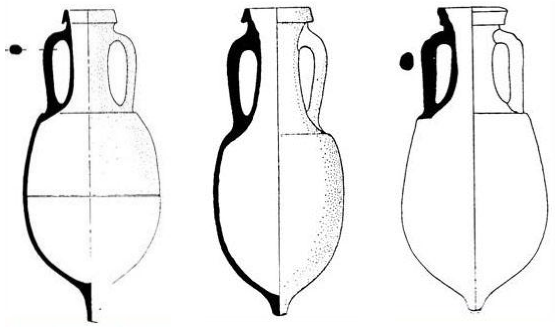


Fig. 1.7.2 Examples of Lamboglia 2: late 2nd-mid 1st BC (Sciallano and Sibella 1991).

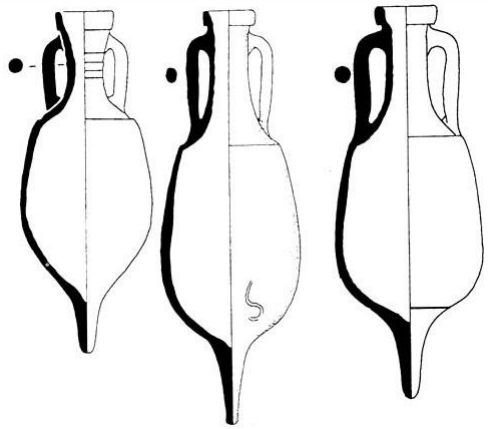


Fig. 1.7.3 Examples of Augustan N Adriatic wine Dressel 6A (Sciallano and Sibella 1991).

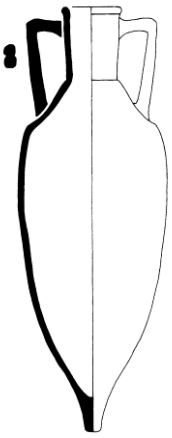


Fig. 1.7.4 'Koan' style amphorae: the Early Empire Campanian Dressel 2–4(Sciallano and Sibella 1991).

[128] Specific bibliography in Panella 2010.

This conversion of Greco-Italic amphora manufacturing sites to the Dressel 1 does not seem to affect Sicily, apart from the brief note on the discovery of a Dressel 1 and a flat-bottomed Dressel 2–4 (Fig. 1.8) at Giardini Naxos, probably made locally, but no earlier than the late 1st century BC.[129]

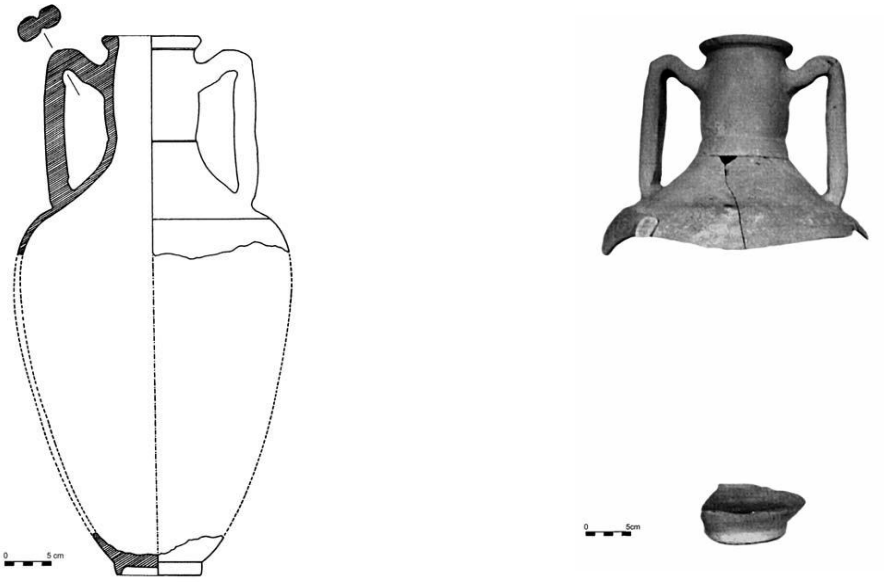


Fig. 1.8 Dressel 2–4 amphora which seems to have been manufactured at Naxos (Ollà 2001, 48, Fig. 2 and 54, no. 2).

For Sicily we are completely lacking the data from amphora stamps that have made it possible to identify the involvement of wealthy Roman *gentes*, especially from Campania, in the transitional phase from Greco-Italic amphorae to the Dressel 1/Lamboglia 2 for the vessels produced along the whole of the peninsular Tyrrhenian coast and the Ionian coast of Calabria.[130]

So what amphora types were used to bottle Sicilian wine after 212 BC? The known documentation is far too scanty to be able to advance plausible hypotheses. On the basis of the little published data, it seems that amphora production sites in this phase were essentially limited to two separate areas of Sicily:

1. the former Punic area of western Sicily, especially around *Lilybaeum*[131] (Fig. 1.9) and the Solunto[132] workshops (Fig. 1.10), which seem to have been manufacturing

[129] Lentini 2001.
[130] The members of the families engaged in production activities were called to populate the *coloniae* of the Adriatic coast of southern Italy, Corrado 2009, 3.
[131] Bechtold 1999, 162–163, pl. XXXIV, 293; Bechtold 2011, pl. 3,3.
[132] Bechtold 2011, pl. 5,6.

a late development of the so-called Punic Sicilian amphorae series[133] within the second half of the 2nd and the first half of the 1st centuries BC. These amphorae have a large mouth and a short neck (and sometimes no neck). Their designs seem more suited to a fish sauce or salted fish content (the wide neck made it easy to fill and empty the container of its fish content)[134] rather than wine, which was usually stored in amphorae with a narrower rim and a longer neck.

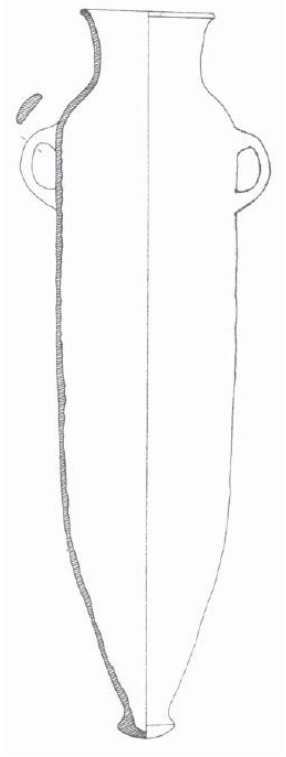


Fig. 1.9 Amphora Ramón's T-7.6.2.1 which seems to have been manufactured at or around *Lilybaeum* (Bechtold 1999, 162–163, pl. 34, 293).



Fig. 1.10 Amphora Ramón's T-7.5.2.1 of supposed Solunto area of production (Ramón 1995, 544, Fig. 181,285).

2. On the east coast, the amphora production centres of the mid 2nd to 1st century BC are basically unknown. A recent petrological study, analysing Greco-Italic amphorae of the 4th century BC,[135] has also suggested production in the area of Messina for two amphora fragments attributed to a late evolution of the Greco-Italic class and ascribed to 'triangular-shaped rim amphorae' (Group V–VI) dated to the 2nd century BC (Fig. 1.11, amphora D). The specimens in thin-sections are characterized by the use of

[133] Punic amphora types are classified according to J. Ramón's classification, see Ramón 1995.
[134] The archaeological documentation on fish processing activities of a long use in this western area of Sicily (Botte 2009) also suggests that the primary use of these containers was connected to the transport of fish and its sub-products.
[135] Barone *et al.* 2011.

prevalently metamorphic inclusions and alluvial sediments. As, in the current state of knowledge, there is not clear evidence for the containers which traded the wine produced in Messina and its hinterland, it is tempting to identify these 2nd-century BC amphorae as the early phase of the containers used to transport the famous Mamertine wine produced in the region of Messina. The Mamertinum wine (Chapter 5, section 5.1.7.1.1) was ranked in fourth place in Pliny's passage listing the best Italian fine wines since the time of Julius Caesar,[136] or the less known high-quality Potitian wine probably cultivated in the north eastern tip of Sicily '*proxima Italiae*'[137] (Chapter 5, section 5.1.7.1.2).

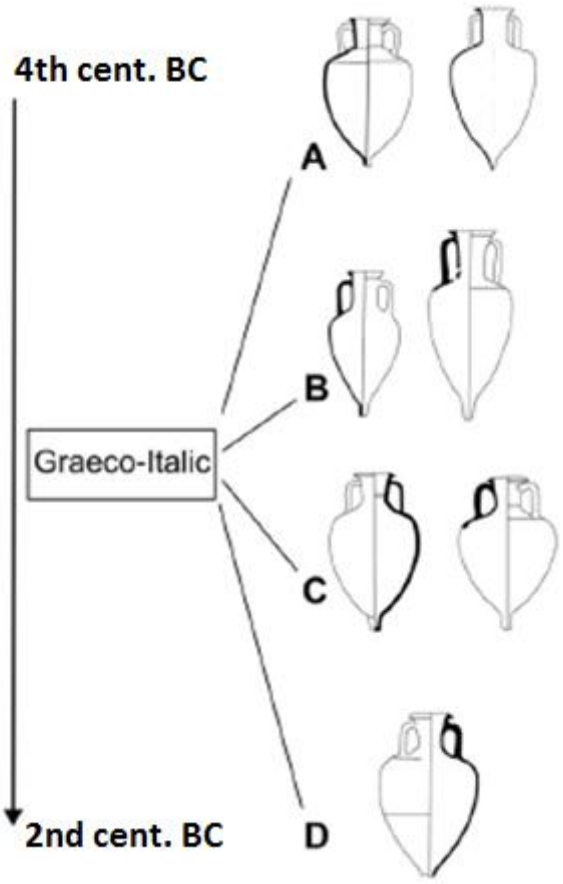


Fig. 1.11 Evolution of the transport containers analysed in thin-sections in Montana *et al.* 2011. For the triangular-rim amphora group attributed to Messina see letter D (Montana *et. al.* 2011, Fig. 1).

In conclusion, the scanty data available for Sicily between the 3rd and 1st centuries BC paint an uneven picture.There was significant discontinuity with respect to both the Hellenistic past and the contemporary situation that can be reconstructed for

[136] Plin., *Nat. Hist.*, XIV, 66.
[137] Plin., *Nat. Hist.*, XIV, 66.

other areas of the Tyrrhenian and Adriatic/Ionian Italian peninsula. In Sicily at this time, the development of specialized viticulture is hitherto suggested only for the north eastern tip of the island, in other words the area of Messina (on an archaeometric basis) and later the environs of Giardini Naxos/*Tauromenium* (if the suggested production of Dressel 1 and Dressel 2–4 is confirmed).

Looking at the overall picture between the 2nd and 1st century BC, the mechanisms underlying the distribution of Sicilian wine on the local and extra-regional markets seems to be interrupted or the patterns of trade changed — at least judging from the current absence of any tangible evidence of ceramic containers for wine in the existing record[138] — after the persistence of large scale and systematic exportation of wine from Sicily to the Mediterranean in the previous centuries.

This presupposes a change in the condition of the *officinatores* who owned pottery workshops on the one hand and of the owners of *fundi* (and thus of vineyards) on the other. In the absence of concrete evidence, it seems probable that this change was due to historical factors. Specifically, I refer to the extension of Roman control to the whole of Sicily and the specific ways in which the new *Provincia* was administered, which was different from those Rome reserved for other territories. Rome did not completely change the political and administrative structures of Sicilian cities and, in some cases, refrained from disrupting social and ethnic balances.[139] After the reorganization of the province by the praetor *Marcus Valerius Levinus* (210 BC), the adoption and the extension to the whole island of the legal system originally adopted by Hieron II (*Lex Hieronica*) — according to which most Sicilian cities had to pay a tenth of their grain harvest as a tax to Rome —, and the implementation of the *Lex Rupilia* (131 BC) — passed by *Publius Rupilius*, which contained regulations for the organization of arable land — Sicily saw an apparent general renewal of agricultural activities due to the increased export of grain to Italy. Rome was in a position to exploit the immense potential of the Sicilian breadbasket and provincial governors made explicit efforts to relaunch and encourage grain production.[140] On close inspection, these mechanisms ultimately damaged the provincial Sicilians: the political aims of the centralized power led to a downturn in more specialized agriculture, including viticulture, in favour of the large estate system manned by slaves to cultivate grain and

[138] The types of amphora involved in such a trade are possibly still unrecognised by archaeologists.
[139] On this issue see Pinzone 2000.
[140] Portale 2005, 24.

pastureland. In the 2nd century BC the foundations were laid for an extremely unequal mechanism that increased the already strong social instability[141] and that saw a sort of complementarity — in a detrimental sense — between the Sicilian and Italic agricultural economy. The Sicilian economy was linked increasingly to the expansion of the large estate system and geared towards the export of grain; the Italian economy was more complex and also aimed to produce a wine surplus, as is clear from the evidence of Dressel 1 and Lamboglia 2 amphorae.

As is known, the economic forces underlying the production of Dressel 1 in areas of the Italian peninsula, particularly from the late Republic on, were the Romanized municipal aristocracies, involved in the production of amphorae and also of bricks. The *domini* were usually the owners of the agricultural lands from which the wine to be bottled came, while the urban Italic ruling classes and the *equites* (as in the towns of Pompeii, Aquileia and Preneste)[142] traded the wine. Linked to the wine trade in the late Republican period is the presence of slave workforce in the Italian countryside and the contribution of skilled artisans to the management of pottery workshops connected to the *fundi* that can be established thanks to the rich evidence from inscriptions/stamps.[143]

Unfortunately, the situation in Sicily is currently impossible to reconstruct because we lack material data in the shape of amphorae and stamps. However, in light of the historical context outlined above, it is not implausible that the large-scale production and bottling of Sicilian wine saw a downturn in the 2nd century lasting at least until the first half of the 1st century BC. It is to be hoped that further excavations and — above all — research on published and stored materials may shed some light on the production and distribution mechanisms of Sicilian wine containers of the 2nd and 1st centuries BC. Considering the appreciation shown by the Romans already from the time of Caesar for Sicilian grape varieties and wines, we can only assume that some of the wine produced was exported, perhaps in small quantities and exclusively to specific markets such as that of the capital. Generally, at least judging from the wine production areas known from the sources (Chapter 5, section 5.1.7), it would seem that western (former Punic) Sicily was less engaged in viticulture than the north east/east central

[141] The flow of slaves to Sicily, often coming from territories conquered by Rome, led to the servile wars, First Slave War (134–132 BC) and Second Slave war (104–100 BC).
[142] Nonnis 1999.
[143] Panella 2010 summarizes the issue with the expression: 'binomio vino/schiavi' (with specific bibliography on incriptions on Dressel 1).

area. With regards to the 1st century BC, several research carried out in the context of a major survey projects on selected areas of Sicily, such as in the vicinity of Eraclea Minoa,[144] in the hinterland of *Thermae Imerenses* in the north western area of Sicily,[145] and in vicinity of *Lilybaeum*, between Marsala and Mazara,[146] have proved changes in the rural settlement pattern which led to a reduction in the numbers of rural settlements.

The role of Sicily as Rome's wheat granary reduced gradually during the 1st century AD (see the comments in Chapter 8, esp. section 8.3.3). It is no accident that it is precisely this period that sees the resumption of the cultivation and export of wine in the 'new' fully 'Romanized' flat-bottomed containers, clear evidence of the persistence of Sicily's capacity for specialized agriculture after a couple of centuries of suggested decline. As will be seen below, the production of flat-bottomed amphorae begins in Naxos/*Tauromenium* and Catania/*Catina*, those towns of ancient Greek tradition that were heir to the most ancient Greek colonies where the Augustan reorganization led to a stronger Roman presence.

1.6. The Production of Flat-Bottomed Amphorae Within the Process of Roman Imperialism

The data set collected during this research project, with special reference to the material evidence represented by transport containers, may in my opinion add another piece of information to the broader issue of the integration of Sicily into the Roman Imperial phase.

The results of this study have established that on the one hand the island appears to be fragmented into numerous local and sub-regional production identities, as evidenced by the adhesion of the *figuli* to various formal amphora models which differ from one production context to the other (see Chapter 4, section 4.5). On the other hand, despite the variations between the different production centres, what emerges is a shared repertoire of forms whose general adoption of the flat amphora bottom and production methods — initially aimed at the Tyrrhenian market — become unified in Sicilian workshops in adherence to the economic conditions dictated by Rome. How already mentioned, flat-bottomed containers were produced at the same time in the whole upper

[144] Wilson 1980-1981.
[145] *Himera* III.1, 211-216; *Himera* III.2, 393-394.
[146] Fentress, Kennet and Valenti 1986.

Tiber Valley and Central Italy from the very beginning of the 1st century AD onwards and were used for the inter-regional transport (Rome, Umbria, the Tyrrhennian coast) of Upper Tiber Valley wine along the Tiber.[147]

I believe that it is no accident that the very earliest Sicilian amphora productions from the beginning of the 1st century AD followed the Italic flat-bottomed wine amphora model such as the Campanian Dressel 2–4[148] (Fig. 1.12) and especially the Spello amphora type (Fig. 1.13), produced (at least) from the Tiberian-Claudian period,[149] with which they share a similar body profile and the ringed bottom (see Chapter 4, section 4.8.1). The Spello amphora type has been also classified as Ostia II, no. 521/Ostia III, 369–370 Type II,[150] and Altotiberina 1 type.[151] The containers have a lower capacity (15–20 litres) and ovoid bodies which finished off by a ring 1–2 cm in height and in varying diameters, from 5 cm to 10/14 cm.[152] The same shape was adopted by the Centro-Adriatic Forlimpopoli amphora type[153] (Ostia IV, 442) (Fig. 1.14), which was produced from the second half of the 1st AD, therefore at a slightly later time than the Spello amphora type and the 'Naxos Early Roman type' (Fig. 1.15) produced at the Naxos workshop in NE Sicily (Chapter 4, section 4.8.1).

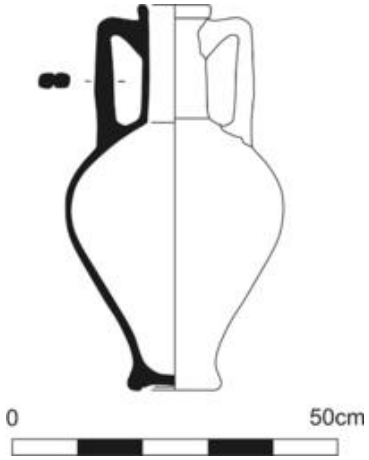


Fig. 1.12: Flat-Based Pompeian Dressel 2–4 (Panella 2001, pl. I, no. 4).

[147] Panella 1989, 149.
[148] Panella 2001, pl. I, no. 4.
[149] Panella 2001, 195; Rizzo 2003, 149.
[150] Panella 1989, 144.
[151] Vidal 2009.
[152] Vidal 2009, 227.
[153] For the type Aldini 1978. The amphorae are attested in Rome from the beginning of the 2nd century AD.

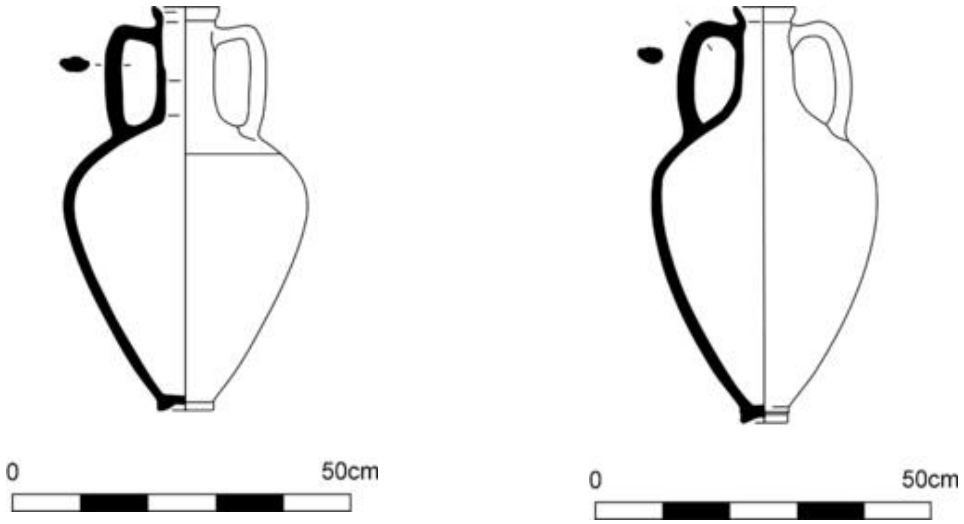


Fig. 1.13, Examples of Spello amphora type/Ostia II, 521/Ostia III, 369–370 (Panella 2001, pl. II, nos. 11–12).



Fig. 1.14: Example of Forlimpopoli amphora type (Panella 2001, pl. III, no. 21)

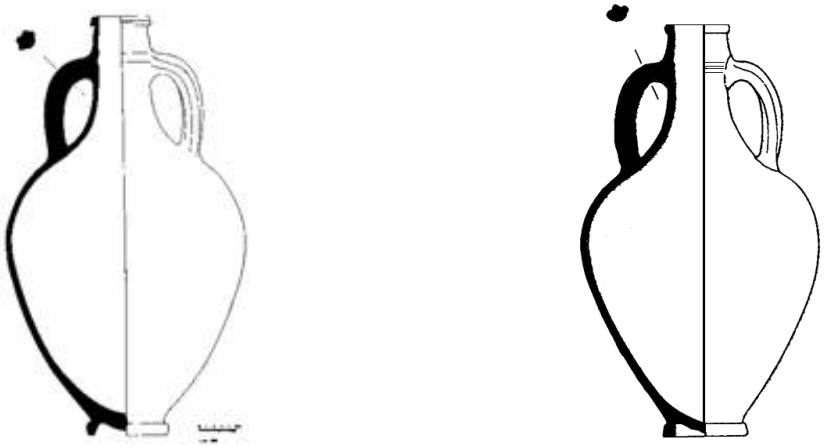


Fig. 1.15: Examples of the amphora here classified as 'Naxos Early Roman type' produced at the Naxos workshop located on the coast of the Ionian Sea (Ollà 1997, Fig. 2. A and B).

The analyses of Early Imperial period ceramic assemblages in Italy have shown that the use of flat-bottomed vessels for wine export became more frequent from the Flavian period onwards.[154] This tendency is accentuated for Sicilian amphora production, for which the ringed bottom and small capacity became the standard feature of the wine amphorae of the whole province from the 1st to the 6th century AD.[155] These two morphological elements represent a striking innovation when compared to the previous Greco-Italic wine amphora model with a long spike; furthermore specific amphorae workshops developed their own regional formal register which would become an indication of the 'Sicilianness' of the products exported,[156] and which in a modern context we might describe as a kind of DOC label.

Among the possible reasons leading in the first instance to the adoption of these smaller, more fragile, flat-bottomed vessels in Central Italy, C. Panella first proposed that they were suited to coastal or river navigation and that they were more suitable for mixed land and river transportation on carts to the Tiber and by boat to Rome.[157] Flat-bottomed containers were undeniably easier to handle in small boats or rafts. This hypothesis fits well with the Spello and Forlimpopoli amphora types which were manufactured in workshops located inland, and no longer at coastal locations as in the case of the workshops producing their immediate Dressel 2–4 predecessors. The new amphora shape was primarily intended to transport the cheap table wine produced in central Italy. The containers were traded by rivers, and not by sea, to the city of Rome which was their main market.[158]

The choice of a flat bottom to facilitate river transportation and as a marker of a change in amphora distribution processes is in my opinion unlikely to fully explain the broader regional adoption of flat-bottomed containers in Sicilian workshops for centuries, for at least two main reasons:

1) location of the workshops (Chapter 2, section 2.9). The production areas manufacturing the better-known flat containers were located in coastal or in-land not far from the coast, with access to good roads and to ports (in contrast to the central Italian workshops of the Spello/Forlimpopoli types);

[154] Panella 1989.
[155] The same phenomenon can be recognized in Gaul in the 2nd and 3rd century AD (see the typical flat-bottomed Gallic wine amphorae).
[156] For example the typical profile of the amphorae made in the Catania area (see Chapters 4, section 4.5, point 2).
[157] Panella 1989.
[158] Panella 1989, 139–140, 145.

2) amphora distribution (Chapter 7). The evidence collected suggests that the best-known Sicilian containers were primarily made to be shipped overseas for the extra-regional wine trade, and that they therefore travelled primarily by ship. According to this view, it is my opinion that the bulk of the inter-regional trade in local wine primarily used wooden and skin containers.

Sicily's ruling and entrepreneurial classes made good use of new economic opportunities, the rapid increase in trade and the broadening of distribution outlets taking place from the late Republic and to a greater extent from the Augustan period when the manufacture of small Sicilian wine amphorae began. The wine producers of specific areas of Sicily in the 1st century AD, such as Naxos and the region of Catania, aimed at entering the same markets shared by the Italian and Gallic wine amphorae, and were first intended to reach Rome and southern France (see data on distribution in Chapter 7, in partic. section 7.4.1.1.1 (Rome) and section 7.4.1.4.1 (Southern France). Probably with the aim of competing in those markets, the Sicilian potters of these two main production centres began to follow the morphological innovations of the amphorae produced in Gallia and central Italy, i.e. the adoption of a flat bottom and small capacity.

The initial production phase of exported amphora broadly corresponds to the point at which Sicily's ruling classes effectively coincides with full adherence to Augustan policies, after an earlier phase dating to between the mid 3rd and 2nd century BC — which R. Wilson significantly describes as the 'background' in his work on Roman Sicily — in which evidence from vases, amphorae architecture and art present more markedly Hellenistic Greek features.[159] It is significant that the earliest productions of genuinely 'Roman' flat-bottomed amphorae are clearly distinct in terms of their metrological[160] and formal standards from the containers of neo-Punic type produced in the western part of Sicily[161] and from those of Magna Graecia[162] (see above on these types).

Nor is the geography of amphora workshops fortuitous: the places where these amphorae were made are found exclusively in the hinterland of those settlements in which 'Roman-style' urbanization depended on the central power and specifically on

[159] On this see Portale's considerations; with the felicitous expression '*Vivere da Greci per essere philorhomaioi*', she sums up the cultural strategies of the Sicilian elite in the first phase of 'Romanization', Portale 2007, 161.
[160] The Hellenistic χούς (l 3,24) *vs* the Roman amphora (= 48 *sextarii*, ca l 26). The small flat-bottomed amphorae which correspond to *c.* a half amphora or slightly more, see also above.
[161] Bechtold 2011.
[162] Van der Mersch 1994.

Augustan policy, in other words that segment of Sicily's north eastern coast on the Tyrrhenian sea and the north eastern coastal belt. These are the same places most affected by the consequences of the fierce conflicts between Sextus Pompey and Octavian known as the *Bellum Siculum* (42–36 BC).[163] When the war ended to Octavian's advantage, from 36 BC onwards Sicily had a new administrative system. He rewarded the cities that supported him and punished those which had adhered to Pompey's cause.[164] Archaeological evidence of abandonments and destruction is attested in several Sicilian towns around this phase.[165] The north western part of Sicily was little affected by the war, while other areas, such as the north eastern and eastern of the island were severely affected. In this area Augustus created colonies in 22 and 21 BC settling veterans from the legions in five colonies along the northern and eastern coast of the island.[166] The colonies involved in this large-scale and unitary programme underwent a major process of architectural monumentalization which affected private spaces[167] and public areas[168] with a greater intensity in the Augustan phase.

As far as amphora production is concerned, it should be noted that cities such as *Tauromenium* and *Catina*, described as having the *status* of colony in Augustus's *formula provinciae* and enjoyed urban growth, are those involved in the production of flat-bottomed amphorae.

The new conditions imposed by Rome probably redefined the role of the local elites (Roman or Romanized) of these cities, and they took advantage of this favourable location, profiting from the increase in trade following the Augustan reform. The new documentation on amphorae which forms the object of this study, then, represents important material evidence of the way in which the elites invested their wealth, originating from land ownership and began to export agricultural surpluses.

[163] Pinzone 2000.
[164] Diod., 49.12.4.
[165] Such as in *Tyndaris*, *Syracusae*, *Akrai*, *Kamarina*, *Lipara*, *Megara Hyblaia*, *Herakleia Minoa* and *Morgantina*. A review in Stone 2002.
[166] RGDA 28; in the list by Pliny the Elder, *Nat. Hist.* 3, 88–91 (T*hermai Himerenses*, *Tyndaris*, *Tauromenium*, *Catina and Syracusae*). Strabo adds *Panhormus* to the list (*Geog*., 6.2.4–5 C270–C272).
[167] Portale 2001–2002.
[168] Campagna 2007.

FIRST PART: PRODUCTION

CHAPTER 2

AMPHORA PRODUCTION CENTRES IN ROMAN SICILY: DISTRIBUTION, CHRONOLOGY AND POTTERY PRODUCTION PHASES

2.1. INTRODUCTION

This chapter pulls together the evidence for individual Roman amphora kiln sites and areas of amphora production recorded in Sicily, and discusses these in order to define the role of each artisanal area. The data available on amphora production areas are illustrated following a chronological order. Each site entry is summarised in Table 2.1. The amphora types produced in each workshop are briefly presented, examining the association of amphora production with other industries, such as tiles and bricks or other pottery. Including other Sicilian pottery production shows how the manufacture of transport containers fitted into the broader context of ceramic production in Roman Sicily. Questions about the origin and social position of the commercial operators — kiln owners and potters — will be addressed where possible.

The last part of the chapter focuses on the geographical distribution of known amphora production sites in Sicily with the aim of identifying patterns in their location and changes in this pattern over the centuries. Specifically, differences between sites producing amphorae for export and those producing them for local/regional distribution are stressed in order to provide an interpretation of the organisation of production and the evolution of the economic structures behind pottery workshops over time.

Area	Workshop	Chronology	Site Type	Workshop Category	Associated industry	Ceramic production evidence	Amphora type	Export range	Fine ware	Coarse Ware	Cooking ware	Tiles/ building material	Bibliography
1	Castel di Tusa/ *Halaesa*	Late Roman period	Coastal urban site		Wine?	Few over fired containers, with traces of rubefaction and some manufacturing defects	NE Sicily amphora Type 4	Regional? Local?					Scibona and Tigano 2009, 182, Fig. 18.
1	Caronia Marina/ district of Chiappe	Early Roman period	Coastal	Suspected Kiln		Not published	Dressel 35 similis?						Wilson 1990, 263.
	Caronia Marina/ district of Chiappe			Suspected Kiln				Local			Cooking pots		Scibona 1987, 12, on the amphora production;Bonanno 2008, 2008, 42.
	Caronia Marina/ *Kale Akte* District of Pantano	Late Roman period	Urban coastal/ *statio*	Individual centre of production	Wine	Single petrological group; production wasters, amphorae abundance; new petrographic data	NE Sicily amphora Type 1; NE Type 2; NE Type 3 and NE Type 4	Regional and Mediterranean					Bonanno and Sudano 2006, 442–443; Bonanno 2008, 355–356.
1	Capo d'Orlando/ *Statio Agathynum* (Bagnoli–S.Gregorio)	Late Roman period and Vandal period	*Mansio*	Individual centre of production	Wine?	Single petrological group; production wasters, amphorae abundance; new petrographic data	NE Sicily amphora Type 1; NE Type 2 and NE Type 4	Mainly regional			Cooking pots		Ollà 2004; Spigo, Ollà and Capelli 2006.
1	Furnari/ District of Tonnarella	Late Roman period	Coastal	Individual centre of production	Wine	Single petrological group; kiln dump, wasters, pottery; new petrographic data	NE Sicily amphora Type 1	Local		Common ware (wasters)	Cooking pots		Bonanno and Sudano 2006, 443; Bonanno 2007, 355–356, Fig. 3.
2	Region of Messina	Early Roman period			Wine	Literary evidence: Mamertinum and Potitian wine	Not known	Rome					See Chapter 5, section 5.1.7.1.1 and 5.1.7.1.2
	Region of Messina	Late Roman				New petrographic data	Several different flat–	Mediterranean					Unpublished

Area	Workshop	Chronology	Site Type	Workshop Category	Associated industry	Ceramic production evidence	Amphora type	Export range	Fine ware	Coarse Ware	Cooking ware	Tiles/ building material	Bibliography
		period and Early Byzantine period					bottomed types among which Keay 52 and Crypta Balbi 2						
2	Naxos	End 1st century BC/1st AD–5th century AD	Coastal urban site	Large-scale workshop									
	City harbour area	Early Roman period	City harbour area		Wine	Kiln wasters, spacers deposit of amphorae; new petrographic data	Naxos Early Roman amphora type	Regional and Mediterranean					Lentini 2001, esp. 13–22 (on the port); Ollà 2001, 56, cat. 12; Muscolino 2005–2006, figs. 1–8; Muscolino 2009.
	Spinella Quarter/ Larunchi quarter	Middle Roman period	City area		Wine	Amphora wasters; new petrographic data	Naxos flat-bottomed amphora type Form 1	Regional and Mediterranean				Tiles	Lentini 2001, 24, Fig.23; Ollà 2001, 48–49, 16;, Fig.7, no.10. On the tiles: Wilson 1990, 264, footnote 128; Basile 1995, 27, Fig. 24; Ollà 2001, 49, 59.
	Mastrociccio quarter	Late Roman period	*Mansio* near to the S. Giovanni river	Large-scale workshop	Wine	Five Kilns; amphorae wasters, spacers deposit of amphorae; new petrographic data	Naxos flat-bottomed amphora Form 2 and Form 3; Naxos Keay 52	Regional and Mediterranean	Red Slipped ware bowl and jugs (imitation of ARS)			Tiles and bricks	Fallico 1976–1977, 632–633; Wilson 1990, 256–257; Basile 1995, 25–27, figs. 17–18, 20–22; Lentini 2001, 33–35; Ollà 2001, 49, figs. 15–18; 56–58.
3	Region of Catania	From the Early Roman Period to the Late Roman			Wine	New petrographic analyses	Catania flat-bottomed type Form 1, 2 and 3; Catania MR 1a Form 1, 2 and 3	Regional and Mediterranean					Franco and Capelli 2014a, 2014b.

Area	Workshop	Chronology	Site Type	Workshop Category	Associated industry	Ceramic production evidence	Amphora type	Export range	Fine ware	Coarse Ware	Cooking ware	Tiles/ building material	Bibliography
		Period											
3	S. Venera al Pozzo/Statio Acium	Late Roman Period	*Statio*	Large-scale workshop	Wine and oil (?)	Kilns; amphora wasters; new petrographic data	Flat-bottomed amphora types: Catania MR1 a Form 3; globular amphora for olive oil and Keay 52 *similis*	Regional? Little evidence for overseas export		Common ware (wasters)		Building materials (bricks and tiles)	Branciforti 2006; Amari 2007 and 2008.
5	Enna/Gerace	Late Roman Period (?)	Rural inland settlement	Rural kiln		Suspected kin, Amphora Wasters	Flat-bottomed amphora type	Local		Basins similar to Tunisian Carthage *LR Basin* 5 (end 4^{h}/ second half 5th)?	Cooking pots		Bonanno 2010.
7	Montallegro/ Campanaio	200 BC–AD 460	Rural settlement with access to river and coast	Medium-scale rural workshop	Wine and oil	Kilns (Hellenistic Period, 2nd century BC). Pottery dump and wasters (Late Roman period: end 4th/beginning 5th century AD)	Flat-bottomed amphorae (Keay 52 *similis*)	Local		*Mortaria*		Tiles	Wilson 1982; Wilson 1996; Wilson 2000.
7	Agrigento/ *Agrigentum*	Late Roman period and Vandal period (?)	Urban context with good access to river and coast				Flat-bottomed amphora types	Local ?				Tiles	Unpublished data, mentions in Rizzo *et al.* 2014.
7	S. Elisabetta and Aragona/	Late Roman	Rural	Small-scale rural			Flat-bottomed amphora type	Local		Common ware		Tiles	Parello, Amico and D'Angelo 2010, 286;

Area	Workshop	Chronology	Site Type	Workshop Category	Associated industry	Ceramic production evidence	Amphora type	Export range	Fine ware	Coarse Ware	Cooking ware	Tiles/ building material	Bibliography
	Giammaritano quarter	period		workshop									Rizzo and Zambito 2010, 294.
7	Palma di Montechiaro/ Cignana quarter	Early Byzantine period	Rural inland settlement			Suggested nearby/local amphora production	Flat-bottomed amphora types	Local					Rizzo and Zambito 2010, 293–295.
8	Alcamo Marina/Foggia Quarter	Early Roman period	Coastal settlement	Network of kilns	Salted fish	Kilns; amphora wasters; petrographic analyses; Kiln A, Phase I: end of the 1st BC to AD 125	Dressel 21= Botte type 1var. A and B = Alcamo A and B; one Dressel 2–4 (waster)	Regional and Mediterranean (Dressel 21/22)	'thin-walled' drinking cups			Imbrices; Bessalis with stamps. MAESTIA NE F	Giorgetti 2006; Capelli and Piazza 2006; Giorgetti, González Muro and Botte 2006; González Muro 2009, 452–455; Botte and Capelli 2009, 152–156.
	Alcamo Marina/Foggia Quarter	Early Roman period	Coastal	Network of kilns		Kilns; wasters Kiln A, Phase III: 4th–beginning of the 5th AD		Local (?)		Closed forms and basins	deep casseroles lids and open pans		González Muro and Di Martino 2007, 114 ff. with catalogue of forms; González Muro 2009, 454–455 with bibliography cited.
9	Solanto promontory	Early Roman period	In-land with good access to coast	Kilns	Salted fish	Amphora sherds abundance	Dressel 21/22	?					Lo Cascio 1990

Tab. 2.1 Roman Sicilian amphora production sites from Area 1 to Area 9, from west to east.
The table provides estimated dates for amphora production (new classification), geographical location (within the nine areas recognized in Sicily), indication of the type of workshops (for instance coastal or inland), archaeological evidence for production (such as amphora wasters or petrographic analyses), a list of the amphora forms produced, and information on other production activities including other ceramics (cooking wares, fine wares etc.) and bricks and tiles. An essential bibliography for each artisanal area is included.

2.2. EARLY ROMAN AMPHORA PRODUCTION (30 BC–AD 100)

The archaeological evidence on amphora production structures in the Early Roman period do not fully reflect the economic complexity and the cultural developments taking place in Sicily at the important 'turning point' represented by the transition from the end of the Republican period to the Augustan reorganization of the island. What is immediately apparent is the marked difference between the quantity and heterogeneity of the fine and common wares (thin-walled pottery, red glosses wares, high-quality cooking pots etc.) made in numerous towns on the island in various geographical sub-areas (Chapter 1, section 1.3), partly for the inter-provincial market, compared to the few contemporary amphora productions destined for foodstuffs. With the exception of the 1st-century production (continuing in the 2nd and 3rd centuries AD and up to the 5th century) in the region of Catania suggested for the first time by this study (see Chapter 3, section 3.6.1), our knowledge of the Sicilian amphorae of the Early Imperial period is essentially limited to two major long-lasting amphora productions located in two distinct geographical and cultural areas: the craftworking site of Naxos, on the eastern Greek side of the island (Fig. I, Area 2), and Alcamo Marina (Fig. I, Area 8) on the Punic western side.

2.2.1. Evidence for Amphora Production in the Hinterland of Messina and at Giardini Naxos

2.2.1.1. The Pottery Industry of Naxos

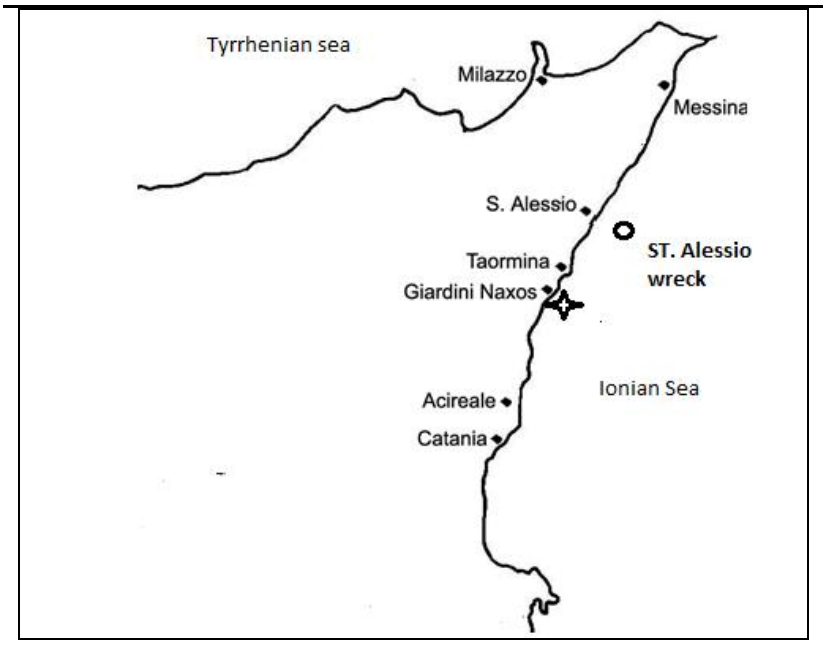


Fig. 2.1 Location of the Naxos workshop in present-day Giardini Naxos town, located on the north eastern coast of Sicily. (C. Franco).

The Naxos workshop is located in modern-day Giardini Naxos on the north eastern coast of the island between *Messana* to the north and *Catina* to the south. Naxos lies at the foot of the hill where the city of *Tauromenium* was built in 358 BC and afterwards became its commercial harbour. The workshop was particularly long-lasting[169] and produced bricks,[170] tiles and small flat-bottomed commercial amphorae probably intended for the transport of local wine[171] from the end of the 1st century BC/beginning 1st century AD, until the 5th century AD (see below, 2.4.2.1, on the Late Roman production at the Mastrociccio kilns). Remains of productive structures and amphorae wasters dating from the early manufacturing phase have been uncovered in the south western part of the bay, where the harbour of the ancient town was, and on the slopes of the Larunchi hill, where natural deposits of clay have been detected. The local pottery

[169] Since the Greek Archaic period (6th century BC), Lentini 2001. It also produced the Hellenistic Van der Mersch MGS type III, as suggested from some wasters from the area of the Greek period dockyard of the city, Lentini and Muscolino 2013, 277.
[170] Lentini 2001, 17–19 (on the existence of potters' quarter and of a potter production unit, so-called 'bottega del figulo' dated in the 1st century AD, in which brick stamps have been found).
[171] Lentini 2001, 20–21.

production has been confirmed by archaeometrical analysis (thin-sections)[172] (see also Chapter 3, section 3.6.2).

Early Roman amphora production from the harbour area of Naxos

Systematic archaeological research in the area of the town's ancient harbour has discovered several commercial buildings[173] connected to the production of wine in the fertile hinterland.[174] In the port a complex of *horrea*, where wine *dolia* have been found,[175] is to be connected to the activities of the local kilns. A large number of amphora fragments were found in a ship–shed in the port in association with kiln wasters and spacers. Although the kilns which produced those amphorae have not yet been discovered they were probably located near the harbour area. The deposit was composed of 45 small flat–bottomed amphorae known in the current Sicilian archaeological literature as the *Sant'Alessio Type similis*.[176] Their nomenclature derives from the name of a shipwreck, which sank close to the Capo S. Alessio promontory,[177] 10 kilometres from Taormina/*Tauromenium* (Fig. 2.1) and from which 8 examples of a very similar type were first recovered in 1997[178] (Fig. 2.2). The amphorae found in Naxos harbour can be ascribed to the same local production on the basis of morphological similarities, with only small variations in the handle, base profiles and height of the rim (on their typology see the Catalogue I). In terms of chronology, judging by the material association of the Naxian deposit[179] the production of the S. Alessio amphora type can be ascribed to the 1st century AD. These amphorae produced at the Naxos workshop were initially published as 'Spello amphorae' (cf. Ostia III, 369–370).[180]

[172] Williams 2001, 61–62 (different amphora types analyzed but figures or fabric pictures are not provided).
[173] Lentini 2001, esp. 13–22.
[174] Cf. the already cited '*Tauromenitanum wine'*.
[175] Lentini 2001, 25.
[176] Muscolino 2009.
[177] Parker 1992, no. 251, 123. On the wreck, Bacci 2001, 271.
[178] Ollà 1997. The amphorae are now stored in the local archaeological Museum of Naxos.
[179] Two fragments of Italian Sigillata *Conspectus* 18.1–2 and 12 fragments of Dressel 2–4 of different provenance.
[180] See Lentini and Garaffo 1995, 14, pl. I (amphora on the right).

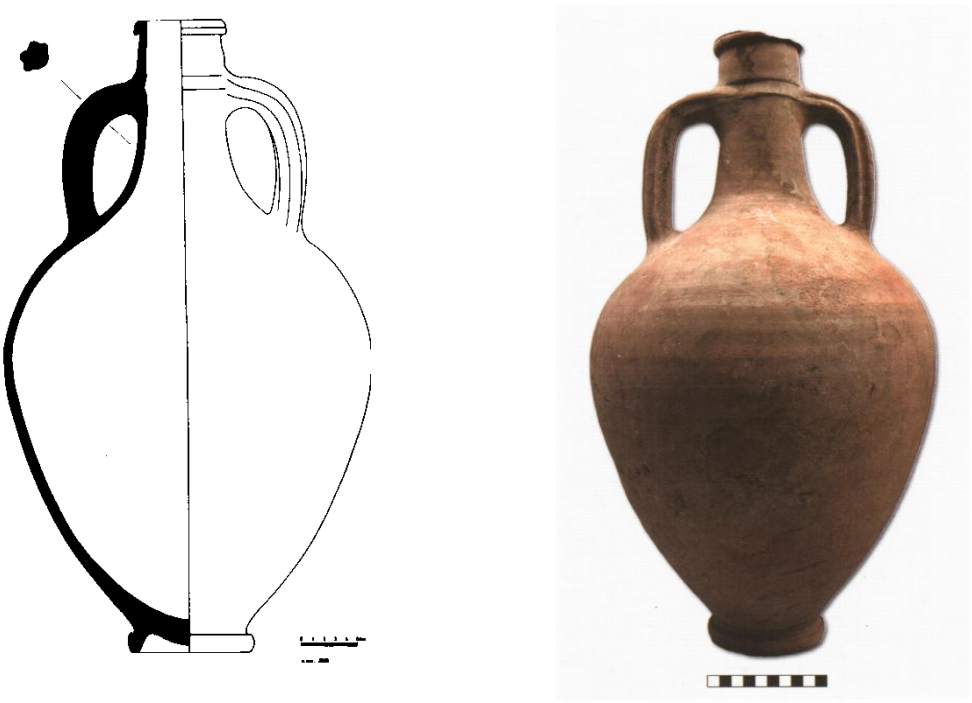


Fig. 2.2 Flat-bottomed amphora type from the cargo of S. Alessio wreck and published as S. Alessio amphora type (Ollà 2001, 118, Fig. 3).



Fig. 2.3 Upper parts of amphorae found in the harbour area of Naxos and attributed to local production. The amphorae were originally named as 'S. Alessio amphora type similis' (Muscolino 2009, figs. 18–21).

More or less in the same chronological horizon (between the end of the 1st BC and the 1st century AD) the excavators of the Naxos area have suggested that the production centre was also manufacturing amphorae which copied the Italian Dressel 2–4 type,[181] (Fig. 2.4) apparently produced in two different modules (small and large)[182] and, probably, the Gauloise type 4[183] (Fig. 2.5).

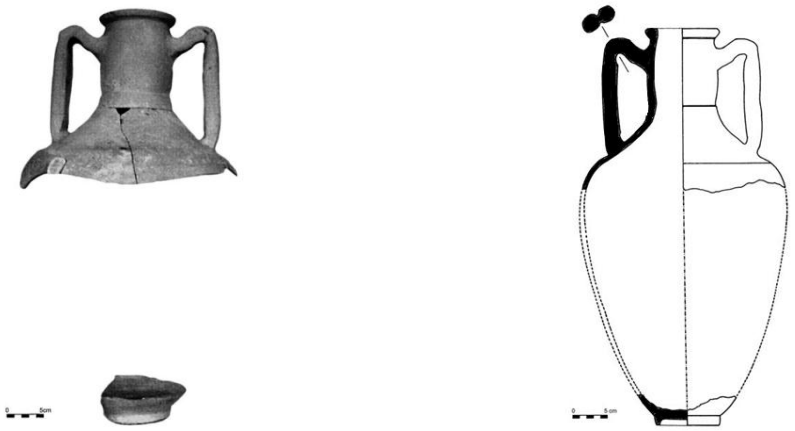


Fig. 2.4 Imitation Dressel 2–4 with flat-base attributed to the Early Imperial phase of Naxos workshop (Ollà 2001, 48, Fig. 2 and 54, no. 2).



Fig. 2.5 Probable imitation of Gauloise 4 amphora type attributed to the Early imperial phase of Naxos workshop (Ollà 2001, 48, Fig. 5, 55, no. 5).

A flat-based smaller version of the Dressel 2–4 amphorae type was also produced in Pompeii in the 1st century AD (see Fig. 1.12), and may itself be copying the flat-based amphorae from Gaul.[184] The trade of the flat-bottomed Pompeian flat Dressel 2–4 is believed to be limited to the cities on the slopes of Vesuvius and Naples,[185] but given its similarity to the normal-sized Pompeian Dressel 2–4 from which it differs only for the flat base, its distribution may be wider than is currently known (especially when

[181] R.J.A. Wilson a few years suggested the possibility of a Sicilian production of Dressel 2–4 made to transport local wine, see Wilson 1990, 264: 'Indeed it would not be surprising if future research isolated a Sicilian version of Dressel 2–4'.
[182] Ollà 2001, 48, Fig. 2 and 54, no. 2.
[183] Ollà 2001, 48, Fig. 5 and 55, no. 5 (Gauloise 3 for the editor).
[184] Panella and Fano 1977, 171, figs. 25–26.
[185] Panella 2001, 194 with bibliography cited.

the base is not preserved), and these containers might have well reached the territory of the north eastern coastal tip of Sicily which traditionally had close commercial ties to the present-day region of Campania.[186] Supplementary evidence for this privileged link between the two regions and possible Campanian economic interests in Naxos/*Tauromenium* is further suggested on the basis of the attestation of *C. Numitorius* e *M.* e *P. Cottii,* '*nobilissimi homines ex agro Tauromenitano'* mentioned in Cicero's Verrines.[187] A prosopographic study has, in fact, suggested the existence of economic interests in Sicily of members of this high-profile family which originated in the city of Capua around the 2nd century BC.[188]

Going back to the locally produced flat-bottomed Dressel 2–4/Gauloise 3, though the published material only consists of a few sherds, the hypothesis of local imitation of well-known Roman amphora types is particularly intriguing. I believe that it is not unrealistic to suggest that the *figuli* and *officinatores* operating in the Naxos pottery industry recognized the potential of experimenting with Roman wine amphora shapes in order fully to integrate with contemporary extra-regional wine trade mechanisms (on this observation see Chapter 1, section 1.6). The potters in the Naxos workshop, from its early Roman manufacturing phase of production, chose to produce the popular flat-bottomed amphora model, abandoning the solid spiked toe of the previous Dressel 1/Lamboglia 1 amphora types.

To sum up, the Naxos workshop seems to be an ancient and long-lasting production centre which was at the same time clearly engaged in the extra-regional trade system. Initially, the local artisans imitated the new flat-bottomed forms of Italic origin (Spello and Forlimpopoli amphorae types, see Figs. 1.13 and 1.24); later, between the 1st and 2nd century AD, they created an amphora type specifically linked to Naxos and the colony of *Tauromenium*, here called the Naxos flat-bottomed amphora type (Chapter 4, section 4.8.2).

The explanation for the longevity of the Naxos production centre is the persistence over time of solid economic and specialized agricultural system, focused on wine production, and the presence of artisans and *officinatores*, who were perfectly integrated into Mediterranean economic mechanisms. From the outset, the flat-bottomed Naxos amphorae were aimed specifically at extra-regional markets. In this case, the

[186] Bacci and Tigano 2001.
[187] Cic., *In Verrem*, II, 5, 165.
[188] Muscolino, 279 in Lentini and Muscolino 2013.

choice of the flat bottom was not determined by practical considerations (to ease transport by river or mixed river/overland transport) but expresses full adhesion to the ‘new Roman type’ of container destined primarily for wine transport. As such, we can argue that the main variations in shape made to well-known amphora types at the kiln also held meaning for traders and possibly for consumers.

2.2.1.2. Data on Wine Production from the Hinterland of Messina

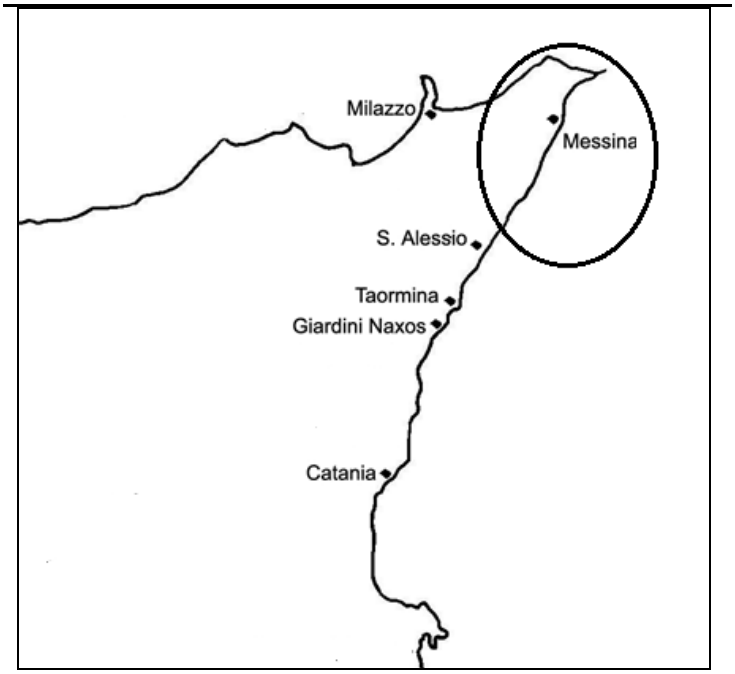


Fig. 2.6 The location of the region of Messina in the north eastern tip of Sicily (C. Franco).

Further north within the territory of the colony of *Messana*/Messina (Fig. 2.6) a pottery production centre for coarse and cooking wares was in use from the 2nd BC to the 2nd century AD in an area which in the Roman period lay in the suburbs of the *colonia* (district of Casa dello Studente).[189]

There is no archaeological evidence to suggest that amphorae were produced within the city of *Messana*, and the lack of inscriptions on local pottery does not allow to suggest the involvement of citizens or elites in the organisation of amphora production. On the other side, as is well known, there is indirect evicence that the rural area of Messina was involved in the extra-regional supply of wine, as it produced the famous Mamertine wine,[190] particularly popular in the Roman markets, and the equally high estimated Potitian wine.[191]

[189] Sannino 2001 (Messina, present-day via C. Battisti).
[190] As attested from Plin., *Nat. Hist*., XIV, 66 : *Quartum curriculum publicis epulis obtinuere a Divo Iulio — is enim primus auctoritatem iis dedit, ut epistulis eius apparet — Mamertina circa Messanam in Sicilia genita.* For public banquets the fourth place in the race has been held from the time of his late Majesty Julius Caesar onwards — for he was the first person to bring them into favour, as appears from his letter — to the Mamertine vintages grown in the neighbourhood of Messina in Sicily [translated by Rackham 1968].
[191] '*Ex his Potitiana ab auctore dicta illo cognomine, proxima Italiae laudantur praecipue*' Plin., *Nat. Hist*. XIV, 66. Of these the Potitian, so called after the name of its original grower, is particularly highly spoken of; it grows <in the part of Sicily> nearest to Italy [translated by Rackham 1968]. See also Van der Mersch 1994, 31–32, 50–51.

Furthermore, several rural estates were established in the suburban area of the Roman *Messana* from the late Republican period onwards, with a major phase of use in the Early Roman period and during Late Antiquity (see below). They should be regarded as *partes rusticae* of the *villae* located to the hinterland of *Messana*, north and south of the present town of Messina. For the period under review, excavations within the boundaries of the present town have uncovered an Early-Imperial Roman period suburban rural settlement, located in the area surrounding the estuary of the present-day river Gazzi, where structures for grain storage and for oil and wine production were found.[192]

2.2.2. Evidence for Amphora Production Along the North Eastern coast of Sicily.

2.2.2.1 The Suggested 1st-century AD Amphora Production at Caronia Marina (Me)

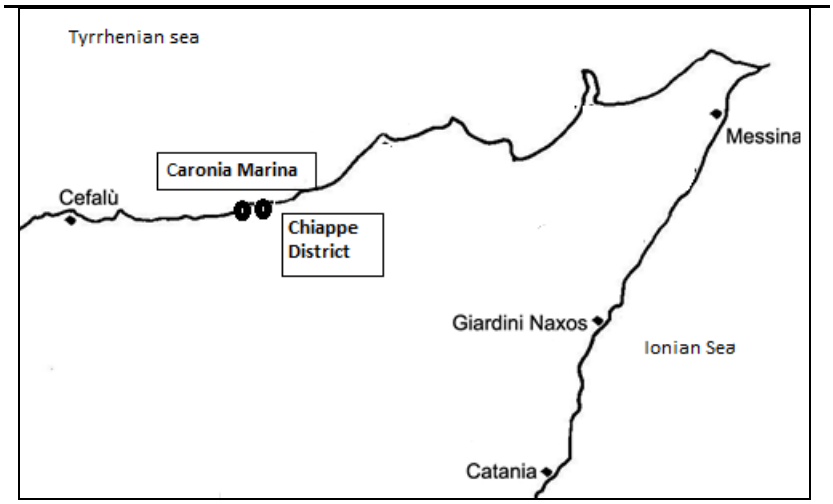


Fig. 2.7 The location of the Caronia Marina and the district of Chiappe workshops along the north eastern coast of Sicily (C. Franco).

On Sicily's north eastern coast (Fig. I. Area 1), previous unpublished excavations had revealed the presence of a suspected kiln–site in the territory of Chiappe (Fig. 2.7), 10 kilometres from the Caronia kiln, reported to be producing Dressel 35 *similis* amphorae during the Early Imperial period.[193] In the absence of drawings or pictures of these suggested amphorae, no further comment is possible.

[192] Structures in the modern-day Via Catania in Messina city, Bonanno 2001, 195–205; Portale 2006, 49.
[193] Scibona 1969, 228; Wilson 1990, 263–264 and 402, no. 127.

2.2.3. Evidence for amphora Production Along the North Western coast (area 9) and in the Inner area of Western Sicily (Area 8).

The kilns in this large territory of Sicily (Fig. I, Area 9 and 8) do not manufacture the flat-bottomed types on which this study mainly focuses, but it is nonetheless important to include them in this illustrative discussion of Sicilian kilns. This is true both for a series of technological reasons linked to production structures and above all for the economic considerations suggested on the basis of the stamps attested (important because they are rare in the Sicilian amphorae produced in the Roman Period) and on the nature of the contents of these vessels.

2.2.3.1. The Pottery Workshop of Contrada Foggia in Alcamo Marina (TP)

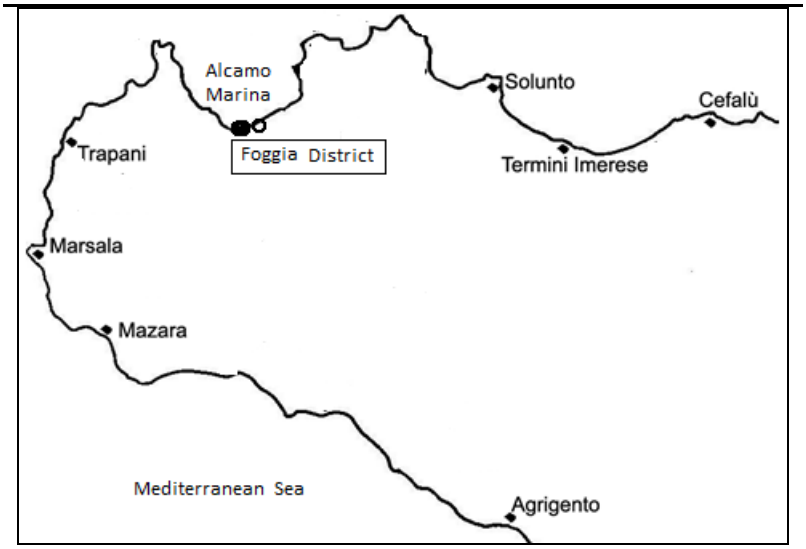


Fig. 2.8 The location of the Alcamo Marina site and the district of Foggia workshop along the north western coast of Sicily (C. Franco).

The presence of locally–produced transport amphorae and common ware has been ascertained in the district known as *Foggia* near the present-day city of Alcamo Marina, in today's province of Trapani (Fig. 2.8). Several recent excavation campaigns[194] have shown the presence of a vast pottery workshop, conveniently constructed close to the mouth of the present-day S. Bartolomeo river, where at least three different principal phases of activity have been identified.

[194] For the results of the excavations, Giorgetti 2006, 130–143; González Muro 2006, 35–100. For the studies conducted on the kiln and the characteristics of the amphora production, Giorgetti, González Muro and Botte 2006, 505–516; González Muro 2006.

Investigations yielded evidence of two kilns (Kiln A and B) and two rooms (rooms C and D) most probably used for the manufacture of wares and characterized by different periods of use (Fig. 2.9). The workshop activity is dated (though not continuously) to between the end of the 1st century BC/Augustan period when Dressel 21 amphorae were produced and the beginning of the 5th century AD when cooking and common wares were manufactured. The two kilns — still well preserved — are positioned side by side[195] and are located in front of a large common area, where rooms were probably used to store and dry the vessels. According to the excavator the workshop had other kilns (not yet discovered) in use during Late Antiquity in which common wares and cooking pots were fired (see Late Roman phase).[196]

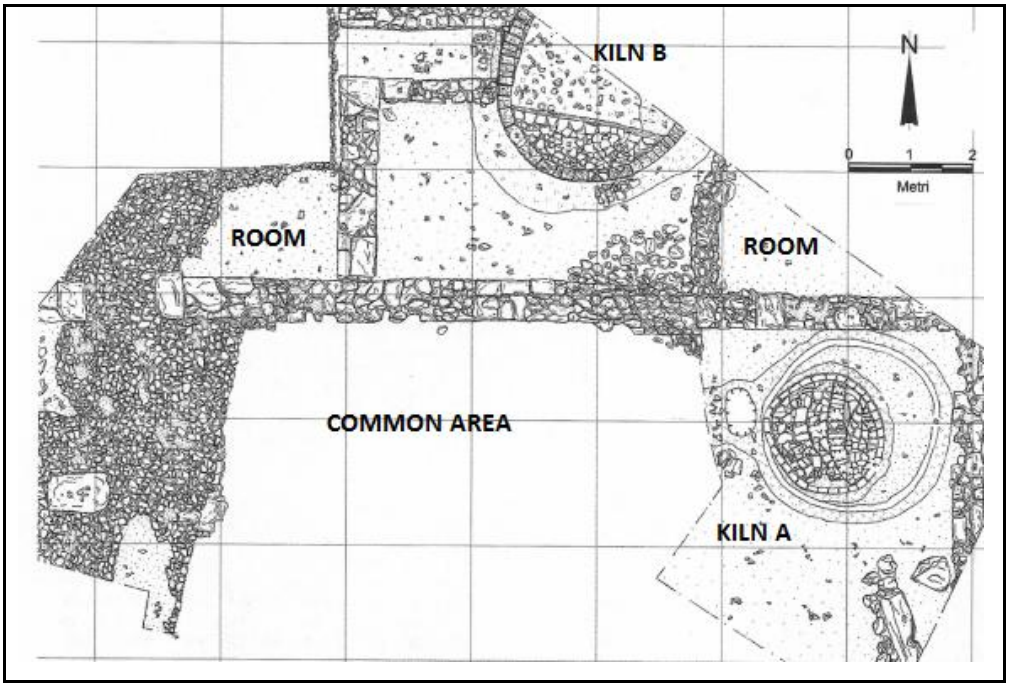


Fig. 2.9 Plan of the excavated area of Contrada Foggia workshop in Alcamo Marina (González Muro 2006).

The pottery wasters of common and cooking wares in the area dated to between the 4th and the mid-5th century AD were found in the firing chamber of Kiln B when the kiln went out of use and the pottery waste produced within the production area was dumped in its firing chamber. What is significant for this workshop is the continuation or reuse of the same workshop for centuries, with an apparent break during the Mid-

[195] Giorgetti 2006, 95 with a discussion on similar Roman pottery workshops in the Iberian Peninsula (El Tejarillo and *Lucus Augusti*) with bibliography.
[196] González Muro 2009, 454.

Imperial period. It cannot be ruled out that different kilns were operating at the same time, perhaps for different ceramic classes.

For the first phases of use of the workshops we have no information on those involved in their exploitation. The only stamp dating back to this phase appears on a Dressel 21 specimen,[197] and the reading is unclear: FA (in ligature) which has been interpreted both as *F*(iglin)*A* […] or *F*(igulus) *A*(?) […], therefore identifying the *figlina* that produced the amphora or the name (unpreserved) that would designate a potter of the production workshop.

The only indication of a *familia* involvement in manufacturing processes at the Alcamo workshop is available for a much later period. An inscription MAES on a 5th-century AD tile found in Kiln A may provide some information on the families involved in running the *figlina* in Late Antiquity. The inscription has been related to the wealthy *gens Maesia* and has been interpreted as evidence of their presence in western Sicily, already attested by some inscriptions found in the cities of Termini Imerese, Palermo and Marsala.[198]

The Kilns

Kiln A

Kiln A (Fig. 2.10 and 2.11) was discovered in an excellent state of preservation. It was possible to identify *in situ* the entrance of the *praefurnium* made of burnt rectangular-shaped bricks and over-fired and vitrified traces of clay. Two different phases of use have been identified from the evidence of two concentric walls of small rectangular clay blocks which had been fired in *situ* (USM 6 e USM 19). The walls enclosed two distinct firing chambers, circular in shape, which differ in diameter and in the chronology of activity. The earliest phase of kiln B (phase I) is 3 m in external diameter which makes the structure one of the largest pottery kilns known in Sicily. The floor of the firing chamber of phase II is smaller, measuring 1.70 m (internal diameter) and 2 m in external diameter, and is pierced by holes; the circular firing chamber contains a central pilaster in *opus testaceum*. Like Kiln B (see below), Kiln A conforms to Cuomo di Caprio's type I/d.[199]

[197] Dressel 21–22, 'Alcamo A type', var. 3, González Muro 2006, 82; 2009, 466.
[198] On this hypothesis, Giorgetti, González Muro and Botte 2006, 508–509.
[199] Cuomo di Caprio 1971–1972, 429–438.

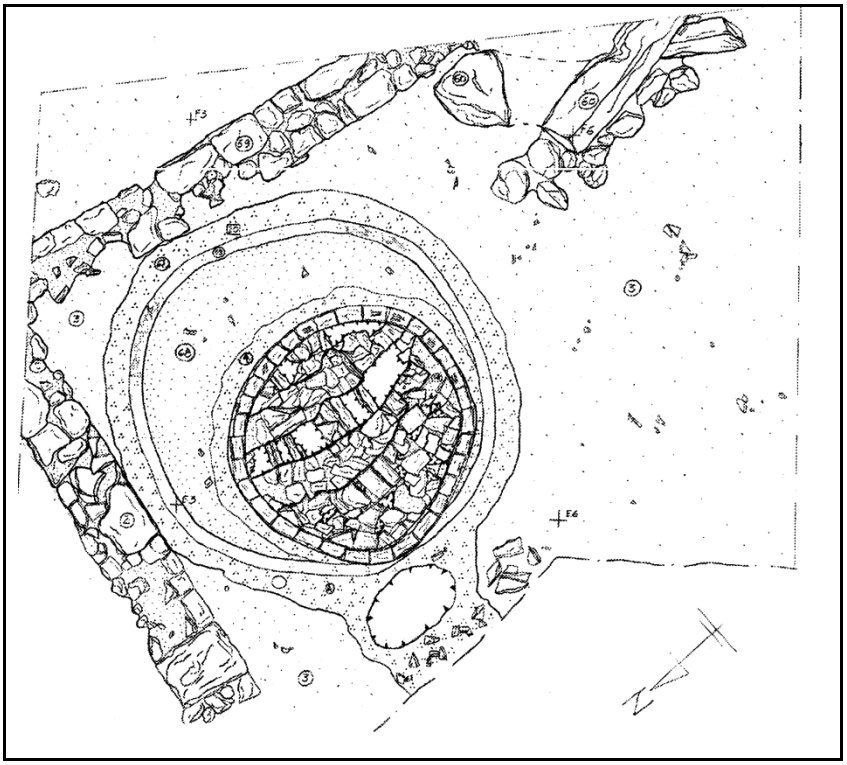


Fig. 2.10 Plan of Kiln A (phase I and II) discovered at Foggia workshop, Alcamo Marina (Giorgetti 2006, 41, Fig. 6).



Fig. 2.11 Firing chamber of Kiln A at Foggia workshop, Alcamo Marina (Giorgetti 2006, pl. VIII, a).

A room (room D), interpreted as a store room for pottery, was found between the firing chamber and a corridor. In one of the rooms near Kiln A the excavators found

circa 30 fragments of over-fired vaulting tubes (Fig. 2.12), on average between 18 and 20 cm long, with an interior diameter between 7 and 10 cm. The tubes may have been used to cover the vault of the firing chamber.[200] The use of vaulting tubes in the vault had several advantages, of which the most important was to guarantee a more homogeneous distribution of heat within the kiln, with a direct effect on fuel consumption and thus on costs.[201]

In Sicily, vaulted structures in the context of bath complexes are known in the 3rd-century BC North Bath of Morgantina, which represents the earliest known example.[202] In a recent study, F. Tomasello proposes the existence of a 'Sicilian tradition' of tubular vaulting. He attempts to connect the vaulting of the mid-2nd century *nymphaeum* of Lepcis Magna to the re-discovery of the Hellenistic Sicilian vaulting technique.[203] This idea would further support the existence of contacts and exchanges of people and ideas between Sicily and Lepcis Magna, which in my opinion lies at the heart of the Sicilian amphora trade in the city (see Chapter 7, esp. section 7.4.4.1.1).

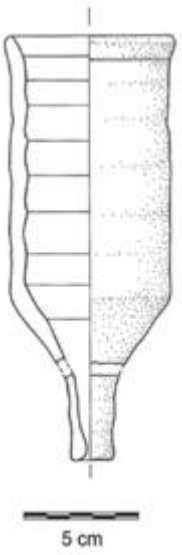


Fig. 2.12 Terracotta vaulting tube from the area of Kiln A (Giorgetti 2006, Fig. 13).

[200] Giorgetti 2006, 54–56, Fig. 13. The excavators stressed the need for a more accurate study of the fragments found within the area of the kiln.
[201] For an analysis of the use of vaulting tubes in kiln vaults see Cuomo di Caprio 2007, 517–518; 556–557 with examples and bibliography.
[202] Lucore 2009. For the latter history of tubular vaulting see Wilson 1992.
[203] Tomasello 2005.

Kiln B

Kiln B[204], only partially excavated (see Fig. 2.9 above), in most respects conforms to Cuomo di Caprio's type I/d with a circular furnace chamber and central corridor.[205] Its *praefurnium* has not yet been discovered but it probably lies beyond the northern limit of the excavated area. The firing chamber has a diameter of 3 m and contains supports for a pierced clay floor. The whole structure is partially underground to help insulate it against heat loss. The outside face of the kiln is strengthened with courses of limestone blocks and pebbles. Between the outer walls of the kiln and the combustion chamber is an insulation layer of clay. The structure of the furnace suggests that it was in active use over a long period; three different chronological phases of kiln use have been defined.

During phase I, dated to the Early Roman period, the kiln produced Dressel 21 transport amphorae (Fig. 2.13). During phase II, whose date has not yet been established with precision, kiln B's firing chamber was narrowed by the construction of a wall made of bricks and fragments of amphorae mixed with red clay. It is not known what was fired in kiln B during phase II. In phase III, roughly dating to between the first half of the 4th century and the mid-5th century AD, the space inside the kiln appears to have been deliberately filled with broken pottery and production wasters, probably manufactured in Late Antiquity[206] (on the common ware and pot production of the last phase of the production area see below) in other furnaces still in use in the same workshop and as yet undiscovered. All the ceramic contents thrown into the kiln were covered with sandy yellowish clay layers of alluvial origin and were deposited when kiln B was already out of use.

2.2.3.1.1. The Amphora Production in Alcamo Marina

Between the end of the 1st century and the first quarter of the 2nd century AD, the kiln produced Dressel 21 amphorae (*cadi*) (Fig. 2.13). A possible slightly later chronology — mid/second half of the 2nd century (?) — can be suggested on the grounds of the export of Dressel 21 produced at Alcamo to the market of Rome, where the type is attested in strata dated to the Late Nervan-Antonine dynasty.[207] A locally produced thin-

[204] González Muro 2009, 452–455 with indication of the phases of activity of Kiln B.
[205] Cuomo di Caprio 1971–1972, 429–438.
[206] Chronology established mainly on the style of the pottery produced within the production area.
[207] For the export in Rome of Alcamo Marina Dressel 21 from an excavation on the Janiculum Hill, see Ferrandes 2008, 258 (context 3). The Alcamo production also appears in Augustan period strata (context 1) and in Flavian period strata (context 2).

walled drinking cup dated to between the end of the 1st century BC and the Tiberian Period[208] and one Dressel 2–4 amphora waster[209] were also found in the same layer of Kiln B.

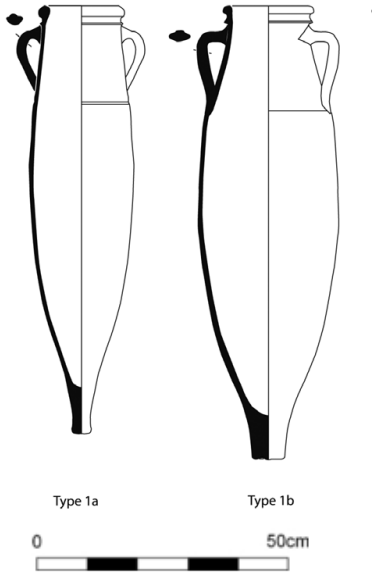


Fig. 2.13 Illustration of Dressel 21–22 amphora type produced at Alcamo Marina – variant A and B (Botte and Capelli 2009, Fig. 11, Botte type 1)

The rim of the local Dressel 2–4 amphora (Fig. 2.14) is slightly rounded and the neck is cylinder-shaped. The handles present the characteristic bifid section, are flexed and join the amphora below the rim and on the shoulder. A single rib below the thickened rim and more dense double ribbing on the neck are also visible. The filling of the corridor kiln with locally made amphorae shows the end of the first phase of use of the furnace, around the first quarter of the 2nd century AD.

[208] The shape of the cup is similar to type Ricci 2/219 and 2/221, see González Muro 2009, 453 with bibliography.
[209] González Muro 2009, 453 Fig. 5, with bibliography.

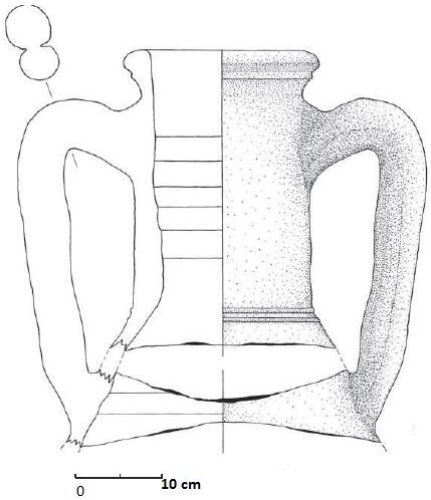


Fig. 2.14 Dressel 2–4 amphora type attributed to Contrada Foggia/Alcamo Marina production (Gonzales 2009, Fig. 5).

I think it is still difficult to suggest the production of this wine amphora type in the Alcamo Marina workshop on the basis of just one burnt/overfired specimen[210] without petrographic analyses which could rule out a different geological origin, or show that the fabric was homogeneous with that of the rest of the ware from the site. Nevertheless, its production within the local pottery industry would be significant not only to demonstrate Dressel 2–4 production in the western area of Sicily, but also to show the coeval production at the same site of Dressel 2–4 and Dressel 21–22 that shipped different contents, respectively wine and fish.

2.2.3.1.2. Amphorae for Fish Produced at the Alcamo Workshop in Early Imperial Period

About 500 fragments of Dressel 21 amphorae, the majority of which presented traces of overfiring, were found in the burnt layers of kiln B and accumulated inside the corridor that lead to the furnace chamber. A detailed study of the available material has been undertaken by E. Botte, who has examined the amphora typo-chronology, content and distribution.[211] The local amphorae, produced no earlier than the end of the 1st century BC, have been divided into two different subtypes: 'Alcamo A'[212] (Fig. 2.15) and

[210] Especially if compared with the 500 fragments of Dressel 21–22 found *in situ*, of which 70% were production wasters, González Muro 2009, 455.
[211] Botte 2009.
[212] González Muro 2006, figs. 27–35; Giorgetti, González Muro and Botte 2006, 509–510, figs. 11–15.

'Alcamo B'[213] (Fig. 2.16). They both belong to the Botte type 1[214] (see above Fig. 2.13), whose Sicilian origin is confirmed by petrographic analyses.[215]

Before the discovery of the wasters some petrographic analyses carried out on Dressel 21–22 fragments found near Segesta had already suggested the possibility that this type was produced in (north) western Sicily on the basis of compatibility with the local geology.[216]

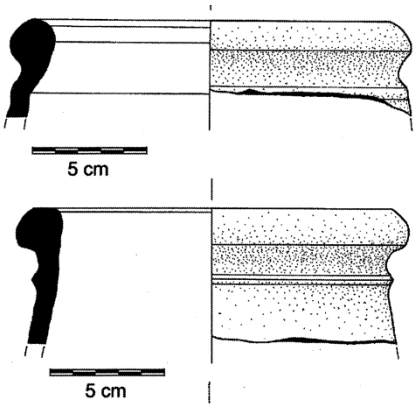


Fig. 2.15 Illustration of rim variants of Alcamo Marina Type A (Giorgetti 2006, Fig. 32).

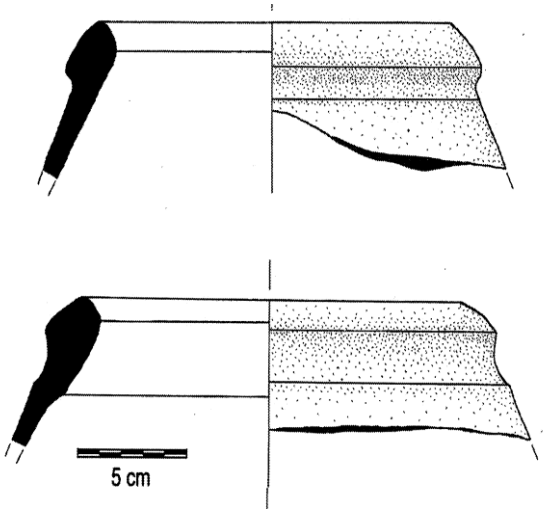


Fig. 2.16 Illustration of rim variants of Alcamo Marina Type B (Giorgetti 2006, Fig. 33).

Botte's study has established that the Dressel 21 were meant for the preservation and transport of salted fish and not, as previously thought, for fruit.[217] The new

[213] González Muro 2006, figs. 27–35; Giorgetti, González Muro and Botte 2006, 509–510, figs. 11–15.
[214] Botte and Capelli 2009, Botte Type 1, var. A and B: 152, figs. 4–5.
[215] Capelli and Piazza 2006, 171–173; Botte and Capelli 2009, espec. 164.
[216] Denaro 1995, 199; Alaimo *et al.* 1997, 60.
[217] H. Dressel expanded the *tituli picti CE* found on these amphorae as *CE(RASA*) (i.e. cherry) suggesting that they were fruit containers *CIL* XV, 2, *Amphorarum Formae*; Dressel 1879, 172.

interpretation is based on a different expansion of several abbreviated *tituli picti* attested on similar types found in Pompeii.[218] According to Botte, the painted inscription *CE*, often found in these types, should be read *CET*, i.e. with the E and T ligatured, and translated *CETUS*, the Latin for 'large sea fish' or tuna.[219] There is no documented evidence for the use of stamps or graffiti. The distribution of Sicilian Dressel 21 amphorae and the economic implications of their production will be addressed in Chapter 7.

2.2.3.2. Amphorae for Fish Produced at Solunto in the Early Imperial Period

The Alcamo workshop was not the only one to produce the Dressel 21 type in the early Imperial period in Sicily. Another workshop manufacturing the same container is located in the area of the ancient Punic *Soluntum* on the north coast, about 16 kilometres east of Palermo (Fig. I, Area 9) (Fig. 2.17). Surveys carried out in the early 1990s in the modern-day district of S. Cristoforo, just a hundred metres from the sea, discovered a massive concentration of Dressel 21 type amphora fragments.[220] It is probable that the amphorae were produced nearby. The same area is known for the manufacture of Punic amphorae (for fish?) from the 7th century BC.[221]

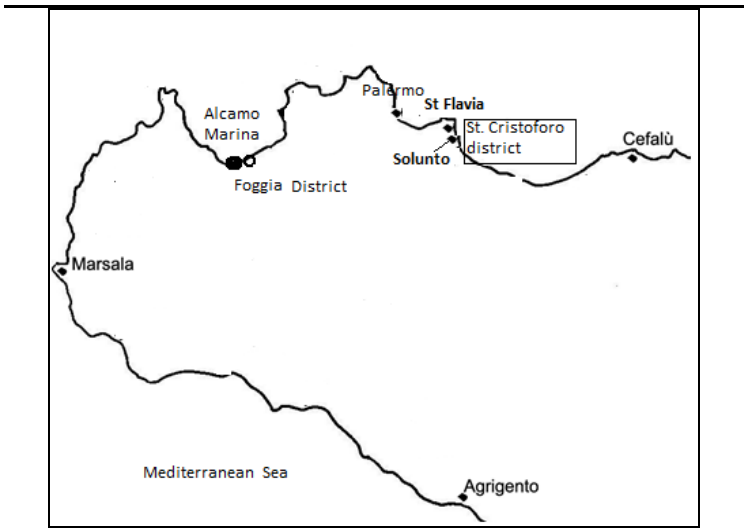


Fig. 2.17 Location of Solunto workshop in the district of S. Cristoforo and modern tuna-fishing area in S. Flavia town, near Palermo (C. Franco).

[218] CIL XV, 2, *Amphorarum Formae*, nos. 4787–4793, 4795–4796, 4800–4801.
[219] Botte 2008.
[220] The first publisher of the amphora fragments did not recognize them as Dressel 21–22 types, relating them instead to a 5th century AD shape (type non identified), Lo Cascio 1990, esp. 35, Fig. 6, nos. 1, 2, 4, 7 e 11; 36 and 38. For the first correct interpretation of the amphora types as Dressel 21–2, see Denaro 1995, 197.
[221] Bechtold 2011.

The Solunto workshop could be connected to a wider economy based on the production of tuna and fish *salsamenta*. A probable indication of how marine resources may have continued to be exploited in this way for a long time is the geographical position of the probable production area: the district of S. Cristoforo/Solunto is just a hundred metres from the sea and approximately one kilometre from the modern *tonnara* of Solanto, the present-day town of Santa Flavia. Furthermore, for the previous centuries (first half of 2nd century-early decades of the 1st century BC?) it has been suggested that this western area of Sicily produced the so-called neo-Punic *Tubular amphora* (Fig. 2.18) used to export fish-products found especially in the eastern Mediterranean.[222]

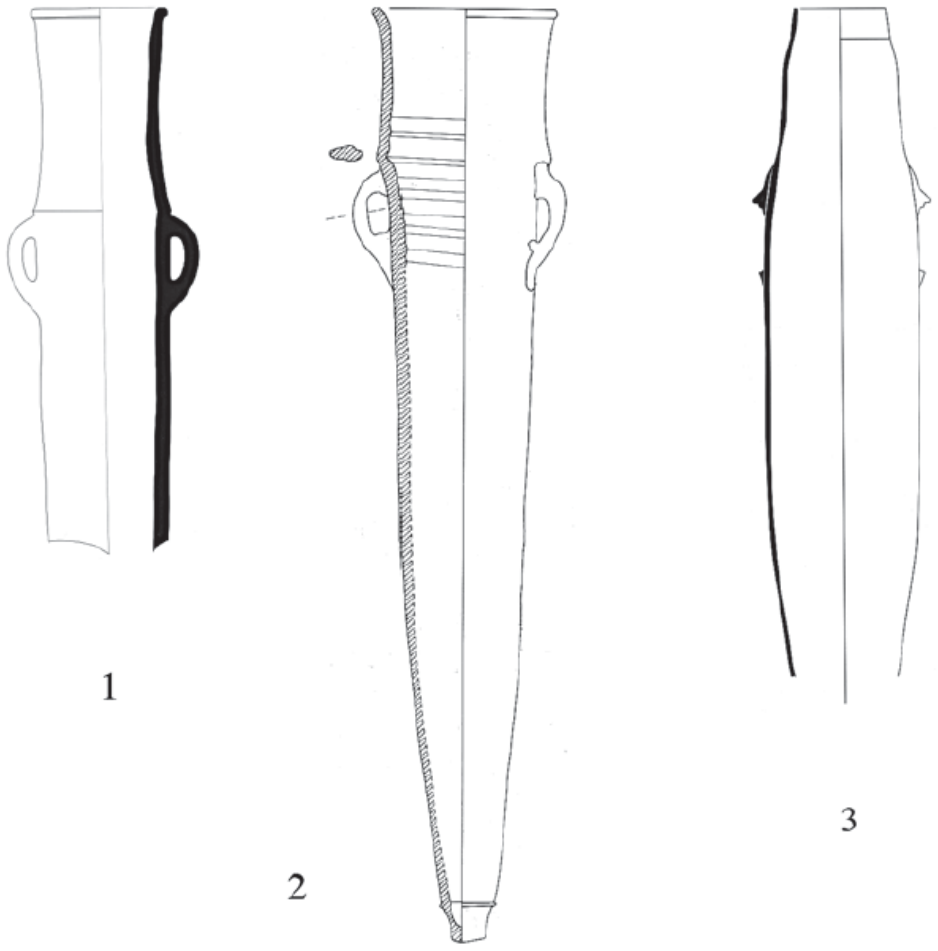


Fig. 2.18 *Tubular amphorae* of probable Sicilian origin dating to between the first half of the 2nd century BC and the early decades of the 1st century BC (Botte 2012, Fig. 4, nos. 1–3).

[222] Botte 2012.

In light of these data, we should therefore reconsider the production of tuna and salted fish in the north western and western region of the island in a wider context. The former Elymian, Punic and Siceliot territories of western Sicily, what Livy describes as the *vetus provincia*[223] to distinguish it from the Hellenized western area, seem to have concentrated primarily on the production (i.e. fish-salting tanks) and regional and extra-regional trade in fish-based products (i.e. evidence of the amphorae). This substantial area must have seen the convergence of all the phases of the cycle linked to the production of salted fish: from catching the raw material (tuna?), to the manufacture of the finished product through a salting process to the storage of the commodity in the amphorae produced by nearby kilns and the export of these goods via Mediterranean routes.

Six salting factories (*taricheiai* and *cetariae)* of the Roman period (Fig. 2.19) have been identified in Punic western Sicily where the majority of salting factories are attested. Production of salted fish is known in Trapani,[224] S. Vito Lo Capo,[225] and at Isola delle femmine[226] and Punta Raisi[227] in the province of Palermo. Off Sicily two factories are known on the islands of Levanzo and Favignana.[228]

Fish-salting factories and traces of tanks used to ferment the fish entrails have also been found on the north eastern coast at Milazzo.[229] Near the south eastern tip of Sicily they are known in the vicinity of Ispica Castellazzo della Marza,[230] at Porto Palo di Capo Passero/*Portus Pachyni*[231] and close to Punta delle Formiche, near the modern-day town of Pachino.[232] With the exception of Porto Palo, and partially Milazzo and Pachino, which have been studied and published in detail, the others have been identified only by surveys. The lack of scientific analyses may explain the scanty knowledge of Roman period containers used for fish (only Dressel 21), although salted

[223] Liv., 24, 44; 25, 3.
[224] Trapani, present-day Tonnara del Cofano, Purpura 1985.
[225] S. Vito Lo Capo, present-day Calza Cofano, fish-salting workshop dated between the 1st and the 3rd century AD, Purpura 1982, 48, figs. 3–4; Wilson 1990, 264–268.
[226] Town administratively part of the province of Palermo, fish-salting workshop which activity has been dated between the beginning of the 3rd century BC and the Late Antique, Purpura 1985, 64.
[227] Purpura 1985.
[228] Purpura 1982, 56.
[229] Present day Piazza Mezzaluna in Milazzo, Tigano 2003, 281–295.
[230] In the modern-day province of Ragusa, Portale 2005, 55.
[231] Pachino: Bacci 1982–1983, 345–347; Capo Passero: Bacci 1984–1985; Wilson 2005, 232.
[232] In the modern-day province of Syracuse, Felici 2012. 24 rectangular fish-salting tanks have been identified.

fish produced in Sicily was well known from ancient sources,[233] as was the production of salt and its quality:[234] salt being essential for fish salting production). The repertoire of forms and production centres was certainly far more varied and broader, and would have probably encompassed the north and south eastern area of Sicily, as can be seen on the basis of the numbers and distribution of *cetariae*.

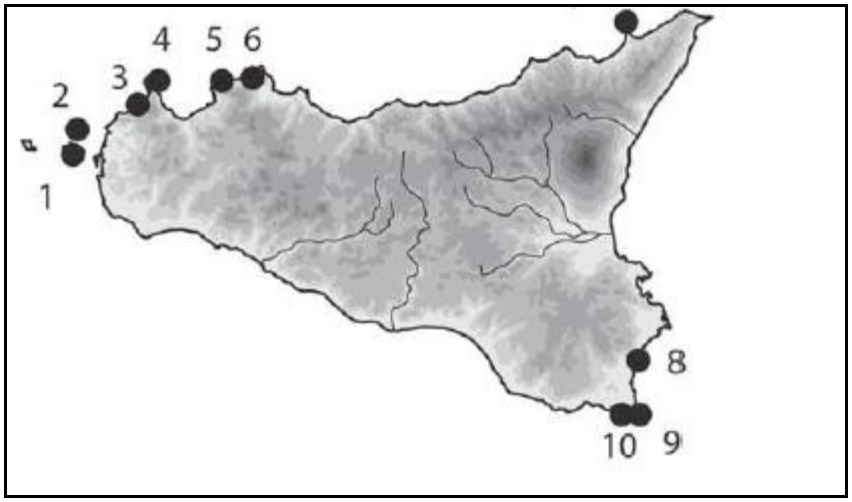


Fig. 2.19 Distribution of the known ancient and Roman period *cetariae* in Sicily
1: Favignana; 2: Levanzo; 3: Monte Cofano; 4: San Vito lo Capo; 5: Punta Raisi; 6: Isola delle Femmine; 7: Milazzo; 8: Vendicari; 9: Portopalo; 10: Pachino (Botte 2012, Fig. 1).

[233] For example, the mention of salted fish produced in Syracuse an stored in ceramic containers (Athen. V, 11, 44); and the mention of Sicilian tuna, sliced and ready to be salted in brine and stored in containers (Archestr., fr. 38; = Athen. III, 117). See also Felice 2012, 120, note 23 and Marzano 2013 with bibliography.
[234] Salt from Pachino, Sol. 5, 18: [*sal*] *in Pachyno translucidus invenitur*; Isid., Etym. XVI, 2,5: [*sal*] *in Pachyno adeo splendidus et lucidus ut imagines reddat*. See also Wilson 1990, 237.

2.3. MIDDLE ROMAN AMPHORA PRODUCTION (AD 100–300)

In the Severan Age (AD 193–235), the available archaeological evidence (architecture, inscriptions, data from surveys on rural settlements and imported ceramic evidence)[235] provides precious direct testimony of a period of commercial vigour and new urban prosperity in Sicily; most notably in the western part of the island and in the major coastal cities of the east. The archaeological and epigraphic evidence is concentrated especially in the cities of Palermo, Termini Imerese, Marsala, Taormina and Catania.[236]

Between the end of the 2nd and the 3rd century AD evidence of a period of wealth and high living standards of the Sicilian ruling class of the main cities, such as Palermo, Marsala, Agrigento, Syracuse and Catania, is indicated by the considerable number of polychrome mosaics in private houses,[237] the use of imported marble in private[238] and public buildings.[239] Sicilian *gentes* were also involved in the inter-provincial trade of goods such as marbles and sulphur. The branch of the *gens Cassia Proconsularis* moved from Africa to Sicily to further their economic interests related to the quarrying and sulphur trade,[240] and in Catania an inscription dating from the 3rd century suggests the existence of a *collegium* of *marmorarii.*[241]

One of the main causes of the island's economic prosperity in the mature phase of the Middle Imperial period is to be attributed to the changes in the managements of land involving Sicily during the Severan Age, which would foster the later Late Antique concentration of the *fundi* on the island (see below). Archaeological evidence from extensive surveys carried out over the last twenty years in western Sicily (Heraclea Minoa, Entella, Termini Imerese and its hinterland) suggests the presence of large rural estates specializing in the cultivation of vines (and olives) dating from the late 2nd/early 3rd century AD.[242] The Severan age agrarian reorganization brought both higher social status and better economic opportunities to the local ruling class. The majority of the influential *gentes* of Sicily (or with strong economic interests in Sicily) held positions

[235] Franco in Malfitana, Franco and Di Mauro 2013, 419–439.
[236] Wilson 1990, 183–184; Portale 2005, 81.
[237] For some late 2nd-/3rd-century examples of 'African style' mosaic floors, Wilson 1990, 247–249.
[238] Wilson 1990, 243–244.
[239] Such as the *scaenae frons* theatre decoration in Catania, Pensabene 1996–1997.
[240] Bivona 1987, 16.
[241] CIL X, 7039.
[242] Himera III 1, 2; Entella 1988, 1478–1491; Canzanella 1993.

functioning as intermediaries between Rome/Central Italy and its economic interests in North Africa,[243] as widely attested by inscriptions of this age.[244]

To sum up, between the 2nd and mid-3rd century AD the island seems to see a phase of renewed economic and commercial vitality, aimed in part at the production of agricultural and manufactured commodities for distant markets, as is apparent from an understanding of amphora containers.

The continuing development of a high-yield viticulture open to the outside market is evident from the production of flat-bottomed amphorae at the *figlina* of Naxos, already known from the published data, even between the 2nd and 3rd centuries (see below). Our understanding of this period is now enriched by the outcome of this study on the production of wine amphorae in the region of Catania — which continues in the Middle Imperial period — and in the north eastern coastal region, especially in the production region gravitating around Caronia Marina (see Chapter 3, section 3.6.1 and 3.6.4).

This new and important fact allows us to evaluate more accurately the persistence between the 2nd and mid-3rd century of a monopoly on the wine trade that seems to be concentrated exclusively in the coastal north eastern region and in the central eastern belt of the island. Apparently excluded from this commercial system are the western and central parts of Sicily. For these areas, we lack both remains of amphora kilns and amphora wasters.

In the Middle Imperial period in these areas of Sicily, viticulture seems to have been aimed at subsistence or at any rate at a wine trade restricted to neighbouring areas to which wine (or oil) could be transported in skins (*cullei*) on carts or pack animals and has therefore not left material traces. The production of fish in western Sicily known for the Early Imperial period between Alcamo and Solunto (see above) also appears to be interrupted, at least judging from the absence of material data from amphorae. Needless to say, only additional stratigraphic archaeological excavations, especially in the fish-salting workshops located all around Sicily could help us decide whether the differences noted in the Middle Roman imperial phase compared to the previous two centuries are real or apparent.

[243] Portale 2005, 35 for a list of names of senators of Sicilian origin or with long-term economic interests both in Sicily and in North Africa.
[244] See CIL XIV, 3593 which mentions *Clodius Pupienus* (AD 220–230), father of the later Roman Emperor *Pupienus Maximus*, appointed as *curator rei publicae* in Catania, Benevento and Lepcis Magna, Portale 2005, 37.

2.3.1. EVIDENCE FOR AMPHORA PRODUCTION AT GIARDINI NAXOS

2.3.1.1. The Beginning of the Production of the Naxos Flat-Bottomed Amphora Class

At least from the 2nd century AD onwards the eastern slopes of the Larunchi Hill, near the ancient harbour area, became an industrial quarter where potters' workshops replaced the earlier town houses. Numerous flat-bottomed amphora wasters have been found in this area of the ancient city of Naxos (Fig. 2.20). Particularly important is the evidence of a large late 2nd-century flat-bottomed amphora dump located on the Larunchi hill, whose amphorae are defined in the current literature as the 'Via Larunchi amphora type',[245] or 'Spinella type'[246] (see Chapter 4, section 4.8.2 for my different classification). The kilns producing these types have not yet been located, but the extensive amphora dumps suggest the existence of nearby workshops.[247]

As during the previous two centuries, for the Middle Imperial period there is evidence that wine production was still an important economic activity in the *ager Tauromenium* able to produce a certain level of output. The amphorae produced at the Naxos workshop are one of the indicators of the continuity of investment in wine production.

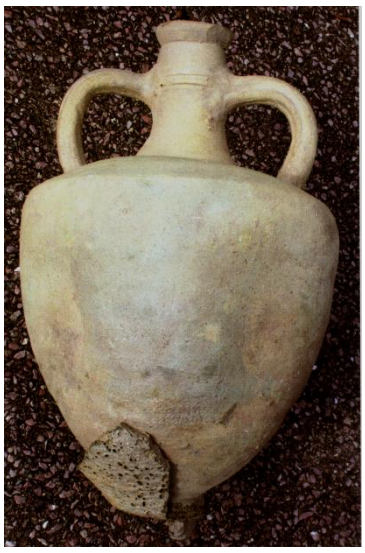


Fig. 2.20 Amphora waster of the Middle Roman 'Spinella type' from the waster dump in Larunchi area in Naxos (Muscolino 2009, Fig. 41).

[245] Lentini 2001, 24.
[246] Lentini 2001, 24, Fig. 23 (amphora waster from Spinella quarter). Amphorae of this type were found in the present-day districts of Spinella and Frudà. Example of this type in Ollà 2001, 55, cat. 10, Fig. 7.
[247] Ollà 2001, 48.

2.4. LATE ROMAN AMPHORA PRODUCTION (AD 300–440)

This period has been interpreted as one of decline in urban living standards in Sicily, when some cities could no longer keep up the former standard of civic munificence of the early and middle Roman period.[248] On the other hand, the general (renewed?) importance of its agricultural production has been linked to the increase in senatorial and Imperial property.[249] Prestigious names are connected to the large senatorial estates in Sicily, such as the *Nicomaci*, *Simmaci* and *Valerii*,[250] aristocrats from the most prestigious Roman families, as well as Imperial administrators and ecclesiastical leaders.[251] Examining the data on kilns and amphora production, a large quantity of archaeological evidence confirms a generalized resumption of craftworking activities in this period (including the production of common ware, cooking pots and building materials) and of activities linked to the trade in agricultural surpluses (attested by the manufacture of amphorae) in a much larger area than in the previous phase.

In the Middle Imperial period the evidence from wine amphorae produced at Caronia, Naxos and in the region of Catania indicated the existence of a sort of monopoly of the Tyrrhenian and Ionian coasts of Sicily with regards to the production and sale of agricultural produce to distant markets. In Late Antiquity, by contrast, we see the development of far more production sites (even the smaller workshops, such as Furnari) which, alongside amphorae, also made other pottery items linked to the needs of small/medium-sized rural communities in the inland and central western areas of Sicily.

A more generalized production of flat-bottomed amphorae is evident; these were made contemporaneously at several sites, as also apparent from the petrographic analyses that have identified several fabric groups for amphorae of the same period (on the data available for Sicily see Chapter 3, section 3.7). It is probable that amphora production is linked to the broader exploitation of Sicilian land and the renewed importance of agricultural production centres characteristic of the Late Antique period, with special reference to the wine supply for Rome.

[248] For instance in Segesta where the citizens started to live among the ruins of the ancient buildings that they could no longer repair, Aprosio, Cambi and Molinari 1997, 187; Molinari 2002, 329.
[249] For the structure of imperial property in Sicily, see Crawford 1981, 69 and Mazza 1986, 60–61, no. 72.
[250] For a thorough analysis on the distribution of property of the Roman gentes in Sicily in Late Antiquity, see Vera 1989.
[251] Cracco Ruggini 1980, 65, note. 65.

The landscape of Sicily in late antiquity was made up of *massae*, sets of adjoining *fundi* (landed estates) usually in highly productive agricultural areas which depended on senatorial *villae* at least during Late Antiquity.[252] We know the name of some of them, such as *massae Sireniana, Calvisiana, Egnatiana* and the *Statio Philosophiana*, located mainly in mid-southern Sicily.[253] The questions related to the aforementioned decline of civic life of Sicily and the shift to a rural system, based on huge agricultural estates/*latifundia*, continue to be debated.[254] Various analytical studies of the economic and historical development of agriculture in Sicily have highlighted the modalities of realization and the transition to the '*villa* system'.[255] It is now common knowledge that the concentration of *fundi* in Sicily was not a short-term process: aristocratic wealth was the product of longstanding processes of aggregation, which started around the middle of the 3rd century[256] and were completed between the 4th and the 5th century AD.[257] The *fundi* existed before the construction of *massae* and were '*vere cellule produttive del latifondo'* (the real production centres of the landed estates), in which free farmers and tenant farmers who owned no land worked.[258]

Amphora and pottery production patterns in the Late Roman period were intimately related to the traditional nucleated pattern of farming sites, and differ from the Early Roman phase of pottery production connected to major towns. Alongside intensive kiln-fired production (as at Naxos, in the region of Catania and in Caronia Marina — the continuity of the latter two mainly detected by petrographic analyses), coarse wares and amphorae were also fired in rural areas, the majority of which were not producing for a large market. Within the *fundi*, smaller production structures dependent on the *villae*, such as farms and country villages, produced the agricultural s*urplus* transported in the amphorae fired in nearby kilns. The proliferation of medium-sized production sites in inland locations, with access to good roads, or situated a few kilometres from the coast, with good access to ports, during the Late Roman period and

[252] Mazza 1981, 42–45.
[253] Uggeri 2004, 180, 220–221.
[254] This topic has been widely debated. See for instance L. Cracco Ruggini (1980; 1982, 63 ff.; 1982–1983, 500 ff.); G. Manganaro (1982); M. Mazza (1980–1981 1986); D. Vera (1988 and 2006) and O. Belvedere (1995; 1996).
[255] Carandini 1989b; Torelli 1990; Grassigli 1995.
[256] The expansion of Roman senatorial property allegedly took place between AD 250 and 300, Vera 1989, 142.
[257] Vera 1989, 140, 'Il grosso delle proprietà attestate ai primi del IV secolo è il risultato di un investimento anteriore'. The bulk of the property that goes back to the early 4th century AD is the result of previous investments.
[258] Vera 1989, 144.

possibly the later Vandal period can be explained if we assume that during this period a rise in the demand for wine (or olive oil) encouraged the establishment of more numerous workshops near olive oil or wine producing centres.

2.4.1. Evidence for Amphora Production Along the North Eastern Coast of Sicily

2.4.1.1. Caronia Marina Amphora Production in the Late Roman Period

The production of another flat–bottomed amphora type has recently been attested in the present-day coastal town of Caronia Marina/*Calactae*[259] (Fig. 2.21), in the district of Messina on the ancient *Via Valeria*.[260] The latter road in the Roman Period linked the main cities and settlements on the northern coast of Sicily (such as *Panhormus*; *Soluntum*; *Thermae Himeraeae* and *Cephaloedium*) (Fig. 2.22).

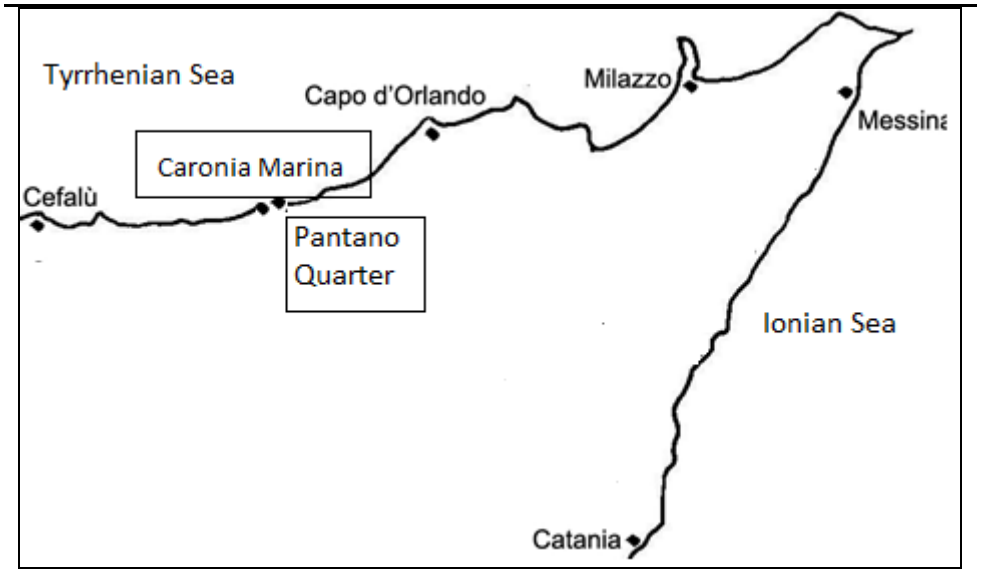


Fig. 2.21 Location of Caronia Marina and the Pantano workshop along the north eastern coast of Sicily (C. Franco).

[259] On the settlement and its long duration: Bonanno 1997–1998; Bonanno 2008. On the statio Uggeri 2004, 134.
[260] This route served the northern Sicily coast, and is called «*Valeria*» in Strabo, *Geog*., VI, 266. On the route, Uggeri 2004, 117–162.

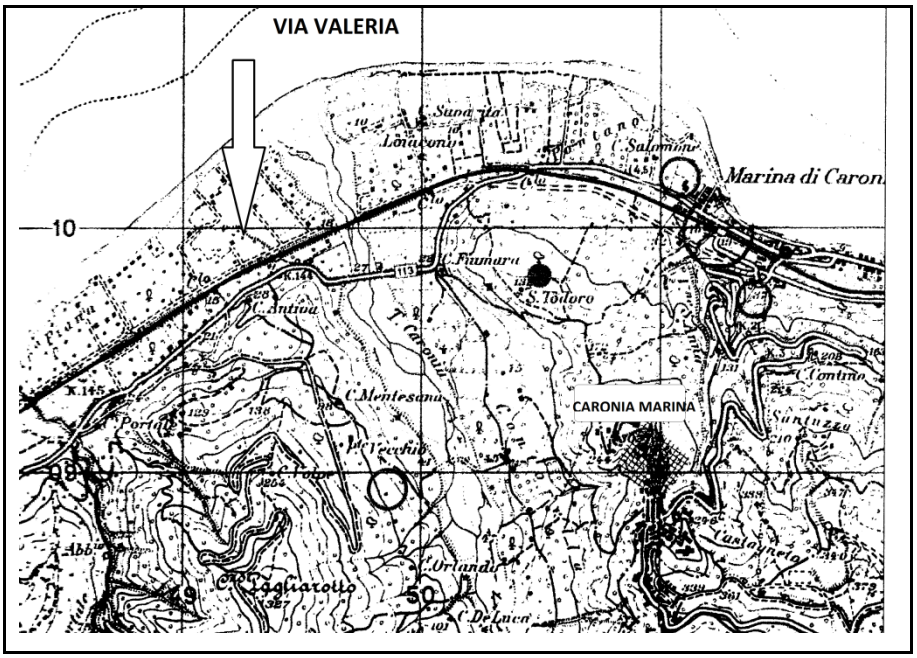


Fig. 2.22 Location of Caronia Marina along the *Via Valeria* (Uggeri 2004, Fig. 27).

The urban settlement of Kale Acte was founded on the hill-top of Caronia in 446 BC [261] by *Ducetius*, a former resistance leader of the indigenous Sikels. The settlement saw increasing prosperity in the Hellenistic period and during the Roman period due to its strategic location close to the sea and its commercial links with Rome (see below). Between AD 100 and 300 the maritime settlement and its harbour flourished as is attested by several buildings with a commercial purpose, public storage buildings, water cisterns, and a commercial establishment interpreted as a *thermopolium*, selling ready-to-eat food, found in the vicinity of the coast.[262] In the 4th century AD the settlement was a village (*vicus*)[263] where trade in agricultural products and different kinds of goods such as pottery and locally made amphorae took place. Recent excavations in the area of Calactae have uncovered a significant number of pottery (common wares and cooking pots) and amphora specimens in warehouses located in the present-day district of Pantano, a rural suburb a few metres from the sea.[264] The buildings uncovered were located close to the mouth of the river Caronia and where the harbour of the ancient town was. Due to the close proximity of the sea these warehouses were most probably used for artisanal and commercial endeavours. Although economic life continued through the export of the locally produced amphorae in the 5th and 6th centuries AD (see

[261] Diod., 12 8,2.
[262] Bonanno 2008.
[263] Lindhagen 2012, 139.
[264] Bonanno and Sudano 2006; Bonanno 2008.

in general Chapter 7 on distribution), life in the Caronia *vicus* changed greatly: the settlement decreased in population, the inhabitants now lived in more modest buildings and their tombs were built in the central parts of the earlier settlement.[265] Numerous amphora finds were discovered during the excavations of the District of Pantano (Fig. 2.21).

These small containers, some of which are characterized by a short, empty base or stubby foot, have been interpreted by the excavators as a 'locally made variant of the Crypta Balbi 2 type'.[266] Morphological comparisons have been established with amphorae specimens recovered in Late Antique Roman contexts, among which the Crypta Balbi, Caelian Hill contexts and a 5th-century AD context in the Baths of Trajan.[267] Morphologically the amphorae produced at the Pantano workshop (Fig. 2.23) show similarities with the small containers produced at the Capo d'Orlando kiln (see above) and with some of the amphora types currently known as 'Termini Imerese' amphora class (see Chapter 4, Fig. 4.54 and Fig. 4.63 on my new typology of types).

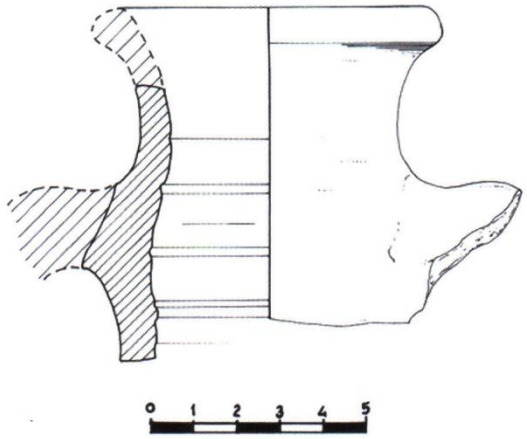


Fig. 2.23 Neck of a small amphora type produced at Caronia Marina in the district of Pantano (Bonanno and Sudano 2006, Fig. 3, no. 1),

The remains of kilns are not preserved; nevertheless the archaeometrical analyses undertaken on amphora samples from Caronia indicated a probable provenance from a local area.[268] The same analyses suggested similarities between these local amphorae and several samples of cooking pots and common ware frequently attested in

[265] Bonanno 1997–1998, 429, 431–432, Fig. 6; 2008, 25–26, Fig. 29, 75–77.
[266] Bonanno and Sudano 2006, 442.
[267] Bonanno 2007, 354–355 with bibliography of comparisons cited.
[268] Cabella, Capelli and Piazza 2009.

the district of Pantano, suggesting that they may also have been produced locally.[269] It is reasonable to assume that the potters who made the containers also produced other kinds of tableware whose export is still to be confirmed by further study.

The results of this study have confirmed that the locally produced amphorae were exported overseas (see the new data on Chapter 4, section 4.10 for the amphora types originated in the north eastern coast of Sicily). The amphorae were likely to have carried the wine produced in the fertile hinterland of *Caleacte*, which was also praised by the ancient sources. This territory was known in the 1st century AD for the production of a sweet wine in the area of *Haluntium* on the north coast of Sicily[270] (see Chapter 5, section 5.1.7.2). The *Municipium* of *Haluntium* is often identified with the modern town of S. Marco d'Alunzio[271] only a few kilometres from the town of Caronia. Pliny's source dates this production to the Early Imperial period; but the archaeological evidence of the amphora dump, dating back to Late Antiquity, and the data from the distribution study strongly suggest local wine production in the following periods as well and a strong export of locally made wine containers to Rome and other Mediterranean contexts (see Chapter 7). According to these data — evidence of local amphora production, chronological data from the consumption sites and mentions in the ancient sources of a local wine production — the coastal settlement of Caronia may be the commercial centre specializing in the wine trade and its agricultural territory may have been involved in wine production for centuries, eg. from the 1st to the 5th century AD.

2.4.1.2. The Suggested Amphora Workshop of Furnari Tonnarella

Further est, in the modern town of Furnari (Fig. 2.24), along the route of the *Via Valeria* to *Messana Diana*, excavations in the 1990s found amphora, common ware and cooking ware wasters in a kiln dump site dating to the 3rd/4th century AD.[272] The kiln has not been found yet, but the many fragments of overfired sherds and amphorae wasters suggest pottery production near the site.[273] The time range of its use is dated solely on

[269] Lindhagen 2006, 80; Bonanno 2007, 357–358.
[270] Plin., *Nat. Hist*., XIV, 80.
[271] Wilson 1990, 149–150.
[272] Bonanno 2007, 356.
[273] Bonanno and Sudano 2006, 442.

the basis of the association of the suggested locally made pottery and amphorae with datable materials found in the vicinity of the dump.[274]

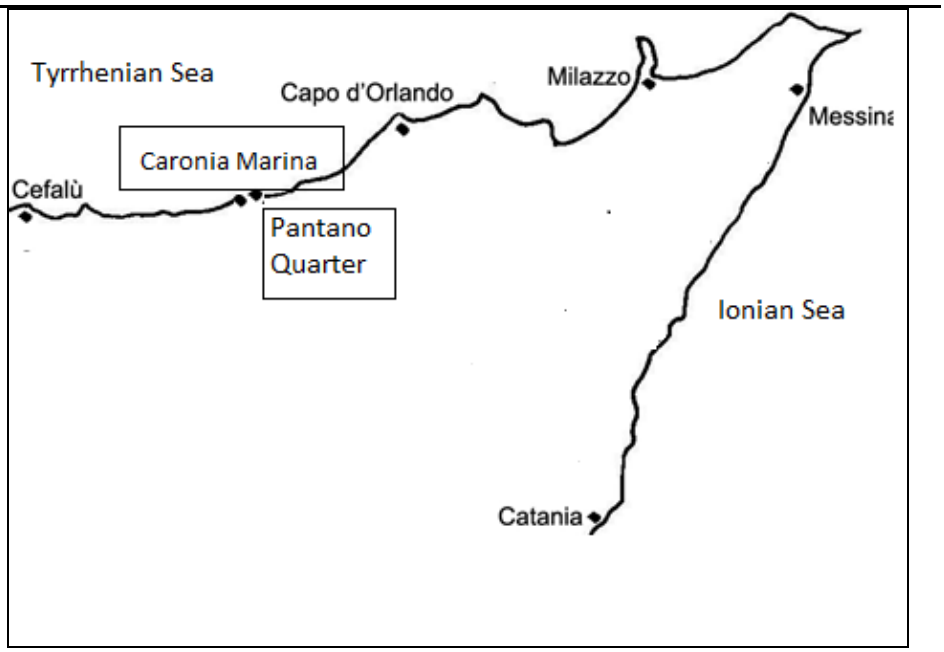
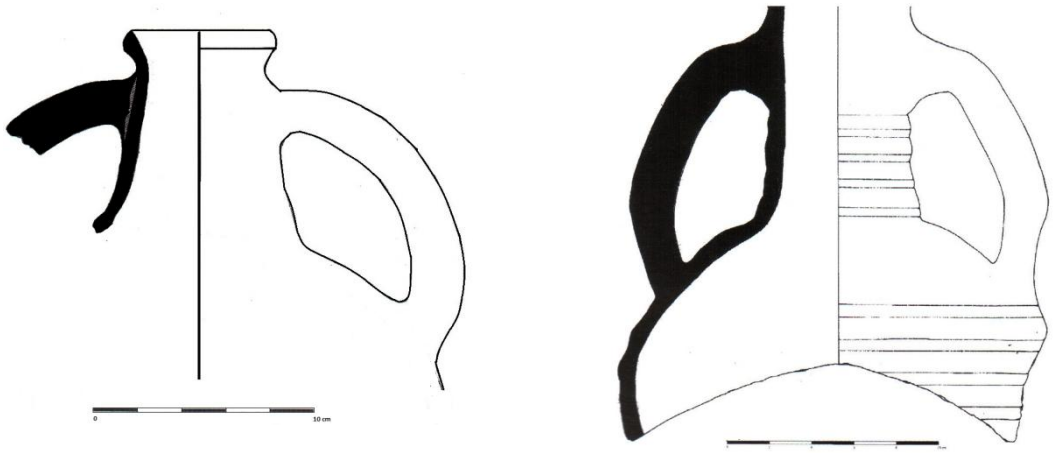


Fig. 2.24 Location of the inland site of Furnari located not far from the Thryrrenian coast along the north eastern region of Sicily (C. Franco).

The characteristic feature of the containers is their small size, the short neck, the small handles and a ringed bottom. The surfaces of the specimens do not present a slip, and the outer surface is often covered with horizontal rilling[275] (Fig. 2.25).



[274] ARSW (Hayes 45) and North-African containers, Bonanno 2007, 356.
[275] For a typological description of the amphorae see Bonanno 2007, 356, Type 1 (Fig. 3, nos. 3–5) and Type 2 (Fig. 3, no. 6).

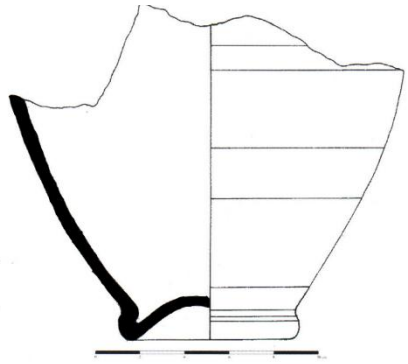


Fig. 2.25 Amphorae produced at Furnari Tonnarella workshop
(Bonanno and Sudano 2006, figs. 4–6)

The extent of the production of these numerous different Late Roman flat-bottomed amphorae suggests the large quantities of wine produced along the north eastern coast of Sicily and in its hinterland from around the 1st century AD but with more emphasis during Late Antiquity. Several workshop sites — Caronia Marina, Capo d'Orlando and Furnari — in a relatively small geographical area, *c.* 80 kilometres, produced similar amphora forms which differ in fabrics and technical execution. The new data gathered here distinguished between the different areas of production/kilns, establishing more accurate typological comparisons and improving our overall understanding of the extent of the trade in Sicilian wine produced along the Tyrrhenian coast.

2.4.2. Evidence for Amphora Production at Giardini Naxos

2.4.2.1. The Amphora Kilns in the Present-day District of Mastrociccio and the Naxian Keay 52 Amphora Type

In Late Antiquity Naxos continued production with amphorae of the Keay 52 type, whose kilns were identified in 1974 in today's district of Mastrociccio.[276] The workshop lies at the mouth of the S. Giovanni river and is closely connected with the nearby sea. This Late Roman workshop has five kilns[277] (Fig. 2.26) in use, some evidently at different times, roughly from the second half of the 4th to the 5th century AD.

[276] Fallico 1976–1977. For the Keay 52 type produced at the kiln see Ollà 2001, 52, Fig. 18.
[277] Fallico 1976–1977, pl. LXXXVII–LXXXVIII.

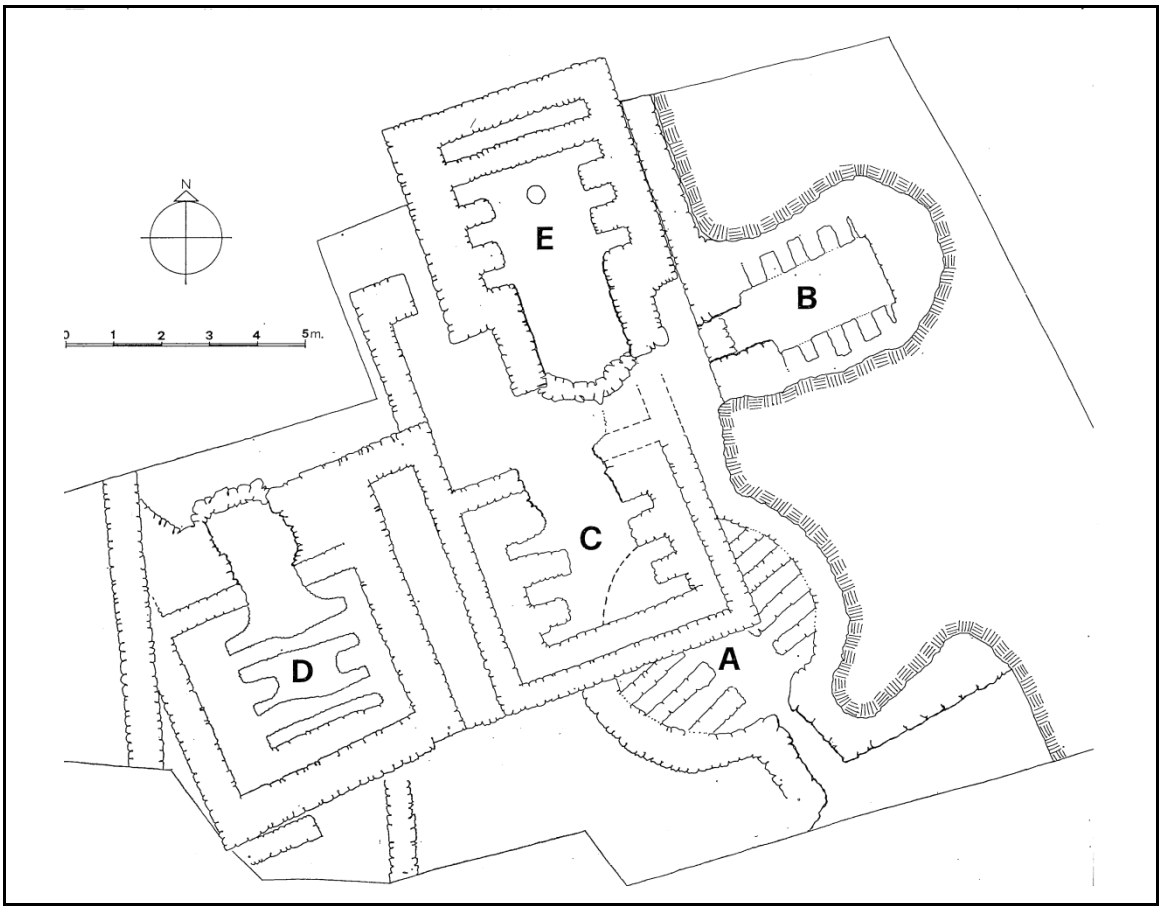


Fig. 2.26 Workshop in the district of Mastrociccio at Naxos with indication of the kilns (Fallico 1976–1977, pl. LXXXVII).

The kilns have never been stratigraphically excavated. Three kilns are rectangular in shape (kilns C, D and E); one is circular (Kiln A) and one approximately oval (Kiln B). On the basis of the workshop's layout alone the rectangular kiln C seems to have been built above the circular kiln A, suggesting chronologically distinct phases. Among the material assemblages were numerous glass fragments morphologically assigned to tronconical bowls or beakers found in furnaces E and C. According to the first excavator, the same glass types, of which no drawings or pictures have yet been published, are attested in the Late Roman cemetery of Syracuse (*c.* end 4th century AD), Ragusa and Malta. One glass fragment has been attributed to Form Isings 107.[278]

The workshop produced a Keay 52 amphorae type[279] (Fig. 2.27) and another type of flat-bottomed container which was identified as a Keay 52 as well (see Chapter 4, section4.8.2.6 on my new identification of the type as 'Naxos flat-bottomed type, Form 3).

[278] Isings 1957, 133. This form finds particular comparison in the 4th century AD.
[279] Basile 1994; Ollà 2001, 52, Fig. 18 and 56, no. 16.



Fig. 2.27 Keay 52 produced at the workshop of Mastrociccio in Naxos in Late Antique (Ollà 2001, 52, Fig. 18 and 56, no. 16).

The kilns also produced tiles and bricks, some of which were found with two different series of stamps. One series took the form of a daisy ('margherita'); the other series consisted of a five–pointed star. It is difficult to find possible comparisons for the building materials produced at the workshop, and for the stamps, given the lack of pictures or drawings.

Red slipped ware is also reported to have been produced in a few shapes. The vessels have been interpreted as a local 'imitation of Africa red sigillata D fabric' suggesting specialisation for a regional/local market. A total of three specimens have hitherto been published: a small ovoid jug with a handle and cylindrical neck [280] and two large bowls with a vertical rim, straight walls and flat base. Both the interior and the exterior present an unevenly applied red slip.[281] A chronological indication is given by the small bowl Hayes 73b in ARS C with a groove in middle of the rim. This form dates to around the second half of the 5th century[282] confirming the final period of use of the kilns.

The Mastrociccio workshop may be an example of a nucleated workshop with a long production (two centuries) and evolution of shapes, where different artefacts could have been fired in different kilns. There are generic similarities with the Alcamo Marina workshop, where a separate coarseware/cooking ware kiln is attested in Late Antiquity (see below, 2.4.4.1). However, its location near a water course, facing the sea within a coastal *vicus*, more closely resembles the kilns at Pellaro and Lazzaro Vecchio in the

[280] Ollà 2001, 52, cat. 28.
[281] Ollà 2001, 52, cat. 26 and 27.
[282] Hayes 1972, 124. Suggested date: AD 425–475.

territory of Reggio Calabria, also known for the production of Keay 52 amphora types.[283]

The evidence of the kilns of Mastrociccio quarter is the latest evidence of amphora production connected to the Naxos settlement. These kilns indicate that the local production of wine and its trade in ceramic containers was uninterrupted for several centuries. Throughout these centuries the kilns/pottery installations change areas within the ancient settlement of Naxos, but not their setting, being always located near the coast, e.g. in close relationship with the harbour. This is another hint of the primary purpose of the locally made wine containers, mainly produced to be exported overseas and for a long-distance trade within Sicily.[284] Despite the change of the settlement of Naxos from its urban character in Early and Middle Roman period, to a rural suburb during the Late Antique period, when decreases in size and was situated in a suburban zone (Schisò promontory),[285] the settlement still shows signs of agricultural prosperity which fuelled the local production of amphora. The new pattern of the production centre in Naxos during the Late Antique period is similar to that noted in Caronia Marina (see above, 2.4.1.1) and in the Capo d'Orlando amphora production areas (see below, 2.5.1.1).

2.4.3. Evidence for Amphora Production in the Hinterland of Catania

2.4.3.1. The Pottery Workshop of S. Venera al Pozzo/*Statio Acium*

The archaeological area of S. Venera al Pozzo, 14 kilometres north of Catania and 4 kilometres inland from the coastal settlement of Capo Mulini (Fig. 2.28) was known from the 17th century for its Roman baths, archaeologically excavated between 1980 and 1985 and more recently between 1999 and 2005.[286] The warm water of a sulphurous thermal spring (23°C) in the area was piped and diverted towards the Roman baths.[287] The bath building presents at least three construction phases (first phase between the end of the 1st BC and first half of the 1st century AD; second phase mid-2nd century-early 3rd century AD; third phase 4th century AD)[288]. The water is now used in the

[283] Andronico 1991; Gasperetti–Di Giovanni 1991.
[284] The finds of Early Roman and Late Roman period Naxian amphorae in several consumption sites in western and central Sicily (see data from CASR project in Sicily and Chapter 7) demonstrates the strength of the Naxos pottery tradition and regional market networks.
[285] Lentini 2001, 23.

modern–day spa building in Acireale (known as the Santa Venera spa) for therapeutic purposes.[289]

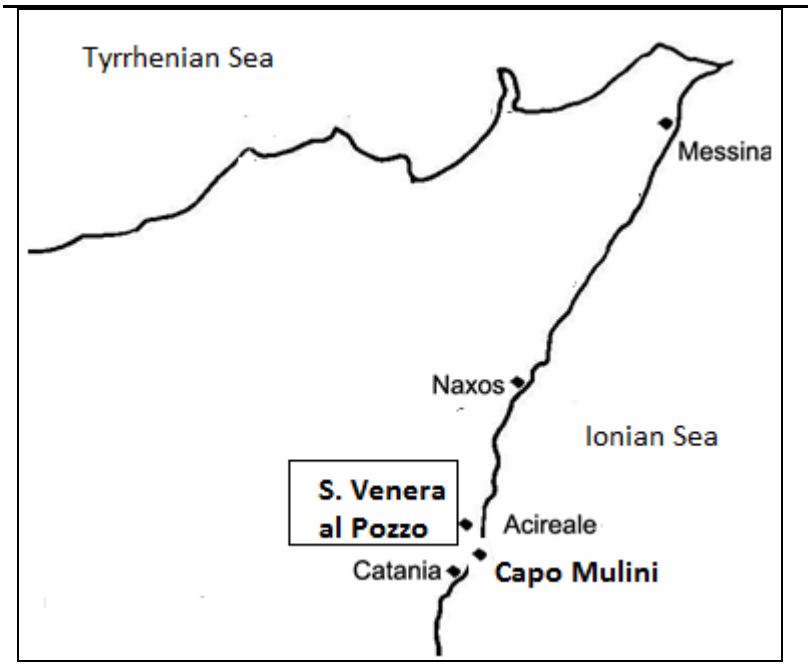


Fig. 2.28 Location of S. Venera al Pozzo and Capo Mulini along the central Ionian coast of Sicily (C. Franco).

More recently, excavations by the local Soprintendenza have identified a Roman rural settlement in use from the end of the 1st century to the end of the 3rd century[290] and a Late Roman complex of kilns and a warehouse for pottery.[291] The settlement is located in a favourable position in the fertile volcanic region on the slopes of Mount Etna and descending to the Reitana estuary, the ancient river *Akis*. The numerous springs in the area were known from Antiquity, and were the objects of myths and legends indicating the importance of the water for the whole territory.[292] The ancient town was listed in the Antonine Itinerary along the inner *via Pompeia* between Messina and Catania and

[286] For an up-dated description of the Roman Bath see Branciforti 2006, 47–58; 2010, 37–43.
[287] The traces of this conduit are only partially excavated, Branciforti 2006, 26.
[288] Branciforti 2006, 93–94.
[289] Sulphur compounds are dissolved in the spring water during its passage underground. The warm temperature of the water is to be linked with the volcanic nature of the territory of S. Venera, located on Etna's slopes. The water, in fact, may be heated by coming into contact with the magmatic basin through cracks found on the surfaces of lava flows. On the spring water see Branciforti 2006, 66.
[290] Overall, the settlement has been considered as part of a large *villa rustica*, Branciforti 2006, 89–90; 93–94; Amari in Branciforti 2011, 44–46.
[291] Branciforti 2006, 97–101; Amari 2006, 105–183; 2007, 121–128; 2008; Branciforti 2011.
[292] In particular, the legend mentioning the young Acis who was changed into a river-god and from whom a Greek town in this area took its name (Ovid, *Metamorphoses*, XIII, 750–768). A mention of the water source close to the kilns is also found in a 4th-century AD legend in regards to the martyrdom of the Christian Venera who, according to the legend, was decapitated in the area of the workshop, Branciforti 2006.

corresponds to the Roman *statio Acium.*[293] It was well-connected with the nearby harbour of Capo Mulini by a road in use in the Roman period.[294]

The pottery workshop is located approximately 160 m north of the Roman baths (Fig. 2.29), and was built on the ruins of the settlement (*villa*?), already abandoned when the workshop was in use.[295]



Fig. 2.29 Remains of Roman baths in S. Venera al Pozzo.

The factory dates to between the early decades of the 4th and the first half of the 5th century AD. The workshop produced flat-bottomed transport containers, common ware and building materials The beginning of its use has been established by the presence of several coins dating to the period of Constantine I (AD 313–315), found under the floor of one of the kiln's combustion chambers. The excavators of the pottery workshop have related the end of its activity to the Vandal raids in Sicily[296] attested in the *Codex Theodosianus* describing the trail of destruction the Vandals left behind them in the Sicilian countryside.[297]

The pottery factory consists of three circular updraught kilns[298] and around 37 rooms. One room was probably used to prepare and form the clay,[299] while in another

[293] *Statio Acium*, It. Ant., 87, 3. See, Tortorici 2002, 321 and Uggeri 2004, 203–204.
[294] Tortorici 2002, 291–306, 18–25, figs. 21, 47.
[295] Amari 2005; Amari in Branciforti 2011, 47–48.
[296] Amari 2008, 473.
[297] Codex Theodosianus, VII, 13, 20.
[298] Branciforti 2006, 97–99: 'Fornace grande', Fig. 14; 'Fornace piccola settore Nord' Fig. 16 and 'Fornace piccolo settore sud', Fig. 17.
[299] Amari in Branciforti 2011, 51 (vano T).

room the pottery was left to dry.[300] Other rooms have been interpreted as warehouses.[301] In one room a potter's wheel was found. The base and reduction disks of the wheel are made of terracotta. They turned on a spindle set into a lava block, the local stone of the S. Venera area[302] (Fig. 2.30).

The organization of the workshop with three kilns very close together suggests large-scale pottery production, as do the many areas connected to the various phases of clay preparation, modelling of the vessels, drying of the vessels. The different sizes of the kilns which were in use at one time presumably relates to the different use of each furnace within the workshop depending on the size or volume of the artefacts fired. The largest kiln (Fig. 2.31) — the so–called Fornace grande[303] — (diameter 2.80 m) may have been meant for firing building materials, while the two smaller kilns, the so-called 'Fornace Nord' and 'Fornace Sud'[304] (diameter 1.80 m) could have been used to fire common wares or small flat-bottomed amphorae. This kind of specialization is evident in several Roman North-African workshops, for example at the *Leptiminus*/Lamta workshop where the smaller kilns were probably used for firing cooking wares, while amphorae were fired separately in larger furnaces.[305]

[300] Amari in Branciforti 2011, 55 (vano G).
[301] Branciforti 2006, 98, Fig. 15 (Vano N).
[302] Amari in Branciforti 2011, 50
[303] Branciforti 2006, 97, Fig. 14.
[304] Amari in Branciforti 2011, 53.
[305] On this see the observations in Leitch 2011, 87–88.

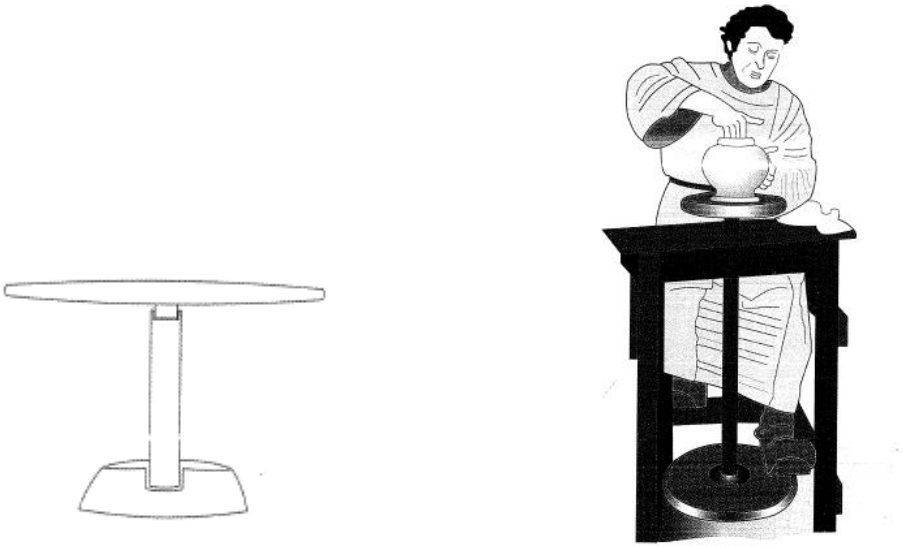


Fig. 2.30 Reconstruction of one potters' wheel found in S. Venera al Pozzo workshop (Fig. I, Area 3) The pivot is made of local lava stone, while the wheels are made of clay (Amari in Branciforti 2011, 50).

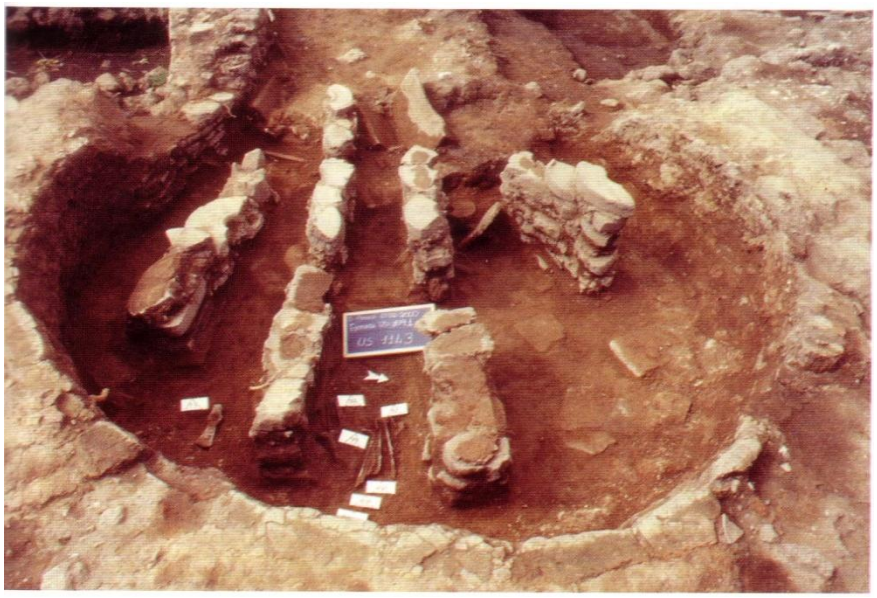


Fig. 2.31 Main kiln of S. Venera al Pozzo workshop so-called 'Fornace Grande' (Branciforti 2006).

Three main types of flat–bottomed amphorae are known to have been made here and different forms were probably used for different contents, such as wine and olive oil[306]. One type has been published as Keay 52[307] (Fig. 2.32) (for a different

[306] Amari in Branciforti 2011, 59.

identification of the amphora as an MR 1a see Chapter 4, section 4.9.3.4), a second type has been classified as an 'imitation of LR1' (Fig. 2. 33.)[308] The third amphora type has a rim and body profile that can be loosely linked to a 52 amphora type[309] (Fig. 2. 34). No stamps are known on the amphorae (and tiles). Nevertheless, the workshop appears to have a signature motif consisting of a wave impressed on the neck of the amphorae (Fig. 2.35).

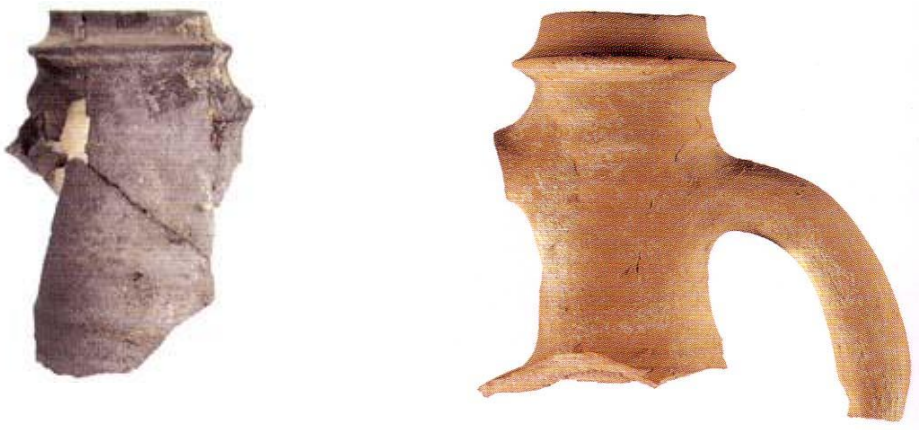


Fig. 2.32 Amphora waster and amphora type (for wine) produced at the S. Venera al Pozzo workshop. Type Catania MR 1a Form 3 (Amari 2006, 144, no. 6: amphora Keay 52 by the author).

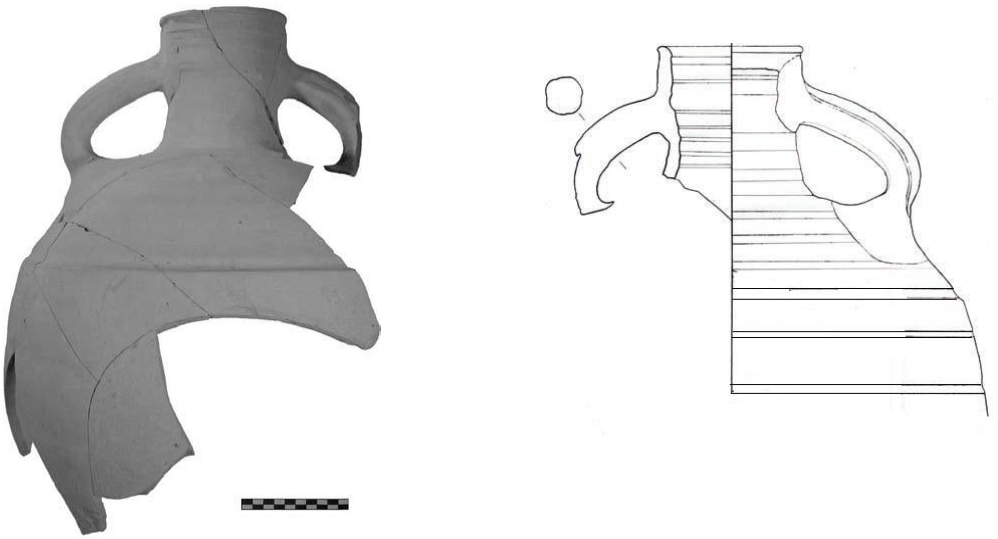


Fig. 2.33 Amphora type produced at the S. Venera workshop with a wide mouth (10 cm wide) (intended for the transport of olive oil?) (redrawn after Amari 2008, figs. 13–14: imitation of LR1 type by the author).

[307] Amari 2006, 144, no. 6.
308 Amari 2006, 144, no. 7; 2008.
309 Pers. observation.

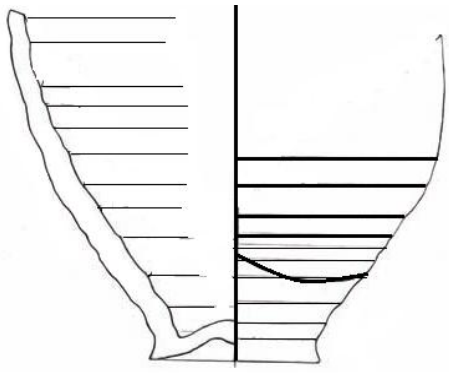


Fig. 2.34 Lower part of an amphora type produced at S. Venera al Pozzo workshop showing similarity with a Keay 52 type, see also the wave impressed on the lower part of the body (Amari 2008, Fig. 7).

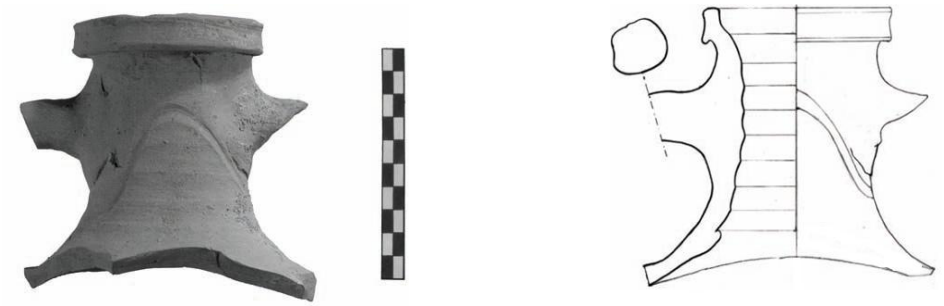


Fig. 2.35 Amphora neck and rim of an amphora type produced at S. Venera al Pozzo, see in particular the wave impressed on the neck (Amari 2008, Fig. 5 and 6: Keay 52 by the author).

Among the tableware, jugs, cups, lids and basins were produced as shown by some pottery wasters.[310] The building materials consist of *imbrices*; square and circular bricks; quarter-circle and triangular bricks; *opus spicatum* bricks; almond-shaped and rhomboid bricks[311] (Fig. 2.36). Most of the roof tiles present different types of marks on the outer surface either made by the potters' fingers (groove, double lines or double curves, wavy lines, single or triple and a single X) or cut (stars and herringbone motifs) using tools at the leather-hard stage before firing the artefacts. The different stamps might suggest a diversification in the organisation of production within the workshop, or may have been used to distinguish between different batches. In the kiln the only method of marking the bricks and tiles was by using broad finger marks; potters in the *Acium* workshop did not adopt the 'combed lines' style attested in other Late Roman

[310] Branciforti 2006, 150–151 (wasters).
[311] Amari 2007.

contexts in Sicily[312] and on the tiles produced at the Nunziata tile-kiln (see below). In terms of technical characteristics the tiles and bricks are generally characterized by a pale pink or yellowish exterior. This same finish is attested in the amphora types produced at the kiln. The building materials made by the workshop are not thought to have been exported outside the local/sub-regional limits. Further studies may tell us whether the tiles and bricks produced were mainly intended for local use.

[312] Wilson 1979, 23, pl. 2.VI.b, dated from early 5th century AD.

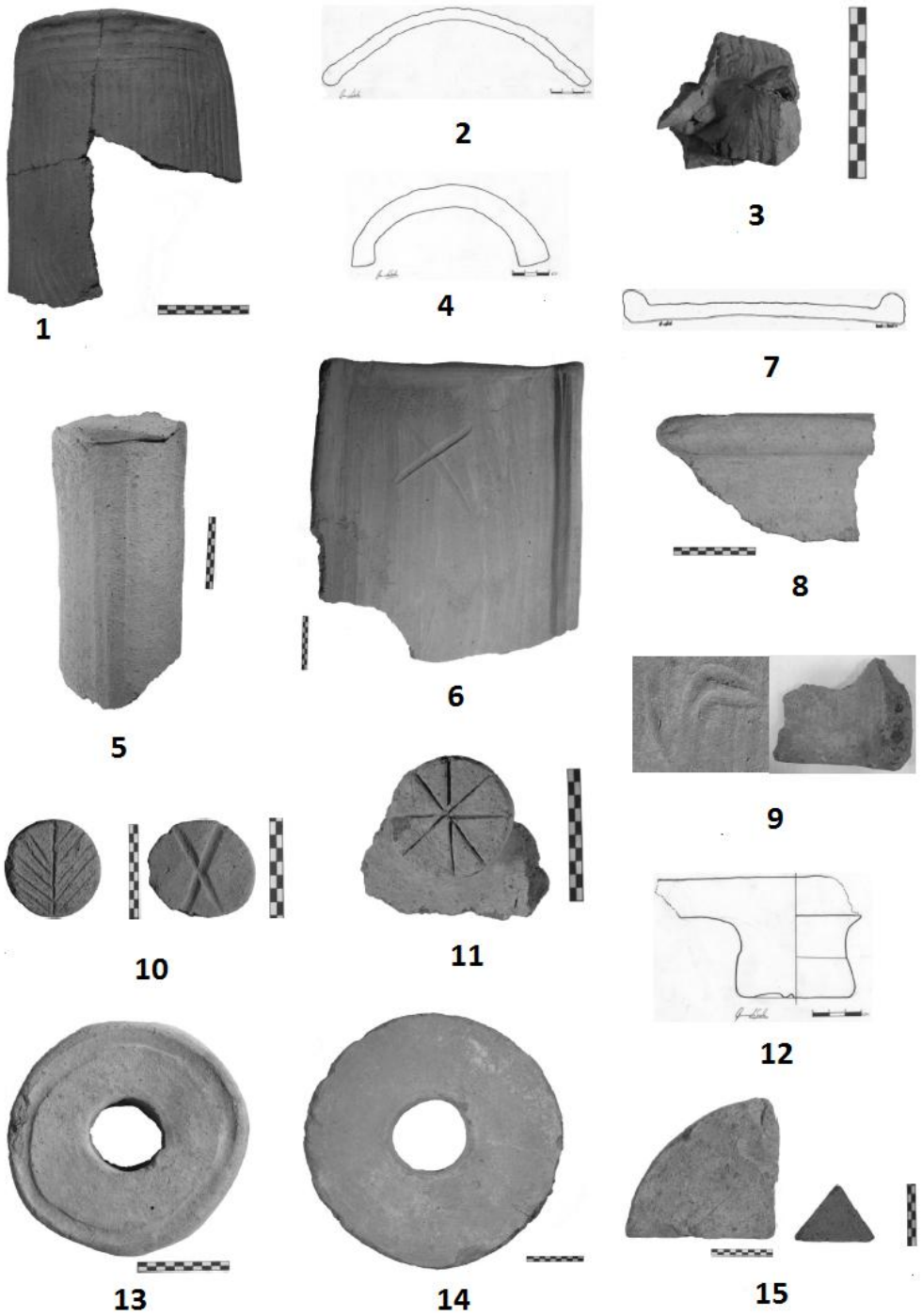


Fig. 2.36 Building materials produced at the S. Venera al Pozzo workshop 1) Imbrex with finger-streaked lines; 2 and 3) *imbrex* profiles; 4) *imbrex* waster; 5) *imbrex*; 6) *tegula*; 7) *tegula* profile 8) curved side tegula; 9) waster; 10 and 11) *tegulae mammatae*; 12) profile of *tegula*; 13 and 14) ringed bricks; 15) quarter circle and triangular bricks (after Amari 2007, Fig. 1–15).

2.4.4. EVIDENCE FOR AMPHORA PRODUCTION IN WESTERN SICILY

2.4.4.1. Late Roman Common Ware and Cooking Pot Production at the Alcamo Marina Workshop

In the production area of Alcamo Marina, where the fish containers Dressel 21–22 were produced in the course of the 1st century AD (see above), there is a resumption of the manufacturing activities in Late Antiquity. Several fragments of locally manufactured common wares and cooking pots were recovered from the later layers found in Kiln B and attributed to its Phase III, when the one kiln of the workshop (so-called Kiln B) was already out of use. The coarse ware types, probably fired at a nearby kiln — not yet excavated — , include one-handled narrow vessels (so-called 'bottiglie') (Fig. 2. 37) and basins in two main different types[313] (Fig. 2.38). Among the cookware forms several fragments of deep casseroles (Fig. 2.39), lids and open pans[314] (Fig. 2.40), have been identified.[315] Morphological similarities have been noted with the Tunisian deep casserole with an everted plain rim Bonifay Culinaire C Type 29/Marmite Sidi Jdidi 8.[316] A more precise chronology could be achieved when all the pottery will be published in detail, together with a distribution analysis (i.e. chronology from the consumption sites).

[313] González Muro and Di Martino 2007, 114.
[314] González Muro and Di Martino 2007, pl. 9.
[315] González Muro and Di Martino 2007, 114 ff. with catalogue of the forms; González Muro 2009, 454–455 with bibliography.
[316] This class of casseroles was produced in the northern Gulf of Hammamet and is dated between the second half of the 3rd to the 4th century AD, Bonifay 2004, 236, Fig. 127.

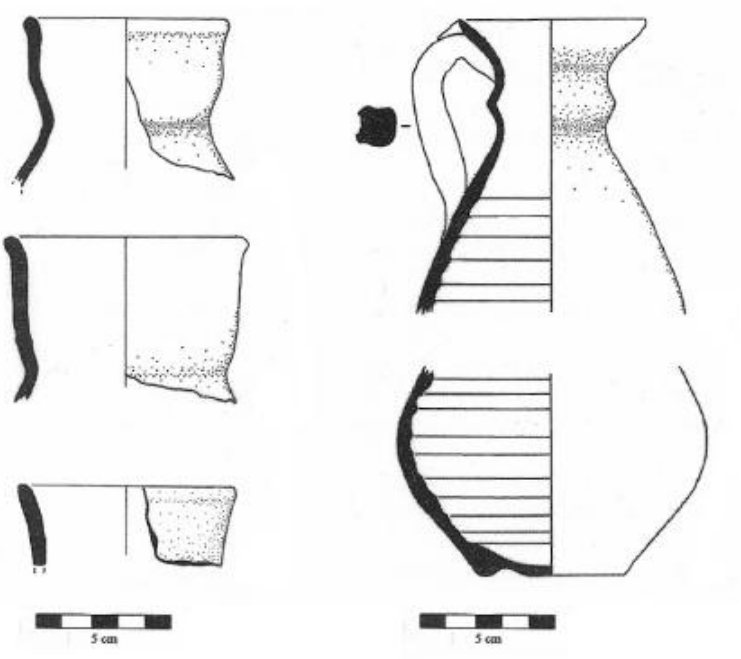


Fig. 2.37 Closed forms, so called 'bottiglie', produced at Alcamo Marina production centre during the Late Roman Period (González Muro and Di Martino 2007, pl. 12).

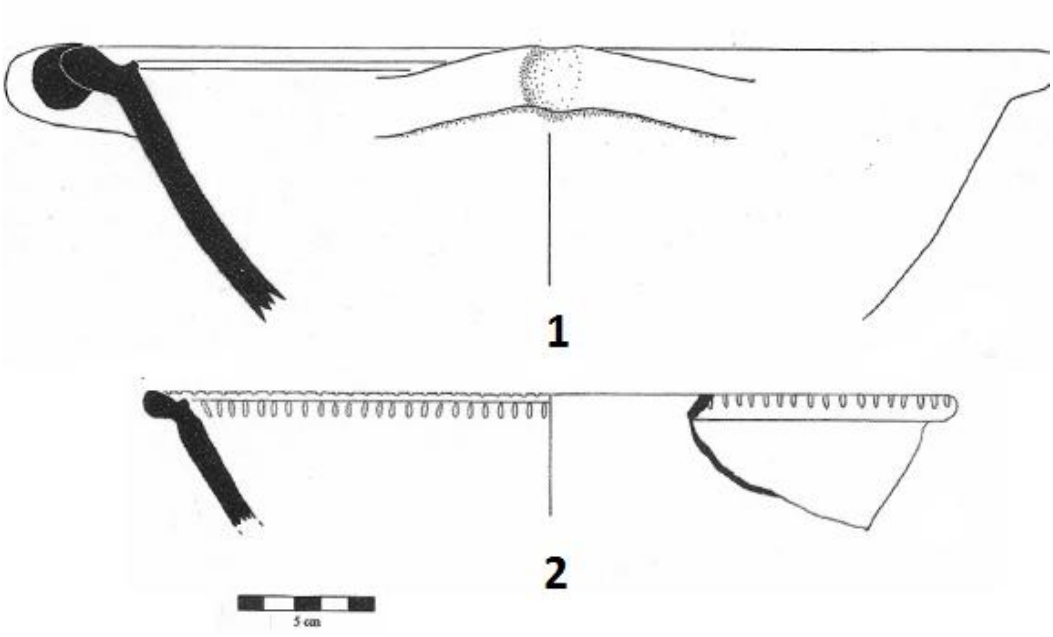


Fig. 2.38 Representative basins (type 1 and 2) produced at Alcamo Marina production centre during the Late Roman Period (redrawn after González Muro and Di Martino 2007).

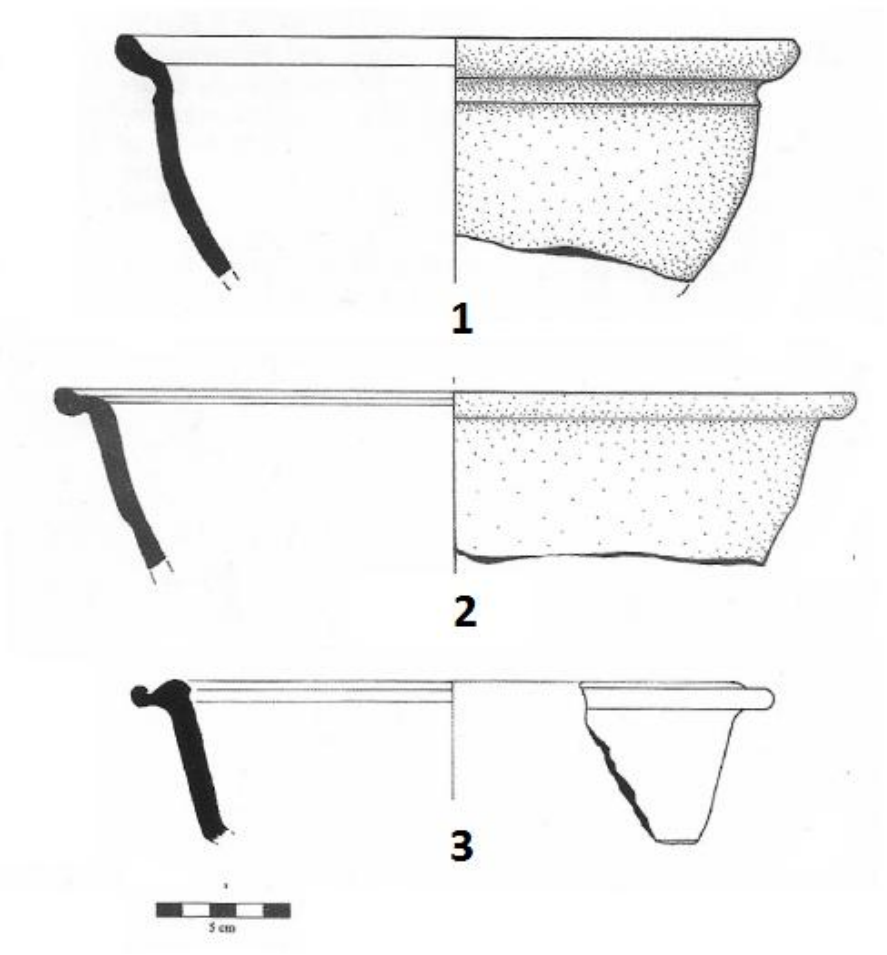


Fig. 2.39 Representative cooking pots types 1, 2 and 3 produced at Alcamo Marina production centre during the Late Roman Period (redrawn after González Muro and Di Martino 2007).

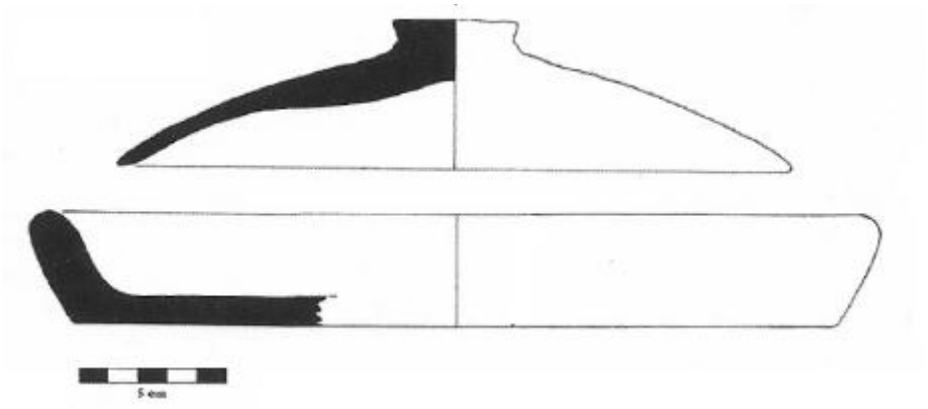


Fig. 2.40 Representative common ware basins types 1 and produced at Alcamo Marina production centre during the Late Roman Period (redrawn after González Muro and Di Martino 2007, plate 9).

2.4.5. Evidence for Amphora Production in Central southern Sicily

2.4.5.1. Evidence from the Rural Site of Campanaio (Montallegro)

The rural settlement at Campanaio is situated within the town of Montallegro, 27 kilometres from Agrigento[317] (Fig. 2.41). The site lies on a hill, in an area rich in water springs and wood, a short distance from the coast. The availability of water and fuel in the Roman period would have affected the existence (and scale) of local pottery and tile production. Nowadays this area has flourishing agricultural activities such as the production of grapes, almonds and olives, and a wooden furniture industry.

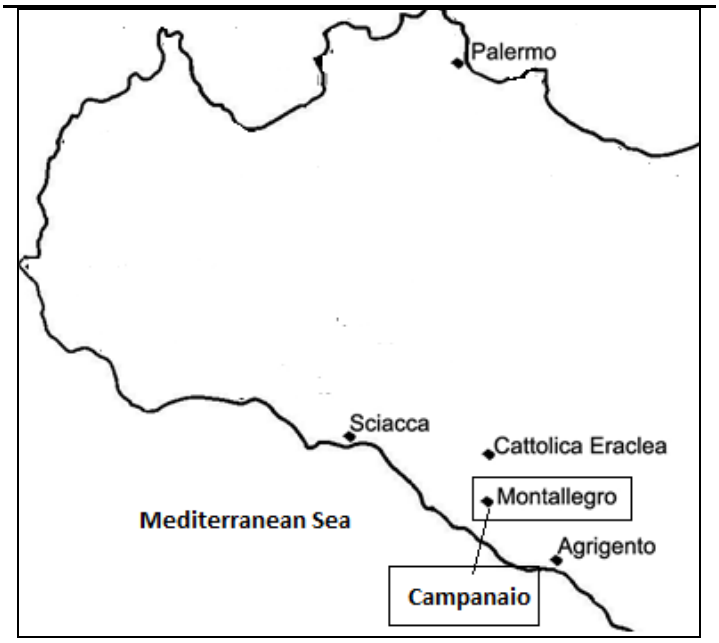


Fig.2.41 Location of the rural settlement of Campanio in the present-day town of Montallegro in Agrigento province, 5 kilometres far from the central southern coast of Sicily (C. Franco).

Excavations have revealed a complex of buildings in use from the Late Hellenistic period to the beginning of the 1st century AD, followed by a period of abandonment between *c.* AD 25 and 375. During the first phase of use the production of tiles is attested. The kilns firing the tiles were probably abandoned before the end of the 2nd century BC.

Between the end of the 4th and the beginning of the 5th century AD the area was reoccupied and several new buildings with different purposes were erected. At this stage the Campanaio settlement was probably not just a small rural site, but a large farm

[317] Wilson 1982; 1996; 2000b.

belonging to an agricultural village specializing in a wide range of activities related to agriculture, iron-working and possibly tanning. Although no pottery kilns have yet been found in Campanaio the discovery of amphorae, tiles and *mortaria* wasters clearly indicate a local production of handicrafts in the later 4th century AD. The life of the village came to a violent end in the mid-5th century, possibly as a result of one of the many Vandal raids on Sicily in *c.* AD 460.[318] Agricultural work is attested at the site by the presence *in situ* of a tank for decanting oil. The stone vat was used to separate olive oil from water after pressing and was probably in use from the 4th century until some time in the 5th century when it was buried by the collapsed roof of the room in which it was set.[319]

2.4.5.1.1. The Hellenistic Tile-kilns: an Example of Industrial Continuity?

Two Late Hellenistic tile furnaces (Fig. 2.42) partially cut into natural hill–wash, so-called tile-kilns 1 (4.75 x 4.25 m) [320] and 2 (2.95 m long) [321] were found in the excavated area. A visit to a tile-works in the modern day town of Racalmuto, just 15 kilometres from the Campanaio site, showed close similarities in the overall processes of tile production, in particular in terms of the types of tiles produced and the size and construction of the kiln itself. According to R.J.A. Wilson '*It seems likely that methods of tile-making have remained fundamentally unchanged in this region of Sicily for over two millennia*'.[322] Furthermore, the modern furnace used straw for fuel. According to the excavators this might explain why the furnace area outside the Roman tile-kilns of Campanaio was particularly clean and can provide suggestions as to the kind of fuel used in the workshops and its availability.

[318] Proc. *B. Vand*. 1, 5, 22.
[319] Wilson 2000b, 361–362.
[320] Wilson 2000b, 352.
[321] Wilson 2000b, 357–361.
[322] Wilson 2000b, 352.

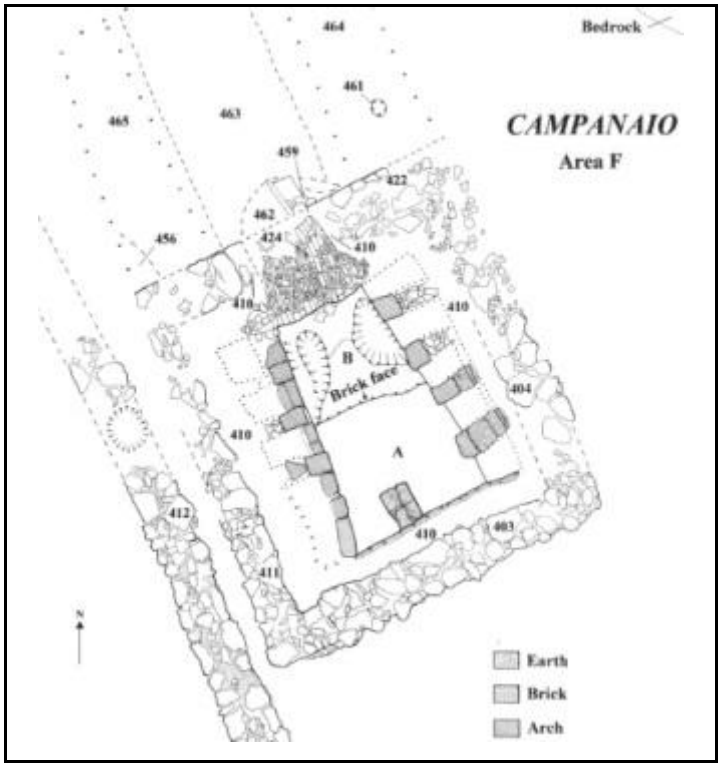


Fig. 2.42 Plan of the tile kiln (area F) in Campanaio (after Wilson 2000b, Fig. 13).

Known tile-kilns of Hellenistic and Roman date are particularly rare in Sicily, making the evidence from Campanaio particularly significant.[323] In Sicily, tile furnaces dating back the Late Republican period are also attested at Morgantina;[324] in the present-day city of Centuripe[325] in the province of Catania and in Partinico in the province of Palermo.[326] A Byzantine circular kiln used only to fire tiles is attested at Nunziata in the province of Catania.[327] Production of tiles in larger workshops is attested in Naxos and S. Venera al Pozzo (see above).

2.4.5.1.2. The Production of Flat-bottomed Amphorae in the Later 4th Century AD

A third kiln cut into the sterile hill is thought to have been a limekiln[328] presumably in use some time in the 4th century and abandoned before AD 400 as attested by ceramics found in the abandonment level.[329] After going out of use the kiln was used as a dump

[323] For an overview on Roman period tiles production, Wilson 1990, 269.
[324] Cuomo di Caprio 1992.
[325] Rizza 2002, 35–39.
[326] Di Stefano 1982.
[327] Lentini 1982.
[328] Wilson 2000b, 362 with bibliography.
[329] Few fragments of African red slip ware were found in the dump, including ARS forms Hayes 50B and

for locally produced pottery, *mortaria*, amphorae and roof-tile discards. According to the excavators the pottery kiln — not yet discovered — was in use during the 4th and 5th century AD. An area of burnt bricks and tiles — about 25 m east of tile-kiln 1 — might be considered as a sign of another kiln (maybe the Late Antique pottery kiln) that has heavily eroded over the centuries. In fact it is unlikely that the Late Roman pottery kiln which manufactured the amphorae described above at any great distance from the limekiln dump. Further excavations may be able to locate it with certainty.

The local production of amphorae is dated to around the second half of the 4th century and is attested by several specimens with vitrified body sherds and plain or grooved handles (Fig. 2.43, left).

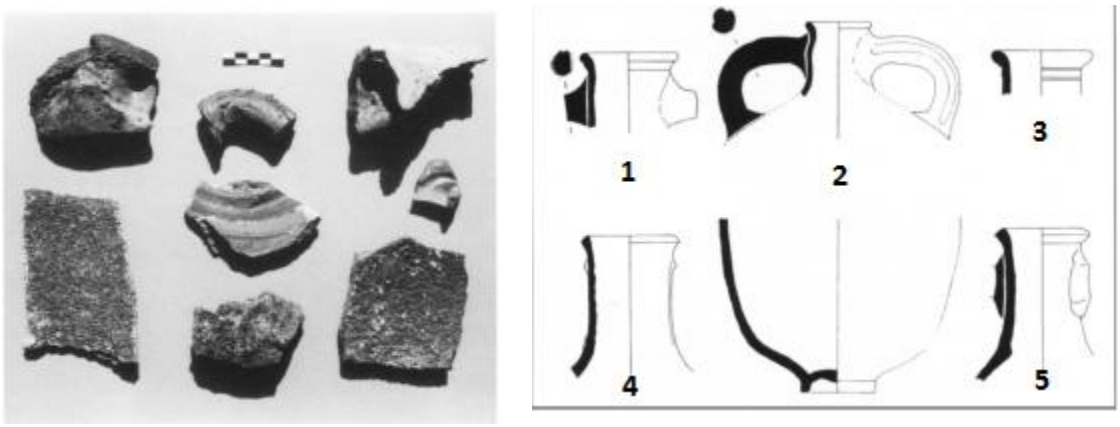


Fig. 2.43 Left, vitrified body sherds and grooved handles of amphorae found in the dump and, right, flat-bottomed containers attributed to local production
(Wilson 2000b, Fig. 20, D and E, amphorae profile scale 1:6).

The amphorae are all small and flat-bottomed, with plain or grooved handles. On the basis of the illustrations available two main sub-types can be identified. One has a triangular rim and a high neck (Fig. 2.43, no. 4 and 5) and has been considered a local variant of the Keay 52 amphora type.[330] Nevertheless, the body of this type is not illustrated, making it difficult to ascertain morphological similarities with the elliptical profile characteristic of the Keay 52 type. The second type (Fig. 2.43, no. 1 and 2) has an ovoid body and ring base, cylinder-shaped neck and a simple rounded rim. The general shape of the second local type can be likened to a series of small containers

59B.
[330] Wilson 2000b, 362.

identified in the current archaeological literature as 'Termini Imerese Types 151–354'[331] (see below, 2.4.7.1). An amphora found in Campanaio can also be of local/regional production (Fig. 3.44) and morphological comparison can be established with some specimens attested in the Late Antique catacomb complex of Agrigento/*Agrigentum* (Fig. 2.45).

It is my opinion that the Campanaio amphorae were part of a large (sub)family of small containers produced, with small differences in shape, technique and fabric, in the region of Agrigento in the Late Roman, Vandal and Early Byzantine periods (more evidence on this point in Chapter 4, section 4.12).



Fig. 2.44 Probable Sicilian amphora found in Montallegro/Campanaio (Wilson 1996, Fig. 5.12).

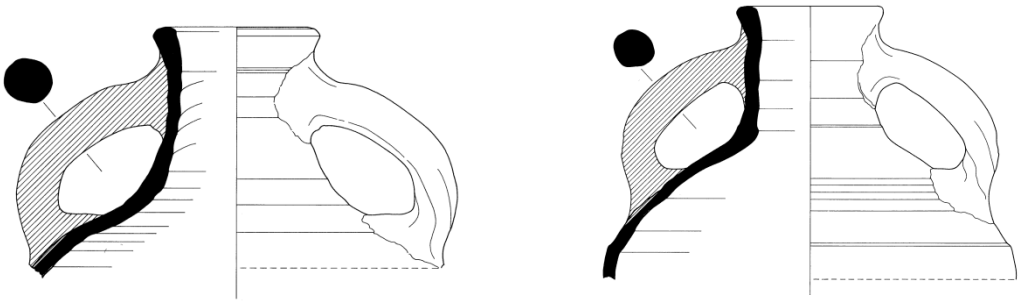


Fig. 2.45 Amphorae from the *sub divo* necropolis of Agrigento which can be compared to the type found in Campanaio illustrated in Figs. 2.43-44
(Bonacasa Carra 1995, Fig. 79, inventory no. 85, 96 and 85, 144).

[331] Belvedere *et al*. 1993, 59–67.

2.4.5.1.3. Concluding Remarks

The territory controlled by the settlement of Campanaio produced a *surplus* that allowed for the export of agricultural products and most probably oil. The oil could be stored either in locally-produced amphorae or in the imported containers found in the vicinity of the press. A deposit of 16 amphorae, the majority of which belong to the North-African Keay 25, 33 and 45 types, were found in a room which appears to have been a warehouse *'for the sale of oil of different provenance and qualities'*.[332] On the basis of this evidence R.J.A. Wilson even suggested that the empty imported amphorae were filled with local products for sale to unsuspecting buyers.[333] Although the suggestion that empty amphorae were sold is fairly convincing, in my opinion it is more probable that the containers, emptied of their original (imported) content, were reused to store, sell or transport local commodities to buyers who were well aware of the local origin of the foodstuffs stored in them.

In my opinion the published evidence for the distribution of the Campanaio containers, or very similar containers, suggests that the workshop served a local market within the hinterland of Agrigento.[334] The amphorae/pottery produced at the rural site seem to have been primarily intented for the needs of the village. The Campanaio workshop can be considered therefore as a medium individual workshop, manufacturing amphorae to transport the agricultural products cultivated in its environs and destined mainly for a local market.

2.4.5.2. The Suggested Flat-bottomed Amphora Production in Agrigento

Emergency works carried out by the Soprintendenza in Agrigento (Fig. 2.46 for the location of Agrigento in Sicily) in the west and north western area of the Hellenistic and Roman period areas of private houses (so-called Hellenistic quarter) revealed a possible tile, common ware and amphora production area, thought to have been in use around the mid-5th century AD. The amphorae produced are described as being similar to the types

[332] Wilson 1996, 30; 2000b, 341.
[333] Wilson 2000b, 341.
[334] See for example the amphorae found in the Late Antique necropolis *sub-divo* in Agrigento, which show stringent morphological similarities with the containers produced at the Campanaio workshop, Lima 1995, 281-282, cat. 6–27, Pl. XXIV, 8–9; XXV, 1 and Fig. 79.

manufactured in the Campanaio workshop.[335] Unfortunately there is little information on the forms to support this hypothesis.

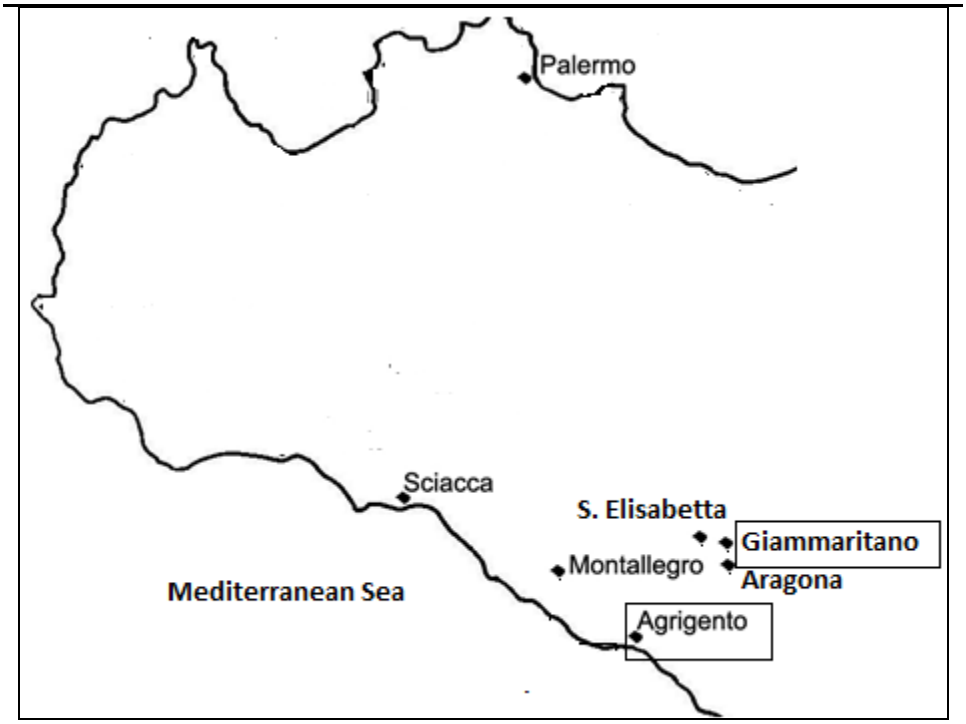


Fig. 2.46 Location of Agrigento and Giammaritano quarter in the south western area of Sicily (C. Franco).

2.4.5.3. The Probable Workshop of Giammaritano in the Agrigento Hinterland

In the hinterland of Agrigento, in a territory characterized by the presence of tributaries of the river Platani, non-systematic surveys have been carried out by the local Soprintendenza in the area of Giammaritano, near the present-day municipalities of S. Elisabetta and Aragona (above, Fig. 2.46).[336] These indicated the presence of a rural settlement in use from the Early Roman period to Late Antiquity. At this first stage, the settlement of Giammaritano was probably a *villa*, perhaps with private baths. In the 5th century AD there is evidence for the on-site manufacture of tiles, common ware and small flat-bottomed amphorae as suggested by the presence of several wasters and heavily vitrified body and handle sherds. The containers are said to be similar in shape to the types produced in Campanaio (in particular local type 2). No amphorae pictures or drawings have been published.

[335] A brief reference to the amphora type produced is in Rizzo *et al.* 2014, 214 and 216.
[336] First general description of the amphorae in Parello, Amico and D'Angelo 2010, 286 and Rizzo and Zambito 2010, 294.

2.4.5.4. Concluding Remarks on the Production of Amphorae in Southern Central Sicily

The production structures hitherto known in the hinterland of Agrigento — Giammaritano and Campanaio — developed between the mid-4th and mid-5th century AD within true rural settlments (*vici*) with residential and production areas arranged on flat areas among hills with woody vegetation and the production of agricultural produce that certainly included oil. Both settlements were certainly in a favourable position near water courses (essential for pottery production) and connected to good communications networks which allowed for the sale of surplus agricultural produce stored in local containers. Campanaio was well connected to the coast whilst Giammaritano was linked to both Agrigento and Palermo by the Platani river, the ancient river *Halykus*, one of Sicily's largest and longest rivers, navigable in ancient times.

Although amphora kilns have not yet been discovered we can suggest that these were small or medium-sized structures which also manufactured pottery and tiles, linked exclusively to the needs of the communities gravitating around the rural villages.

The only production centre within a city (i.e. Agrigento) is not a significant exception to the picture that appears to emerge from these data, in other words the location of kilns in rural villages and farmsteads. Agrigento, though maintaining some urban features, saw a contraction and disintegration of its residential spaces: the inhabited area moved to the upper part of the town (formerly the Greek acropolis) and the wealthy private houses of the middle imperial period were covered between the 4th and 5th century by the kilns.[337]

Another fact that emerges from the few available data is the essentially uniform morphology of the amphorae produced in these kilns; despite the numerous differences resulting from the artisanal aspects of production, they share a unitary 'morphological language', typical of the region of Agrigento. The containers made in this part of Sicily have a local or micro-regional distribution and were not exported overseas (see Chapter 7, section 7.3).

[337] Rizzo *et al.* 2014, 216.

2.4.6. EVIDENCE FOR AMPHORA PRODUCTION IN CENTRAL SICILY

2.4.6.1. Flat-bottomed Amphora Production at Enna–Gerace

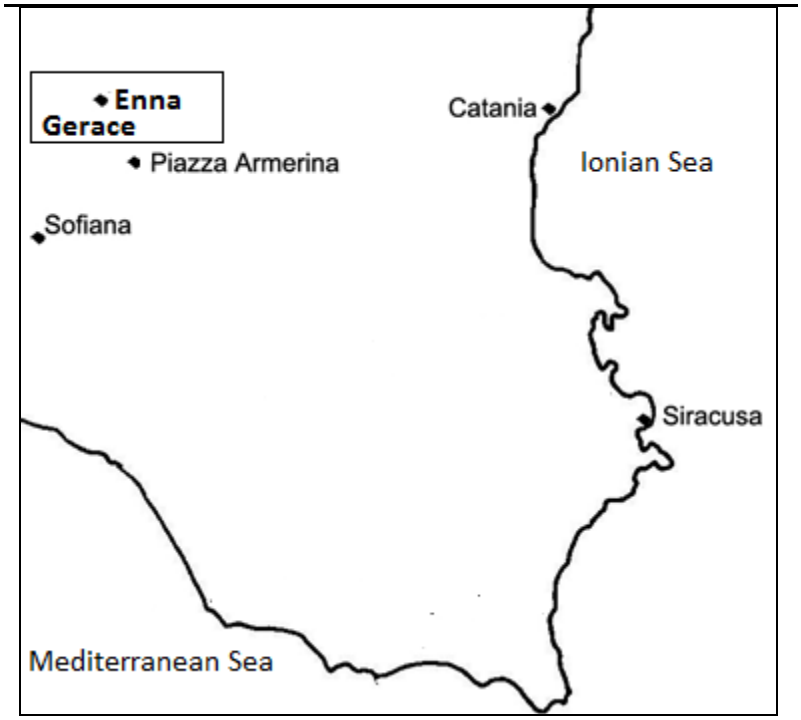


Fig. 2.47 Location of Enna/area of Gerace in central Sicily (C. Franco).

In central Sicily near the modern town of Enna at Gerace (Fig. 2.47), excavations in 2007 brought to light 11 rooms belonging to a large *villa* of the imperial period (Fig. 2.48), in use from the late 2nd to the late 4th century AD.[338] The villa has been partially studied and had mosaic floors and an apsidal hall. It was located in a fertile depression near the Aiolo river, an affluent of the southern Himera, in a strategic area near an ancient road linking the centre of Sicily with Gela[339] that in antiquity ensured communication with the coast and probably encouraged the trade in the agricultural produce from the villa's hinterland with products imported by sea.

[338] Evidence of the use of the rooms are known up to the 8th century AD. For the architectural structures and ceramic materials: Bonanno *et al.* 2010; Bonanno 2013.
[339] Uggeri 2004, 283.

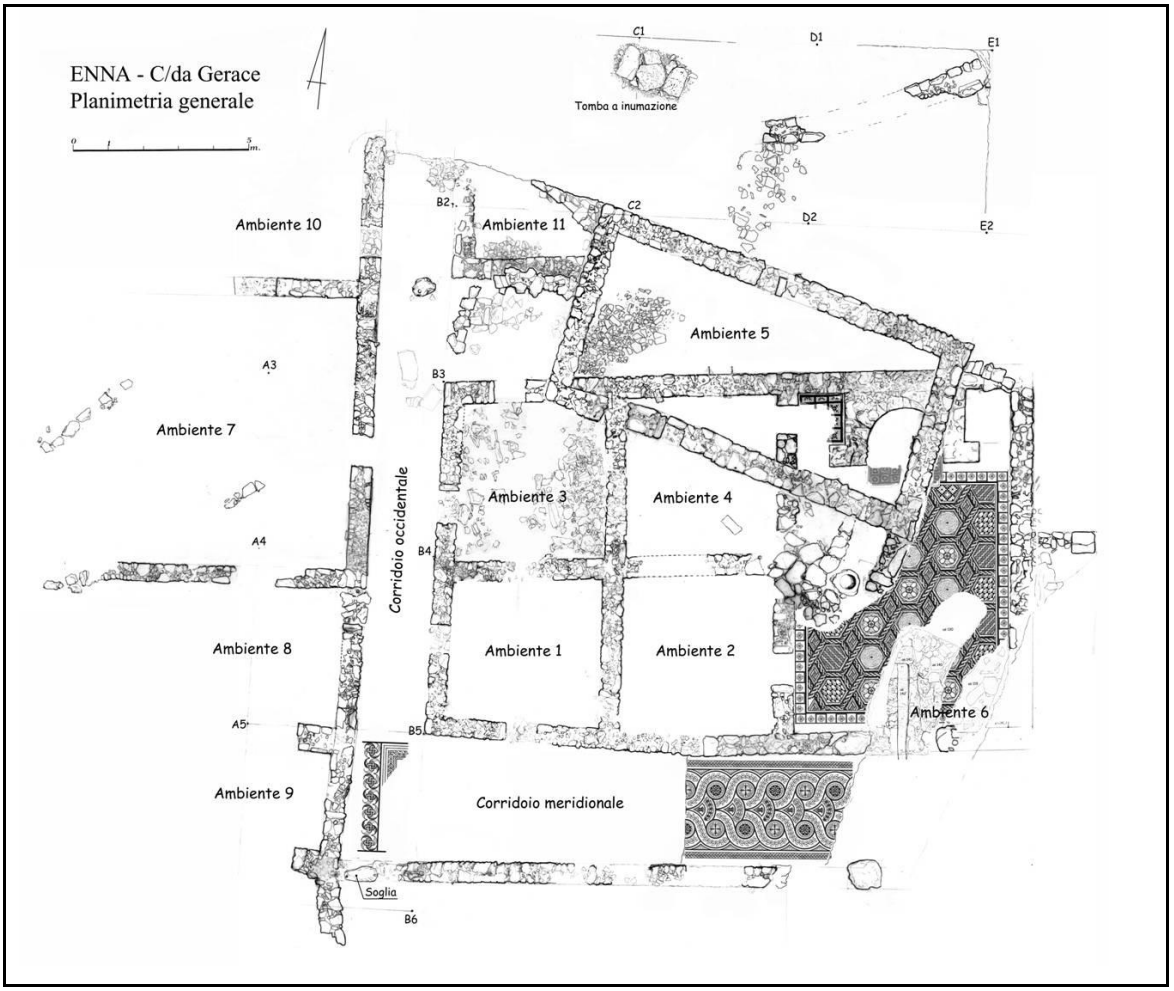


Fig. 2.48 Plan of the excavated area of the villa in the district of Gerace/Enna (Bonanno *et al.* 2010).

A kiln which has not yet been excavated has been identified near the villa. During my participation in the CASR project I was able to view some production wasters in the form of overfired bases ascribed by the excavators to this kiln.[340] No quantified information or chronological data are available. The wasters are the bottoms of small amphorae with rilling in the exterior, whose rims are currently not known. In the absence of accurate chronological data, we can at present only confirm the production of the Sicilian flat-bottomed 'generic shape' also in the central part of the island at some point from the late 2nd to the late 4th century AD (e.g. the time range of the use of the *villa*). In addition, production of flat-bottomed amphorae in central Sicily (or western Sicily) is now suggested on the basis of the results of the thin-sections carried out for this study (see Chapter 3, section 3.6.5; and Chaper 6, section 6.3) The

[340] First remarks in Bonanno *et al.* 2010: '…presenza di una fornace, ancora inesplorata, di alcuni scarti di fornace tra cui alcuni fondi ipercotti di anfore con basso piede ad anello'.

suggested kiln in Gerace may have been connected to the *villa*, and in this case the containers must have been used for the storage (and local distribution) of the agricultural produce (wine) of its hinterland.

2.4.7. Evidence for Amphora Production along the North Western coast of Sicily

2.4.7.1. The so-called 'Termini Imerese 151–354' Amphora Types

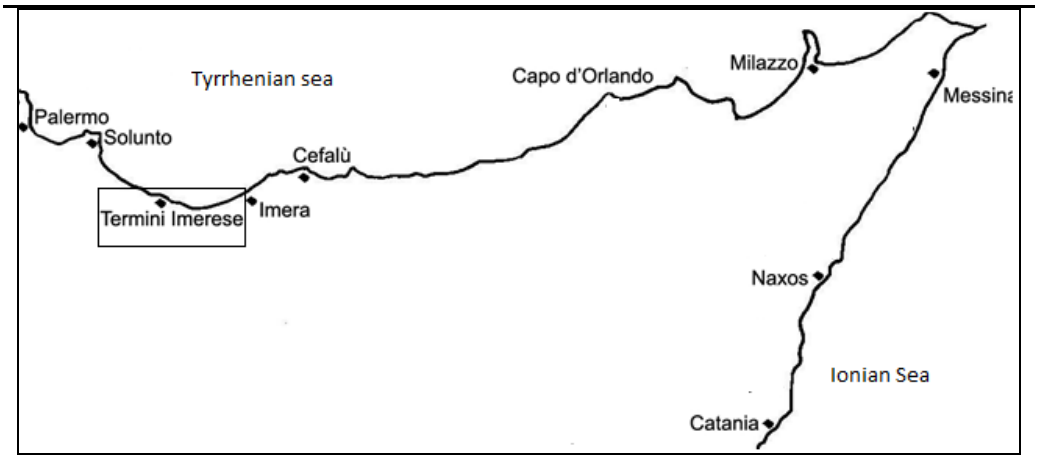


Fig. 2.49 Location of Termini Imerese along the north western coast of Sicily (C. Franco).

In the territory of Termini Imerese/*Thermae Himeraeae* (Fig. 2.49), on the island's north western coast, major research programmes — started over fifteen years ago — began to define settlement patterns and the origin of ceramic products.[341] These studies have revealed significant quantities of specific amphora types — so–called 'Termini Imerese Type 151–354' — characterized by a similar petrological group that matches the geology of the area where they were found, thus suggesting a production in the area near the Roman colony or within the territory characterized by the Numidian Flysch outcropping in northern Sicily[342] (see Chapter 3, Fig. 3.3, area C). This group included other pottery such as lamps and coarse wares.[343] Morphologically the amphorae belonging to this 'family' (Fig. 2.50) are flat-bottomed, small (the volume cannot be reconstructed because of the lack of whole preserved amphorae published from this

[341] Belvedere *et al.* 1998a and 1998b.
[342] Belvedere *et al.* 1998a, 502–504, tab. 1 (Tab. 1 include the pottery/amphorae specimens which origin can be narrow within the Numidian Flysch in Sicily).
[343] Belvedere *et al.* 1998a, 223–225.

group), spherical or ovoid in shape, with a short neck and round/oval-section handles with generally a low profile.[344]

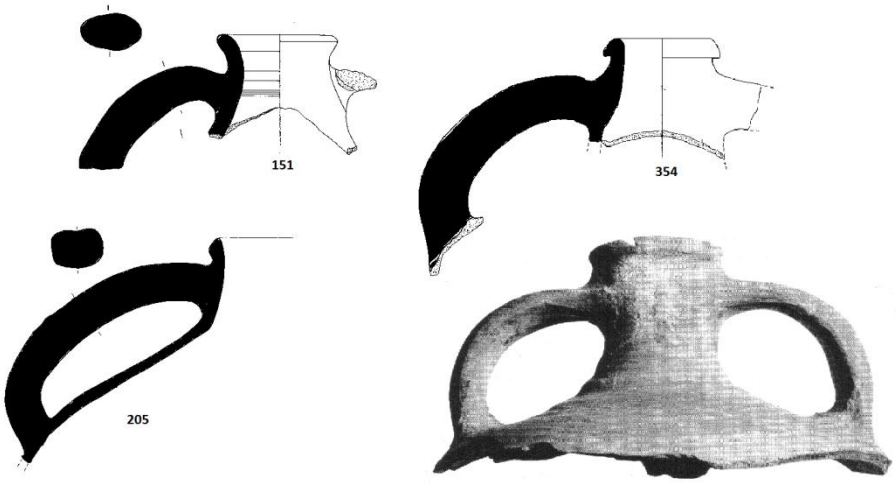


Fig. 2.50 Selection of small amphora types part of the 'Termini Imerese' amphorae class (Belvedere *et al.* 1993).

My research has established that the amphorae known as 'Termini types' belong to a fairly heterogeneous group which can be differentiated on the basis of morphology, chronology and production area. It was possible to identify the production areas of some types from this family; these in fact do not coincide with the territory of the colony of Termini. As a consequence, the definition 'Termini Imerese amphorae types' should be abandoned in favour of another term better able to define the morphological variants and the production areas of individual amphora types (for these problems of definition and the new terminology proposed, see Chapter 4, section 4.10).

2.5. VANDAL PERIOD AMPHORA PRODUCTION (AD 440–535)

The data available on amphora production centre are particularly scanty for the Vandal Period and seems to be mainly concentrated in the Agrigento area, according to local amphora distribution,[345] and in the workshop of Capo d'Orlando.[346] The Vandal raids

[344] The small amphorae have been published in the catalogue in Belvedere *et al.* 1993 under the numbers 151, 354, 177, 511, 512, 513, 850 and 851.
[345] Small amphorae with a flat bottom though to be of Sicilian origin, on the basis of morphology and macroscopic appearance, have been identified at Saraceno (Favara) in the post vandal and early Bizantine strata, Rizzo *et al*. 2014, 214, Pl. I, 3-4.

on the island have been suggested as a cause for the end of the production activity both pottery workshops of Campanaio, in the hinterland of Agrigento, and of S. Venera al Pozzo, in the region of Catania. The dramatic change due to the Vandal raids over the island had different outcomes in the different areas of Sicily. For example we know that the villa of the Valerii in the area of Messina was inhabited during the Vandal invasion by the landlords *Anicius Pinianus* and *Melania*, who spent their time in study and the translation of religious texts,[347] therefore showing the existence of a peaceful environment at least in some areas of Sicily. In any case, the Vandal domination of North Africa (AD 429–534) had economic implications for the island, in the sense that it increased the relative importance of Sicily to Rome in food production. Genseric[348] (AD 428–477) put the island at the centre of his interests, believing that the control of Sicily was necessary for the security of the Vandal state which led to speculators and land owners taking greater interest in the island.[349]

2.5.1. Evidence for Amphora Production Along the North Eastern Coast of Sicily

2.5.1.1. The Pottery and Amphora Production in Capo d'Orlando/*Statio Agathyrnum*

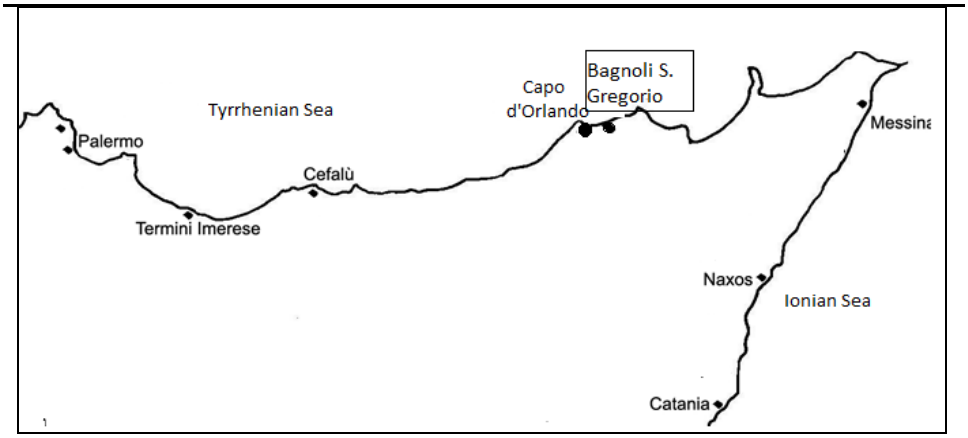


Fig. 2.51 Location of Capo d'Orlando and Bagnoli S. Gregorio along the north eastern coast of Sicily (C. Franco).

[346] Spigo, Ollà and Capelli 2006.
[347] *Vita Mel.* 18, (ed. R. Rampolla Del Tindaro,1905, 13 and 18).
[348] For Genseric the conquest of Sicily meant depriving Rome of food, thus making Rome's wheat supply more difficult. See Proc., *De bello Vandalico*, III, 5; III, 61.
[349] These considerations are taken into account by Giunta 1956, 120, 141; confirmed by L. Cracco Ruggini (Cracco Ruggini 1979, 497) and resumed by M. Mazza (Mazza 1986, 75).

Remains of amphorae and pottery productive activity have been discovered in a disused public Roman bath at Bagnoli San Gregorio/*Statio Agathyrnum*,[350] about 3 kilometres from *Agathyrnum*, the present–day Capo d'Orlando (Fig. 2.51), in the district of Messina. The *statio* was situated along the ancient *Via Valeria* (Fig. 2.52).

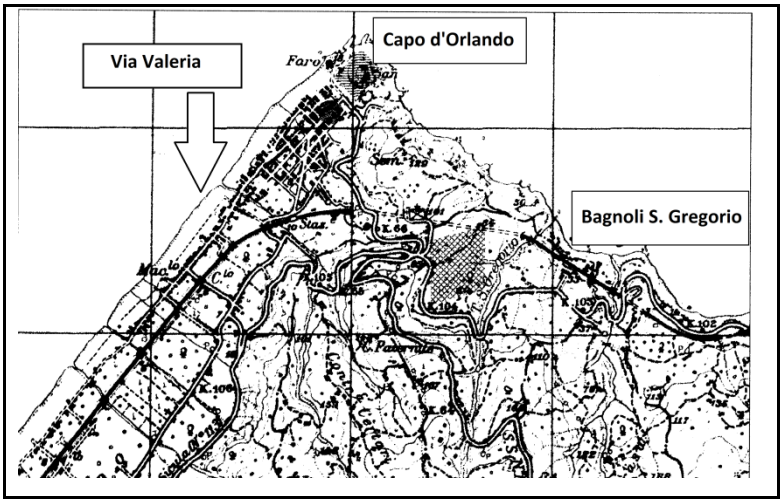


Fig. 2.52 Location of the district of Bagnoli S. Gregorio and Capo d'Orlando along the *Via Valeria* (Uggeri 2004, Fig. 26).

The bath (Fig. 2.53), either a private bath connected to a near coastal (?) *villa* or most probably a public bath complex to be linked with the above cited *statio*, was in use around the 3rd century AD and stopped for unknown reasons probably around the 4th century. This chronology is based only on stylistic study of the mosaics preserved and numismatic evidence. The earthquake which hit the area around the Strait of Messina and eastern Sicily around AD 360 destroyed this building, which was never rebuilt or used as a thermal area.[351]

[350] Spigo, Ollà and Capelli 2006.
[351] Spigo 2004, 96–97

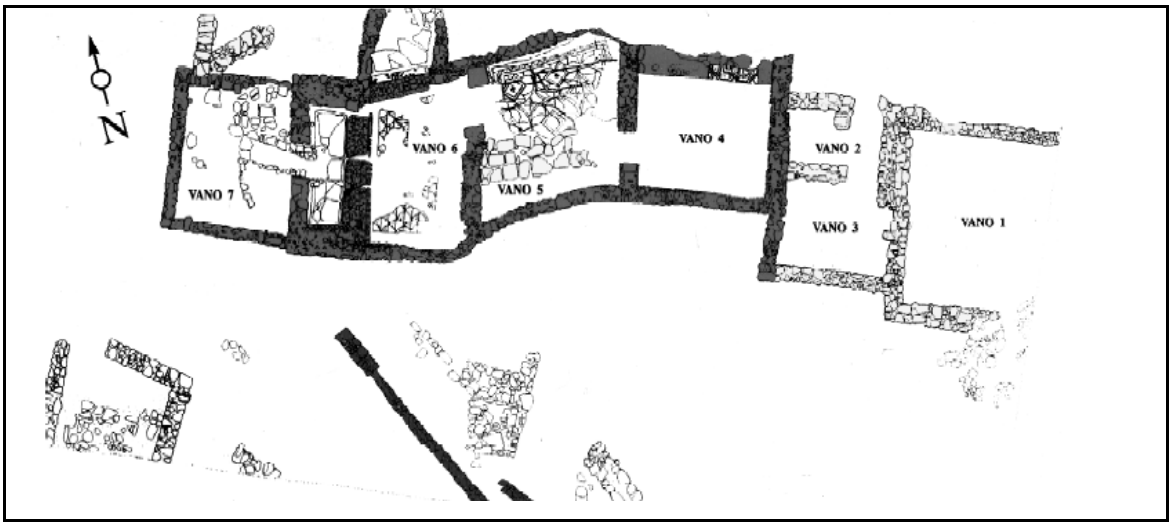


Fig. 2.53 Plan of the excavated area in Bagnoli S. Gregorio (Spigo, Ollà and Capelli 2006, Fig. 1)

The actual remains of the later kiln/s are not preserved. Nevertheless, the large amount of pottery/amphora sherds, some overfired, strongly suggest that the disused building was transformed into a ceramic production site. According to the excavators the *praefurnium* was reused as a kiln, while the *tepidarium* was probably used as warehouse.[352]

The location of artisanal activities within a disused bath complex is significant and demonstrates a major change from a prestigious public or private structure to an industrial site, signifying a certain change of the process of urbanization which might have been connected or accelerated by the earthquake of the 4th century.[353]

Apparently, between the middle of the 5th and the first half of the 6th century AD[354] this complex of kilns produced several different variants of transport amphorae and cooking pots.[355] Previous thin-section analyses carried out on few samples of pottery and amphora wasters from Bagnoli had confirmed the local manufacture of cooking pots, common wares and some small wine flat-bottomed containers.[356] The amphorae, attested in several types (Fig. 2.54) have been morphologically assimilated by the first excavators to other flat-bottomed types thought to have been produced in north eastern Sicily and known in the current literature as the 'Termini Imerese Types'

[352] Spigo 2004, 98.
[353] A similar process of decline of urban life after the earthquake is suggested for the near town of Caronia Marina/*Kale Acte* located along the same coast, 140–141.
[354] Spigo, Ollà and Capelli 2006, 452.
[355] Spigo, Ollà and Capelli 2006, 457–458, figs. 4 and 5.
[356] See Spigo, Ollà and Capelli 2006, 455, note 35; and appendix by C. Capelli 460–462. In particular, the amphorae compared with the types found in Termini Imerese are part of 'fabric group 1', probably produced locally, as proven by the petrographic characteristics of the fabric.

(see above). Other morphological comparisons have been established with the small containers produced around the town of Caronia (see above). A new typological classification has been proposed in this study (see Chapter 4, section 4.10 and Fig. 4.1).

The chronology for the use of the kiln in Vandal Period and by the second half of the 6th century has been established solely on the basis of a stylistic/typological study of the amphorae/pottery found during the excavations and numismatic evidence. It is more difficult to establish whether the kiln was in use before the Vandal period. More precise information on the life span of this kiln can be achieved from the evidence of Capo d'Orlando artefacts exported to consumption sites. The distribution study of the samples which have shown in thin-sections an analogy with the Capo d'Orlando production are only attested in Sicily in Late Antique contexts (4th-5th century AD) which do not narrow the span of use of the workshop.

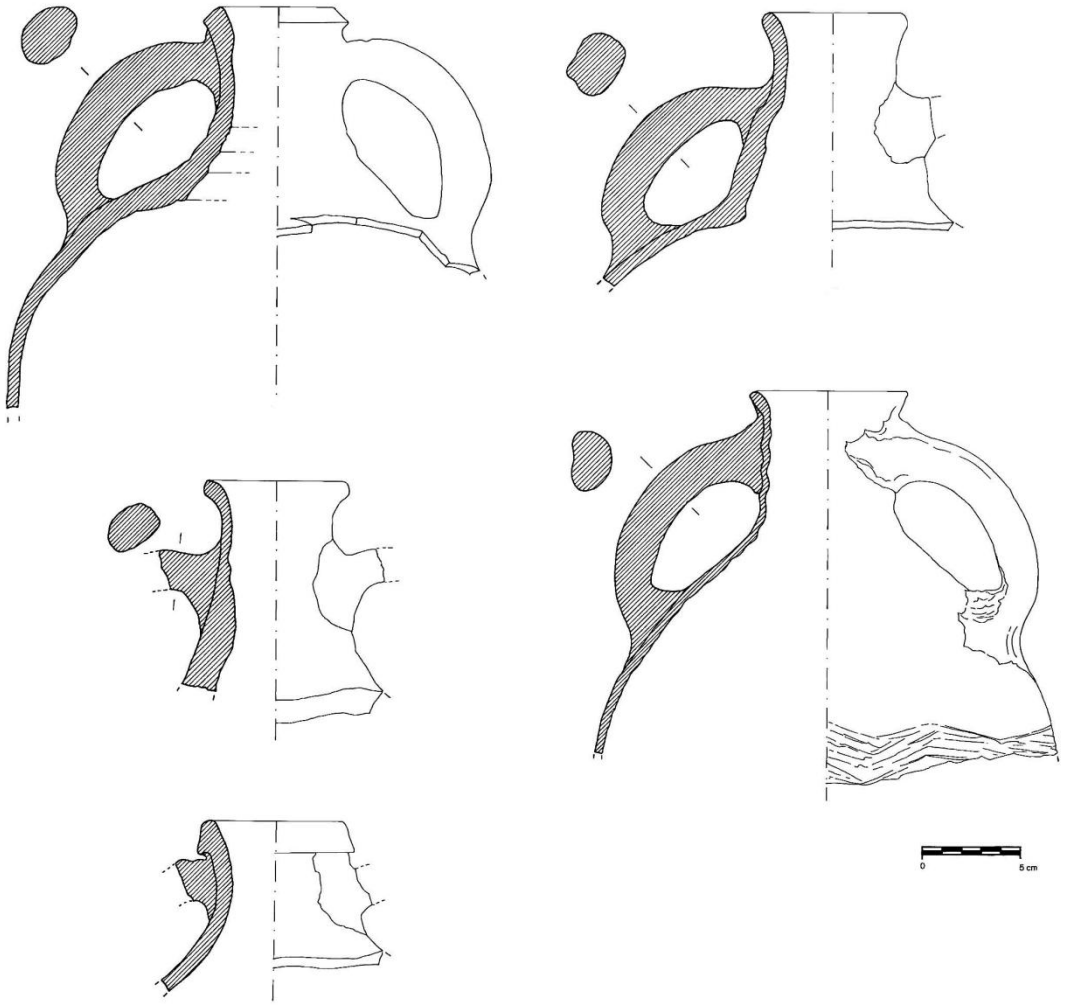


Fig. 2.54 Selected amphora types produced at the Bagnoli S. Gregorio workshop
(Spigo, Ollà and Capelli 2006, 456, Fig. .4)

2.6. Early Byzantine Amphora Production (AD 535–600)

Although there are not excavated remains of amphora kilns in Early Byzantine Sicily, the available evidence of a few ceramic assemblages dated between the second half and the end of the 6th century AD supports the notion that flat-bottomed containers were still produced on some areas of the island. Flat-bottomed containers have been found in the rural settlements of Saraceno (data under study), Canalicchio near present-day Calamonaci (a few examples) and Cignana (14% out of all the amphorae identified).[357] A few samples have been analysed in thin-section. The results have been only briefly published and suggest that the containers were produced in hinterland of Agrigento.[358] Amphorae were also manufactured somewhere in the north eastern region of Sicily. They are known as Crypta Balbi 2 type in the current literature,[359] and were mainly directed to the market of Rome.

2.7. Areas of Sicily with No (Published) Evidence of Amphora Production

2.7.1. Termini Imerese

The town of Termini Imerese (Fig. I, Area 9) became a colony in the Augustan age and represented an important stopover on the trading routes between Rome and North Africa. It flourished already in Proto-Imperial times, thus bringing about the development of a rich elite which relied on the wealth generated by agriculture in the fertile hinterland occupied by cultivated fields and *villae*.[360] There is no evidence that suggests that amphorae were ever produced in the Roman colony in the Early and Middle Roman Empire.

A different picture is available for the Late Antique period when flat-bottomed amphora production has been suggested in an area geologically not dissimilar to the territory of the city. Neverthless a local production of the amphorae called 'Termini Imerese types' (see above, Fig. 2.50) in the actual city of *Thermae* is not proved. The lack of data on local amphorae for foodstuff contrasts with the number of big and medium-sized agricultural settlements which grew from the Early Imperial period, thus

[357] Rizzo *et al*. 2014, Saraceno: 214, Pl. I, 3-4; Cignana: 214, Pl. I, 6 and II, 9; Calamonaci: 215, Pl. I, 5.
[358] Rizzo *et al*. 2014, 216.
[359] Saguì 1998, 321.
[360] Cic., *Verr*, II, 38, 92.

confirming an intensive and systematic rural exploitation by the *colonia*.[361] Probably Termini Imerese was mainly a commercial outlet for the Sicilian grain outbound for Rome[362] and market for the trade of goods and pottery from overseas markets, as attested by the array of pottery and amphorae imports especially from the Tyrrhenian coast of Italy[363], while oil or wine transported in skins or other means from inland estates were locally produced.

2.7.2. Palermo and Marsala

The lack of published evidence of suggested production centres and the overall scarcity of data on the Roman-period ceramic finds from the island's main western coastal cities of *Panhormus*/Palermo (Fig. I, Area 9) and *Lylibaeum*/Marsala (Fig. I, Area 8), important stopovers along the Rome-North Africa trade route, do not allow any thought on the organisation of amphora production Roman period. This issue, given the lack of detailed publications, still needs to be investigated further.

2.7.3. Segesta

The lack of amphora kilns in Sicily's north western tip, in particular in the hinterland of Segesta (Fig. I, Area 8), may also be only apparent. The archaeological research for this area is, in fact, more developed and the evidence shows a high degree of agricultural productive activity in this region. Several surveys have demonstrated the existence of many rural settlements in the vicinity of Segesta, on the low hills near the Valle del Fiume Freddo, with flourishing economies from the 2nd century AD.[364] The villages' wealth during the Middle Empire is evidenced by the importation of ceramics such as fine table wares (ARS) and cooking wares from North Africa, while the presence of transport amphorae imported from Africa, Spain and the Eastern Mediterranean was very limited.[365] On the basis of this last point the villages have been considered self-sufficient in food,[366] in that they were able to produce olive oil and wine for domestic consumption, as also attested by the discovery of an olive press in Segesta.[367]

[361] Belvedere *et al.* 1993.
[362] Uggeri 1997–1998, 346.
[363] Such as Italian sigillata and Italian Dressel 1 and Dressel 2–4, Belvedere *et al.* 1993.
[364] Bernardini *et al.* 2000, 111–112; Molinari 2002, 328.
[365] Cambi 2005, 630.
[366] Bernardini *et al.* 2000, 111–112.
[367] Bernardini *et al.* 2000, 109–110.

2.7.4. Sicily's Southern Coast

A similar picture of high agricultural productivity and lack of amphora kilns is available for Sicily's southern coast. Since the Mid-Empire this area of Sicily witnessed the development of several rural settlements (*villae*, *vici*, *mansiones* and *stationes*) and agricultural land, spread across the hinterland on fertile plateaux, or along the coast. They appear to have been settled and worked from the late 2nd century, until the end of the 5th century, and beyond.[368] Equally, we know of no remains of amphora workshops in the *partes rusticae* of the rich coastal villas (Ragusa region), nor in the vicinity of the *cetariae* known at various places on the Sicilian south eastern coast (Vendicari; Portopalo and Pachino).

To sum up, the current picture for amphorae does not reflect the variety of historical and economic phenomena that can be deduced from other archaeological evidence. This 'flattening' of the data seems to be due exclusively to the different quality of research and publications on these contexts.

2.8. Patterns of Amphora Production in Roman and Early Byzantine Sicily

From the evidence of production centres and the diversity of the amphorae production discovered, it is possible to suggest that several flat-bottomed containers for wine and possibly oil, as well as Dressel 21–22 amphora types for fish products, were made in several different parts of Sicily. To sum up, five diachronic phases of different patterns of amphora production can be distinguished (Fig. 2.55).

[368] Wilson 2005, 234.

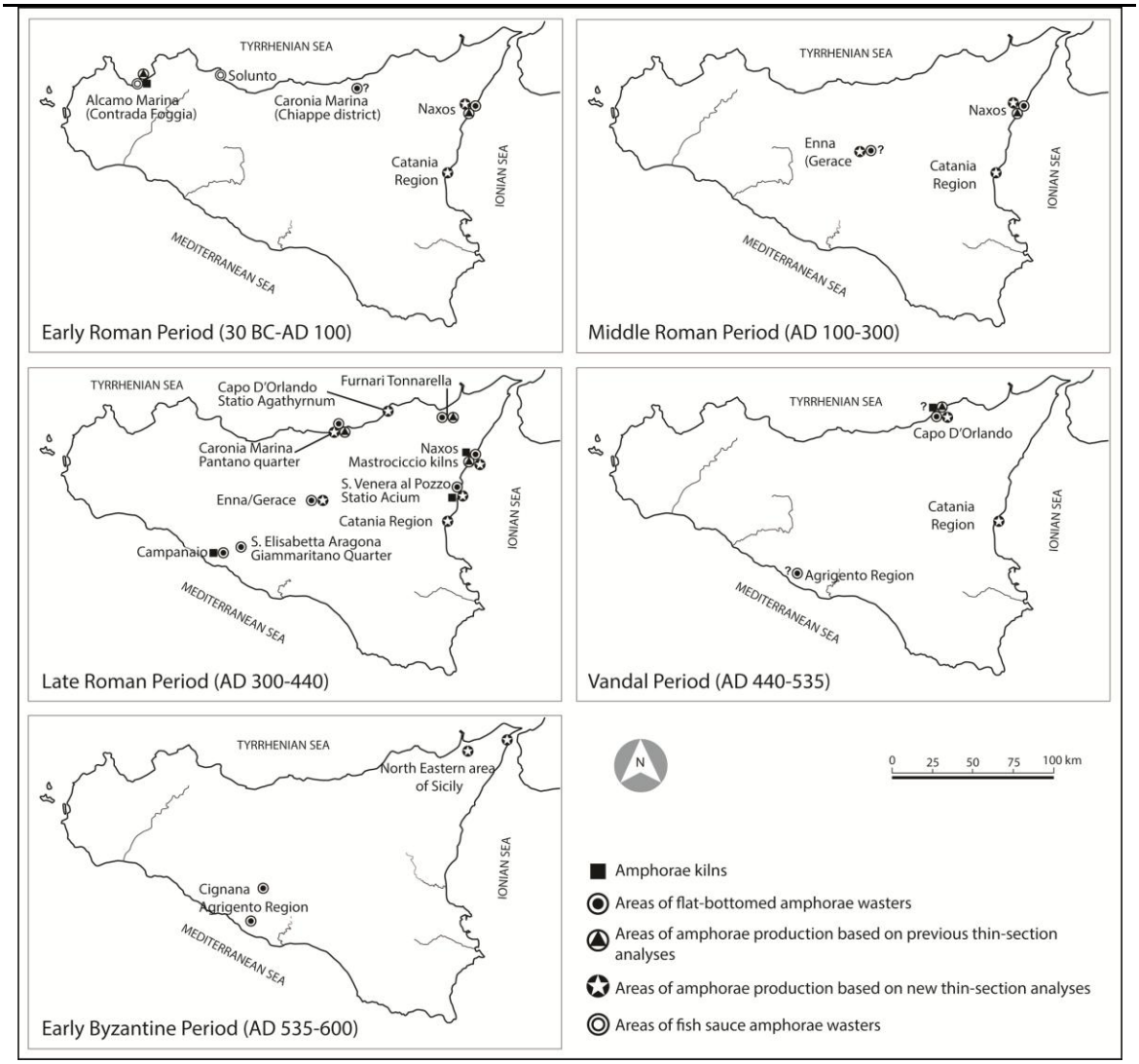


Fig. 2.55 Distribution map of amphora kilns and areas of suggested amphora production in Sicily (30 BC–AD 600) (C. Franco)

2.8.1. Early Roman Period (30 BC–AD 100)

Archaeological evidence of amphora production centres is attested in Solunto and Alcamo Marina (Dressel 21–22 types), Naxos and in the vicinity of Caronia Marina (flat-bottomed amphora types). Catania region flat-bottomed amphora production is suggested by the results of this study. Production of amphorae transportation of agricultural products (wine in this case) somewhere in the vicinity of S. Marco d'Alunzio, Taormina and Messina can be suggested on the basis of literary evidence (Chapter 5, section 5.1.7).

Amphora kilns of this period are located at coastal sites and produced containers for exports (Chapter 7 on amphora distribution). During the Early Imperial Period the

export industry is connected with main urban settlements, an example is the case of the Naxos workshop connected with the colony of Taormina. In this phase (and for the following Middle imperial period), the absence of amphora kilns is attested in various types of archaeological contexts. We have no evidence for kilns/production centres in large towns (such as Palermo, Termini Imerese, Syracuse and Agrigento), in other words the homes of precisely those wealthy classes able to invest their capital in intensive agriculture (wine and oil), in urban workshops and the extra-regional trade in agricultural produce. We also lack material evidence from medium-sized and small rural towns in particularly productive agricultural areas (for example the area of Segesta and Agrigento) where other archaeological data, such as the evidence from the *torcularia* scattered around the area attest to the cultivation of those raw materials (oil and wine) that could be bottled in amphorae.

2.8.2. Middle Roman Period (AD 100–300)

During this period the export industry was connected to the production only of wine amphorae at coastal sites such as Naxos, which continue without a break in the Mid-Roman period. Continuity of production is also attested in the region of Catania (study results, Chapter 3, section 3.6.1). The positive economic conjuncture of Sicily in the Severan Age[369] may have also supported the expansion of the ceramics industry in other areas of Sicily, such as in Central Sicily, in the settlement of Gerace/Enna, where pottery production was associated with the nearby *villa*.

When looking at the pattern of amphora production centres on the island, one can see that from the Mid Imperial period onwards the connection between *villa*/*pars rustica* and rural settlements with pottery/amphora kilns become a common mode of production. Such processes of amphora manufacture, involving many small-scale production units within one region and typically associated with nearby villae is widely attested in the following Late Roman Period.

2.8.3. Late Roman Period (AD 300–440)

During this period we see the rise of a plurality of rural production sites connected to areas producing oil and wine and manufacturing transport amphorae and pottery only

[369] The archaeological and epigraphic evidence suggests new urban prosperity especially in the cities of Palermo, Termini Imerese, Marsala, Taormina and Catania, Wilson 1990, 183-184; Portale 2005, 81; Malfitana, Franco and Di Mauro 2013.

for regional market (such in Agrigento area). Several workshops located closer to the coast (such the ones along the north eastern coast of Sicily) produced very similar amphora types that travelled mainly to Rome (Chapter 7, section 7.4.1.1.1). Although the picture for Sicily is enriched by far more data on amphora kilns during this period, most of the urban and rural centres on the western coast are still excluded from amphora production processes (Palermo and Marsala), as is the south eastern area (the present-day provinces of Syracuse and Ragusa). In this case, too, it is difficult at the present state of knowledge to formulate plausible historical and economic considerations.

The more intense amphora production of this period can be possibly linked to the introduction of the *canon vinarius*, between the end of the 3rd and the beginning of the 4th century AD.[370] As In this period the inland amphora production both in rural and urban sites (*vici*), served mainly a local/regional market, or the needs of an estate. The coastal amphora production was instead mainly aimed at long-distance trade networks throughout the Mediterranean, such as in the case of Naxian and Catania amphorae (see Chapter 7).

2.8.4. Vandal Period (AD 440–535)

Looking at the pattern of distribution of the workshops, one can see a shift in the areas of amphora production. From the Vandal period onwards amphora production for exports seems to be more concentrated on the north eastern (coastal?) area of Sicily. The suggestion is based on the results of thin-sections analyses performed on samples of the so-called 'Crypta Balbi 2 amphora type' (see Chapter 4, section 4.8.5) which show the continuity of wine export from Sicily after the end of the 5th and in the course of the 6th century AD. Judging from the published evidence, the workshop at Capo d'Orlando is the only amphora and pottery productive centre which is supposed to be in use in this phase.

Turning the attention to the consequences of the Vandal raids, the data published do not point to any dramatic change or even crisis in the distribution of pottery in Sicily at the time of the Vandal invasion. This is particularly true for the North-African imports which were imported until the end of the 6th century/beginning of the 7th century AD. Nevertheless, there was certainly a decline in production of Catania and Naxos transport containers with the apparent cessation of production, while the

[370] Lo Cascio 1999.

amphora industries of the north eastern coastal regions of Sicily may have profited from the market of Rome's needs.

2.8.5. Early Byzantine Period (AD 536–600)

The evidence of amphora production for this period is extremely scanty, if we exclude the probable Sicilian production of flat-bottomed containers in the Agrigento Region and the Crypta Balbi 2 amphora type somewhere in the north eastern area of the Sicily (see above). The latter type was produced in Sicily in the course of the 6th, and less certainly in the 7th century AD, and was mainly destined to Rome.[371] As a matter of fact Rome's food needs still depended heavily on the management of Sicilian land between the end of the 6th and the beginning of the 7th century,[372] as testified by the letters of Pope Gregory the Great (AD 590–604).[373] The *Registrum Epistolarum*[374] contains letters on property issues addressed to the bishops of the island[375] and to the *rectores patrimonii* of the Roman Church.[376] During the 6th century the Churches of Rome, and also Milan and Ravenna, owned vast territories in Sicily, acquired through the aggregation of small and medium-sized private and Imperial land.[377] In some cases the estates were owned by worshippers, who relinquished their property to be 'protected' by ecclesiastical patronage and benefit from the life-long usufruct of goods. What is quite certain is that in the Early Byzantine phase the management of the main rural settlements producing wine and oil was under the responsibility of the ecclesiastical property on the island. Whether and how this new system had any consequences for amphora production and distribution it is not possible to say both for the lack of material data (no kilns preserved) and very little information on flat-bottomed small containers of a probable Sicilian origin known for this phase (known in a consistent

[371] Sagui 1998 (from the Crypta Balbi context).
[372] Sicily became the granary of the Byzantine army deployed in mid-southern Italy (Cracco Ruggini, Dalla funzione economica al ruolo politico (IV–VI secolo), SDS III, 20, no. 115).
[373] Different scholars analyzed agricultural subjects in Gregory's writings, such as Mazzarino 1980; Puglisi 1986; Vera 1986, 430–447; Cracco Ruggini 1982–1983, 487 ff., esp. no. 14. More recent analysis in Caliri 1997 and Rizzo M. 2002.
[374] Gregorii I Papae, *Registrum Epistolarum*, MGH, Epistolae, I–II (edd. Elwald e Hartmann, Berolini 1891–1899).
[375] For a list of the Sicilian bishops' letters see Puglisi 1986, 527
[376] Greg. I, *Reg. Ep*., VII, 70 (Peter); IV, 6 (Cyprian); IV, 16; V, 8; VI, 4.
[377] Cracco Ruggini 1979, 493.

number only in the Cignana Early Byzantine Village[378], located 15 kilometres East of Agrigento).

2.9. LOCATION OF AMPHORA WORKSHOPS IN SICILY

Locating and describing known amphora production sites in Sicily with an indication of the amphora types produced is an essential step in this study. Few amphora kilns from the Late Republican to the Vandal period have been identified in Sicily and even fewer have been excavated. The relative scarcity of evidence is due to a general lack of systematic surveys primarily focusing on recording furnaces or areas of pottery manufacture. In some cases, though it is likely that amphorae were produced in the local area, it is unknown whether the workshop excavated was a pottery, tile or brick kiln (e.g. the Campanaio kilns).

It is possible to infer the existence of other kilns, not yet discovered or that have not survived, as also suggested by the results of the numerous thin-section analyses carried out on samples for this thesis (see in general, Chapter 3).

Hitherto, studies have identified amphora production centres in 7 of the 9 sub-areas of Sicily. In the Roman period, the only areas where amphora productions are not (yet) known are those belonging to the territory of Syracuse, around the south eastern tip of Sicily (Fig. I, Area 4) and the southern coast of Sicily between Marina di Ragusa and Licata (Fig. I, Area 6). This does not rule out the existence of production centres for amphorae intended for the storage of foodstuffs; on the contrary, it is likely that such structures did exist on the basis of two facts: the presence of Roman-period structures for the transformation of fish products at the southern tip of the east coast, fairly close to one another and perhaps belonging to an organized system for the exploitation of marine resources (Vendicari, Porto Palo and Pachino); and references from the late Hellenistic period to the production of wine[379] and the storage of salted fish in amphorae[380] in this area of Sicily.

Returning to the data on kilns, a total of just three preserved amphora kilns have been archaeologically excavated. They are located in north western Sicily (Fig. I, Area

[378] Cignana Village in (area 7) where amphorae which are thought to be 'Sicilian' area attested in layers dated between the second half of the 6th century to the first half of the 7th century, Rizzo and Zambito 2012, Fig. 2, no. 11.
[379] Cultivation of a particular vineyard called *Byblinos* in the hinterland of Syracuse Ath., *Deipn.*, I 29b–c.
[380] Athen. V, 11, 44: Sicilian salted fish transported in amphorae as cargo in the Syracosia ship belonging to Hieron of Syracuse.

8: Alcamo Marina); on the north eastern Ionian coast (Fig. I, Area 2: Naxos/Mastrociccio kiln) and in the hinterland of Catania (Fig. I, Area 3: S. Venera al Pozzo kiln). Overall, the kilns have been published in varying degrees of detail. The documentary evidence is particularly scanty from the 4th-/5th-century kiln of Naxos.

In a considerable number of cases (such as the district of Giammaritano; Furnari; Gerace; Caronia), the identification of amphora production is based on the discovery in the areas of spacers and pottery wasters and discards that were rejected because of misfiring, extensive traces of vitrification and other defects that might have occurred during the manufacturing process. In other cases, amphora and pottery production sites (Caronia Marina, Capo d'Orlando) have been suggested on the basis of substantial quantities of similar forms from a single petrological group found in specific areas, which provide an indication of a possible production within the locality.

It is important to note, that several areas of amphora production,[381] unknown by previous studies, have been determined for the first time on the basis of the petrographic analyses carried out within this research, indicating the importance of the archaeometric analyses (mineralogical in this instance) for the determination of pottery origin.

In Roman Sicily the traditional amphora workshop model varies over time. During the Early Imperial Period pottery workshops are mainly located nearby Roman *coloniae*, as in the cases of the amphora productive centres of Naxos and Catania and the long-lasting pottery productive centre in Syracuse.[382] From the Mid Roman Period and, more explicitly, during the Late Roman Period the model of production is connected to the system of *villae*[383] or to the large farms/rural settlements, or *vici*, with its intensive cash crop agriculture (olive and grapes). This is the model for the production centre in central Sicily (Gerace workshop), in south western Sicily (first phase of use of the Campanaio kiln). Between the Late Roman Period and the Vandal period kilns seem to have developed mainly around *stationes* of the *cursus publicus*[384] (as in the case of Naxos, S. Venera al Pozzo, Capo d'Orlando and Caronia Marina production centres) through which the agricultural surplus was conveyed to mid-and-long range markets. The *stationes* often coincided with *emporia*, i.e. larger centres and

[381] These areas being central/western Sicily?, somewhere in the volcanic region of the Messina and somewhere in the volcanic region of Catania.
[382] Production of common ware and fine wares, see now Malfitana *et al.* 2014.
[383] *Villa* when the building remains displays an erray of luxury items, such as mosaics, marble within its *pars urbana*.
[384] On the importance of the *mansiones*/*stationes* (road stations) from around the AD 325, Uggeri 1997–1998, 309.

the seat of local markets[385] where commercialization of rural products, pottery and amphorae containing local foodstuffs took place. *Mansiones*/*stationes* can also be associated with urban contexts, such as in the case of Catania and Agrigento, which are both mentioned as *stationes* in the Antonine Itinerary.[386] In other areas the 4th-/5th-century AD workshops are connected to *vici*, i.e. agglomerations or rural villages (Campanaio in its late development and the Giammaritano workshop located in the inner hinterland of Agrigento). In these villages lived the *vilici* who supervised the large estates. We might think that the amphorae and vessels produced within the locality must have been manufactured for the daily activities of the residents (vessels for drinking, eating, storing foodstuffs, cooking, lamps for lighting rooms, tiles for the roofs of houses) whilst amphorae served the purpose of storing and the medium-range transportation of locally produced foodstuffs; however, we can imagine that these were primarily transported in skins or other containers made of perishable materials.

2.9.1. Coastal Workshops

The majority of both suggested and excavated amphorae workshops — 7 examples — were located in coastal settlements, with direct access to the sea[387] and, consequently, overseas trade or trade within Sicily but not restricted to sub-areas. The general picture shows that the coastal workshops produced amphorae that were traded both inland and overseas. For example Catania region amphorae were traded to the settlements of Agrigento territory, and both Naxian and Catanian amphorae were traded in central Sicily. Nevertheless, the products of the inland Campanaio or Agrigento production area do not travel far and do not seem to have reached Catania or Naxos. This overall picture can be reconstructed thanks to the unpublished data on thin-section analyses carried out on amphora samples found in different contexts of Roman Sicily (CASR project) (see Chapter 3, section 3.7). Amphorae for extra-regional export were only produced at coastal sites probably for economic reasons connected with transport costs. This is mainly corroborated by the outcome of my analysis of Sicilian amphora types found in Mediterranean contexts which shows the widespread distribution of certain forms of amphorae only produced at coastal workshop and in locations at a maximum distance 5

[385] Belvedere 1995, 199.
[386] RE II.3.2, 2210–2213.
[387] This consideration is more obvious for amphorae carrying fish products which were manufactured very close to the sea (see Solunto and Alcamo marina kilns).

kilometres from the nearest port and not at inland rural workshops. This evidence can be seen as an indication of the higher costs of overland transportation, which made it expensive and unprofitable to export amphorae from rural inland sites of the island towards the sea ports.

2.9.2. Non-coastal Rural Workshops

The rural non-coastal amphora production sites were connected to areas of villas/rural settlements with areas producing oil and wine for local consumption[388] generally with good access to major roads. These kiln sites are located in central Sicily and in the hinterland of Agrigento. Campanaio was on a well–organised distribution network of roads and attached to a large agricultural estate; while the settlement of Gerace in Central Sicily was more isolated in Late Antiquity, as is demonstrated by the reduced circulation of the local amphorae and the scarcity of imported transport amphorae and North-African fine and common ware, extensively attested in other regions of Sicily. In general, what emerges from this study is that the amphorae produced at non-coastal workshop sites do not seem to have been exported abroad and were limited to inter-regional markets within the sub-area of production.

2.9.3. The Workshops in Areas of *Stationes* in Late Antiquity

As mentioned above, beside the coastal Roman cities (such as Palermo, Termini Imerese, Catania and Syracuse) the main human occupation in the lowlands in the Late Roman Period is concentrated in *stationes* which had access to good roads and ports. The rôle of amphora production in these sub–coastal small towns and *stationes* should therefore be seen in light of an increase in farming and cultivation from the 4th century onwards.

It is interesting to stress that the amphora workshops located at *stationes* had a privileged rôle in overseas trade. They seem to share the same pattern of location, as access to main roads and sea ports. Access to major communications networks, such as the *Via Valeria* and *Via Pompeia*, and sea ports, such as Catania, Termini Imerese and Messina/Taormina (see below), are the common element for the workshops involved in overseas amphora distribution. Connections with maritime installations helped in trading the foodstuffs stored in the containers. All the workshops were also very close to

[388] See for example the seeds of grape and the *trapetum* found at Campanaio.

large Roman *coloniae* — *Tyndaris*, *Tauromenium* and *Catina* —, characterized by large harbour areas and by prosperous rural and agricultural basins situated behind them, which were known for valuable wine production from the ancient sources (see Chapter 5, section 5.1.7).

2.9.4. Workshops and Water Sources

Sources of water were used at pottery workshops in the various stages of pottery production, from washing and mixing the clay, to preparing the white surface in conjunction with salt.[389] A rational approach to water use is shown by all the Sicilian amphora workshops, in particular by their vicinity to different types of water–sources, such as springs (S. Venera al Pozzo workshop), rivers (the river San Bartolomeo in Alcamo Marina, and Akis in S. Venera al Pozzo) and the sea (Caronia Marina; Capo d'Orlando and Naxos).

2.9.5. Workshops in Disused Baths

Bath complexes were particularly suited to pottery production: the bath furnaces and hypocaust systems could be adapted as kilns, while other infrastructure could be used for their drainage facilities and efficient water supply. The reuse of disused baths as pottery production sites during Late Antiquity in Sicily is attested at the Capo d'Orlando workshop where the kiln was probably inserted into the *caldarium* of a disused (private or public?) bath suite. Similarly, the pottery workshop of S. Venera al Pozzo was built within the ruins of a Roman Imperial building located very close to the disused public baths. In North Africa the re-use of bath complexes as production sites in the Late Roman period is not uncommon[390] and is known, among others, for the public bath complex in the centre of the coastal city of *Leptiminus*[391] and for the Antonine Baths at Carthage in the 7th century.[392]

In Late Antique North Africa, the transformation of the prestigious public baths into industrial sites might suggest a decline of the city itself (decrease in size or wealth, or change of urban conception?), or at least a change in the nature of the amphora

[389] Peacock 1982, 54; Rice 1987, 118–119, 148–150.
[390] See Wilson 1997, 169–170 with bibliography.
[391] Stirling *et al.* 2001.
[392] Lézine 1968, 72.

production within settlements.[393] In the same period (end 5th–6th AD) several amphora workshops moved inside towns, possibly due to a general social insecurity linked to the Vandal raids and reduced urban economic activity.[394] Due to this social insecurity from the 4th century and, with greater extent from the 5th century onwards, several urban settlements — especially in the north western,[395] south western and central Sicily — [396] started a reoccupation of hill top sites and marginal uplands which had been neglected in the previous periods.[397]

Turning to amphora production, the evidence for the Capo d'Orlando and S. Venera workshops might suggest that the potter's socio-economic status in Late Antiquity had changed compared to other craftworkers in the Early and Middle Roman Period when pottery workshops were built from scratch in urban contexts as attested for example in the 1st-century Naxos workshop or in the Syracuse fine-ware production for example). Possibly, in Late Antiquity the Sicilian potters fitted into a lower group of rural potters reluctant to invest in expensive pottery workshop infrastructure, preferring to reuse existing disused structures such as baths or abandoned buildings.

2.10. Organisation and Scale of Production

2.10.1. Ware Relationships

The general trend, as evident from the published data, consistently associates transport amphorae with coarse and cooking ware productions. Of the 10 certain amphora production sites, 8 are associated with vessel production, and of those 8, 4 also made building materials. Of these 8 sites, 5 are predominantly Late Roman. The common wares produced in the same production areas do not seem to travel far and seem to have been used within the locality or sub-area of production. Common/cooking ware production within the workshops could therefore be considered a medium or local scale production, manufactured both in coastal and non-coastal settlements. This consideration is only based on the absence of precise published data on the certain

[393] This is more evident for Leptiminus where amphora production continued at a smaller scale than before and cooking ware production for export ended.
[394] Bonifay 2004, 483.
[395] Molinari 1994.
[396] For the hinterland of Agrigento see Rizzo 2010.
[397] See also Wilson 1990.

extra-regional identification of the table ware or cook ware made at the kilns cites. We cannot rule out that further studies will outline a different picture.

The published evidence rules out that table ware was produced mainly at coastal production sites. In the case of the inland production areas connected to rural settlements or villas, such as Campanaio, Giammaritano and Gerace, the coarse ware production was probably integrated into the local rural economy and may be associated primarily with amphora production, in the sense that coarse wares were produced by filling the gaps in the kilns loaded with amphorae. One might also think that the production of these wares was seasonal rather than year-round, in keeping with the production of the agricultural *surplus* conveyed in the local amphorae.

Often attested is the simultaneous production of building materials and flat-bottomed containers both in coastal workshops and in pottery kilns with good access to ports and rivers (such as Agrigento, Naxos and S. Venera al Pozzo workshops) and in inland workshop areas (such as Campanaio, Gerace and Giammaritano workshops). According to some scholars, in the Roman world tile making is connected to rural workshops, while table ware was mostly a suburban activity.[398] The known evidence from Roman Sicily seems to contradict this latter point because rural workshops for table wares are known (see above) as is the production of tiles in coastal and inland workshop connected to *stationes* (such as the Late Antique phase in Naxos and S. Venera al Pozzo workshops). In any case the technology for producing tiles and table ware was different and may have required the use of different kilns within the same workshop.

2.10.2. Organisational Trends of Amphora Production in Roman Sicily

The extreme paucity of the stamp evidence on Sicilian Roman amphorae[399] deprives us of an important tool helpful for reconstructing activities linked to the management of *figlina*, in other words phenomena linked to the production process of containers and managed by the *officinatores*; but also for the identification of possible protagonists of the wine or fish trade. For the latter, we do not know names, the location of their properties or social status making impossible to established their social background. The amphorae from the S. Venera al pozzo workshop are differentiated by signs specific to

[398] Poblome and Firat 2011, 51.

the workshop whilst tiles present several marks (see above Fig. 2.36, no. 6) which may have served to distinguish batches of production within the same production centre.

A certain organization of production with different spaces for the execution of individual tasks or division of labour which would have required greater capital investment is attested only for the larger pottery workshops such as in Alcamo Marina (Dressel 21 amphora type), S. Venera al Pozzo (flat-bottomed amphora types) and Naxos (flat-bottomed amphora types) and suggested for Caronia Marina (flat-bottomed amphora types). The size of the workshop is one of the features which provides information on the scale of production. However the size of the workshop itself is not necessarily indicative of the long-range export of the amphorae produced there. Considering the published data and those known from the examination of samples conducted for this study, it seems that the Late Roman period workshop of S. Venera al Pozzo, though large and organized, only exported amphorae more likely to have transported olive oil within its territory,[400] whilst its wine amphorae are exported overseas to a lesser extent than other contemporary Sicilian amphorae (see Chapter 7). The production centre seems to concentrate on meeting the needs of the rural communities in its vicinity. By contrast, the late production centres on the north eastern coast of Sicily — Caronia, Capo d'Orlando and Furnari — though archaeologically less visible, appear fully integrated into the broad extra-regional trade in local wine towards overseas markets (especially Rome). It seems probable that the favourable position of the workshop (coastal), the vast fertile production hinterland to which it belonged and the integration of the *figlinae* into long-range trade circuits encouraged the long-range trade of the amphorae to a greater extent than the size of the kilns or the production centre.

Individual workshops producing the same amphora type in the 1st century AD — Dressel 21 — can be suggested for the Alcamo Marina kilns and the *Soluntum* workshop (district of S. Cristoforo). Each workshop was an independent production zone located in a different area of Sicily (Fig. I, Area 8 and 1 respectively) which used different resources to produce the same amphora prototype for the same content — i.e. salted fish. The same phenomenon can be suggested for the series of workshops producing flat-bottomed amphorae in use contemporaneously in Late Antiquity in Area

[399] In total less than 10 stamps are known on Sicilian Roman amphorae.
[400] Flat-bottomed amphora with a globular body which for its shape seems more suitable for carrying olive oil. For the amphora type see Amari 2005, Fig. 13 and 14.

2 (i.e. Caronia, Furnari and Capo d'Orlando, see Fig. I). The workshops were independent production units and used different resources, and each produced small amphorae very similar in shape and volume and probably intended for the same content, such as wine.

The opportunity for manufacturing pottery — but also tiles and bricks — in uniform shapes and standardised sizes, which could easily be stacked on one another,[401] can be considered another way of increasing the efficiency of production (and trade distribution) within a given workshop enabling the potters to make considerable savings. This organization of production with a certain degree of ceramic standardization appears to have happened in Roman Sicily for the main known amphorae workshops known from the published data such as Alcamo Marina, Naxos, Capo d'Orlando and S. Venera al Pozzo in each of which the range of common wares and cooking forms produced show similar manufacturing techniques, size and surface decoration. This standardized model of organization appears to be finished by the Early Medieval period judging from the evidence of the workshop of Agrigento in use between the 11th and the first half of the 12th century. In the workshop two circular different-sized kilns — both with platforms supported by an arched roof-kiln A (3.15 m diameter) and Kiln B (2.20 m diameter) — were used for numerous different forms of common ware, cooking ware and amphorae. More than 113 different types of pottery fired at the kilns have been recognized by the excavators.[402] What changed from the Roman period was not in fact the quantity of the kilns' output, as evident for the intensive production of this kiln, but the significant decrease of standardisation and lesser levels of specialisation.

The scale of amphora production in Roman Sicily is to be related mainly to the scale of wine production. The evidence that local production of containers intended for wine export predominated over those for oil (see the evidence collected in Chapter 5) supports the view that wine production in specific areas of Sicily — such as around Messina/Taormina, in the region of Catania and along the north eastern Tyrrhenian coast — was more organised and probably more significant overall than olive oil production. The major landowners, probably aristocrats, greatly benefited from the commercial opportunities offered by Rome, at least from the beginning of the 1st century AD onwards, through investment in the specialised cultivation of vine and in

[401] In particular in regards to cooking pots and common ware open-forms.
[402] Bonacasa-Carra and Ardizzone 2007, 163.

kilns making amphorae targeted for export markets. Sicily was, however, a producer of olive oil, [403] which only judging from the evidence of local amphorae known was not exported, but entirely directed towards local consumption. This panorama contrasts with the prosperity of North-African elites (especially the Tripolitanian ruling class) which derived their fortune from olive cultivation and trade, linked to the supply of the *annona*.[404] In Sicily, olive oil was imported from Tripolitania in Tripolitanian II/III amphorae, and from Africa Proconsularis in Africana I amphorae from the second half of 2nd century onwards.[405]

In conclusion, I believe that more than the presence of large production sites, a rarity on this large island, it is the simultaneous operation of numerous small and medium-sized amphorae workshops that gives us a clear idea of the large-scale production of Sicilian amphorae and of how containers for wine (and fish) were integrated into that wide-ranging movement of Mediterranean goods and foodstuffs of which the island was an integral part during the Roman period and beyond.

[403] For olive-crushers (*trapeta*), Wilson 1990, 192, with bibliography.
[404] On Tripolitania, Mattingly 1988.
[405] Franco in Malfitana, Franco and Di Mauro 2013.

SECOND PART: FABRICS, TYPOLOGY AND CHRONOLOGY

CHAPTER 3

THE ORIGIN OF SICILIAN FLAT-BOTTOMED AMPHORAE

Archaeometric analyses, costly when done at the necessary scale, should be [done] with a rigid research objective in tandem with typological observation and attention to detail.[406]

[...] *Choose the right samples for the right means of analyses and the right question to connect with it.*[407]

3.1 INTRODUCTION

This chapter explains how the application of petrographic and microscopic studies, in conjunction with the traditional typological approach, has provided fresh evidence and a new important contribution to identifying containers of previously unidentified origin as Sicilian amphorae, distinguishing production technologies and building a typological series for the main Sicilian ring-footed amphora types. The principal aim of this chapter on fabric analyses is therefore to define different sub-regional Sicilian production areas and determine the origin of specific amphora types, which have hitherto only been hypothesised — as in the case of the forms known as (Riley) Benghazi MR 1a;[408] Termini Imerese amphora class;[409] Palatine East amphora 1 class — [410] or have not been identified by pottery specialists — as in the case of Ostia III, 464; Ostia II, 522; Ostia I, 455 type, (Riley) MR 1b amphora type and its variants.

The new data used in this study include the grouping of the amphora fabrics, undertaken in collaboration with the petrologist Claudio Capelli,[411] using material from Sicilian, Mediterranean and northern European sites (see Figs. 3.1 and 3.2). These new thin-sections have been validated by comparison with previous thin-section analyses

[406] Reynolds 2008, 61.
[407] Zabehlicky and Scheffenegger 2006.
[408] Riley 1979, 177–179.
[409] Belvedere *et al.* 1993, 59–67.
[410] Peña 1999, 76.
[411] Associate member of the DISTAV/Dipartimento di Scienze della Terra, dell'ambiente e della Vita) (Department of Earth, Environment and Life Sciences) at University of Genoa and Associate member of the Centre Camille Jullian, CNRS, Aix-en-Provence. The fabric analyses were undertook by C. Capelli, the identification of the possible provenance of the fragments is the result of joint work; the analysis of aspects of production and their projection into the social and historical context is the work of the present author.

performed on similar amphorae and on wasters from known Sicilian workshop areas (see Fabric Group A, below). The summary tables of thin-section analyses at the end of each *Fabric group* recognized within the study (see Tables 3.1–5) are a first attempt to link amphora typology with fabric composition. The tables include the new amphora classification and the context of discovery in order to allow an at-a-glance link between suggested areas of production and areas of export. The samples are ordered in the tables on the basis of their compositional similarity and do not follow the typology. In Catalogue I the samples are illustrated combining data on typology/chronology and fabric composition. Microscopic images of the main fabric groups identified are included in this chapter.

The concluding remarks for each area of amphora production broaden the perspective and discuss the implications of the new data for an understanding of amphora production, distribution studies and trade networks between Sicily and other Mediterranean regions.

3.2. Previous Characterisations and the New Approach of this Study

3.2.1. Previous Studies

There are only a limited number of studies which focus on determining the origin of Sicilian amphorae with the contribution of archaeometric analyses (chemical and mineralogical) for the Roman period. Although several recent research projects have concentrated on the lively debate over ceramic petrology,[412] archaeometric analyses carried out on pottery kilns or pottery wasters found on the island aimed at identifying manufacturing sites and sources of raw material are still few and far between.

Evidence is available for Punic Sicily thanks to a study by B. Bechtold aimed at identifying the origin and typological evolution of several transport containers of Punic tradition manufactured from the 7th to the 2nd century BC.[413] On the basis of the amphora fabric composition, distribution and archaeological data, she suggests the existence of four main production centres in western Sicily: Marsala, the nearby small

[412] See in particular Malfitana, Bonifay and Capelli 2007 on the research project focusing on archaeometric problems in African imports and Sicilian pottery in the Roman Period (CASR project) and Olcese 2006 on the archaeometric data bank of pottery produced in Italy (with a few examples of Sicilian producer sites) now published in Olcese 2012.
[413] Bechtold 2011.

island of Motya, Palermo and Solunto (Fig. I, Area 8 and 9). Other petrographic studies were carried out on 4th/3rd-century BC transport amphorae probably produced in the vicinity of the ancient Sicanian city of Entella in the interior of Sicily (Fig. I, Area 8).[414]

More recently, on the basis of archaeological data in conjunction with petrographic analysis, E. Botte has argued for a western Sicilian origin of the so-called *Tubular amphora* of Punic morphological tradition. He suggested that the container was manufactured between the mid-2nd and the early decades of the 1st century BC and intended for the transport of fish products.[415]

For the Archaic and Classical Greek period several archaeometric studies making use of mineralogical and chemical analyses have revealed that different amphora types[416] in use between the 6th and the 4th BC were produced in at least three Greek western colonies: Agrigento, Gela and Messina (respectively in Areas 7, 6 and 2). The analyses made it possible to distinguish the Messina amphora fabric, characterised by fragments of metamorphic clasts from the Peloritani Mountains, from specimens produced in Gela and Agrigento, both located along the southern coast of Sicily, which are more similar petrologically, but still distinguishable on the basis of their chemical composition.[417]

An archaeometric study (geochemistry and petrography) of the Graeco-Italic amphora types (see Chapter 1, section 1.5, point 2),[418] has shown that some of these were manufactured in the region of Messina, in the north eastern corner of Sicily (Fig. I, Area 2), from the 4th to the 2nd century BC.[419] Finally, an archaeometric research project on local pottery from Messina allowed for a distinction to be made between pottery produced in the area of the Strait of Messina or more generally in the north eastern corner of Sicily, and the Area of the Nebrodi Mountains in southern Italy, in modern-day Calabria.[420]

As for the amphorae Richborough 527/Lipari 1–2[421] amphorae the discovery of kilns allowed the production to be attributed to the *municipium* of *Lipara*/Lipari, which

[414] Corretti and Capelli 2003.
[415] Botte 2012. See also the appendix by C. Capelli on a thin-sectioned sample of Tubular amphora, Capelli in Botte 2012, 606.
[416] Defined in the current Italian literature as 'massaliote' amphorae (6th-5th centuries BC) or 'pseudo-chiote' amphorae (5th century BC).
[417] Barone 2002; Barone *et al.* 2003.
[418] Van der Mersch 1994.
[419] Barone *et al.* 2011.
[420] Barone *et al.* 2002.
[421] Regarding the typological analyses on the amphorae see, Borgard *et al.* 1991 and Borgard 1994.

is part of the Aeolian Islands, off the north eastern corner of Sicily. From the 1st century BC to the 2nd century AD[422] kilns in Lipari produced these amphorae intended for transporting alum for long-distance trade,[423] and coarse ware which was intended for local use. A thin section study demonstrated that some of these amphorae were produced in Lipari using raw materials imported from Sicily (Milazzo area), characterised by acidic metamorphic inclusions.[424]

For Imperial Roman Sicily the studies carried out on Roman pottery (amphorae and common vessels) found in the cities of Termini Imerese, Segesta[425] and Agrigento[426] are among the most extensive. Their results were published in the late 1990s, and, though interesting, did not clearly identify the geographical origin of the pottery, because they were limited to the definition of mineralogical and chemical compositional groups that were not assigned to any specific local manufacturing sites.[427] Furthermore, these studies did not take into account typological features, nor did they provide sufficient information for pottery specialists to identify the regional provenance.

With the exception of the large-scale programme of analyses carried out on 1st-century AD Dressel 21 salted fish containers produced at the Alcamo Marina workshop,[428] published analyses of other Sicilian amphora types from the manufacturing areas of production are still scanty.

Thin-section analyses were undertaken by D. Williams on 45 pottery sherds (amphorae and common ware) from the Naxos workshop.[429] The results were published in the form of a brief summary which shows the differences among the fabrics of pottery originating in the Naxos Area. Unfortunately, the lack of microscopic images of the main fabric groups does not allow for a visual comparison with the fabric description.

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[422] For the kilns of the Early Imperial period found in Contrada Portinenti, see Borgard and Cavalier 2003.
[423] Alum was a significant mineral for the whole economy of the Empire because of its various multi-functional uses for a range of industrial processes (e.g. for tanning), in the textile industry and in medicine. On the alum from *Lipara,* Plin., *Nat. Hist.,* XXXV, 184.
[424] Borgard and Capelli 2005.
[425] Termini Imerese and Agrigento: C. Gioia in Belvedere *et al.* 1993 (flat-bottomed amphorae sampled: A.21); Belvedere *et al.* 1998a; Belvedere *et al.* 1998b.
[426] Carra Bonacasa 1995, *addendum* R. Alaimo ed., 365–416.
[427] Similar material of known origin or wasters from kiln sites are required in case of chemical analyses in order to supply useful information in regards to pottery origin. On this point, Williams 2005, 615.
[428] Capelli and Piazza 2006, 171–173 and pl. V–VI; Botte and Capelli 2009, especially 142–156 (Botte Type 1 var. A and B).
[429] Williams 2001, 61–62.

Pottery (common and cooking ware) and fragments of flat-bottomed amphora types produced at several Sicilian workshops, such as Naxos,[430] Capo d'Orlando (district of Bagnoli S. Gregorio),[431] Caronia Marina (district of Pantano) and Furnari Tonnarella[432] have been analysed by C. Capelli. More recently, a study by M. S. Rizzo (Superintendency of Agrigento) provides the results of petrographic analyses on a few sherds of Late Roman flat-bottomed amphorae found at three suggested production sites in the hinterland of Agrigento (See Fig. I, Cignana, Canalicchio and Verdura in Area 7).[433]

Overall, these previous studies have generally not made meaningful distinctions between compositional 'reference groups'. The archaeometric studies available were essentially limited to describing the fabric of individual sherds, without integrating the final results within the wider context of archaeological features connected for example with typo-chronological aspects (see Naxos analyses); while others were aimed mainly at the petrographic characterization of individual specimens, sometimes making the results impossible to interpret for the archaeologist dealing with broader analyses of material culture (see the case of Termini Imerese). Previous research has not therefore enabled specialists to provide a more precise and plausible view of the production of containers in Roman Sicily.

3.2.2. The Sicilian Amphora Fabric Study: Main Research Objectives

This study is devoted to a broad and integrated archaeological and petrographic investigation[434] which for the first time considers a large number of samples and wide range of flat-bottomed amphora types recovered from consumption sites both in Sicily and abroad (on the sites selected and quantity of sherds see below: Materials Collected For this Thesis). The selection both of the archaeological sites and the amphora sherds was carefully designed to resolve specific archaeological questions such as amphora production, the identification of amphora origin and amphora distribution, and to test specific archaeological hypotheses.

[430] Capelli 1998 (2 amphora samples from the kiln).
[431] Spigo, Ollà and Capelli 2006 (12 thin-sections, out of which 7 have been attributed to a local production).
[432] Cabella, Capelli and Piazza 2009 (18 thin-sections attributed to Caronia and Furnari production).
[433] Rizzo *et al.* 2014.
[434] On the advantage of the petrographic method for sourcing pottery see also the important studies of D. F Williams (Williams 1983; 1990).

The final goal was to create a corpus of Sicilian amphora fabrics which can be related to specific production centres. The corpus has been validated by comparison with samples from known Sicilian workshop areas and was used in conjunction with the data on morphology for the creation of the typological repertoire (see Catalogue I). It is hoped that once this 'reference Sicilian fabric group' has been established as an open database, this information may be compared with sherds found by other scholars in other regions, making it possible to add new data on production, distribution and consumption on Sicilian amphorae (and pottery).[435]

The main aims of the programme of petrographic thin-section analyses were:

1. To establish and assess less subjective evidence for the provenance of specific flat-bottomed amphora types;
2. To identify sub-regional sources of amphora production, thereby providing a means of distinguishing previously unknown production centres;
3. To provide a useful parallel for comparison with previous thin-section analyses carried out on wasters of similar transport containers (cf. Reference Fabric Group);
4. To support and test the identification of Sicilian amphorae formulated on the basis of the macroscopic characterization of fabrics;
5. To rectify the common and misguided idea that some Sicilian amphora forms were of North-African origin (see the MR1 issue Chapter 4, section 4.9.3.1);
6. To compare fabric groups and subgroups with typological analysis in order to provide a holistic approach to the study of artisanal production.

3.3. THE CREATION OF A *CORPUS* OF SICILIAN AMPHORA FABRICS

3.3.1. Methodology

The new *corpus* of Sicilian amphora fabrics encompasses (A) *reference fabrics* (40 thin-sections) and (B) *fabrics from consumption sites* (181 thin-sections).

Group A consists of amphorae of different types/pottery kiln wasters from 6 known Sicilian production sites (Fig. 3.1). This group was essential for provenancing

[435] To increase accuracy it would be essential to integrate the petrological approach with the study of the raw materials used around the areas of known workshops and the evidence of the chemical compositions of the flat-bottomed amphora wasters. For a recent comprehensive characterization of the raw materials in western and central Sicily see Montana *et al.* 2011.

each sample. It was composed of *c.* 40 thin-sections, of which 10 samples were donated by the local Soprintendenza[436] and approximately 30 thin-sections gathered in a reference collection at the laboratory of DISTAV of Genoa University by C. Capelli.[437]

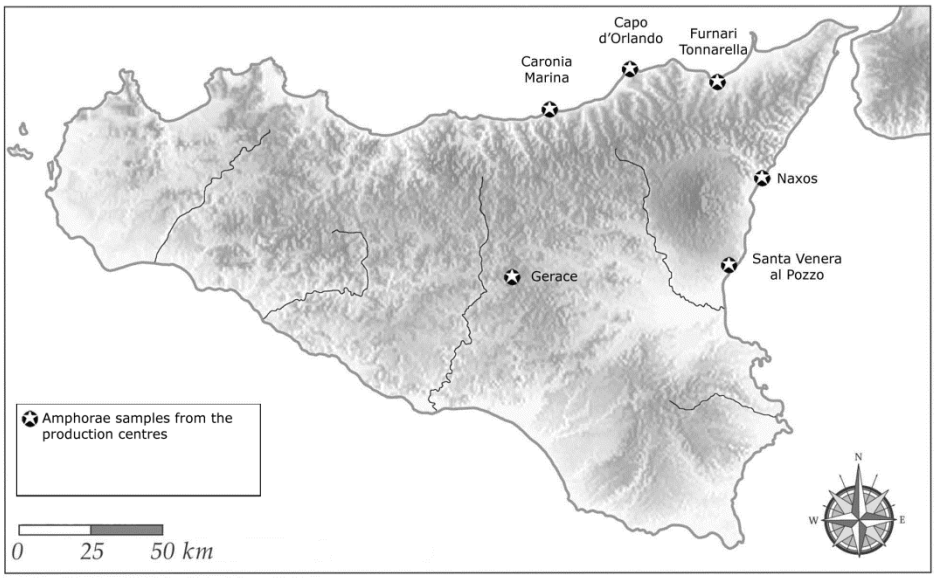


Fig. 3.1 Map of Sicily showing the location of the reference material from kiln areas/pottery workshops (thin-sectioned samples of Group A) (C. Franco).

Group B is composed of sherds found at consumption centres, whose production origin was uncertain, but for which a variety of archaeological data, including morphology and technical features, suggests a Sicilian origin (see Fig. 3.2). This group comprised a total of 181 thin-sectioned samples, of which 111 are part of the new study. The selection of the samples for this study was based on the sherds that best represented particular variants in terms of typology and fabric, and on the sherds that presented unusual typological characteristics. This group also comprised of thin-section analyses from previous studies: 30 thin-sections carried out on flat-bottomed amphorae

[436] Samples from the production centres of Gerace S. Venera al Pozzo (Superintendency of Catania); Caronia Marina and Furnari Tonnarella (Superintendency of Messina); Gerace (Superintendency of Enna).
[437] Samples from the production centres of Gerace, Capo d'Orlando, Caronia Marina Furnari Tonnarella and Naxos. Results of these thin-sections were first published in Capelli 1998; Spigo, Ollà and Capelli 2006; Cabella, Capelli and Piazza 2009.

found in Rome,[438] at Mariana in Corsica,[439] on Djerba in Tunisia,[440] in Algeria,[441] in Libya and Egypt[442] and in Sicily.

The samples (40 thin-sections) from 14 terrestrial consumption sites and 1 underwater find in Sicily (Fig. 3.3, nos. 1–15)[443] were part of the aforementioned CASR project (see the introduction of the thesis). The interpretation of the thin-sections from this project will be fully addressed by the writer and C. Capelli in a monograph which is in preparation. In this thesis I will refer to them using the acronym SIC (Sicilian). The evidence from this group has been essential to demonstrate differences in amphora patterns of distribution and trade in Sicily and overseas (see the concluding remarks below).

[438] Capelli 1998.
[439] Pasquinucci *et al.* 2007.
[440] Fontana *et al.* 2009.
[441] Amraoui, Bonifay and Capelli in press.
[442] Franco, Mazou and Capelli in press.
[443] Tindari (Area 1); Catania and Mineo (Area 3); Piazza Armerina and Enna/Gerace (Area 5); S. Croce Camerina (Area 6); Carabollace, Verdura, Carboj and Vito Soldano (Area 7); Contessa Entellina, Segesta and Mazara del Vallo (underwater recoveries) (Area 8); Castronovo di Sicilia and Termini Imerese (Area 9).

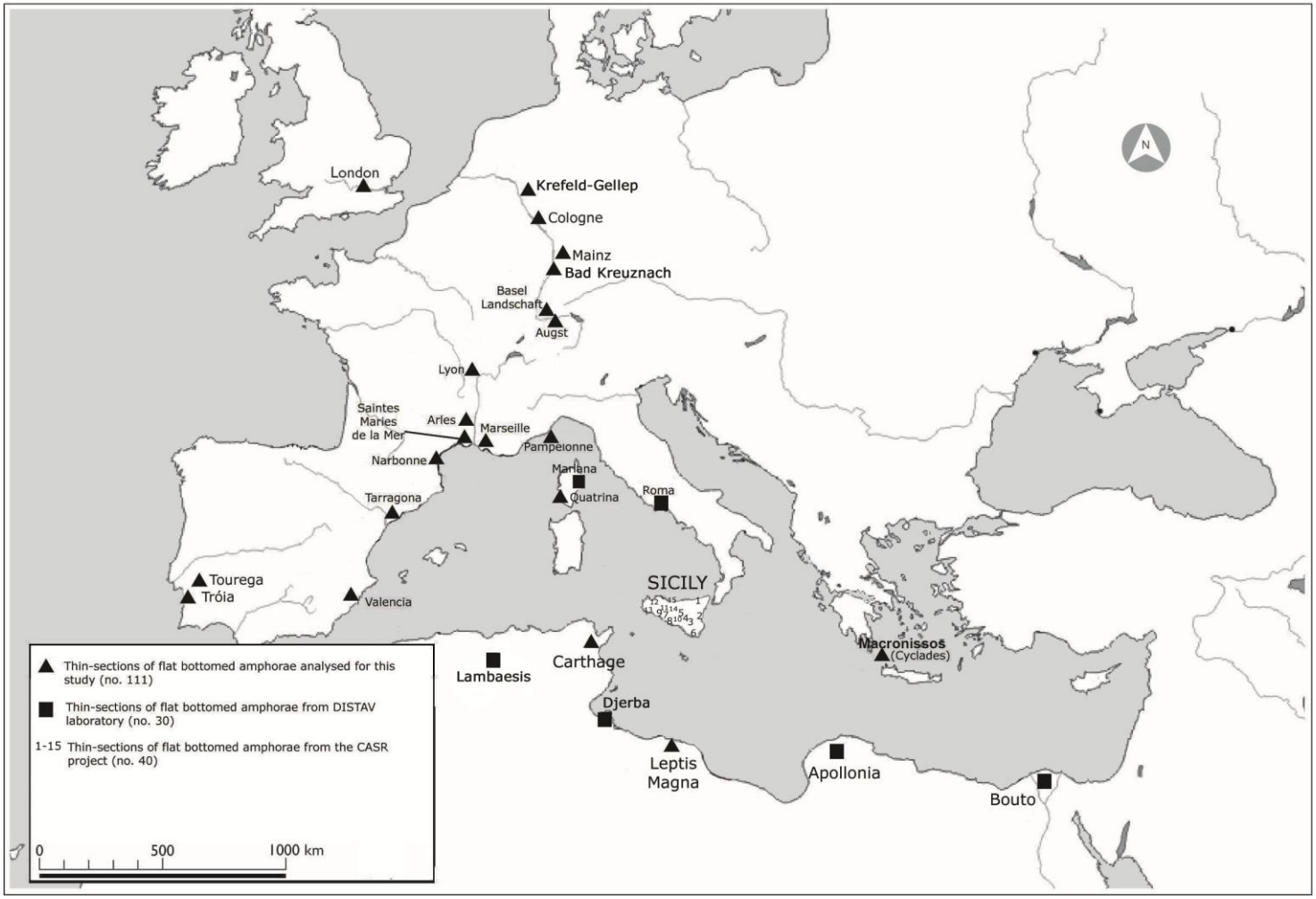


Fig. 3.2 Map of the Mediterranean showing the location of the amphorae reference material from consumption sites (thin-sectioned samples of Group B).
1–15: 1) Tindari, 2) Catania, 3) Mineo, 4) Piazza Armerina, 5) Enna/Gerace, 6)Santa Croce Camerina, 7) Carabollace, 8) Verdura, 9) Carboj, 10) Vito Soldano, 11) Contessa Entellina, 12) Segesta, 13) Mazara del Vallo, 14) Castronuovo di Sicilia, 15) Termini Imerese (C. Franco).

3.4. ARCHAEOLOGICAL AND ARCHAEOMETRIC STUDY OF SAMPLES SELECTED

3.4.1. Methodology

The theoretical and practical model for this integrated archaeological and archaeometric study is the approach used in the last fifteen years by M. Bonifay and C. Capelli for North-African Roman pottery.[444] This approach has enabled a distinction to be made between pottery fabrics of several workshops in Byzacena, Zeugitana and Tripolitania using a combination of binocular and thin-section analysis and the creation of North-African fabric reference groups that can now be used by other researchers.

For this study all the samples from **Group B** were 'sorted' into groups and several subgroups on the basis of the compositional and technical characteristics of the fabric.

The procedure was based on the five main criteria described below:[445]

1) identification of all the minerals, rock fragments and microfossils and other inclusions for each amphora sample. These inclusions, intrinsic to the clay or added deliberately, can identify the source of raw materials and reflect the geology of the region from which the clay – or the added temper – was obtained.
2) textural analyses of the fabric through the identification of size, shape and percentages of the inclusions;
3) description of the composition of the clay matrix;
4) identification of technical characteristics such as firing conditions and surface treatments;
5) examination of the general appearance of the fabric at macroscopic scale.

3.4.2. Materials Collected for this Thesis

For my study the materials analysed in thin-sections (111 samples) came from 19 terrestrial consumption areas[446]; more than five underwater contexts and four wrecks[447]

[444] Capelli and Bonifay 2007.
[445] On the procedure see Capelli and Bonifay 2007, 552.
[446] England: London (Archaeological Museum of London); Germany: Cologne (Archaeological Museum of Cologne); Mainz (*Mogontiacum* urban contex); Krefeld-Gellep (Roman Cemetery); Bad Kreuznach (Roman Villa); Switzerland: Basel-Landschaft (Laufen-Müschhag, Roman villa) and Augst (*Augusta Raurica* and its hinterland); France: Lyon (Parc Saint Georges); Arles (several urban excavations); Saintes-Maries-de-la-Mer (portual context); Marseille (La Bourse); Corsica (Quatrina); Spain: Valencia (Plaza de la Almoina); Tarragona (Tarragona city dumps); Portugal: Tróia (Fish salting factory); Tourega (Roman villa); Libya: Lepcis Magna (Thermes du Levant); Tunisia: Carthage (urban context).

located in seven modern-day European countries (England; Germany; Switzerland; France; Spain; Portugal and Greece) and two North-African countries (Tunisia and Libya) (see Fig. 3.2). The selected archaeological contexts cover a wide chronological range: from the first three decades of the 1st century to the final years of the 5th/very beginning of the 6th century AD.

Overall, several hundred amphora sherds from the archaeological contexts were visually examined. 181 probable Sicilian samples were first identified using a typological approach when diagnostic fragments were preserved. For illustrations of the samples analysed see Catalogue I. All the sherds and bodysherds were analysed using a hand magnifying lens and under a stereomicroscope for an initial characterization and grouping of fabrics. To provide a more accurate characterization, 111 samples from overseas contexts were selected for thin-sectioning[448] in order to assess the proposed Sicilian origin and to define their range and variation within the fabric groups identified. The study of a sufficient number of samples, such as in this case, was essential in order to give reliable significant results.The thin-sectioned samples are referenced within the thesis with the prefix SA (acronym for *Sicilian amphorae*) (see also the reference in the following Tables 3.1–5). This reference is completed by the analysis number in C. Capelli's fabric database, making it possible for any future scholar to find the thin-section for comparative purposes.

3.4.3. Results

The combined analysis of archaeological evidence, amphora morphology and petrography has achieved four main results:

1. The identification of distinct fabric groups and subgroups (Sicilian and non-Sicilian) that can be associated with areas of production and/or workshops (= amphora origin in this chapter);
2. The association of particular fabrics with specific amphora forms (= typology; Chapter 4);

[447] Underwater recoveries from Southern France (DRASSM); from the River Rhone (Gare Maritime; wreck Arles-Rhone 3; Archaeological Museum collection); from Narbonne (Port-la-Nautique) and Macronissos Wreck (Greece).
[448] The samples were made into thin-sections by Massimo Sbrana (Servizi per La Geologia, Piombino, Italy).

3. The clarification of the Sicilian origin of Riley's form MR 1a and 1b (Chapter 4, section 4.9.1); and evidence for imitation in different geographical areas (Chapter 6, section 6.2);
4. The localization of the geographical areas of provenance of the sherds analysed in each site (= pattern of distribution/preferential trade areas). (see Chapter 7 on distribution)

3.5. The Identification of Different Fabric Groups and Subgroups and related production centres

The petrographic analyses allowed us to distinguish four main groups of fabrics and related subgroups (Groups 1–4), and one large generic group (Group 5). Groups 1 to 4 can be related to different Sicilian geological/production areas and, in some cases, individual workshops,[449] while Group 5 can be related to a Sicilian origin as preliminary hypothesis. These data, in conjunction with the archaeological evidence (see Chapter 2 on the preserved areas of production in Sicily) have supported hypotheses on the existence on the island of several, and in a few cases closely proximate, pottery production centres that have produced similar amphorae. The provenance hypotheses are based on the comparative study of the new samples with the reference materials (samples from Group A, see above) and/or the compatibility of the mineralogical and petrographic features of the aplastic inclusions of the fabrics with those of the rocks and sediments outcropping in specific districts on the island. The geological variability of Sicily and the presence of distinctive rock types in a few areas of the island[450] has also allowed to distinguish among different Sicilian amphora production as well as to contribute to recognising non-Sicilian imitations of Sicilian types (such as Riley's MR 1a, Chapter 6). The main groups identified can be further divided into sub-groups mainly on the basis of secondary compositional and textural characteristics, which can often be related with different production sites or workshops in one of the main areas.

The main distinctive petrographic components identified in the Sicilian amphora productions are the following: (see Fig. 3.3)

[449] Such as in the case of the workshops in Naxos (Lentini 2001); S. Venera al Pozzo (Branciforti 2006); Caronia Marina (district of Pantano) (Bonanno and Sudano 2006; Bonanno 2007); Capo d'Orlando (Spigo, Ollà and Capelli 2006); Furnari Tonnarella (Bonanno and Sudano 2006, 442; Bonanno 2007, 356) and Gerace (Bonanno *et al.* 2010).
[450] See on this point Montana *et al.* 2011 and references therein.

a) Basaltic rocks and derived minerals that can be correlated to the Etna complex (Eastern Sicily, region of Catania) (Fig. 3.3, area A);
b) Mostly acid metamorphic rocks and derived minerals that can be correlated to the Calabro-Peloritan Palaeozoic basement outcropping in the area of the Strait of Messina (Fig. 3.3, area B);
c) Quartz-sandstones and derived (aeolian) quartz grains that can be correlated to the Numidian Flysch outcropping in northern Sicily (Fig. 3.3, area C).

As for the more generic fabrics recognized in this study, the absence of these distinctive components could also point to the other geological areas of Sicily (see area D in Fig. 3.3). The presence of distinctive components in the fabrics analysed have, one one hand, pointed to specific provenance areas[451] and, on the other hand, have allowed us to exclude other geological areas where these components do not outcrop.[452]

A few isolated samples of non-diagnostic sherds[453] (5; 4.5% out of 111 samples analysed) did not match particular groups because of the generic nature of their petrographic components. In this instance, without any archaeological data or information on their distribution pattern to further support a possible Sicilian origin, it was chosen not to include them in the illustrated catalogue of sherds selected (Catalogue I). In a few cases, groups consisted of non-Sicilian fabrics, such as Baetican (attested with 2 samples, SA 94 and SA 93; 1.8% out of 111) and samples that could be attributed to a North-African origin[454] (Plate XXXIII–XXXIV) (4 samples; 3.6% out of 111) (see also Chapter 6 on imitation).

[451] Such in the case of the volcanic area of Sicily.
[452] Such in the case of the Keay 52 produced in present-day Southern Calabria, that lack of volcanic inclusions attested, instead, in the North east Sicilial Keay 52 produced in north eastern volcanic area of the island, see *ultra*.
[453] SA 78; SA 96; SA 104; SA 108 and SA 120.
[454] SA 22; SA 46; SA 74; SA 89.

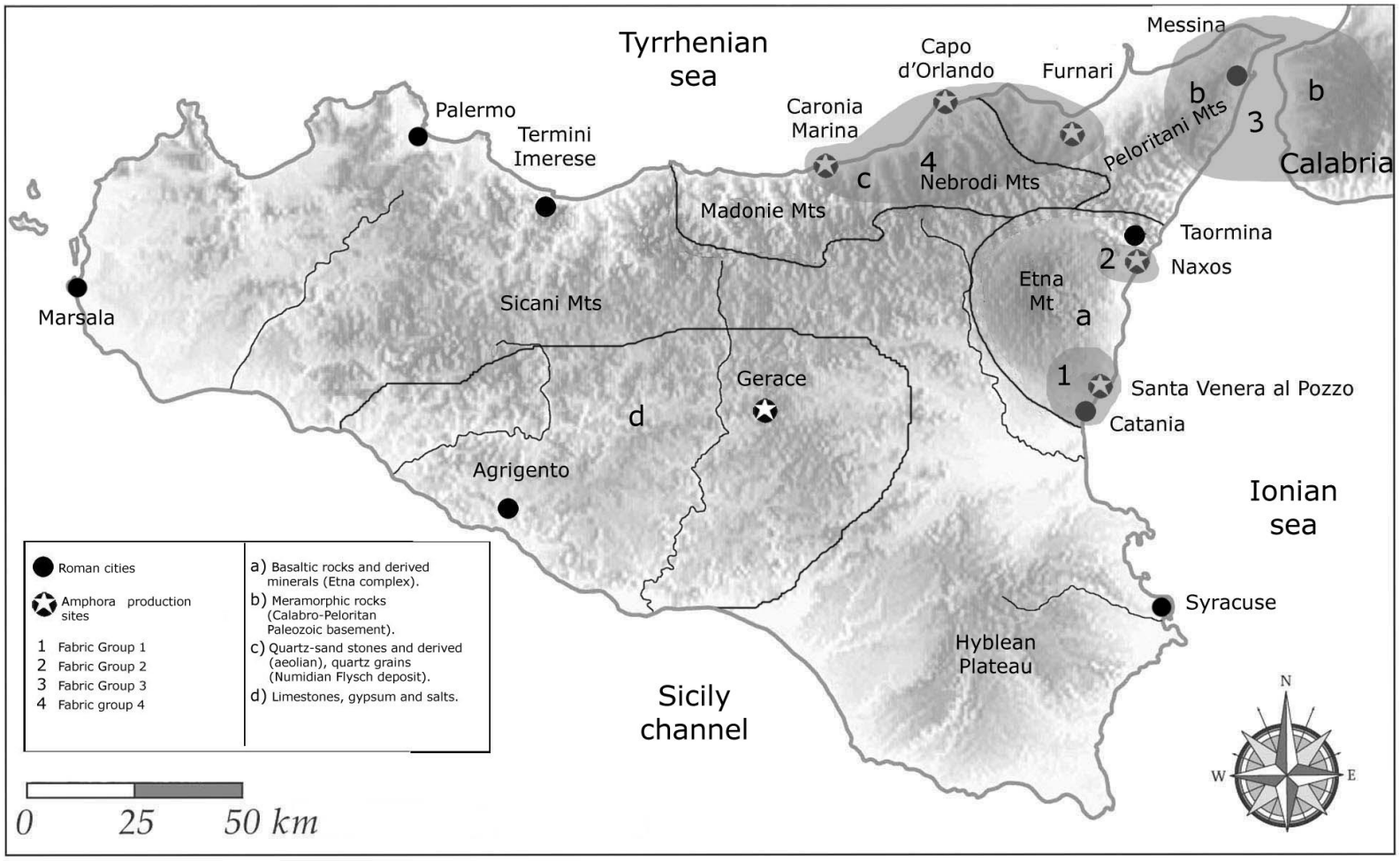


Fig. 3.3 Schematic geo-lithological map of Sicily with indication of areas of Sicilian fabric groups recognized (C Franco).

3.6. SICILIAN FABRIC GROUPS AND SUBGROUPS

3.6.1. Group 1: Volcanic fabric group attributed to the Region of Catania (Fig. 3.3, area A)

The majority of the samples analysed from overseas contexts (45 thin-sectioned samples; 40.5% out of 111), belongin to the so-called Group B, present fabrics characterized by volcanic elements, in particular basaltic fragments and derived plagioclase and pyroxene individuals associated with well-tempered rounded, marine quartz grains and other sedimentary components. The inclusions are usually well-sorted. To a variant of this fabric group belong the vessels and amphorae manufactured in the pottery workshop of S. Venera al Pozzo (on the workshop, Chapter 2, section 2.4.3.1).[455]

Group 1 is to be attributed to the region of Catania in Eastern central Sicily on the basis of the available data:

a) The presence of basaltic inclusions identifiable with Etna lavas (together with the scarcity of metamorphic components);

b) The discovery of the workshop of S. Venera al Pozzo which, among other flat-bottomed transport containers, common ware and building materials produced the MR 1a type with biconic rim[456] in this fabric;

c) The similarities between one kiln waster of an MR 1a type produced at S. Venera al Pozzo kiln and the other specimens of the same amphora type belonging to group 1.

The amphora types characterised by this fabric are published in the Ostia excavations as Ostia II, 522; Ostia III, 464 and Ostia I, 453–454. They are also known as Riley MR 1a and 1b; Agora M254; Peacock and Williams 1986 Class 40.[457] According to the new classification system proposed here the amphorae are called 'Catania' flat-bottomed type (Forms 1, 2 and 3) and 'Catania' MR 1a type (Form 1, 2 and 3). The relatively homogeneous fabric of most samples in this Group 1 suggests that these flat-bottomed types were produced in a few workshops, in use at the same time,[458] relatively close to each other. They were possibly localised in a relatively restricted area (in the vicinity S. Venera al Pozzo?), where similar raw materials and techniques were

[455] Branciforti 2006; Branciforti 2011.
[456] Amari 2006, 144, no. 6.
[457] Peacock and Williams 1986, 175–176, Class 40.
[458] On the basis of chronology of the findings.

used in the course of several centuries, from the first three decades of the 1st to the second half of the 5th century. All the variants of MR 1a produced in the regionof Catania are macroscopically characterized by a similar fabric, compact and depurated. The body is pale red; red-orange or pale brown in colour. The types show a whitened/light pink surface.

Some differences can be seen in the quality of the clay matrix, in the amount and size of volcanic inclusions and in the size and sorting of the quartz grains. Two main subgroups (1.1 and 1.2), more or less rich in fine sandy inclusions (temper?) have been identified in the consumption sites alongside the S. Venera variant, which is distinguished by smaller quantities of inclusions. These differences noted in the fabric subgroups do not relate to typological subgroups, in other words amphorae of the same type and chronology show in thin-sections both the main sub-group variants (1.1 and 1.2). This might indicate the coexistence of different workshops. To the region of Catania can be assigned a total of 96 amphora samples found in overseas contexts[459] (See Catalogue I).

1.1. 'Granular Group'. The majority of the samples attested in the contexts studied (30 samples; 66% out of 45 samples of Group 1) have a fabric characterized by an abundant silty fraction. The sandy fraction is well-sorted and mainly composed of quartz and limestone grains. The textural features do not exclude the deliberate use of sand as a tempering agent.

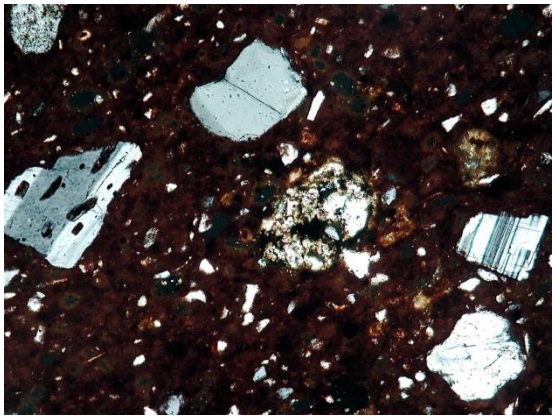


Fig. 3.4 Microscopic photograph of Catania Region fabric (Granular sub-group) in thin-section, real dimensions 1.3 x 1 mm; analysis no. 9656/SA 25; sherd from Arles, amphora type: 'Catania' MR 1a (C. Capelli).

[459] That comprised the samples for which an origin in the region of Catania has been established using the stereo-microscope.

1.2. 'Pure Group'. 'Sub-fabric with a 'purer' clay matrix which occur numerically less extensively than 1.1

1.2.1 S. Venera al Pozzo fabric, characteristic of the S. Venera/*Statio Acium* workshop (see Fig. 3.2 for the workshop and Plate XXI for the samples anaysed). In total 6 samples from the vicinity of S. Venera have been analysed (4 of them come from the kiln and 2 were found abroad=13.3% out of 45 thin-sectioned samples of Fabric Group 1). The fabric of these samples is distinguished by the clean, quartz-free clay matrix. The fabric is much finer than the other sub-variant of the Catania group (see above. 1.1). Its finer texture is distinguishable in the hand specimen. Representative of this fabric are the reference samples of common ware (COM1), amphorae MR1 a (SA 49) and flat-bottomed types whose shape does not fit into the previously established typology[460] SA 50 and SA 51. It is worth noting that only the samples belonging to the MR1 type show similarities with Group 1; while the other 2 samples differ, especially in terms of technique, from Group 1 (outliers in Tab. 3.1). The scarcity of sandy inclusions of those two samples, excludes the use of added temper.

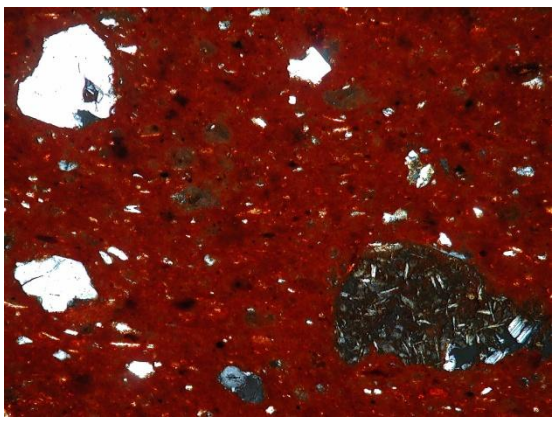


Fig. 3.5 Microscopic photograph of S. Venera fabric in thin-section, real dimensions 1.3 x 1 mm; analysis no. 9736/SA 49; sherd from S. Venera al Pozzo production centre, amphora type: 'Catania' MR 1a, Form 3 (C. Capelli).

1.2.2 The samples belonging to this sub-variant (Fig. 3.6) present a matrix which is more similar to the reference material from the workshop of S. Venera al Pozzo/*Statio Acium*. The most striking feature of this sub-group is the very clean clay of the matrix. Representative of this fabric are the MR 1a SA 35 and SA 39 (Pl. XV, nos. 2–3). The

[460] Amari 2008 for the flat-bottomed types.

wider picture shows that products from this subgroup were rarely attested in the overseas contexts analysed (11 samples from overseas context; 10% out of 111).

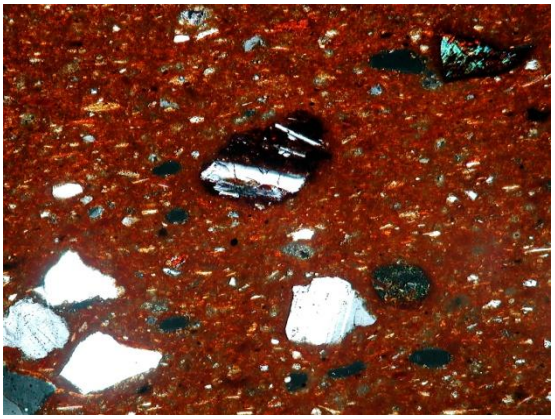


Fig. 3.6 Microscopic photograph of sub variant 1.2 belonging to the 'pure group' thin-section, real dimensions 1.3 x 1 mm; analysis no. 9666/SA 35; sherd from Lepcis Magna, amphora type: Catania MR 1a type, Form 2, variant a (C. Capelli).

Table 3.1: List of the analysed amphora samples attributed to Group 1

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9651	20	Corsica/ Quattrina	Catania flat-bottomed type, Form 1 (=Ostia II, 522)	1	sandy fraction relatively fine grained	Region of Catania	XI, no. 1
10007	90	France/Narbonne (Port-la-Nautique)	Catania flat-bottomed type, Form 1	1	post-depositional alteration	Region of Catania	XI, no. 2
10008	91	France/Narbonne (Port-la-Nautique)	Catania flat-bottomed type, Form 1	1		Region of Catania	XI, no. 3
10008	92	France/Narbonne (Port-la-Nautique)	Catania flat-bottomed type, Form 1	1	post-depositional alteration	Region of Catania	XI, no. 4
9741 9970	54	France/Arles (wreck Arles-Rhône 3)	Catania flat-bottomed type, Form 1	1		Region of Catania	XI, no. 5
9633	2	France/Lion de Mer 1	Catania flat-bottomed type, Form 2 (=Ostia III, 464**)**	1	sandy fraction very abundant; firing temperature relatively low	Region of Catania	XII, no. 1
9745	58	Libya/Lepcis Magna (Thermes du Levant)	Catania flat-bottomed type, Form 2	1	scarce silty fraction	Region of Catania	XII, no. 5
9634	3	France/Marseille (Cap Caveaux)	Catania flat-bottomed type, Form 2 var?	1	very abundant sandy fraction; firing temperature relatively low	Region of Catania	XII, no. 6

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9667	36	Libya/Lepcis Magna (Thermes du Levant)	Catania MR 1a type, Form 1	1		Region of Catania	XIII, no. 3
10171	118	Germany/Krefeld -Gellep (*Gelduba*) Roman cemetery	Catania MR 1a type, Form 2, variant a	1	relatively coarse grained sandy fraction; post-depositional alteration	Region of Catania	XIV, no. 1
9635	4	France/Marseille underwater find	Catania MR 1a type, Form 2, variant a	1		Region of Catania	XIV, no. 2
10004	87	England/London (without context)	Catania MR 1a type, Form 2, variant a	1		Region of Catania	XIV, no. 3
7219 9672	41	France/Lyon (urban context)	Catania MR 1a type, Form 2, variant a	1	scarce silty fraction; firing temperature relatively low	Region of Catania	XIV, no. 14
9666	35	Libya/Lepcis Magna (Thermes du Levant)	Catania MR 1a type, Form 2, variant a	1	Pure sub-group	Region of Catania	XV, no. 2
9670	39	Libya/Lepcis Magna (Thermes du Levant)	Catania MR 1a type, Form 2, variant a	1	scarce silty fraction; Pure sub-group	Region of Catania	XV, no. 3
9752	65	Libya/Lepcis Magna (Thermes du Levant)	Catania MR 1a type, Form 2, variant a	1		Region of Catania	XV, no. 5

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9668	37	Libya/Lepcis Magna (Thermes du Levant)	Catania MR 1a type, Form 2, variant b	1		Region of Catania	XVI, no. 1
9764 9971	77	Libya/Lepcis Magna (Thermes du Levant)	Catania MR 1a type, Form 3, 4th century variant	1	relatively low firing temperature post-depositional alteration	Region of Catania	XVI, no. 3
10170	117	Germany/Krefeld -Gellep (*Gelduba*) Roman cemetery	Catania MR 1a type, Form 3, 4th century variant	1	relatively scarce sandy fraction	Region of Catania	XVII, no. 1
9746	59	Libya/Lepcis Magna (Thermes du Levant)	Catania MR 1a type, Form 3, 4th century variant	1	relatively low firing temperature; post-depositional alteration	Region of Catania	XVII, no. 3
10168	115	Greece/Trypiti reef shipwreck	Catania MR 1a type, Form 3, 4th century variant	1		Region of Catania	XVII, no. 4
9975	82	Switzerland/ Augst (*Augusta Raurica*)	Catania MR 1a type, Form 3, 4th century variant	1	relatively low firing temperature	Region of Catania	XVII, no. 5
9760	73	Libya/Lepcis Magna (Thermes du Levant)a	Catania MR 1a type, Form 3, 4th century variant	1	high firing temperature	Region of Catania	XVII, no. 7
9762	75	Libya/Lepcis Magna (Thermes du Levant)	Catania MR 1a type, Form 3, 4th century variant	1	relatively fine grained sandy fraction	Region of Catania	XVII, no. 9

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9972	79	Switzerland/ Augst (*Augusta Raurica*)	Catania MR 1a type, Form 3, 4th century variant	1	relatively coarse grained sandy fraction	Region of Catania	XVII, no. 12
10165	112	France Arles (urban context)	Catania MR 1a type, Form 3, 5th century	1	very abundant and moderately sorted silty fraction	Region of Catania	XVII, no. 3
9655	24	France/Arles (*cryptoportico* of the Forum)	Catania MR 1a type, Form 3, 5th century variant	1	scarce silty fraction	Region of Catania	XIX, no. 2
9636	5	France/Marseille (Pointe Pomègues)	Catania MR 1a, Form 3, (Variant)	1		Region of Catania	XVIII, no. 4
9739/9968	52	France/Arles (Rhône)	Catania MR 1a, Form 3, (Variant)	1		Region of Catania	XVIII, no. 5
10172	119	Germany/Krefeld -Gellep (*Gelduba*) Roman cemetery	Catania MR 1a (form 2 or 3)?	1	scarce silty fraction	Region of Catania	XX, no. 1
9656	25	France/ Arles(wreck Arles-Rhône 7)	Catania MR 1a	1		Region of Catania	XX, no. 1; Fig. 4.4 (thin-section)
9974	81	Switzerland/ Augst (*Augusta Raurica*)	Catania MR 1a	1		Region of Catania	XX, no. 7
10009	83	Switzerland/ Augst (*Augusta Raurica*)	Catania MR 1 (a)?	1	silty fraction scarce	Region of Catania	XX, no. 8
10001	84	Switzerland/ Augst (*Augusta Raurica*)	Catania MR 1a	1		Region of Catania	XX, no. 9
9658	27	France/Arles (wreck Arles-Rhône 7)	Catania MR 1a	1		Region of Catania	XX, no. 10

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
10005	88	Portugal/Tróia (Fish salting factory)	Catania MR 1a	1		Region of Catania	XX, no. 11
9663	32	France/Lyon (Célestins)	Catania MR 1 (a)?	1		Region of Catania	XX, no. 18
9662	31	France/Lyon (urban context)	Catania MR 1a	1		Region of Catania	Not illustrated
9674	43	France/Lyon (urban context)	Catania MR 1a	1		Region of Catania	Not illustrated
10163	110	France Arles (urban context)	Catania MR 1a type, Form 3	1 variant	volcanic components not detected	Region of Catania?	XVIII, no. 2
9744	57	Libya/Lepcis Magna (Thermes du Levant)	Catania MR 1a type, Form 3, 5th century variant	1 variant	scarce silty and sandy fractions Can be attributed to S. Venera al Pozzo fabric	Region of Catania	XIX, no. 1
9736	49	Sicily/S. Venera al Pozzo kiln	Catania MR 1a, Form 3 *Statio Acium* variant	1 variant	silty and sandy fractions moderately abundant	S. Venera al Pozzo/ *Statio Acium* kiln	XXI, no. 1; Fig. 4.5 (thin-section)
9738	51	Sicily/S. Venera al Pozzo kiln	Flat-Bottomed amphora type 1 (Not MR 1a)	outlier	the sandy fraction is very scarce (volcanic elements, no rounded quartz)	S. Venera al Pozzo/ *Statio Acium* kiln	XXI, no. 3
9737	50	Sicily/S. Venera al Pozzo kiln	Globular amphora type (Not MR 1a)	outlier	the sandy fraction is almost absent (volcanic elements, no rounded quartz)	S. Venera al Pozzo/ *Statio Acium* kiln	XXI, no. 2
9742	CO M 1	Sicily/ S. Venera al Pozzo kiln	Basin (common ware)	outlier		S. Venera al Pozzo/ *Statio Acium* kiln	XXI, no. 4

3.6.2. Group 2: Metamorphic and Volcanic Components Attributed to the Area of Naxos (Fig. 4.3, between area A and B)

This group is characterised by acid metamorphic rocks, to be related to the Peloritan basement, and igneous components and rarer volcanic rock fragments or minerals, possibly to be attributed to the Etna volcanic complex. The various fabrics of this group (attested with 18 samples from overseas contexts;[461] 16% out of 111 samples analysed) could be attributed to different kilns located within the Giardini Naxos area on the grounds both of geological and archaeological data:

a) The ancient workshop of Naxos is situated near the bay of Giardini Naxos (in the present-day province of Messina, see Fig. I, Area 2), located in the northern sector of the Ionian coast of Sicily and to the north of Mount Etna. The bay of Giardini Naxos stretches from Cape Taormina in the north to Cape Schisò in the south. The local geology presents volcanic rocks from the Etna Volcanic complex[462] alongside granite, limestones and the igneous/metamorphic components from the Peloritan Massif which dominates the north eastern tip of Sicily.[463]

b) Remains of production structures and amphorae wasters have been uncovered in the Naxos area. From the 1st century onwards this production centre manufactured several different flat-bottomed containers which have been classified under several names in the current literature. They are known as Ostia II, 523 type; S. Alessio type; S. Alessio type *similis*; Palatine East 1 and — erroneously — MR1 amphora type. Here a different and more rational nomenclature has been proposed.

c) The fabrics of previously analysed kiln wasters from Naxos belonging to Keay 52 and flat-bottomed types[464] can be ascribed to our Fabric Group 2.

The fabrics of the specimens of different date belonging to this Group 2 displayed similar petrographic characteristics indicating the continuity of amphora production in Naxos throughout the Roman period. On the other side, two sub-groups and one main variant can be distinguished within fabric Group 2 on the basis of secondary mostly textural characteristics. What is interesting is that those differences relate to different amphora types of different chronology produced in Naxos suggesting

[461] In total 22 samples have been attributed to Naxos area (see Catalogue I).
[462] The lava flow from Etna created the Naxos promontory of Capo Schisò in the Holocene.
[463] On the geology of the Naxos Area see Truillet 1970, 171–173, 175, Fig. 4.
[464] Capelli 1998. In particular analysis nos. 4506; 4994 and 4996.

therefore a development of amphora manufacture within the same production area over time.

Sub-Group 2.1 fabrics. *Coarse-grained subgroup.* The inclusions, mainly quartz, have coarser and larger grains with generally sub-rounded shape. The related amphora types, here termed Naxos Early Roman type (=Ostia II, 523) and Naxos flat-bottomed amphora Form 1, were produced between the 1st and the 2nd century AD (as suggested by archaeological data). In particular, see the specimens SA 53; SA 1 and SA 21. (It is attested in 3 samples out of 18 attributed to Naxos area; 16% out of the Naxos amphorae).

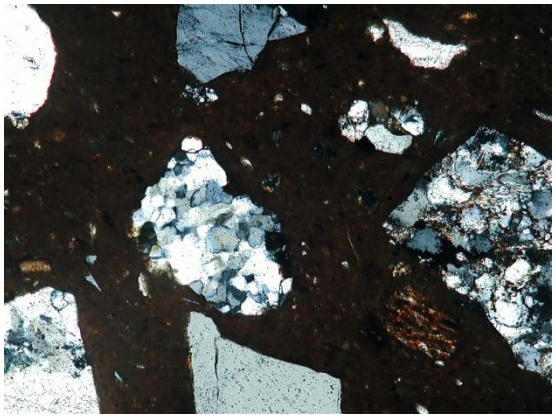


Fig. 3.7 Microscopic photograph of Naxos Coarse-grained fabric Sub-Group 2.1 in thin-section, real dimensions 1.3 x 1 mm; analysis no. 9632/SA 1; sherd from Arles, amphora type: Ostia II, 523/here termed Naxos Early Roman amphora type (C. Capelli).

Sub-Group 2.2 fabrics. *Fine-grained subgroup.* This sub-fabric has a relatively scarce and fine-grained silty fraction (mica, quartz, generally rare fossils) and medium-grained inclusions. Representative types are here termed the Naxos flat-bottomed amphora type, Form 3 and Naxian Keay 52 type produced between the 4th and the 5th century AD. See in particular the specimens SA 28; SA 14 and SA 29 (Sub-Group 2.2 is attested with 14 samples out of 18 attributed to Naxos area; 77.7% out of the Naxos amphorae).

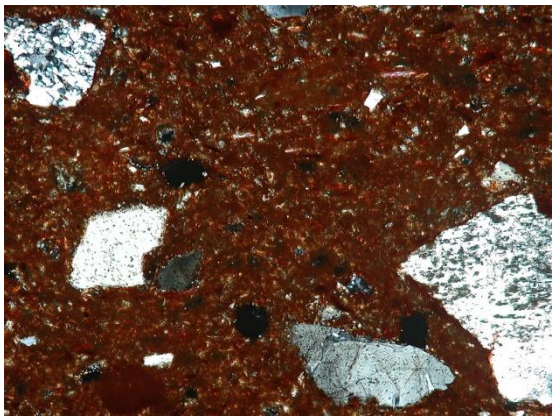


Fig. 3.8 Microscopic photograph of Naxos Fine-grained fabric Sub-Group 2.2 in thin-section, real dimensions 1.3 x 1 mm; analysis no. 9659/SA 28; sherd from Arles, amphora type: Keay 52 (C. Capelli).

It is likely that the contemporary types belonging to these two sub-variants 2.1.1 and 2.1.2 were produced at one kiln within the same production area and/or with the same manufacturing technique. This factor also suggests a deliberate selection of raw materials and a high degree of standardisation and homogeneous technical standards in each of the periods of manufacture of Naxos workshop (Early Roman *vs* Late Antique production). The more recent amphora production, dated to Late Antiquity, is made of a finer mixture, the fabrics are more compact and the inclusions are finer when compared to the Early Roman production. The differences between the two variants 2.1.1 and 2.1.2 with an increasingly finer mixture used over time may well be connected to the development of techniques over four centuries.

Table 3.2: List of the analysed amphora samples attributed to Group 2

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9740 9969	53	France/ Arles	Naxos Early Roman type	2.1	inclusions <0.2 mm (also microfossils) relatively abundant; post-depositional alteration	Naxos area	I, no. 1
9652	21	Corsica/ Quattrina	Naxos Early Roman type	2.1	relatively abundant silt inclusions (quartz, mica) relatively high firing temperature	Naxos area	I, no. 3
9632	1	France/ Marseille	Naxos Early Roman type	2.1	scarce silt inclusions	Naxos area	I, no. 4; Fig. 4.7 (thin-section)
9664	33	Libya/Lepcis Magna (Thermes du Levant)	Naxos flat-bottomed type, Form 2	2.2	relatively coarse and abundant sandy inclusions	Naxos area	II, no. 1
9665	34	Libya/Lepcis Magna (Thermes du Levant)	Naxos flat-bottomed type, Form 2	2.2	relatively coarse and abundant sandy inclusions; clay matrix relatively rich in carbonate component	Naxos area	II, no. 3
10167	114	Greece/ Trypiti reef shipwreck	Naxos flat-bottomed type, Form 3	2.2	relatively coarse and abundant sandy inclusions	Naxos area	III, no. 1
9753	66	Libya/ Lepcis Magna (Thermes du Levant)	Naxos flat-bottomed type, Form 3	2.2		Naxos area	III, no. 2
9751	64	Libya/Lepcis Magna (Thermes du Levant)	Naxos flat-bottomed type, Form 3 (?)	2.2		Naxos area	III, no. 4
9748	61	Libya/Lepcis Magna (Thermes du Levant)	NE Sicilian type 1=Naxos region variant?	2.2	relatively abundant and small sandy inclusions	Naxos area	IX, no. 2

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9660	29	France/ Arles-Rhône	NE Sicilian type 1= Naxos region variant?	2.2	relatively abundant and small sandy inclusions; post-depositional alteration	Naxos area	IX, no. 1
9659	28	France/ Arles	Naxos Keay 52	2.2	relatively abundant sandy inclusions	Naxos area	V, no. 1; Fig. 4.8 (thin-section)
9645	14	France/ Marseille (La Bourse)	Naxos Keay 52	2.2		Naxos area	V, no. 4
9759	72	Libya/Lepcis Magna (Thermes du Levant)	Naxos flat-bottomed type, Form 2 (?)	2.2	relatively low firing temperature	Naxos area	II, no. 2
10159	106	France/ Arles	Naxos flat-bottomed type, Form 3	2.2	relatively scarce inclusions	Naxos area	III, no. 6
10158	105	France/ Arles	Naxos flat-bottomed type, Form 3	2.2 variant	slightly coarser inclusions; post-depositional alteration	Naxos area	III, no. 5
9758	71	Libya/Lepcis Magna (Thermes du Levant)	Naxos flat-bottomed type, Form 3	2.2 variant	coarser inclusions	Naxos area	III, no. 3
9755	68	Libya/Lepcis Magna (Thermes du Levant)	Naxos flat-bottomed type, Form 2 or 3	2.2 variant	coarser inclusions	Naxos area	IV, no. 1
9766	55	France/ Arles (wreck Arles-Rhône) 3	Naxos Early Roman type	outlier	abundant and poorly sorted silty and sandy fractions; frequent volcanic elements, rounded quartz absent	Naxos area?	I, no. 2
9637	6	France/ Marseille (Pointe Pomègues)	Naxos flat-bottomed type, Form 2?	outlier		Naxos area?	II, no. 4

3.6.3. Group 3: Samples Attributed to the Area of the 'Strait of Messina' (Fig. 3.3, area B)

In this broad group (attested with 15 samples; 13.5% out of 111) we include all the samples whose fabrics are characterised by the presence of inclusions mainly consisting of acid metamorphic rocks (quartz-micaschists, gneisses and metagranitoids) and derived minerals (quartz, micas, feldspars). The fabrics of this group present affinities with the Calabro-Peloritan palaeozoic basement but are not comparable with any reference samples from known pottery production centres. The amphora types part of Group 3 are mainly Keay 52 types and other flat-bottomed containers which do not fit established typologies. There is a high variability of fabrics within this group. Even the fabrics related to the same amphora type differ from each other, pointing out to the presence of a great number of amphora workshops — still to be discovered — possibly located in Strait of the region of Messina. As for the Keay 52 type the variety of fabrics and production sites was already suggested by previous thin-section analyses performed on several specimens.[465]

The fragments belonging to this sub-group are compatible with the metamorphic rocks outcropping in the Peloritani Mountains. For three of them an origin in the Naxos workshop cannot be excluded (SA 26, 103 and 7), the others do not belong to any known workshop. Whenever a volcanic component, which is rare in this group, was also detected, a north eastern Sicilian provenance (attested for 9 specimens) was considered more probable than a southern Calabrian one (the latter only attested with three samples of Keay 52). The southern Calabrian Area in fact is characterised by igneous and metamorphic rocks as well as NE Sicily, as both areas belong to the same Palaeozoic Calabro-Peloritan basement. Nevertheless, the basaltic components are only attested in the Sicilian fabrics and derive from the alteration and transport of the Etnean volcanic complex.

Representative of a possible north eastern origin are three Keay 52 types and one amphora type similar to Ostia IV, 166 (SA 60, Plate X, no. 1) which I consider to be a early 5th-century possible predecessor of the later Crypta Balbi amphora type on the basis of macroscopic appearance and petrography. The so-called Crypta Balbi 2 amphora type, not attested from the consumption sites under analyses, is in fact part of

[465] Capelli 1998.

this fabric group[466] composed by metamorphic and minor volcanic components. Assuming a close relationship between the components of the ceramic fabric (clay matrix and clasts) and the geology of the production area we can hypothesise that this unknown suggested workshop is to be located in the Peloritani Mountain Belt, consisting of metamorphic crystalline rocks, not far from a region with volcanic outcrops. Nevertheless, we should bear in mind that geological conditions may have changed over time. For example, some prehistoric lava flows may have lain in the vicinity of this workshop but have now been eroded; or volcanic sediments may have been brought in by river (the Alcantara river flows through this Area of Sicily) and employed in amphora production. Nor should we underestimate the actions of the potter, who may have added sediment to the clay, modifying the characteristics of the ceramic artefacts and consequently making the link between fabric composition and geology less direct.

There are, up to now, no archaeological remains of kilns which produced flat-bottomed amphorae in the north eastern tip of Sicily. Nevertheless, as these analyses show, it is likely that the area was involved in amphora production in the Roman period and onwards, as also suggested by Greek amphora production attested in the region of Messina.[467]

[466] See in particular the analyses no. 4600/CB11, 4593/OM15 published in Capelli 1998.
[467] Barone *et al.* 2011.

Table 3.3: List of the analysed amphora samples attributed to Group 3

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9657	26	France/ Arles-Rhône	Keay 52	3	relatively abundant volcanic components	NE Sicily (Naxos area not excluded)	VI, no. 4
10156	103	Spain/ Tarragona	Keay 52	3	very abundant well-sorted temper; foraminifera and several amphibolite fragments	NE Sicily (Naxos area not excluded)	V, no. 3
9638	7	France/ Marseille (Pointe de la Luque B)	NE Sicilian amphora, unknown type	3	very abundant well-sorted temper	NE Sicily (Naxos area not excluded)	XXIX, no. 1
9747	60	Libya/Lepcis Magna (Thermes du Levant)	Similar to Ostia IV, 166=Crypta Balbi 2 predecessor?	3	coarse grained temper; abundant fine mica, accessory garnet	NE Sicily	X, no. 1
10166	113	France/ Arles-Rhône	Unidentified amphora type	3	abundant coarse schist fragments, frequent fine quartz; post-depositional alteration	NE Sicily	XXX, no. 2
9639	8	France/ Marseille (Pointe de la Luque B)	Keay 52 ?	3	very abundant, poorly-sorted, fine- to medium-grained inclusions; frequent microfossils and mudstone fragments	NE Sicily	XXIX, no. 2

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9678	47	France/ Arles	Unidentified amphora type	3	very abundant poorly-sorted fine to coarse grained inclusions; frequent mica and schist fragments	NE Sicily	XXIX, no. 3
9754	67	Libya/Lepcis Magna (Thermes du Levant)	Keay 52	3	relatively rare but coarse sandy inclusions; occasional volcanic plagioclase?	Strait of Messina (NE Sicily?)	V, no. 2
9646	15	France/ Marseille (La Bourse)	Keay 52	3	Ca-rich matrix; very abundant poorly sorted inclusions (frequent foraminifera and mica, rare clinopyroxene)	Strait of Messina (NE Sicily?)	VI, no. 1
10150	97	Spain/ Tarragona	Keay 52	3	Ca-rich matrix; abundant fine fraction, frequent microfossils, rare volcanic plagioclase?	Strait of Messina (NE Sicily?)	VI, no. 2
9671	40	France/ Lyon	Unidentified amphora type	3	abundant poorly-sorted inclusions; frequent mica, rare clinopyroxene, no microfossils	Strait of Messina (NE Sicily?	Not illustrated

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
10169	116	Greece/ Trypiti reef shipwreck	Unidentified amphora type	3	Ca-rich clay matrix; abundant fine mica and microfossils, accessory amphibole; very coarse sandy inclusions; occasional volcanic inclusions	Strait of Messina (NE Sicily?)	XXXI, no. 1
10148	95	Spain/ Tarragona	Keay 52	3	very coarse sandy fraction (granitoids), abundant fine mica; no volcanics detected	Strait of Messina (S Calabria?)	VIII, no. 5
10155	102	Spain/ Tarragona	Keay 52	3	Ca-rich clay matrix; very coarse schist fragments, abundant fine inclusions (mica, fossils); high firing temperature; no volcanic detected	Strait of Messina (S Calabria?)	VIII, no. 6
9647	16	France/ Marseille (La Bourse)	Keay 52	3	Ca-rich clay matrix; abundant mica and microfossils; rare coarse inclusions	Strait of Messina (southern Calabria, Tropea?)	VIII, no. 4

3.6.4. Group 4: Fabrics Attributed to North Eastern Sicily, Area between Caronia Marina and Milazzo

All the fabrics belonging to Group 4 (14 samples, 12.6% out of 111) are characterised by an oxidised Fe-rich matrix and the presence of quartz-sandstone fragments and rounded (aeolian) quartz grains which can be attribute to the Numidian Flysch outcropping along the northern Sicilian coast.[468]

Two sub-groups (3.1, dominant, and 3.2) and a few outliers have been distinguished on the ground of secondary differences in texture and petrographic composition. Both sub-groups can well be attributed to the production site of Caronia Marina in the district of Pantano (on the workshop, Chapter 2, section 2.4.1.1) on the ground of the striking similarities with the available kiln wasters[469] (see Plate XXV, nos. 1–2 for reference samples).

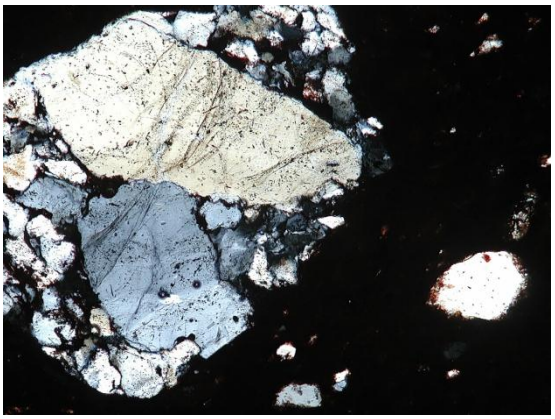


Fig. 3. 9. Microscopic photograph of Caronia fabric in thin-section, real dimensions 1.3 x 1 mm ; analysis no. 10164/SA 111; sherd from Les Saintes, mouth of the Rhône; amphora type: Ostia I, 455/here termed NE Sicilian type 1 (C. Capelli).

The two outlier fabrics (see Tab. 3.4 below) identified do not show any striking resemblance with the reference materials from the known north eastern coastal Sicilian workshops (i.e. Capo d'Orlando and Furnari (see Furnari Type in Plate XXIV, no. 1: fabric reference), possibly suggesting the presence of another unknown production site in close proximity to one another along the coastal Tyrrhenian Area. Specimens with fabrics similar to Capo d'Orlando/Bagnoli S. Gregorio workshops are only attested in Sicily (unpublished data from CASR project) and not from overseas contexts. The fabric of Capo d'Orlando is predominantly composed of acid metamorphic rocks

[468] Montana *et al.* 2011.
[469] Thin-section analyses published in Cabella, Capelli and Piazza 2009.

(quartz and feldspar inclusions, fragments of quartzites, fine-grained quartz schists and mica schists, medium-grained gneiss) and a lower concentration of fragments of sedimentary rocks (sandstones and limestones).

To Group 4 belong several flat-bottomed types which have been termed 'North eastern Sicily coastal types'. They also include 'Termini Imerese type no. 151' (here NE type 2) which was manufactured in the Caronia workshop; and the form belonging to 'Termini Imerese type no. 354' (here NE type 4) which was produced at two different locations: in the vicinity of Capo d'Orlando and at Caronia.

Table 3.4: List of the analysed amphora samples attributed to Group 4

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
10164	111	France/Arles Les Saintes	NE Sicilian type 1	4.1		Caronia Marina	XXII, no. 1; Fig. 4.9 (thin-section)
9648	17	France/Marseille (La Bourse)	NE Sicilian type 4	4.1		Caronia Marina	XXVII, no. 1
9649	18	France/Marseille (La Bourse)	NE Sicilian type 4	4.1		Caronia Marina	XXVII, no. 2
9650	19	France/Marseille (La Bourse)	NE Sicilian type 4	4.1		Caronia Marina	XXVII, no. 3
9679	48	France/Arles	Not identified type	4.1	low firing temperature	Caronia Marina	XXVII, no. 4
10154	101	Spain/Tarragona	NE Sicilian type 3	4.1	relatively abundant coarse inclusions; rare limestone fragments	Caronia Marina	XXVI no. 3
10151	98	Spain/Tarragona	NE Sicilian type 6	4.1	low firing temperature; rare limestone fragments; post-depositional alteration	Caronia Marina	XXVIII, no. 1

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
10152	99	Spain/Tarragona	NE Sicilian type 6	4.1	low firing temperature	Caronia Marina	XXVIII, no. 2
9763	76	Libya/Lepcis Magna (Thermes du Levant)	NE coastal Sicilian type 1	4.1	medium-grained, moderately sorted inclusions; relatively abundant shale fragments	Caronia Marina	XXII, no. 2
9669	38	Libya/Lepcis Magna (Thermes du Levant)	NE Sicilian type 3	4.1 variant a	relatively abundant medium-grained inclusions	Area of Caronia Marina	XXVI no. 1
10153	100	Spain/Tarragona	NE Sicilian type 3	4.1 variant a	relatively abundant medium-grained inclusions	Area of Caronia Marina	XXVI no. 2
9749	62	Libya/Lepcis Magna (Thermes du Levant)	NE Sicilian type 2	4.2	abundant fine- and medium-grained inclusions; relatively abundant metamorphic components (rock fragments, fine mica, rare limestone fragments	Area of Caronia Marina	Not illustrated
9757	70	Libya/Lepcis Magna (Thermes du Levant)	NE Sicilian type 1	outlier	abundant fine- and medium-grained inclusions; relatively abundant metamorphic components (rock fragments, fine mica)	Northern Sicily (Furnari area)	XXIII, no. 2
9756	69	Libya/Lepcis Magna (Thermes du Levant)	NE Sicilian type 1	outlier	poorly sorted, relatively fine-grained inclusions (quartz, feldspar, mica)	Northern Sicily (Furnari/Capo d' Orlando area)	XXIII, no. 1

3.6.5. Group 5: Unknown Provenance Areas

Group 5 is a rather generic, non-homogeneous group. The common feature of all fabrics belonging to this group (7 samples; 6.3% out of 111) is the presence of well-sorted sandy inclusions essentially consisting of rounded, relatively small quartz grains associated with limestone fragments and microfossils. The fabrics lack petrographically distinctive inclusions and are very different from the reference materials from the known workshops. The lack of vulcanites precludes an origin in the volcanic region of eastern Sicily, unless we suggest that the raw material was taken from a source which preceded the lava flows from Mount Etna. The presence of quartz leaves open other possible scenarios, such as an African origin. The rounded quartz attested in these fabrics may in fact come from the Numidian Flysch formation, present in northern and western Sicily, as well as in Tunisia.[470] A Sicilian provenance (probably from more than one workshop) is here only suggested, mainly on the basis both of similarities in the matrix in conjunction with stringent morphological similarities with the Sicilian fla-bottomed containers, such as in the case of the Catanian MR1a (see below).

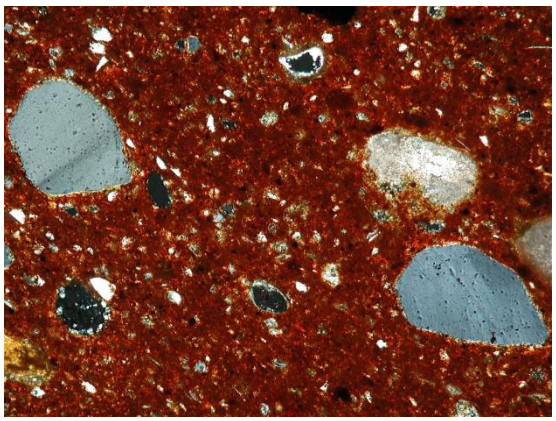


Fig. 3. 10. Microscopic photograph of Quartz fabric in thin-section, real dimensions 1.3 x 1 mm; analysis no. 9644/SA 13; sherd from Marseille, amphora type: MR 1 a (C. Capelli).

Four samples (sub-group 5.1) are similar to each other and could possibly relate to a single production centre. The fabric is characterised by a Fe-rich, oxidised clay matrix, abundant silty inclusions (quartz, mica, microfossils), and moderately frequent sandy inclusions (mostly <0.3–0.4 mm). The latter are essentially composed of rounded

[470] As for the characteristics of African fabrics and the similarities in geological/sedimentological features between part of Sicily and North Africa, see for example Capelli and Bonifay 2007 and Capelli and Bonifay 2014.

to angular quartz, subordinate limestone, rare quartzite fragments and microfossils. The fabrics are macroscopically red in colour and show a whitened surface.

It must be noted that several of the characteristic features of sub-group 5.1 amphorae are common to the most characteristic samples belonging to the above cited Group 1. In particular, there is a similarity in fabric texture and, partially, in the petrographic components (the main difference consists in the lack of volcanic components). Furthermore this group of fabrics is attested only in MR 1 amphora forms[471] (from the overseas contexts see SA 30, SA 44 SA 56) and has the same macroscopic appearance of this type (i.e. red fabric and whitened surface). Therefore, one cannot completely exclude the possibility that sub-group 5.1 represents the production of an unknown workshop/s somewhere in the region of Catania.

Table 3.5: List of the analysed amphora samples attributed to Group 5

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9661	30	France/Lyon (Célestins)	MR 1a variant 1	5.1		Undetermined (Sicily?, Region of Catania?)	XXXII, no. 1
9676	45	France/Lyon (Parc Saint-Georges)	MR 1a	5.1		Undetermined (Sicily?, Region of Catania?)	Not illustrated
10003	86	England/ London (Temple of Mithras's)	MR 1a (form 2 or 3?)	5.1	post-depositional alteration	Undetermined (Sicily?, Region of Catania?)	XXII, no. 2
9644	13	France/ Marseille, (Tunnel La Mayor)	MR 1a variant 1 (late version?)	5.1 variant	moderate firing temperature	Undetermined (Sicily?, Region of Catania?)	XXXII, no. 2; Fig. 4.10 (Fabric)
9743	56	Libya/Lepcis Magna (Thermes du Levant)	MR 1a	5.2 or 5.1 variant	abundant quartz	Undetermined (Sicily?)	XXXII, no. 4
10162	109	France/Arles (bank of the Rhône)	Unidentified amphora type	5.3	relatively coarse quartz, occasional clinopyroxene and garnet	Undetermined (Sicily?)	XXXI, no. 4

[471] Three other samples come from Sicilian contexts, cf. CASR project. Pers. observation.

Sample no.	SA	Country	Amphora type	Fabric group	Observations	Suggested origin	Plate
9675	44	France/Lyon (Parc Saint-Georges)	MR 1a var. 3 (?) imitation of the Catania type?	5.4	occasional clinopyroxen, low firing temperature	Undetermined (Sicily?)	XXXII, no. 5

3.7. Analysis of Amphora Samples found in Sicily: Preliminary Considerations

During the CASR project 40 sherds of suggested flat-bottomed Sicilian amphorae from *c.* 15 Sicilian sites — whose chronology ranges from the 1st century to the 6th century AD — were made into thin-sections (these samples were also part of Fabric group B, above). The results of these analyses are of special importance for my whole study on Sicilian containers because they show a different picture compared to that provided by analyses of overseas contexts.

Some preliminary considerations can be summarized as follows:

1. In thin-section the amphorae from Sicilian contexts present much more varied petrographic characteristics than the specimens identified in overseas contexts. Only a small proportion can be ascribed to the fairly homogeneous petrographic groups (Groups 1–4) found in overseas contexts. This suggests that only a subset of amphora types produced on Sicily regularly travelled overseas, the remainder were traded within the island.
2. Six small containers, which are not included in this thesis, were only found in central and western Sicilian contexts. They do not belong to accepted amphorae typologies and present generic fabrics. Some of them present traces of gypsum in the fabric characteristic of the geology of a wide Area of Sicily (Fig. 3.3, Area d): western Sicily (Fig. I., Area 8), central Sicily (Fig. I., Area 5) and the region of Agrigento (Fig. I., Area 7). With the exception of a waster from a suggested kiln in Gerace in central Sicily (in Area 5) reference material from other

suggested kilns in these areas was not available.[472] It was therefore not possible to establish fabric reference groups and the samples cannot be associated directly with a particular workshop. It is interesting to note that the amphora specimens with these petrographic characteristics were only found in Sicily, suggesting their production within the region and a local trade in the containers. As a final note related to central and western Sicily, I would mention a large-scale recent chemical and mineralogical study of the most important clay raw materials used or potentially used for pottery making in antiquity.[473] The results, though potentially a good basis for provenance studies on pottery produced within these areas of Sicily, are difficult to use unless they are related to ceramic artefacts or kiln wasters from the same territories.

3. The greater complexity of the fabrics is accompanied by a greater complexity of amphora forms. Some specimens (more than 10) do not belong to types and categories already codified in the archaeological literature, and generically belong to the 'Sicilian flat-bottomed' amphora class; in other words from a formal point of view they follow what I have described as the 'Sicilian amphora *koinè*'. Petrographically these amphorae have fairly generic characteristics compatible, in the absence of reference fabrics from amphora wasters, with a fairly large area comprising central or western Sicily (see above, point 2). A more precise geographical location for possible production areas/workshops cannot be established.
4. In Sicily (at least for the sites considered in the CASR project) we see a trade in small flat-bottomed containers which do not leave the regional context and which are not found in other important distribution area of Sicilian containers in the Mediterranean such as Lepcis Magna and southern France.
5. Further food for thought comes from the circulation and trading network of the flat-bottomed Catanian types manufactured from the 1st to 5th century AD (cf. Riley MR1 class). The fabric which circulates most widely in Sicily is that belonging to what we have described here as the 'pure group' (sub-group 1.2) which constitutes a minority in overseas contexts. In overseas contexts there is a majority of the MR1 types belonging to the 'granular group' (sub-group 1.1).

[472] For example from the kiln of Campanaio or other suggested Late Roman workshops in the hinterland of Agrigento (see Chapter 3).
[473] Montana *et al.* 2011.

The S. Venera fabric (sub-group 1.2.1) is in the minority both in Sicilian and overseas contexts. These data suggest that two or three main workshops in the volcanic territory of the Catania area produced amphorae of the same type in the Roman period, aimed predominantly at different markets. The workshop of what we have here termed the 'granular group' produced amphorae — and the wine they contained — for an inter-provincial market; the workshop of the 'pure group' made amphorae predominantly distributed on the regional market; finally, the S. Venera workshop limited the export of its containers to the neighbouring region.

3.8. CONCLUDING REMARKS

The archaeological data, in conjunction with the wider *corpus* of samples available for this study and the CASR project, indicate different regional *facies* of flat-bottomed amphora production, whose results are confirmed directly by the definition of trade connections and amphora distribution.

Overall, the study has confirmed the overseas export of amphorae produced at the kilns of Naxos, Caronia Marina, and to a much lesser extent, S. Venera al Pozzo. However, the new petrographic analyses have documented the existence of more numerous amphora manufacturing complexes producing food-stuff containers in the Roman period that have not yet been located. On the basis of the petrography these suggested production centres can reasonably be located in four main Sicilian geological regions:

1. in the volcanic area of eastern Sicily within the region of Catania (Fabric Group 1);
2. in the vicinity of the Peloritani Massif in the north eastern corner of Sicily (Region of Messina) (some fabrics belonging to Group 3);
3. somewhere along the north eastern Tyrrhenian coast (outliers within Group 4);
4. Somewhere in central and/or western Sicily (data from CASR project).

In particular, in the region of Catania one hitherto unlocated workshop produced the majority of the flat-bottomed types from overseas contexts. One of the most important hypotheses based on the archaeometric data is that the potters in this unknown workshop managed to maintain good quality standards throughout the

production of the different variants of flat-bottomed containers. During the entire phase of production, lasting four centuries, no major variations seem to occur in their choices of clay raw materials and in the technique of manufacture. The superficial whitish layer on the surface of the ceramic body of the containers produced in the region of Catania can be also due to the presence of calcite and kaolinite in the raw clay, and probably also to the use of seawater during modelling and polishing. It also attested in S. Venera al Pozzo pottery and amphorae types.

Among the fragments selected from overseas consumption sites it is worth noting that there is no certain evidence of specimens produced in western Sicily — the former ex-Punic area of the island — where areas of ceramic production are known in the region of Palermo, Solunto and Marsala from the 7th to the 2nd century BC.[474]

Regarding the samples attested in Sicily and belonging to the generic group of fabrics it would be of extreme interest to be able to access the fabric of the amphorae produced in the Campanaio rural site, in particular the amphorae classified by R. Wilson as Keay 52[475] (for the amphora see Chapter 2, Fig. 2.43), to verify if the containers exported within Sicily and in the Mediterranean area can also be attributed to this production, that would thus join the well-known production sites of north eastern Sicily (the Naxos kilns) and Calabria.

The survey of both Sicily and overseas contexts did not reveal a group of fabrics which could be hypothetically linked to the south eastern area (Fig. I, Area 4) where the Syracuse workshop, on the southern Ionian coast, had a long tradition of common pottery and fine ware production in Greek and Roman times (see Chapter 1 for remarks on this point).[476] The colony so far has no record of transport amphora production in the Roman period. The lack of evidence for fabrics potentially originating in Area 4 could be due purely due to the selection of materials, but may also be indicative of a production of different amphora shapes (full-size containers for example) or a lack of amphora production for export. More research on the local pottery evidence and a mineralogical characterisation of the fabrics from the environs of Syracuse is needed to address this issue fully.

[474] See for example Bechtold 2011 with bibliography.
[475] Wilson 2000b, 362, Fig. 20.
[476] On Syracuse pottery workshop, Malfitana *et al.* 2014.

CHAPTER 4
FLAT-BOTTOMED SICILIAN AMPHORAE: THE NEW TYPOLOGICAL SERIATION

4.1. INTRODUCTION

This chapter illustrates the results of much of the work undertaken for this thesis, aimed at constructing a repertoire of Sicilian flat-bottomed amphorae and their chronological development from the 1st to the 6th century AD. The identification of the whole range of formal and technical characteristics of the various Sicilian flat-bottomed amphora types is a fundamental prerequisite for the wider aim of the thesis because it provides an important source of evidence for tracking economic activity in Roman Sicily and supplies material evidence for the island's flourishing wine-producing economy.

The typological classification took as its basis the fabric analyses carried out for this study to establish regional provenance (Chapter 3). The technological and stylistic aspects of amphora manufacture were considered as geographical and chronological markers.[477] Shaping techniques provided a means of assessing long-term trends in pottery technology extending beyond the shapes.[478]

The new typology includes amphora forms of previously unidentified or uncertain origin whose Sicilian origin has been now established on the basis of the fabric analyses carried within this study and from the data of the CASR project. The amphora classes are discussed individually within their production area and described in their chronological order of development. The amphora variants produced in different workshops or production areas do not necessarily have a chronological meaning and might be contemporaneous.

This chapter should be read in conjunction with Catalogue I at the end of the thesis and the relevant illustrations. Catalogue I illustrates 11 main amphora types and discusses each with more detailed observations, including morphology, distinctions in forms and source, epigraphic information (stamps, graffiti and *dipinti*); details of fabrics and surface treatments providing a further means of identification. At the end of the description of each type follows the illustration of the specimens whose petrographic

[477] See for example the different manufacturing techniques in use with regards to the Catania amphora production *vs* the Cyrenaican production or the style of the double wavy lines in Naxos amphora manufacture that changes over time.
[478] As in the case of the region of Catania amphora production.

composition was analysed for this study. In total 180 fragments have been studied, among which 172 from consumption sites and eight from productions sites.[479] Each sherd is classified according to its form/variant and fabric — and hence its source — and is discussed within its proposed production area. A profile illustration of each specimen analysed is provided in the Plates (Plate I–XXXIV).

4.2. Reconstructing Typology: the Method Adopted for this Study

There has been a tendency to label amphora forms or 'variants' as 'Late Roman x' or 'Early Roman amphora y', when they are in fact the same amphora passing through decades and centuries of evolution.[480]

The creation of a new typology was not a mere exercise in classification into distinct shapes and variants, where each 'amphora type' is necessarily defined by a specific and cohesive combination of features and stands as a separate entity. It was created with the intent to illustrate '*continuities and trends'* and the evolution of the same amphora type over time evidenced by the formal and technological development of amphorae from same source, rather than focusing on small differences.

The underlying logic and foundations of this '*linear typology*' are based on the research method used by Paul Reynolds for specific Roman period containers and cooking pots.[481] Reynolds recognizes that beyond formal *fragmentations* of forms and shapes there are '*continuous strands of ceramic development*'.[482] According to this approach, major typological changes in the development of amphorae produced in a specific territory should be seen as '*one long continuous period in the evolution of the amphora*'.[483]

The latter point highlights the need for a uniform typological classification of amphorae based on production areas and regionally-based fabric groups rather than just morphological variants. I therefore propose using an amphora classification system based on amphora *types* produced within a given production area/territory. This approach will, it is hoped, allow for future additions from the discovery of more numerous production centres or new petrographic data.

[479] S. Venera al Pozzo (region of Catania); Furnari and Caronia Marina (region of Messina).
[480] Reynolds 2008, 62.
[481] Such as the Beirut amphora, Late Roman Amphora 1, and Agora M334 amphora type, Reynolds 2008.
[482] Reynolds 2008, 62.
[483] Reynolds 2008, 67.

The known archaeological notion and the new results of this study identify four main and long-lasting areas of production of flat-bottomed containers in Roman and Early Byzantine Sicily. Flat-bottomed amphorae were manufactured for centuries along the North eastern coast (Fig. 4.1); within the north eastern tip of Sicily, in a territory wich encompass Messina and Naxos productive areas (Fig. 4.2); in central eastern Sicily opposite the Ionian coast, corresponding to the present day province of Catania (Fig. 4.3) and in the region of Agrigento (Fig. I, Area 7). The available scanty archaeological evidence of a few amphora wasters suggests that flat-bottomed containers were also produced in central Sicily (Fig. I, Area 5, area of Enna/Gerace). In the latter case, it is doubtful if there was a regular amphora production or even a trade of the containers.

With the exception of the amphorae produced in the area of Agrigento, which show a high degree of morphological variabilty, the containers produced in north eastern coastal Sicily (Fig. I, Area 1), in the north east tip of the island (Fig. I, Area 2), and in the region of Catania (Fig. I, Area 3), at multiple productive sites,[484] show more distinct amphorae for which a typological sequence can be drawn. In regard to Sicilian containers produced at the above mentioned areas, I have defined *classes*, *types*, *forms*, *variants* and *productions* (see Figs. 4.1–3).

The *Class* comprises a set of amphora types regarded as forming a group by reason of general common attributes, such as morphology and the usage of certain technology of production throughout centuries. Although one cannot be sure that the shape of the ceramic containers was intended for a specific content, it is reasonable to suggest that the amphorae belonging to a given class may have carried the same primary content. A defined amphora class may have been manufactured at different locations, and can be formed by a number of varieties which, however, can be assigned and are representative of a given *type* of amphora.

The *type* indicates the overall shape of a container which shares similar morphological characteristics. A given amphora type may have been produced in more

[484] This is also corroborated by the results of thin-section analyses, see detailed discussion in Chapter 3. It is important to note that there is not exact correspondence between the seven geographical areas identified in Sicily (see Introduction, I.3) and the more numerous different geological formations of the Island (See Chapter 3). The implication is that in different 'sub-regional' areas the geology may be similar, such as in the case of Naxos and Catania, respectively in Area 2 and Area 3, which share the same geology of basaltic rocks formation (see Fig. 3.3, area a), or viceversa, the same geographical area . This is the case of Messina and Naxos, which, although being part of the same geographical areas (Area 2), are included in two different geological district, respectively area of metamorphic rocks (see Fig. 3.3, area b) and area of basaltic rocks (see Fig. 3.3, area a).

than one workshop, but is generally linked to specific sub-regional areas (see below the areas of typological influences). In this instance we have a Naxos flat-bottomed type, Catania flat-bottomed type etc.

The *forms* correspond to the various stages through which the *type* developed. They are indicated with a number, e.g. Naxos flat-bottomed type, form 1.

Within each suggested production area possible predecessors and forerunners of the same amphora type have been identified on the basis of their chronological differences as mainly evidenced by consumption sites. In Figs. 4.1–3 these are shown as a 'vertical line' of development which aims to illustrate the continuous process of variation of the same type over time.

The term *variant* refers to minor morphological differences (for example in the rim shape) noted in a given amphora form. In this instance we have a Catania flat-bottomed type, Form 1, variant a. Morphological variants may be signs of a chronological development of the same amphora form or may be contemporary, in the latter case due to the existence of a multiplicity of workshops. In other words the same amphora type is distinguished by fabric. In this case, the contemporaneous production of an amphora shape (= type) within the same macro-area of *typological influences* by a variety of workshops (i.e. different sources) is shown as 'horizontal lines' and termed *production*. These different 'branches' of the same amphora model are particularly significant in economic terms because they testify to the presence of several production areas in rather small territories. In this instance we have a NE Sicilian type 1 Caronia Marina production and NE Sicilian type 1 Capo d'Orlando production etc.

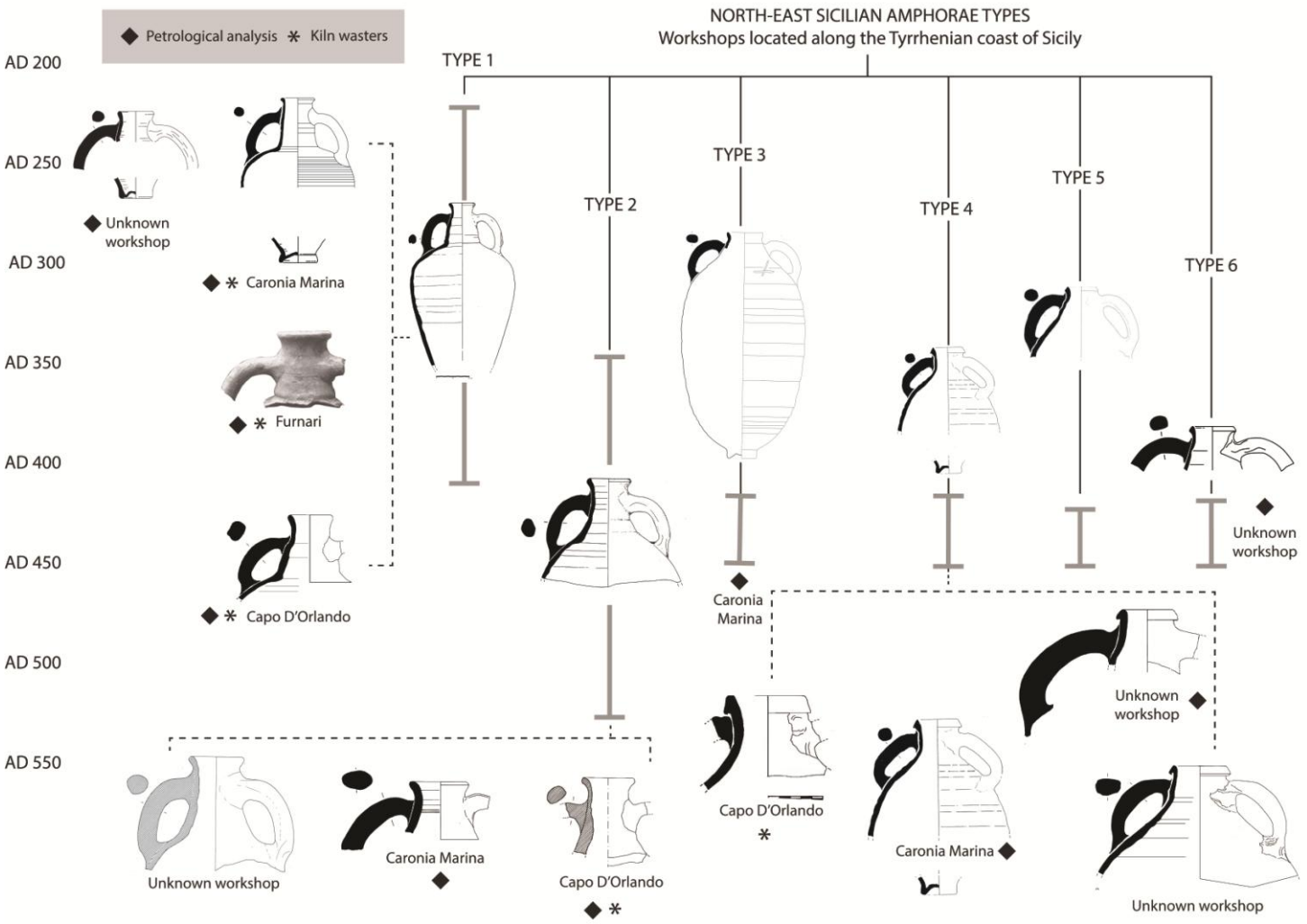


Fig. 4.1 New typology of flat-bottomed amphorae produced along the north eastern Tyrrhenian coast of Sicily (Area 1) (C. Franco)

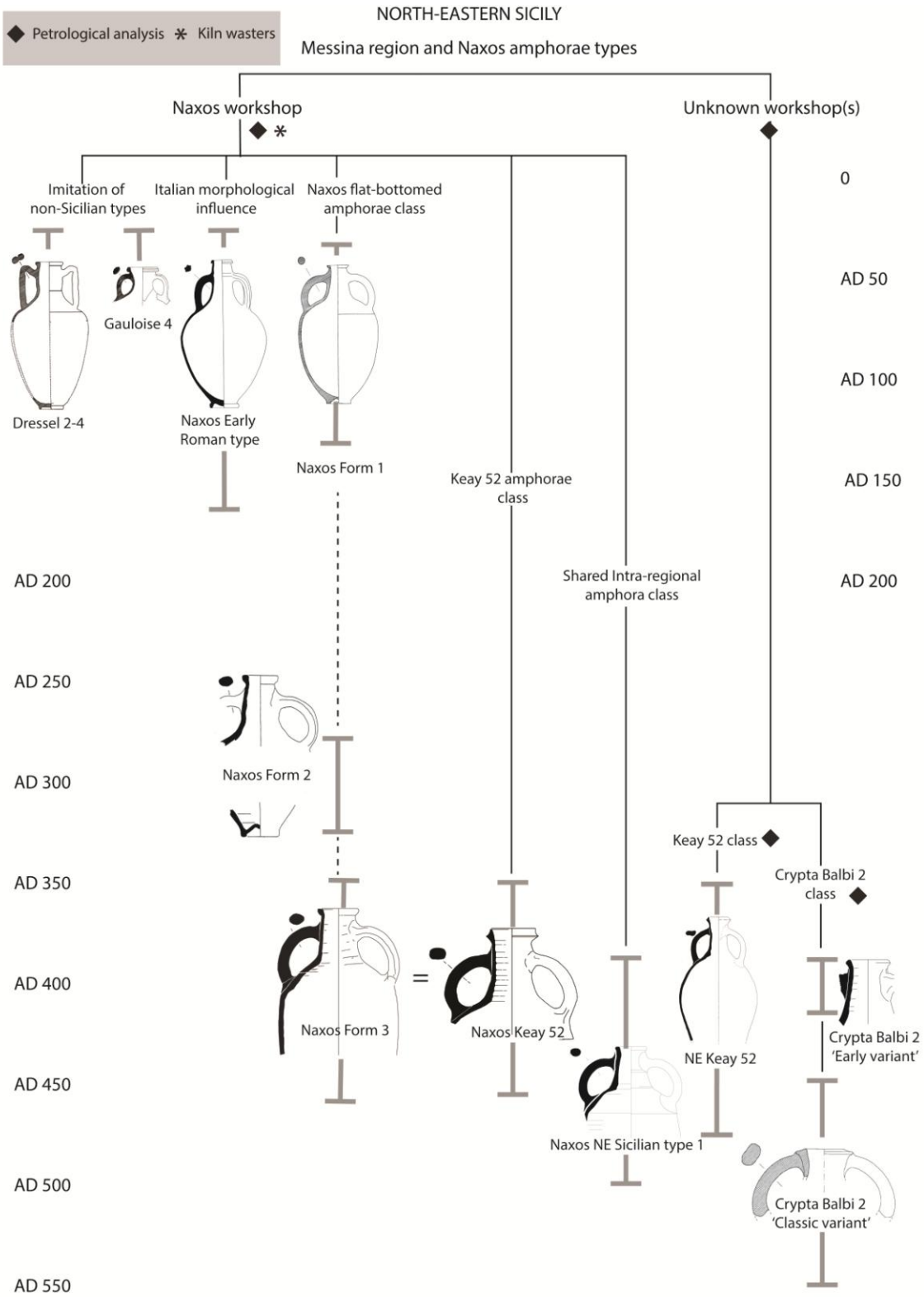


Fig. 4.2 New typology of flat-bottomed amphorae produced in the north eastern region of Sicily (Regions of Messina and Naxos, Area 2) (C. Franco).

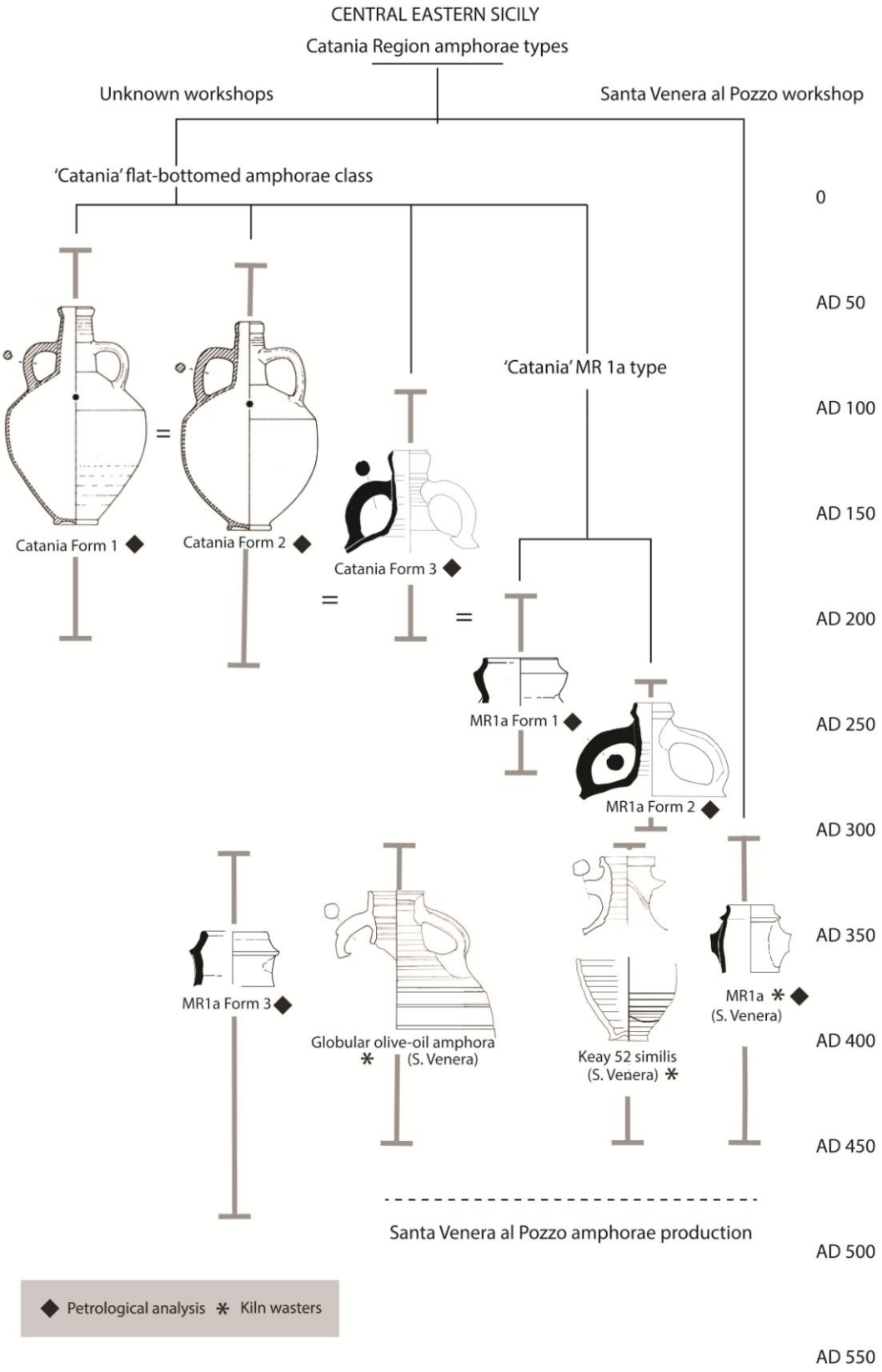


Fig. 4.3 New typology of flat-bottomed amphorae produced in central eastern Sicily (region of Catania, Area 3) (C. Franco).

4.3. SOURCES OF INFORMATION, CHRONOLOGICAL AND DISTRIBUTIONAL IMPLICATIONS OF THE NEW TYPOLOGY

The new typology was created with the aim of defining clearer and more uniform guidelines for the description of the numerous Sicilian flat-bottomed wine transport containers. It is composed of a coherent set of data which can be used by other pottery specialists. Two main sources were used to create the repertoire:

1. Reliable published excavated stratigraphic sequences dated from the 1st to the end of the 6th century AD from Sicily and several Mediterranean contexts.
2. Information gathered from assemblages or survey work, some of which are unpublished, studied as part of my doctoral research and data from the CASR project. The seriation of the main types dating to between the mid-2rd and early 5th century was gauged primarily by the well-excavated context of Thermes du Levant in Lepcis Magna.[485]

4.3.1. Chonology

The chronology of the amphora class was reassessed using evidence from a wide range of archaeological contexts across the Mediterranean regions and northern Europe, which also provided significant data for cross-dating the amphorae through their association with well-dated artefacts. Equally, the chronological range of some specific Sicilian amphora types allowed us to modify the chronology of a few archaeological contexts. This is true of the Levanzo wreck.[486] For its cargo, that was dated in the course of the 4th century AD, the evidence of the Sicilian amphorae allow me to modify the chronology initially proposed by the authors by almost one century (see Chapter 7, Table 7.8).

4.3.2. Distribution

On the basis of these data an attempt has been made to identify and plot the presence and absence of Sicilian amphorae in a wide geographical context (Chapter 7). The first source, reliable stratigraphic contexts, made it possible to verify or modify the dating of

[485] Michel Bonifay who undertook the study of the pottery at this site very generously supplied information, amphora samples and illustrations. The initial results from this context are available in Bonifay and Capelli *et al.* 2013, Chapter III.A1; Franco and Capelli 2014a; Franco, Capelli and Mazou in press.
[486] Royal and Tusa 2012.

amphora types. The second allowed me to identify Sicilian forms in areas where they had not previously been found, helping to build up a more reliable distributional picture of Sicilian wine exports. At the same time, a few unpublished contexts analysed (for example the 3nd-century Tarragona dump) yielded no Sicilian amphora sherds. These data are also important because they provide evidence of the absence of Sicilian amphorae, helping scholars to reconstruct the Sicilian wine amphora market more accurately.

4.4. NAMING PROBLEMS

From the first phase of this research it was necessary to improve the current typological classification of flat-bottomed amphorae by overcoming their confusing naming system. One major problem is that several amphorae belonging to different types but of general similar shape (i.e.: amphorae of different '*typological influences*'), have been mistakenly classified with the same name.[487] In other instances, some of their morphological features were not consistent with the types of amphora to which they were compared.[488] In other cases, a detailed examination of the morphological features of the amphorae shows that not all the Sicilian types are comparable with known types. In the latter instance, I have proposed a new classification.[489]

It is important to stress that several of the amphorae belonging to this class were considered of non-Sicilian origin by previous scholars.[490] In other cases, some amphora types were included in typologies created for specific excavation assemblages or publications with no indication of their origin.[491] Furthermore, some forms were identified as Sicilian products on the basis of archaeological elements (kilns/wasters), but were not assigned to any established typology, thereby creating an artificial over-representation of forms.[492]

[487] E.g. the so-called 'Termini Imerese 151–354 types'.
[488] E.g. what we have here termed the Naxos flat-bottomed amphora types compared to the Catania MR 1 amphorae.
[489] See the group here termed 'North eastern Sicilian amphora types' (= NE types).
[490] E.g. in particular the Riley MR amphora 1.
[491] E.g. a group of flat-bottomed amphorae first published in the Ostia excavations (Ostia II, 523; Ostia II, 522; Ostia III, 464; Ostia I, 455).
[492] E.g. the so-called S. Alessio amphora type already known in the archaeological literature as Ostia II, 523.

This study tackles the issues connected to earlier names for amphora types with the aim of demonstrating the need for more uniform definitions. The new typology provides a concordance of defined types, recording all the different names used for the same amphora type in different excavation reports. In a few instances, to avoid further confusion, I decided to use the most commonly used amphora names, preceded by the geographical area of production, rather than adding new references.[493] I have changed previous amphora identifications and cross-references only when they were used inappropriately, with the objective of rationalising previous definitions.[494]

In several cases, the variety of sub-groups of fabrics observed in the types studied in conjunction with minor morphological differences suggested the existence of several production centres active contemporaneously and producing the same amphora prototype.[495]

4.5. THE SICILIAN AMPHORA *KOINÈ* AND SUB-REGIONAL *FACIES* OF AMPHORA PRODUCTION

The new element which this research aims to introduce is that several production centres manufactured transport containers that followed a similar regional morphological logic. This shared morphological language can be defined as a '*Sicilian amphorae koinè'*. It displayed internal cohesion both in the choice of the flattened bottom and in terms of capacity.

However, this study has also identified differences in the technological features of manufacture and morphological variations within these broader classes. The latter data provide a strong basis for determining the existence of several *sub-regional facies* of amphora manufacture which were all integrated into the broader Sicilian production context.

The theoretical approach adopted here makes use of concepts such as 'common language' and 'geographic ceramic *facies*' used in pottery studies by M. Bonifay and J. Poblome for the investigation of specific geographic areas of production. The approach was first used by M. Bonifay for North-African ceramics,[496] allowing him to make

[493] For instance the Catania region MR 1a amphora type.
[494] This is in particular the case of the Naxos flat-bottomed amphora types.
[495] E.g. in the case of the 4th-/5th-century workshops located along the north eastern coast of Sicily or in the Catania production area.
[496] 'Faciès géographiques', Bonifay 2004, 7.

distinctive groupings of pottery and transport amphorae on the basis of similar typo-chronological and technological details linked to specific sub-regional areas of production.[497] J. Poblome used the same approach for the regional late Roman table ware typologies produced in Cyprus and Sagalassos, concluding that pottery specialists should 'stop investigating matters in isolation' and further implement the concept of pottery *facies* in terms of a 'dialect' or 'recognisable mix of vocabulary, pronunciation and grammar used by a particular group of speakers, who are regionally or socially connected'.[498]

In our specific instance, the general uniformity of Sicilian amphorae evident in the adoption of a flattened base and small size can be read as a 'generic Sicilian morphological language'. The manufacture of several amphora types in different geographical production areas within Sicily (as clearly evident from this research) can be read as the presence of Sicilian amphora 'morphological dialects'.

The existence of these 'dialects' has important consequences for issues connected to amphora production and distributional trends. It is clear from this study that from the Early Roman period, but especially in the Late Imperial Roman period when a plethora of small, medium and large production sites were active, Sicilian potters could choose to adopt different morphological dialects.

Making some generalization, the distinctive dialects of three main specific regions can be as follow (see also below, Identification of the sub-regional *facies* of typological influences):

1) The Naxos workshop in Area 2 (Fig. I, Area 2; Fig. 3.3, Area a, fabric group 2), adopted a quite short and small ovoid amphora shape (Fig. 4.5). The rim of the amphorae was never triangular or biconic (see below, region of Catania) and the rim had a flat upper surface. Two horizontal wavy incisions occurred with regularity on the neck, at the same height as the handles (Fig. 4.4). These grooves represent a constant element in the Early/Middle Roman Naxian amphora production. They will disappear in the later production.

[497] 'Car, si hors d'Afrique la céramique africaine apparaît comme un tout, il n'en est pas de meme lorsqu'on est amené à travailler sur les lieux de production, où chaque région possède son originalité', Bonifay 2004, 1.
[498] Poblome and Firat 2011, 54.



Fig. 4.4 Amphora produced at the Naxos workshop. The two horizontal wavy incisions on the neck represent a distinctive element of the Naxos flat-bottomed amphora production in Early and Middle Imperial Period (Ollà 2001, 48, Fig. 7).

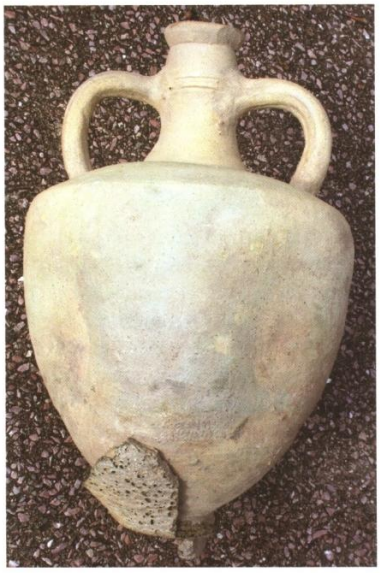


Fig. 4.5 Amphora produced at the Naxos workshop (Spinella quarter). The ovoid body with a slight carinated shoulder is another distinctive element of the Naxian flat-bottomed amphorae class from the 1st to the end of the 4th century AD (Muscolino 2009, Fig. 41).

2) The distinct dialect of the region of Catania in Area 3 (see Fig. I, Area 3; Fig. 3.3, Area a, fabric group 1), encompassed the adoption of two main handle types, that could be flower-shaped in section (especially in the Early Imperial Period) and unfluted. The biconic rim of the MR 1a type/Ostia I, 453–454 is probably the most iconic element of the Middle and Late Roman production of the region of Catania, together with the constant adoption of the carinated shoulder and the persistence of the long neck (Fig. 4.6).

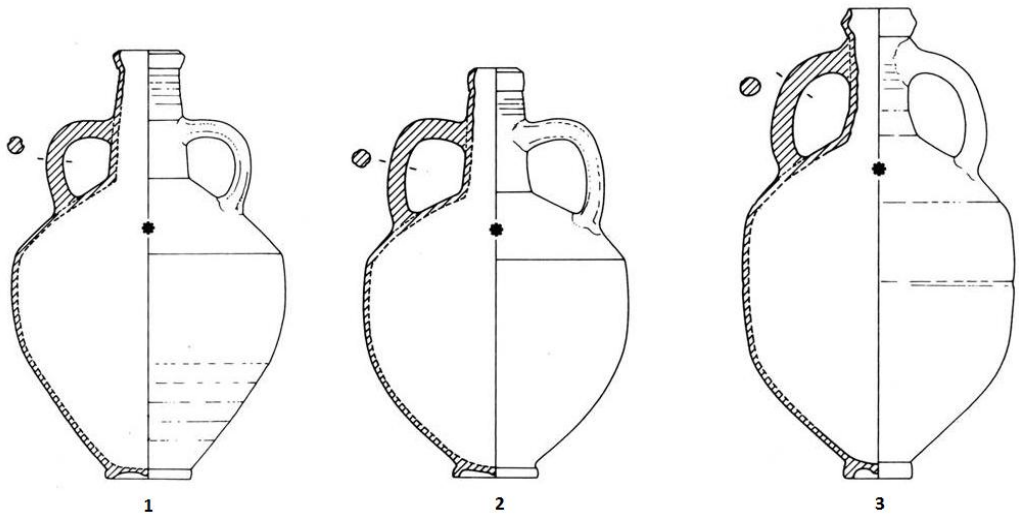


Fig. 4.6 Exemplification of the amphora types produced in the region of Catania with the constant element of the carinated shoulder and the long neck (from the left to the right, no. 1: type so-called Ostia II, 522; no. 2: Ostia III, 464 and no. 3: Ostia I, 453–454, after Panella 2001).

3) The north eastern coast of Sicily in Area 1 (see Fig. I, Area 1; Fig. 3.3, Area c, fabric group 4), produced amphorae that had a pear-shaped body which become ovoid in Late Antiquity, while a carinated shoulder was never adopted in the various types produced in the area. Another characteristic was the very low profile of handles (‘anse a maniglia’ in the Italian literature) and the appearance of rilling in the exterior surface (Fig. 4.7 and 4.8), which never appeared both in Catania and Naxos amphora production, characterized both by a smooth exterior.



Fig. 4.7 Late Roman Amphora produced in the north eastern coastal area of Sicily (Tarragona Archaeological Museum, C. Franco).



Fig. 4.8 Late Roman Amphora produced in the north eastern coastal area of Sicily (underwater find from S. Vito Lo Capo in Sicily, C. Franco).

It appears that the potters of each main area of production wanted to reinforce the visual connection to the location of production (and probably to the origin of the content) through the adoption of long-lasting morphological features.

The evidence collected for this study shows that workshops producing amphorae for a local market (Fig. I, Areas 5 and 7) followed their own ‘morphological dialect’, producing less standardized types with many variations, which are *de facto* difficult to categorize according to previous typologies (Fig. 4.9). This is the case for Central Sicily (workshop of Gerace); and for the central southern coast of Sicily, where the Campanaio workshop and several small/medium (?) areas of amphora manufacture which have not yet been scientifically investigated produced amphorae through the Roman Period and until the Early Byzantine period. This extensive territory, which comprises the present

Provinces of Caltanissetta, Enna and Agrigento, seems to have produced less distinctive amphora types do not provide sufficient elements to distinguish the sub-regional *facies* beyond their shape.

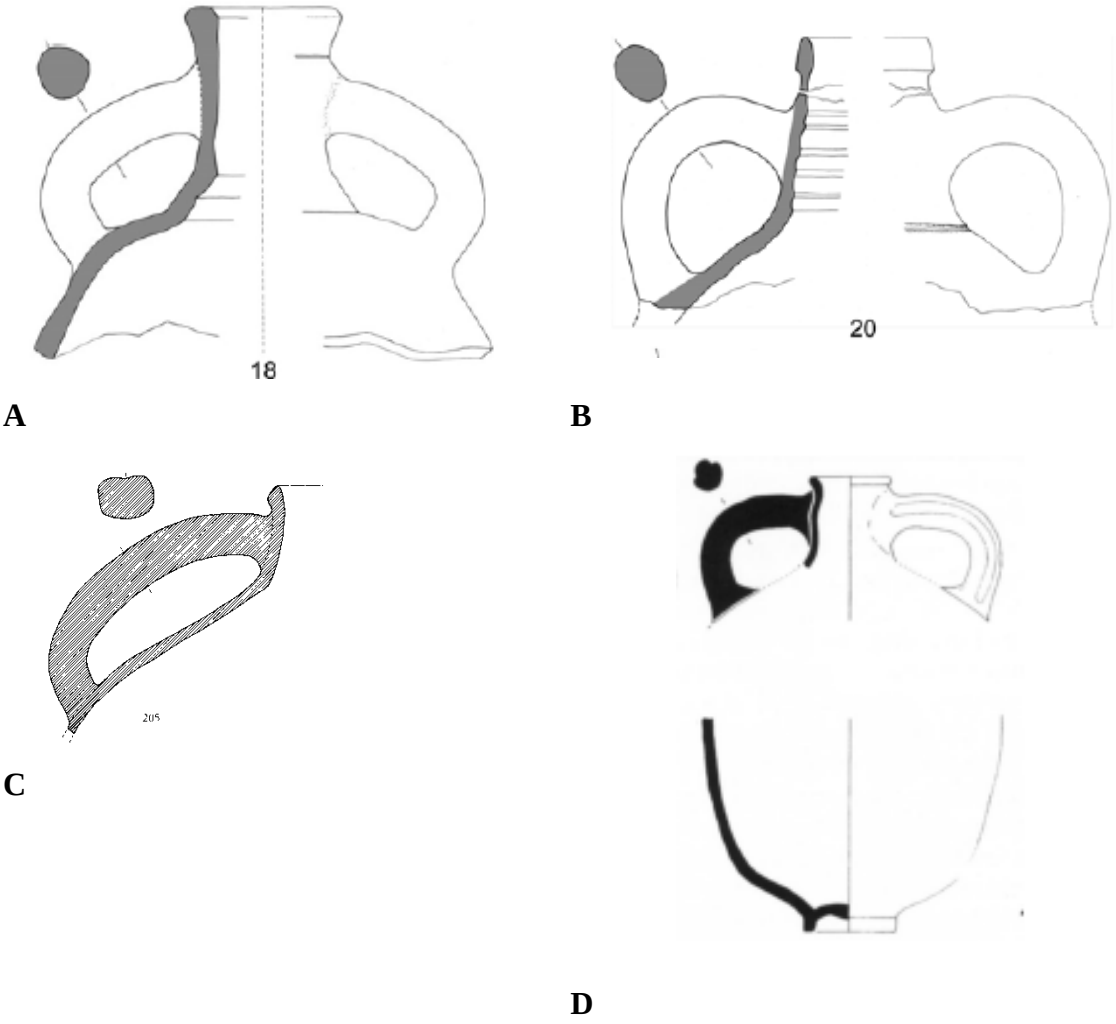


Fig. 4.9 Illustration of the morphological heterogeneity of the amphorae produced within the (north) western and central area of Sicily. Amphorae not to scale. A and B) Amphorae from the Late Roman period Verdura village in Sicily in the vicinity of Sciacca (Area 7) (Parello, Amico, D'Angelo 2010, Fig. 6, no. 18 and 19); C) Late Roman amphora from Termini Imerese (Belvedere *et al*. 1993, no. 205); D) Late Roman amphora from Campanaio Village (Wilson 2000, Fig. 20 E).

The pottery industries which were fully integrated into the export of overseas foodstuff (wine) (see Naxos, Catania and Caronia) circuits tended to adopt a generic and recognizable *Sicilian language*, identifiable by traders and buyers in the wider inter-provincial markets. At the same time, beyond the widespread adoption of this generic Sicilian amphora shape, each larger and long-lived production area, such as Naxos and Catania, stuck for centuries to the manufacture of trademark morphological features

such as the rim shape or the handle/body profile. From this point of view the amphora shape could serve as a brand of its geographical area of origin, advertising the local product, possibly giving rise to phenomena of imitations of successfully 'branded' types (on the imitation of specific Sicilian amphora type, see Chapter 6).

4.6. THREE MAIN SUB-REGIONAL *FACIES* OF TYPOLOGICAL INFLUENCES

Within the generic Sicilian *koinè* of flat-bottomed containers three main sub-regional *facies* have been identified. These *facies* are located in distinctive geographical areas which are described in the introduction of this thesis (see Fig. I).

Area 1. Sub-regional *facies* of the north eastern coast of Sicily. It comprises a large range of small and medium-sized production areas, including those of Capo d'Orlando, Caronia Marina and Furnari;

Area 2. Sub-regional *facies* of the north eastern tip of Sicily with workshops somewhere in the region of Messina and in the production area of Naxos;

Area 3. Sub-regional *facies* of central eastern coastal region of Sicily which includes the workshop of S. Venera al Pozzo and other unlocated workshops within the region of Catania;

These defined geographical spaces[499] have long-lasting pottery making traditions, each of which appears to possess its own specific features and within which the production of flat-bottomed wine containers presents a certain degree of morphological and technological cohesion. The considerations expressed regarding the existence in antiquity of these *facies of typological influences* can potentially be applied to other Sicilian craft industries of the Roman period for which no material evidence exists but which are mentioned in the sources, such as the textile industry, the jewellery industry and carpentry.[500]

[499] These areas have been defined by socio-political, artificial (harbours and roads) and natural (rivers, mountains, plains and coastlines) features.
[500] Pliny, *Nat. Hist*., 83, 34; 89, 33; Athen., 1, 28 a–b; 5, 206 d ff; 15, 700 d.

4.7. SICILIAN FLAT-BOTTOMED AMPHORAE: TYPES, FORMS, VARIANTS AND ORIGIN

4.7.1. The Material

The containers discussed in the typology belong to a large family of flat-bottomed amphorae whose tradition started in the western Mediterranean (i.e. France and Italy) around the last 40 years of the 1st century BC and lasted through Roman Imperial times until the Early Byzantine period. The comprehensive approach adopted allowed for the identification of 15 main amphora types subdivided into three main areas of '*typological influences*' — geographically located in the north eastern coast, in the north eastern region and central Ionian region of Sicily — as summarized in Fig. 4.1–3 (see above for the amphora typology).

The characteristic features of the Sicilian amphora class are the flat or footed ring-base, which allowed the containers to stand on the ground unsupported, and their relatively small size. The average height of these amphorae ranges between 40 cm and 60 cm. Their maximum capacity ranges from 15 to 21 litres for the majority of intact specimens.[501] These measurements do not include the Keay 52 type, for the lack of preserved whole amphorae found in the contexts analysed. Digitised measurements of Keay 52 types from the Palatine East context have given 6 to 7.4 litres for this type.[502] The base diameters measure between 8 and 12 cm. The handles are generally small, and may be fluted, slightly grooved or unfluted, with a circular, oval or flower-shaped section (diameter ranges between 2.8 and 4.3 cm). The walls are generally thin[503] with an average thickness of 1/1.5 cm. The external diameter at the lip measures between 7.5 and 9.5 cm while the internal diameter measures on average 7/7.5 cm, with a range of between 5.5 and 8.5 cm. One exception to this rather homogeneous range of rim sizes is a peculiar amphora type known from the Late Roman S. Venera al Pozzo workshop and hitherto not attested elsewhere in Sicily or abroad. The amphora (see Chapter 2, Fig. 2.33) has a larger rim diameter (10 cm internal diameter) and very different body geometry. I tentatively propose connecting these morphological differences to the different nature of its content, perhaps olive oil, due to the large rim and distinctive globular body which is more consistently associated with an olive oil content.

[501] Digitized capacity measurements were obtained for a few examples using the method established by Theo Peña and his equipe, see Catalogue I.
[502] Peña 1999, 72.
[503] Particularly for the Catania region amphorae.

Table 4.1 summarises the main amphora types analysed for the study. The amphorae are presented within their area of production and are distinguished into types, forms and variants. The information in the table include new nomenclature, previous classification and concordance of names, bibliographic references, chronology of production and suggested origin as evident from the thin-section analyses (Chapter 3). The *concordance* with the previous denomination and the new proposal of classification is an attempt to relate previous amphorae descriptions to one another and rationalise the information.

Sub-regional *facies* of production	New nomenclature		Current nomenclature	Bibliography	Chronology	Suggested origin	Plate
AREA 2	Naxos Early Roman amphora type		Ostia II, Fig. 523	Ostia II, 105, pl. 29, no. 523 = Ostia III, 632, no. 43	From the early decades of the 1st century AD (Tiberian age/Late Julio-Claudian dynasty**)** –mid/third quarter 2nd century AD? (Late phase Antonian dynasty**)**	Naxos Area: Fabric Group 2.1	I
			Sant'Alessio amphora Type	Ollà 1997; 2001, 56, no. 12	As above	As above	I
			Sant'Alessio Type *similis*	Muscolino 2005–2006; 2009	As above	Naxos kiln	I
	Naxos flat-bottomed amphora type	Form 1	Spinella/Via Larunchi amphora type	Lentini 2001, 24, Fig. 23; Ollà 2001, 55, cat. 10, Fig. 7	First three decades and the end of the 1st century AD/2nd century AD	Naxos kiln: Fabric Group 2	
			Palatine East 1 Early variant	Peña 1999, 76–77	Second half of the 1st century AD (Palatine East, Rome)	Peña Fabric 4d (metamorphic)	
		Form 2	'Keay 52'	Basile 1994, Fig. 23; Ollà 2001, 57, no. 18 and 21	4th century AD	Naxos, Mastrociccio kiln	II
			Palatine East amphora 1	Peña 1999, 76, Fig. 10.1	Late 3rd-early 4th century AD (Palatine East, Rome)	Peña Fabric 4d (metamorphic)	II
		Form 3		Bonifay, Capelli *et al*. 2013, cat. 3.4–3.7	from mid-4th century AD	Naxos area: Fabric Group 2.2	III

Sub-regional *facies* of production	New nomenclature	Current nomenclature	Bibliography	Chronology	Suggested origin	Plate
	Naxos Keay 52 type	Keay 52	Fallico 1976–1977; Ollà 2001, 52, Fig. 18	Second half of the 4th century/mid-5th century AD (?)	Naxos, Mastrociccio kiln/ Fabric Group 2.2	V
	North eastern Keay 52	Keay 52		As Above	Fabric Group 3	VI
AREA 1	NE Sicily amphora Type 1	Ostia I, 455	Ostia I, 98, Fig. 455; Ostia III, 485–487; Ostia IV, 232–235.	First half of the 3rd until the course of the 5th century AD	North eastern coast of Sicily	
				Mid-3rd/beginning 4th century AD	Caronia Marina production Fabric Group 4.1	XXII
			Bonifay, Capelli *et al.* 2013, cat.1.13 and 1.14	Mid-3rd century AD	North eastern coast of Sicily (Fabric Group 4, outliers)	XXIII
			Bonanno 2007, Fig. 3, no. 3	4th century? AD	Furnari Tonnarella production	XXIV
		Capo d'Orlando no. 3	Spigo, Ollà and Capelli 2006, Fig. 4, no. 3	Mid 4th and the 5th century AD?	Capo d'Orlando production	
	NE Sicilian amphora Type 2	Ostia IV, 166	Ostia IV, 232–233,	Mid-4th/end of 5th century	North eastern	

Sub-regional *facies* of production	New nomenclature	Current nomenclature	Bibliography	Chronology	Suggested origin	Plate
			pl. XXV, Fig. 166	AD (?)	coast of Sicily	
			Bonanno 2007, Fig. 3, no. 1	mid-4th century AD	Caronia Marina production Fabric Group 4.1	XXV
		Termini Imerese no. 151	Belvedere *et al.* 1993, 73, 164, no. 151	End 4th/first three decades of the 5th century AD	Caronia Marin: Fabric 4.1	
		Capo d'Orlando nos. 6–7	Spigo, Ollà and Capelli 2006, 456, Fig. 4, nos. 6–7	Mid 4th and the 5th century AD?	Capo d'Orlando production	
	NE Sicilian amphora Type 3	Remolà 2000 Amphora Tardia type D	Remolà 2000, 241, Fig. 90, nos. 4–5	AD 425–450 (Tarragona)	Caronia Marina (Fabric 4.1) and other workshop/s in the vicinity (Fabric 4.1 var.)	XXVI
	NE Sicilian amphora Type 4	Bonifay 1986, nos. 39–40	Bonifay 1986, 286, nos. 39–40	Mid-5th century (Marseille)	Caronia Marina Fabric 4.1	XXVII
		Termini Imerese no. 354	Belvedere *et al.* 1993, 83,Fig. 354		North eastern coast of Sicily	
		Remolà 2000 Tipo tardío C	Remolà 2000, 238, Fig. 90, nos. 1–3	AD 425–450 (Tarragona)	North eastern coast of Sicily	
		Capo d'Orlando no. 6	Spigo, Ollà and Capelli 2006, 456, Fig. 4, no. 4		Capo d'Orlando production	

Sub-regional *facies* of production	New nomenclature			Current nomenclature	Bibliography	Chronology	Suggested origin	Plate
	NE Sicilian amphora Type 5			Bonifay 1986, no. 41	Bonifay 1986, 286, Fig. 9, no. 41	mid-5th century (Marseille)	North eastern coast of Sicily	
	NE Sicilian amphora Type 6			Remolà 2000 Tipo tardío E	Remolà 2000, Fig. 90, nos. 6–83	AD 425–450 (Tarragona)	North eastern coast of Sicily	XXVIII
AREA 3	Catania flat-bottomed type	Form 1		Ostia II, 522	Ostia II, pl. XXIX, no. 522; Ostia III, 632, Fig. 44	Augustan/Tiberian Age-beginning 3rd century?	Region of Catania: Fabric Group1	XI
				Riley MR 1b	Riley 1979, Fig. 81, no. 216		As above	
		Form 2	Var. A	Ostia III, 464	Ostia III, pl. IV, no. 464= Ostia III, 632, Fig. 45	End 1st century-beginning (?) 3rd century AD	Region of Catania: Fabric Group1	XII
			Var. B		Bonifay, Capelli *et al.* 2013, cat. 1.5	AD 250–260 residual? (Lepcis Magna)	Region of Catania: Fabric Group1	
		Form 3		Riley MR 1b	Riley 1979, Fig. 81, no. 217	Beginning 2nd century-beginning 3rd century? AD	Region of Catania	
	Catania MR 1a type	Form 1			Bonifay, Capelli *et al.* 2013, Fig. 25, 1.7	From the late/end of the 2nd/ mid-third quarter of the 3rd century AD (residual?) (Lepcis Magna)	Region of Catania: Fabric Group1	XIII

Sub-regional *facies* of production	New nomenclature			Current nomenclature	Bibliography	Chronology	Suggested origin	Plate
		Form 2	Var. A	Ostia I, 453–454	Ostia I, 100, figs. 453 and 454	*c.* AD 230/300 onwards	Region of Catania: Fabric Group1	XIV–XV
				Riley MR 1a	Riley 1979, Fig. 81, no. 215	As above	As above	XIV–XV
					Bonifay, Capelli *et al.* 2013, Fig. 25, 2.7	Mid-second half of the 3rd century AD (Lepcis Magna)	As above	
			Var. B		Bonifay, Capelli *et al.* 2013, cat. 2. 10–11.	AD 290/310 (Lepcis Magna)	Region of Catania: Fabric Group1	XVI
		Form 3		Agora M254	Robinson 1959, 108, pl. 28, M254	Early/middle 4th century AD (Athens)	Region of Catania	
					Bonifay, Capelli *et al.* 2013, Fig. 25, 3.2	From the very beginning to the 4th to the end of the 4th century AD (Lepcis Magna)	Region of Catania: Fabric Group1	XVII–XIX
				Catania MR 1a type, Form 3 (S. Venera variant)	Amari 2006, 143, nos. 5–6.	Early decades of the 4th and the first half of the 5th century AD	S. Venera/*Statio Acium Kiln* Fabric group1 variant	XXI

Table 4.1 . Table of main Sicilian flat-bottomed amphora types and forms recognized within this study, with indication of the new nomenclature, chronology and areas of production. The table indicates where the amphora samples belonging to a given type have been illustrated.

TYPOLOGY

4.8. THE FLAT-BOTTOMED AMPHORA TYPES PRODUCED AT THE WORKSHOP OF NAXOS

This study has demonstrated the regional and overseas export of several flat-bottomed transport containers produced in the Naxos region (Fabric Group 2) between the 1st and the first half (?) of the 5th century AD (Fig. 4.2). This group is composed of three main amphora types — two of which follow various degrees of imitative amphorae.

1) ***Naxos Early Roman amphora type***: This type is only produced in the Early Roman period. In my opinion it appears to imitate other amphora forms from outside the region. In particular, the form falls within the sphere of morphological influence of the Italian flat-base amphorae such as Spello amphora (later also imitated by the Forlimpopoli amphora type).
2) ***Naxos Flat-Bottomed amphora type* (*Form 1, 2 and 3*)**: This second broad amphora type is produced from the Early Roman Period to the Late Antique. I believe that this 'new' amphora shape adopts a morphological logic firmly tied to its area of manufacture. The persistence over time of common and recognizable morphological and technical features were possibly aimed at linking the flat-bottomed ovoid containers to their productive area and, possibly, giving information on the area of wine production.
3) ***Naxos Keay 52 amphora type***: This third amphora type shares the formal characteristics of the wine containers produced in the sphere of the 'Strait of Messina' and does not coincide with a specific-workshop/productive area amphora type.

4.8.1. 'NAXOS EARLY ROMAN AMPHORA TYPE' AN EXAMPLE OF IMITATIVE REGIONAL STYLE AMPHORA

Naxos Early Roman Amphora Type (Ostia II, Fig. 523; Sant'Alessio amphora Type; Sant'Alessio Type *similis*) (Plate I, 1–4).

Tackling the Issue of Previous Classifications

The type called the Naxos Early Roman amphora type was first published in the 1st-century AD context of the Terme del Nuotatore in Ostia and is listed as Ostia II, no. 523[504] (Fig. 4.12). The type can be identified with containers produced at the Naxos workshop and called 'Sant'Alessio amphora Type'[505] (see Chapter 2, Fig. 2.2) and 'S.Alessio type *similis*'[506] (see Chapter 2, Fig. 2.3).

Problems of Origin

C. Panella, who first published the containers in 1970, preferred not to hazard a guess as to their provenance. On the basis purely of the similarity in shape and macroscopic appearance of the fabric with the amphorae published as Ostia II, Fig. 522 and Ostia III, Fig. 464 (Fig. 4.24, below) she suggested that the three types might have had the same geographical origin. She preferred to leave the problem open, listing the type Ostia II, Fig. 523 from the Ostia contexts as '*anfore di incerta provenienza*'.[507] Specifically, she noted that the handle sherds of Ostia II, 522 and Ostia II, 523 were not easily distinguishable if found without any diagnostic fragments. In fact, in *Ostia* volume III on the context of the Terme del Nuotatore, the handles of these different amphora types are grouped together in the group of '*anfore di piccole dimensioni*'.[508] This chapter will show that this study has identified the geographical origin for both the Ostia II, 522 and Ostia II, 523 amphora types, making it clear that, despite the visual similarities in fabrics, they differ in thin-section, and should be assigned to different areas of production within Sicily.

[504] Ostia II, 105, pl. 29, no. 523 = Ostia III, 632, no. 43.
[505] Ollà 2001, 56, no. 12.
[506] More than 45 amphora specimens: Muscolino 2005–2006; 2009.
[507] 'Amphorae of uncertain origin', writer translation.
[508] Ostia III, 486, tab. 2. 'Group of small amphorae', writer translation.

New Data

Four specimens of the *Naxos Early Roman amphora type* were selected for thin-sections. They were recovered in southern France (Arles; Marseille) and in Corsica (Quattrina). The thorough petrographic examination confirmed that all the sherds[509] (Plate I, 1–4) were produced at the Naxos workshop on the basis of comparison with reference samples (cf. Group A). They belong to a *coarse-grained sub-group* which differs from the latest forms of Naxian production (Chapter 3, Sub-Group 2.1 fabrics).

Concluding Remarks

The shape of this amphora type belongs to a shared 'Roman amphora language'. The general morphology of the body of the *Naxos Early Roman amphora type* is comparable with other Early Roman flat-bottomed amphorae produced in Italy from the Augustan period onwards. These Italic amphorae imitated the Gallic series with a flat ringed base and ovoid body (Gauloise 1–9)[510] produced in *Gallia Narbonensis* and Provence from 40 BC.[511]

The Early Roman Naxos type (Fig. 4.12) was produced from the early decades of the 1st century AD until the mid/third quarter of the 2nd century AD. The general shape presents similarities with the 1st-century AD central Tyrrhenian Italian Spello type[512] (Fig. 4.10) and with the later north eastern Italian/central Adriatic Forlimpopoli amphora type (A-D sub-types)[513] (Fig. 4.11). Despite some minor differences such as the profile handles[514] and the height,[515] overall their morphological characteristics are governed by the same basic principles directly connected to their primary content: i.e. wine. They all have long thin necks, thin walls, a narrow mouth and flat bottom.[516] They

[509] SA 53, SA 55, SA 21 and SA 1.
[510] Laubenheimer 1986.
[511] Panella 2001, 197–198 with bibliography.
[512] Ostia II, no. 521; Ostia III, 369–370. Named after the Spello production centre (Umbria) where it was first found. The great variety of fabrics indicates contemporaneous production in several centres in inland central Tyrrhenian Italy, see Patterson *et al*. 2005, 372.
[513] Forlimpopoli/Ostia IV, 442 form produced in Forlimpopoli and other workshops (at least one in Rimini) in the Emilia Romagna region from the second half of the 1st to the first half of the 3rd century AD, Panella 2001, 195. In the published data this type is not firmly identified in Sicily.
[514] In the Spello type the handles are flat rectangular or slightly oval in section, with two or three ridges on the outside. In the Forlimpopoli type they rise vertically from the rounded shoulder, peaking a little over the join with the neck. In the Naxos type the handles are circular in section with groves and more right-angled.
[515] The Naxos type is shorter than the Italian versions. The height is between 54–61 cm, while the Spello type is comprised within 59 and 61 cm. The Forlimpopoli type is the tallest with 71–73 cm.
[516] In regards to the Spello Amphorae: Vidal 2009, 226.

also have a comparable small capacity of around 15 litres[517]. The three types have all been termed 'small amphorae'/'Anfore di piccole dimensioni' in the Italian literature.[518]

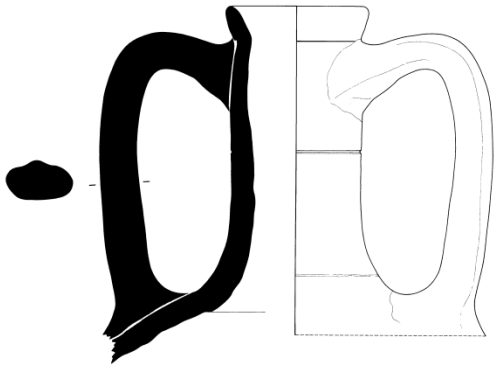


Fig. 4.10 Spello Type amphora/ Ostia II, 521 (Ostia II, no. 521).

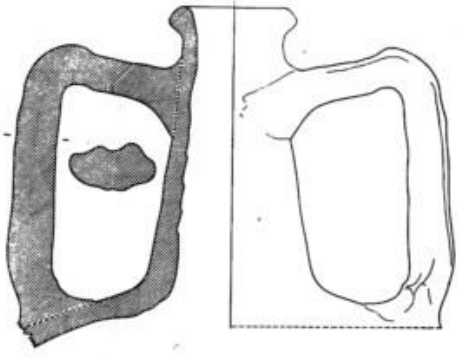


Fig. 4.11 Forlimpopoli Type amphora/ Ostia IV, 442 (Ostia IV, no. 442).

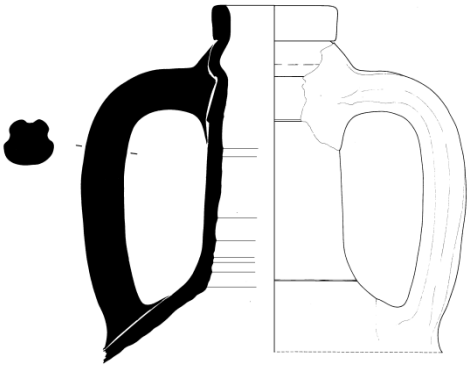


Fig. 4.12 Naxos Early Roman amphora type (Ostia II, no. 523).

4.8.2. THE NAXOS FLAT-BOTTOMED AMPHORA CLASS: THE ADOPTION OF A NEW DISTINCT ROMAN SICILIAN AMPHORA TYPE

During the early decades of the 1st century AD, probably contemporaneously with or slightly later than the start of production of the *Naxos Early Roman amphora type* (see above), the Naxos potters began to manufacture a whole new range of flat-bottomed containers that differ from the 1st-century Italic amphora prototype. The origin of this new amphora class in the Naxos area is suggested by the remarkable quantities of

[517] The capacity is lower in the Naxos Early Roman type (*c.* 15 litres), compared to the Forlimpololi type A–D (21 litres) and Spello type (15–20 litres).
[518] Ostia I; II; III; and IV.

wasters, spacers and associated deposits of containers with comparable morphological and fabric characteristics (Chapter 2, section 2.2.1.1). This class is composed of a series of similar small containers (height 54 cm approx.) with an ovoid body and ring-footed base produced from the (mid) 1st to the beginning of the 5th century AD.[519]

Finds of the same ovoid containers — termed 'Palatine East Amphora 1' — are known from the Palatine East context (Fig. 4.13), where they appear from the second half of the 1st century AD and occur until the first half of the 5th century AD (probably as residual).[520] Peña has analysed a few specimens of this class, suggesting that it originated either in the area of the Sila Massif of south central Calabria or in the Peloritan Massif northeast Sicily.[521]

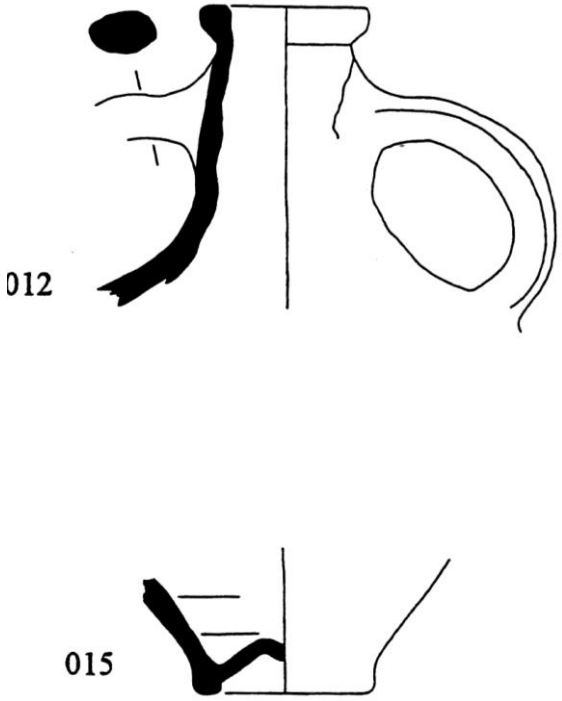


Fig. 4.13 Palatine East amphora from the Palatine East context
(Peña 1999, Fig. 10, cat. 12 and 15).

More generally, the production of this amphora prototype within the workshop of Naxos, represents a major change in Sicilian material culture during the Roman period. The 'new' flat-bottomed shape has the potential to reveal a distinctive Sicilian pottery manufacturing 'identity', as the same shape was used contemporaneously at more than one productive centre on the island. It was also manufactured from the first

[519] Wilson 1999, 534.
[520] Peña 1999, 76–77, Fig. 10 (considered by the author as 'previously unclassified amphorae').
[521] Peña 1999, 77, 187 (fabric 4d).

three decades of the 1st century at different workshops within the region of Catania (see below), with some differences in typological details and technique. Overall, beyond the differences what emerges is the perception of the new small flat-bottomed series of containers as an identifiable packaging shape, with a generic Sicilian 'brand' identity.[522]

It is also possible that this new distinct 'Sicilian amphora type', manufactured both in Naxos productive centre and in the region of Catania (see below, section 4.9), drove the logic of amphora production and overseas exchange. Amphorae are primarily foodstuff containers and the new small ovoid flat-bottomed shape probably aimed to reflect the geographical origin of the wine. Overall, the choice of the amphora shape could have been affected by how it was viewed by the overseas market and eventually came to be perceived by the ancient sources as a 'Sicilian amphora' carrying Sicilian wine.[523]

4.8.2.1. Tackling the Issue of Previous Classifications

The Naxian containers of this class have several different names in the current literature. They are named after the modern districts of the city of Giardini Naxos (See Map of Sicily, Fig. 1. 1 and Fig. 2.1) where they were first identified by the excavators. This is a particularly complex and confusing classification system that does not allow for an immediate understanding either of the general production area or of the chronology of manufacture. The new name proposed here aims to make the area of manufacture and the chronological variation of their production immediately clear.

I decided to give them the name of *Naxos flat-bottomed amphora type*, indicating the production site and giving basic information on their morphology. The type's stages of development from the mid-1st to the end of the 4th century are indicated by consecutive numbers specifying the *form*. The chronology for each stage of production has been established on the basis of known and unpublished contexts which I was able to study for this research.

[522] Taking into account the imitative processes with reference to the Catania Mid Roman Amphora type, see Chapter 6.
[523] If we admit a link between the small shape and the reference of the ancient sources, such as the mention of the '*urnalia sicula'*, cited in a *tabula cerata* from Pompeii dated AD 53, see Chapter 5.

4.8.2.2. Problems of Origin: the Cause of a Misconception

At this point it is important to introduce the issue of the previous identification of this group of Naxian flat-bottomed containers. This class was rightly ascribed by R. Wilson to a Naxian production on the basis of kiln wasters.[524] He classified it under the name of a similar published amphora class: the Riley Mid Roman amphora 1 (MR1).[525] As this thesis shows, these are actually two different classes of containers which differ in morphology and source of production.

To solve the problem of definition and identification it would be more appropriate to call these different amphora classes by a new name according to their different production sites instead of naming both of them Mid Roman amphorae 1 (see below, section 4.9.3.1 on this issue).

4.8.2.3. Naxos Flat-bottomed Amphora Type, Form 1 (1st–2nd century AD) (Spinella-Via Larunchi amphora type)

The 1st-/2nd-century AD development of the Naxian flat-bottomed type is here called Naxos flat-bottomed amphora 1. The form can be compared to the so-called Spinella/[526]Via Larunchi amphora type[527] published from the Giardini Naxos excavations (Chapter 2, Fig. 2.20).

Chronology and Distribution

The transition from the Naxos Early Roman type, which as noted above imitates the so-called Spello and Forlimpopoli Italic wine amphora types, to this new 'Regional Sicilian type', here called Naxos flat-bottomed amphora type Form 1 (abbreviated**:** Naxos Form 1**)**, with a shorter ovoid body, probably took place between the first three decades and the end of the 1st century AD. The Naxos Form 1 is attested in Sicily (Piazza Armerina

[524] Kiln wasters from Spinella quarter and via Larunchi, Wilson 1990, 264, 402, note 128. See also Wilson 1999, 534, Fig. 317 in which he explicitly mentions that the wasters were found in 'via Larunchi' production area from Naxos.
[525] Riley 1979, 177–179.
[526] Lentini 2001, 24, Fig. 23 (amphora wasters from Spinella quarter); example in: Ollà 2001, 55, cat. 10, Fig. 7.
[527] Lentini 2001, 24.

Roman villa) around the last quarter of the 1st century[528] and in Carthage during the 2nd century AD (phase 3).[529]

This variant is not found (even as residual) in the Thermes du Levant context at Lepcis Magna, indirectly confirming the end of its production by the end of the 2nd century; while the later stages of Naxos flat-bottomed Form 2 and Form 3 are both attested in the Thermes du Levant.

New data

A few specimens of this early stage of the Naxos amphora type were found in the last quarter of the 1st-century AD Roman villa — the so-called *villa rustica* — located in Piazza Armerina, in the modern-day province of Enna,[530] above which the Late Roman 'Villa del Casale' was later built. One specimen analysed in thin-section for the CASR project was produced in Naxos.[531]

4.8.2.4. Naxos Flat-bottomed Amphora Type, Form 2 (last decades of 3rd/beginning 4th century AD) (Plate II, nos. 1–4).

This amphora form does not have a specific name in the current literature, having been considered a Keay 52 type.[532] Several fragments of the same shape were found in the amphora dump of the Mastrociccio kilns in Naxos suggesting that it was made by the same workshop.[533] The kilns of Mastrociccio, never stratigraphically excavated, also fired the Keay 52 amphora type between the 4th and the 5th century AD (Chapter 2, section 2.4.2.1).

I believe that the flat-bottomed Form 2 of the 3rd-early 4th century AD evolved directly from the 1st-/2nd-century Form 1 and that the 4th-century Keay 52 type (i.e. the third amphora type produced in Naxos, see above) is a parallel amphora type with no linear relationship with the Naxos flat-bottomed types. Morphology in this sense is very helpful: the three forms in which the Naxos flat-bottomed class developed all shared a similar body shape, which was ovoid and became longer over time. The body in all three forms was also marked by a slight ledge/carination (less evident than the Catania

[528] Pers. observation (CASR project).
[529] Martin-Kilcher 1998, Fig. 6, no. 6 (Cretan amphora AC1 by the author).
[530] Ampolo *et al.* 1971, 155–158, 162, 167–168.
[531] Fragment not illustrated (SIC 426). Pers. observation. Thin-section analysis no. 8926 (C. Capelli pers. comment).
[532] Ollà 2001, 57, no. 18 and 21 (Keay 52 by the author).
[533] A drawing of this type is in Basile 1995, Fig. 23.

flat-bottomed types, see below). The Keay 52 amphora type has a different body shape which is more elliptical in profile and — most importantly — does not show the carination. Furthermore the rim is typically triangular, while the rim of the coeval Naxos Form 3 is flat in its upper part (Fig. 4.14).

Furthermore, the evidence from the consumption site of Lepcis Magna gives a more accurate chronology for the type studied which indicates that the Naxos Form 2 (predecessor of Form 3) is slightly earlier than the Naxos Keay 52 type.

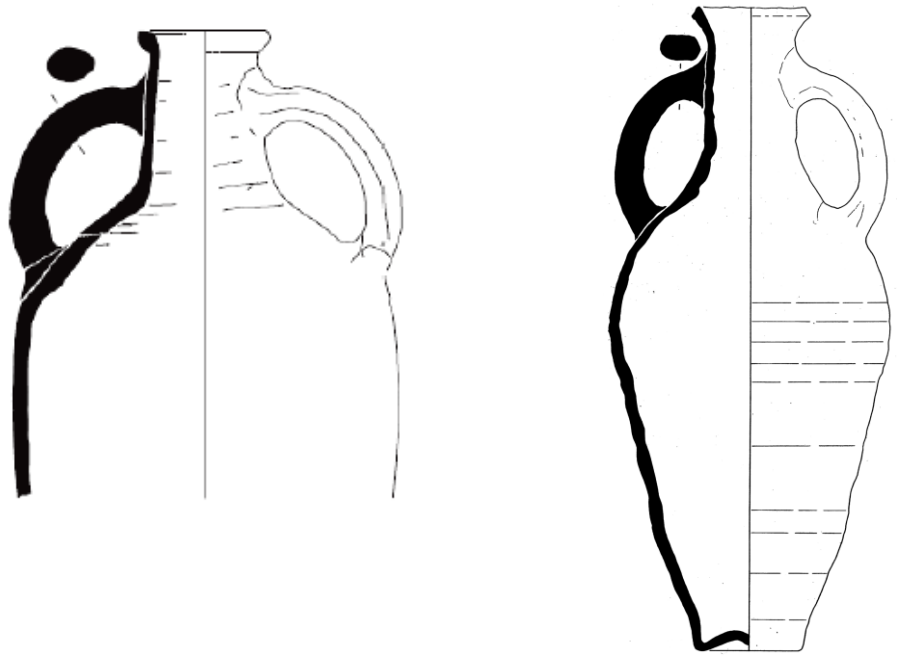


Fig. 4.14 Coeval Naxos Form 3 and Keay 52 type with different body shapes. Amphorae not to scale.

New data

Three fragments of Naxos Form 2[534] (Plate II, 1–3) recovered in the late 3rd-/early 4th-century layers in Lepcis Magna were analysed in thin–sections, indicating a Naxian origin. They occur in association with the Catania MR 1a form 2 (see below on this type) showing their contemporary export.

The sherd no. 4[535] (Plate II, no. 4), a sporadic underwater find off Marseille, despite its morphological similarities with this type, has a generic fabric which is not comparable with the Naxos reference fabric group. It lacks both the metamorphic and

[534] SA 33; SA 34 and SA 72. For the type see also Bonifay, Capelli *et al.* 2013, cat. 2.14; cat. 2.15.
[535] SA 6.

volcanic elements typical of Naxian products. This might suggest the presence of a different area of manufacture or workshop.

4.8.2.5. Naxos Flat-bottomed Amphora Type, Form 3 (production started around mid-4th century AD) (Plate III, 1–7).

Like the previous Form 2, Form 3 did not have a specific name and was included in the group of the Palatine East amphora 1 (Fig. 4.13 for the type).[536] It is attested in Lepcis Magna, in the 4th-century context of the Palatine East in Rome,[537] and in Sabratha in a context dated *c.* AD 300–450.[538]

New data

Seven fragments belonging to this form were analysed in thin-sections. Three were recovered in the Thermes du Levant[539] (Plate III, 2–3; 4). One whole amphora (Plate III, 1) comes from the partially excavated Trypiti reef shipwreck which sunk off Attica, the majority of whose cargo dates to AD 330–350.[540] Three specimens (Plate III, 5–7) were recovered in Arles from undated contexts.[541] It is important to note that the thin-sectioned specimens of this Late Roman evolution of the Naxian flat-bottomed type all belong to a *fine-grained sub-group* (Chapter 3, section 3.6.2, Fabric 2.2) which differs from the oldest form, denoting a difference in manufacturing technique, which is to be expected given their long period of manufacture.

[536] Peña 1999, 76.
[537] Peña 1999, Fig. 10.12.
[538] Di Vita, Procaccini and Pucci 1974–1975, pl. IX, d (*c.* AD 365); Dore and Keay 1989, 64, Fig. 13, 232–233 (from context dated *c.* AD 300–450. Type attributed to an African origin).
[539] SA 66; SA 71 and SA 64. See also Bonifay, Capelli *et al.* 2013, cat. 3.4–3.7.
[540] Sa 114: Franco and Capelli 2014a; Koutsouflakis and Argiris in press.
[541] SA 105 and SA 106.

4.8.2.6. Concluding Remarks on the Naxos Flat-bottomed Amphora Types

This study has provided fresh evidence for reconstructing a sequence of flat-bottomed containers produced at the Naxos workshop while simultaneously demonstrating its longevity of manufacture. Their development from the mid-1st century until production ended in the second half of the 4th century can be broken down into at least three main stages (which corresponds to Form 1, 2 and 3) (see Plate II, III and IV).

The Naxos flat-bottomed amphora class presents general morphological continuity over many centuries as is also evident from the persistence of some features such as the free-standing ringed bottom, the ovoid body, the slightly carinated shoulder, the everted rim and profile handles which are made in the same fashion over the centuries.

In thin-sections the specimens belong to a homogeneous group with a similar fabric composition characterized by a temper containing acid metamorphic rocks, quartz and rare volcanic inclusions (Chapter 3, section 3.6.2, Fabric Group 2). The data suggest that they come from a single production site located in Naxos on the basis of comparison with reference samples (Group A).[542] A technical difference can be noted in the manufacture of Form 1 compared to Forms 3 and 4 (Chapter 3, section 3.6.2, subgroup 2.1 *vs* 2.2). The amphora forms may have been fired in different kilns, the Mastrociccio kiln being the production site of Form 2 and 3 (on the kiln, Chapter 3, section 2.4.2.1).

Despite some similarities with the (Riley) Mid Roman 1 — such as the presence of carination in the shoulder and circular handles with the same arched profile — the development of the rim, the general appearance[543] and the macroscopic characteristics of the fabrics[544] of the Naxos flat-bottomed containers are different.

4.8.3. KEAY 52 AMPHORA CLASS

This is a well-known amphora class[545] whose heterogeneous evolution has been widely recognized by scholars, as also suggested by the variability of the fabrics.[546] These differences can be connected either to typological developments over three centuries,

[542] For previous analyses see Capelli 1998, 339, pl. 3, nos. 4596 and 4998.
[543] The body of Naxos type 2 and Naxos type 3 is longer and more slender than the MR 1a.
[544] The exterior surface is generally lighter in colour than the body.
[545] Nomenclature from Keay's typology for his late Roman NE Tarraconensian contexts, Keay, 1984, 267–268, Fig. 114, nos. 3–6.
[546] Capelli 1998.

from the early-mid 4th to the mid-7th century,[547] or to contemporary variations in shape due to their manufacture in different workshops in southern Calabria (Pellaro and Lazzaro) and north eastern Sicily (Naxos/Region of Messina). Production of similar types is also attested in the S. Venera al Pozzo kiln and in the Campanaio workshop in both cases around the mid-4th century AD (Fig. 4.15).

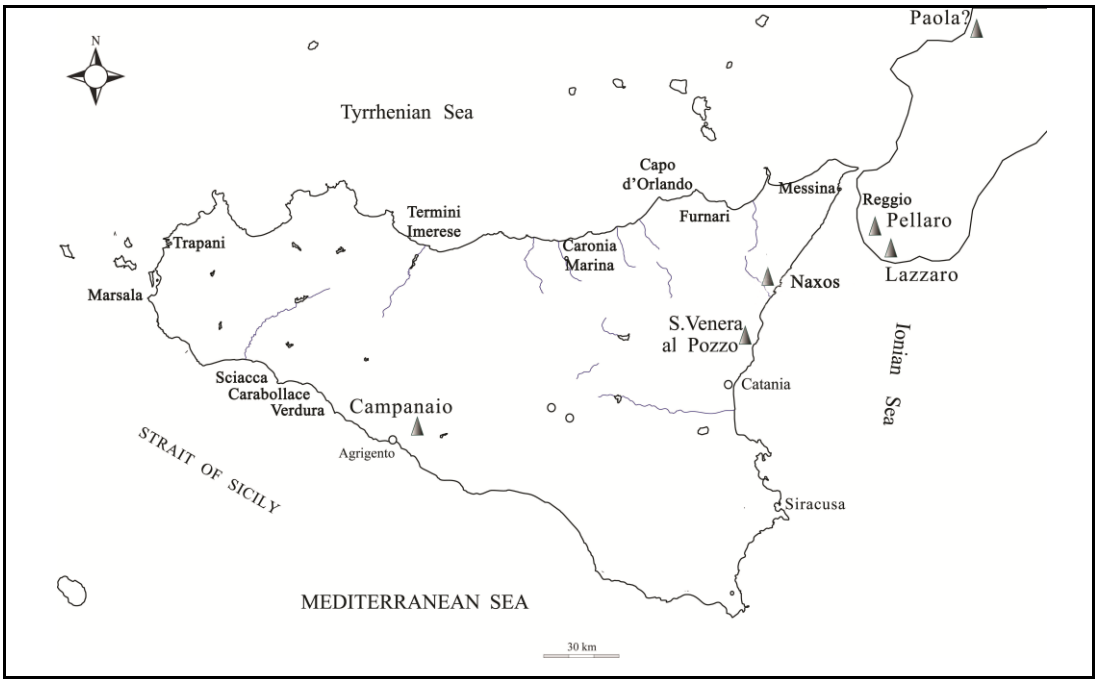


Fig. 4.15 Location of kilns producing Keay 52 amphorae type in Sicily and southern Calabria (C. Franco).

This is one of the rare cases in Sicily for which we know the kilns where a given amphora form was fired. Keay 52 containers were produced in the complex of kilns found in the district of Mastrociccio in the municipality of Giardini Naxos, near the Late Roman *mansio* (see Fig. 4.16 for an example of the type produced). The use of this complex has been dated from the second half of the 4th to the mid (?) 5th century AD.[548] As stated above, the Naxos Form 2 and 3 were also fired at this workshop.

[547] See for example the different sub-types attested in the ceramic assemblages of the Athenian Agora from the mid-4th to the early 6th century AD (Robinson 1959, M234; M302 and M323 types); see also the different types and variants evidence from the late Roman and Early Byzantine contexts published in Saguì 1998.
[548] Fallico 1976–1977, 632–633.

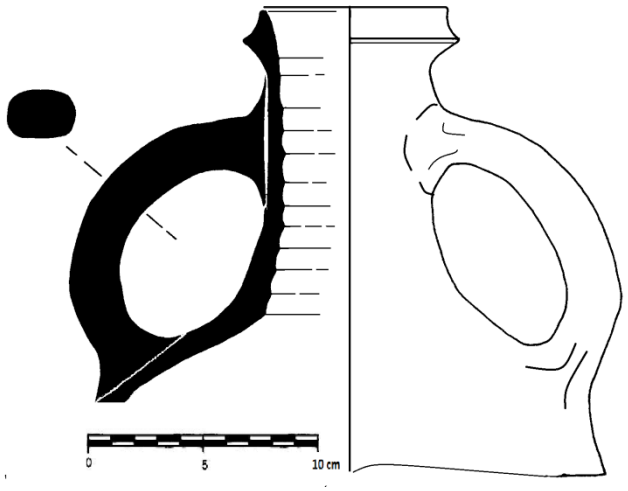


Fig. 4.16 Keay 52 amphora type produced at Mastrociccio kilns in Naxos (redrawn after Ollà 2001, 52, Fig. 18 and 56, no. 16).

A southern Calabrian manufacture of Keay 52 is confirmed from the second half of the 4th century.[549] Production sites, thought to be in use until the beginning of the 5th century AD, have been identified in Pellaro[550] (district of Fiumerella) (Fig. 4.17 for the type) and Lazzaro near the southern tip of Calabria.[551] The potters operating at the Pellaro kiln seem to have used a particular forming operation for the Keay 52 amphorae, which consisted in the forming of three main part of the container: rim/neck; then the body (shoulder/belly/ringed foot) and finally handles. These three main pieces were then joined together using liquid clay by resting the vessel on a ceramic support.[552] The production of Keay 52 in a small kiln located in the 4th-century *vicus* (?) of Paola-Stadio — in the modern day province of Cosenza — on the north Tyrrhenian coast of Calabria is still to be demonstrated with certainty.[553]

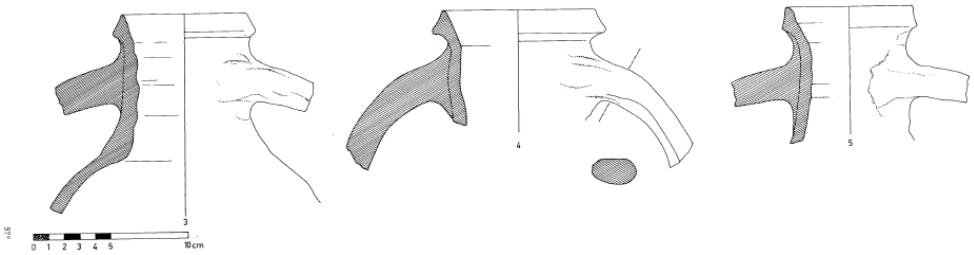
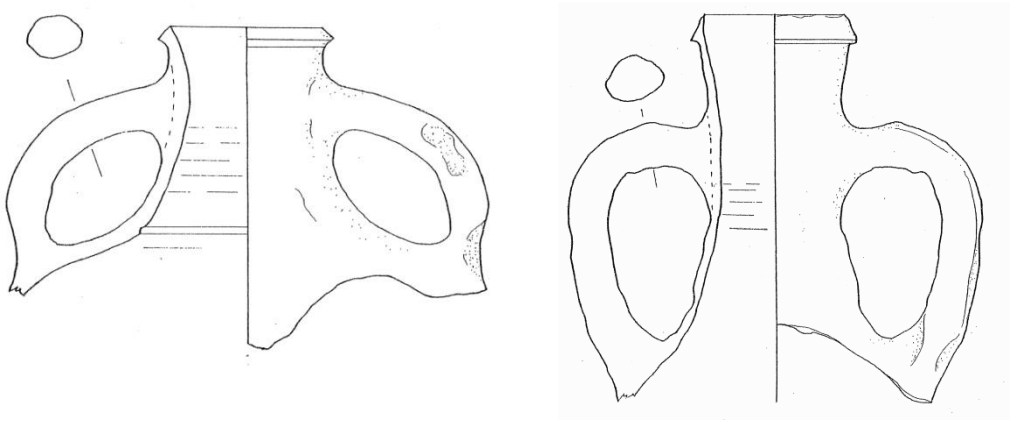


Fig. 4.17 Keay 52 amphora type attributed to Pellaro Kiln production

[549] Arthur 1989.
[550] For the excavations of the kiln sites see Andronico 1991.
[551] Gasperetti and Di Giovanni 1991. Remains of kilns are not preserved, nevertheless the pottery production *in loco* is confirmed by a substantial accumulation of Keay 52 amphora wasters and kiln bricks.
[552] Gasperetti and Di Giovanni 1991, 57.
[553] Sangineto 2001.

(Gasperetti and Di Giovanni1 991, Fig. 3, nos. 3–5).

A typological seriation of the Keay 52 class has been tentatively presented by some scholars.[554] Morphological variations include the rim profile, which can range from a short triangular form to a variety of flanged shapes, the neck and the handle profile. One main Keay 52 possible sub-type presents a short neck with downward-sloping handles[555], another has a longer neck and handles that are more rounded in profile[556] (Fig. 4.18 for the two sub-types).



Figs. 4.18 Exemplification of Keay 52 morphological variant: On the left, short neck variant (Auriemma 1998, Fig. 1, no.1). On the right, long neck variant (Auriemma 1998, Fig. 5, no 2).

The distinctions proposed are based on morphology alone and do not depend on comparative fabric analyses. Furthermore, the sub-types identified do not necessarily reflect the chronological stage of evolution of the amphora. Some variants seem to be contemporary, suggesting either that they were produced by different pottery workshops or that they were manufactured with a low degree of standardization in the same kiln. This is true of the Mastrociccio kilns in Naxos where several variants with long and short necks, different flanged rims and fluted and unfluted handles were produced, probably contemporaneously.

There is a hint of a chronological development of the shape in the pictures of three samples of Keay 52 types attested in the Roman layers of the Agora of Athens.[557] In the contexts Keay 52 specimens are attested from the early/mid-4th century layer to the early 6th century AD. In the early 4th century Keay 52 types (named as Agora

[554] Pacetti 1998, 187, figs. 4–6 and Auriemma 1998, 753–755, figs 1–3 with the indication of the different main sub-types identified. See also Sangineto 2013, 109–118.
[555] Auriemma 1998, Type 2.
[556] Auriemma 1998, Type 1.
[557] A complete catalogue of all the Late Roman Imperial amphorae from the American excavations in the Athenian Agora is to be published by A. Opait.

M234)[558] are attested in association with the 'Catania' MR 1a form 3, var. a (named as Agora M254) and with another flat-bottomed type (Agora M230) which has a loose morphological resemblance to an amphora produced in the south western area of Sicily (cf. Campanaio amphora type). The 4th-century Keay 52 has a long cylinder-shaped neck and a wider body (more ovoid) than the later types. The 5th-century Keay 52 specimen (named as Agora M302)[559] has a more pear-shaped body with downward-sloping handles. The early 6th-century Keay 52 (named as Agora M323)[560] has a shorter and squat neck and an ovoid body. The shoulder of all the three specimen does not have a carinated shoulder or ridge. We are still far from outlining a comprehensive typological sequence for the Keay 52 class; to achieve this far more complete examples from kiln sites must be published. Nevertheless, the more exhaustive list of Keay 52 find-spots considered for this study may help to distinguish between Keay 52s manufactured in north eastern Sicily and southern Calabria.

4.8.3.1. The Sicilian Keay 52 Amphora Production

The petrographic analyses of several Keay 52 samples found in a few of the contexts examined — Tarragona, Marseille, Arles and Lepcis Magna — have revealed for the first time the export of the variant produced in Sicily, from the Naxos workshop and possibly from other workshops/production areas in the north eastern tip of Sicily, such as in the region of Messina.

4.8.3.1.1. Naxos Keay 52 Amphora Type (Plate V, nos. 1–2)

I suggest adopting the name Naxos Keay 52 for this type, i.e. adding the name of the production area. In the absence of a detailed morphological study of the forms produced at the Mastrociccio workshop, the Naxian origin of a Keay 52 specimen can only be ascertained by petrographic analyses.

This study identified two types attested in southern France[561] (Plate V, 1 and 4) which show a Naxos fabric (Chapter 3, section 3.6.2, Fabric Sub-Group 2.2). The evidence of the specimen found in Marseille[562] is particularly important because it

[558] Robinson 1959, pl. 28, M234.
[559] Robinson 1959, pl. 31, M302.
[560] Robinson 1959, pl. 32, M323.
[561] Arles and Marseille, SA 28 and SA 14.
[562] Bonifay 1986, Fig. 8, no. 32.

shows the overseas export of Sicilian Keay 52 in the mid-5th century, in other words up to the end of amphora production at the Naxos kiln.

4.8.3.1.2. North Eastern Sicilian Keay 52 Type (Plate V and VI)

A north eastern Sicilian origin has been ascertained for five specimens found in southern France, Tarragona and Lepcis Magna. Overall, the petrographic analyses suggest that they were made from raw materials and tempers compatible with the metamorphic rocks outcropping in the Peloritani Mountains in north eastern Sicily (Chapter 3, section 3.6.3, Fabric Group 3). For 2 of samples an origin in Naxos workshop cannot be excluded[563] (Plate V, 3 and 4). Two of them[564] present metamorphic and volcanic inclusions but do not match the Naxian fabric group. The volcanic inclusions rule out a source in southern Calabria, where volcanic elements are not present in the local geology. The latter fact suggests that the Keay 52 amphora type was made in more than one production area in the north eastern tip of Sicily. Of particular interest, especially in relation to wine exports to Spain, is the fact that a north eastern Sicilian Keay 52[565] (Plate V, no. 3) was identified in the 5th-century dump of Tarragona. These analyses therefore contributed significantly to identifying imports of Sicilian wine to Late Antique Tarragona, previously completely unknown.

4.8.3.2. 'Strait of Messina' Keay 52 Production (Plate VII, nos. 1–2)

For two specimens[566] (Plate VII, 1–2) the distinction between a Calabrian and northern Sicilian origin cannot be made given the lack of volcanic inclusions in the fabric that could have helped to narrow down the geological area of manufacture. For these specimens more accurate archaeometric studies, such as the chemical composition of the fabrics, could help to determine the specific areas of provenance of each sherd in this group.

4.8.3.3. Southern Calabrian Keay 52 Type (Plate VIII, 1–6)

The southern Calabrian version of the Keay 52 type with its very pale fabric, scattered large quartz, schist and very abundant mica flakes on the surface, is attested by six

[563] SA 26, 103 and with less certainty SA 7.
[564] SA 15 and SA 97.
[565] SA 103.
[566] Lepcis 42 and RH.09.Z5.B20.86.

specimens. Three Calabrian examples[567] (Plate VIII, 1–3) come from the second half of the 4th-century layers of the Thermes du Levant, while one specimen (Plate VIII, 4) comes from the mid-5th-century context of La Bourse in Marseille.[568]

In both these contexts, Sicilian Keay 52 were also traded (see above) indicating the contemporaneous production and overseas trade of the same amphora prototype made at different locations and carrying wine of different origin.

4.8.3.4. Summary on Keay 52 Amphora Class

The published evidence in conjunction with the new data provides a better understanding of the mechanisms of production and exchange of the Keay 52 amphora class. From the second half of the 4th century, and especially from the second quarter of the 5th when Keay 52 export rise in western Mediterranean contexts,[569] there is strong evidence that the wine produced in the north eastern tip of Sicily was part of the same supply system as south Calabrian wine. For this phase I would suggest a common system of trade in 'Strait of Messina wine' which includes the wine produced on both sides of the strait.

Towards the end of the 5th century, the production of the Naxos workshop ends, perhaps reflecting the declining importance of this area of Sicily (i.e the wine from the area of Taormina) for overseas wine supply; the southern Calabrian production and export of wine takes over (especially towards Rome). Regrettably, a detailed assessment of Calabrian 6th-century Keay 52 production is hampered by the lack of evidence from kilns/workshops, although the containers found in several 6th-/7th-century contexts have a probable Calabrian origin.[570] Only from the final decades of the 7th century AD do the imports of Calabrian wine to Rome decrease consistently.[571]

Focusing on morphology, I believe that the generic flat-bottomed shape and small dimension of the containers, adopted, although with small differences, from the early 1st century AD both at Naxos productive centre and in the Catania region (see below), represent the decision of the local potters to innovate the containers repertoire. In this sence, the *Naxos flat-bottomed amphora type* may have been chosen by the local

[567] Lepcis 92, Lepcis 91 and Lepcis 54.
[568] Bonifay 1986, Fig. 8, no. 31. SA 16
[569] Reynolds 2010a, 89.
[570] Capelli 1998, 337. Subgroup MA3, pl. 4
[571] Pacetti 1998, 205 (5% of attestation).

potters as a way to indicate the Sicilian origin of the containers, possibly also aimed at suggesting the origin of the wine to the buyers (see above).

This is not true of the Late Roman Keay 52 amphora type. The Keay 52 type was a parallel amphora manufactured at the same time as the Naxos flat-bottomed Form 3. The adoption by the Naxos potters of this new type with a triangular/flanged rim and a hemispherical body (Keay 52) crosses the boundaries of the **'***faciès géographique***'** of the Naxos workshop and effectively shares the formal characteristics of the wine containers produced in the sphere of the 'Strait of Messina', i.e. the area between the eastern tip of Sicily and the southern tip of Calabria which for geopolitical and socio-economic reasons had always been connected, increasing in intensity from the first half of the 5th century BC.[572] In the absence of precise stratigraphic data on the kilns producing the Keay 52 type it is difficult to ascertain where production first started, in Calabria or Sicily. Even in absence of these (important) chronological implications that would have helped to distinguish between the workshop/s which first adopt the new amphora type and those which later imitated its shape, it is clear that Keay 52 type production is an example of 'shared extra-regional amphorae style' which implies the widespread similarity of containers produced in different regions.[573] The adoption of the the Keay 52 implies a whole different approach to amphora production which potentially may have had a direct effect on amphorae trade: the *Naxos amphora type* visually established a connection between the container shape and the city of its production in the overseas markets; while the adoption of the 'shared form' of Keay 52 type deliberately suppressed the identity of the place of manufacture and consequently the immediate knowledge of the specific geographical source of its content.[574] The information provided by those two types of containers was not of the same value to potential consumers. It is intriguing to connect the shift to a more generic shape with a change in the consumer perception in regards to the quality of Sicilian wine (at least the wine produced in the north eastern region). The average wine drinkers would not be interested in recognizing the wine produced in southern Calabria or in eastern Sicily and choosing which one to drink: they were drinking the 'wine of the Strait'.

[572] See Georges Vallet's definition as 'Kingdom of the Straits' for the Greek period political and economic links. On the Roman Period see Ghedini *et al.* 2006.
[573] For a similar concept referred to the Classic Greek Period amphorae see Lawall 1997.
[574] This could be also implied for the group of north eastern Sicilian types especially for the 4th-and 5th-century forms (see *infra*).

4.8.4. A SUGGESTED EXAMPLE OF SHARED INTRA-REGIONAL AMPHORA TYPE

4.8.4.1. Naxian Imitation of NE Sicilian Type 1 (end of 4th/beginning of the 5th century AD?) (Plate IX, nos. 1–2)

The imitation of an amphora type which I consider 'typical' of the north eastern Sicilian coast production *facies* — here termed the NE Sicilian Type 1 (see below) — can be hypothesized in the area of Giardini Naxos around the end of the 4th/beginning of the 5th century. This hypothesis is based on the analysis of two sherds presenting morphological similarities to the NE Sicilian type 1 (the amphora published in Ostia as Ostia I, 455 being their prototype) but differing in petrology from the north eastern Sicilian production.

The two specimens were recovered in Arles[575] (Plate IX, 1) and in the second half of the 4th/beginning of the 5th-century layer of the Thermes du Levant in Lepcis Magna (Plate IX, 2).[576] A close fabric comparison was established with a Keay 52 form of Naxian origin (Sub-Group Fabric 2.2).

There is no evidence that the Naxos workshop produced this type in the published archaeological evidence. The new data from this study might indicate the adoption of the shape of NE Sicilian type 1 in the Naxos region, also suggesting the existence of an amphora production contemporary with the Keay 52 types.

[575] SA 29.
[576] SA 61: Bonifay, Capelli *et al.* 2013, cat. 4.5.

4.8.5. CRYPTA BALBI 2 AMPHORA CLASS

4.8.5.1. Introduction

The so-called 'Crypta Balbi 2 amphora' takes its name from the Crypta Balbi context in Rome, where it is attested from the 4th to the 7th centuries AD.[577] It is a small amphora with an ovoid or elliptical body profile, terminating in a short, stubby foot. The neck is short with an hourglass appearance (Fig. 4. 19).



Fig. 4.19 Example of Crypta Balbi 2 from the end-7th-century context of Crypta Balbi (Saguì 2001, 295).

The type is also known as the 'Carminiello 17 type'.[578] According to P. Arthur, who identified this container from the late 5th-/early 6th-century AD layers of the Carminiello ai Mannesi context in Naples, the amphorae present some variation and can be subdivided into two forms: the Carminiello 17a (Fig. 4.20) with a plain rim and round-sectioned handles; and the Carminiello 17b (Fig. 4.21) with an everted rim and more ovoid-shaped handles. Examining the pattern of distribution, P. Arthur proposed

[577] Saguì 1998, 321, Fig. 10, no. 56. On the diffusion of this amphora type see Saguì 1998, 321, note 58.
[578] Arthur 1998, 172–173, Fig. 9, 3–5.

an origin in Sicily or south western Calabria.[579] He recognized similar amphorae in Luni, and in North Africa.[580]

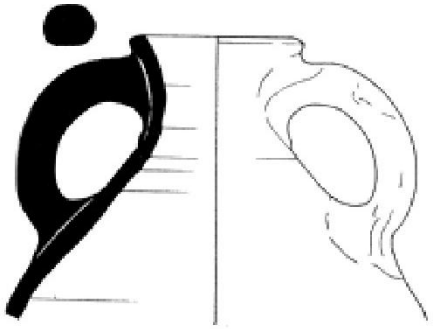


Fig. 4.20 Carminiello 17a type with a plain rim and round-sectioned handles from the site of Carminiello ai Mannesi (Arthur 1998, Fig. 9 no. 3).

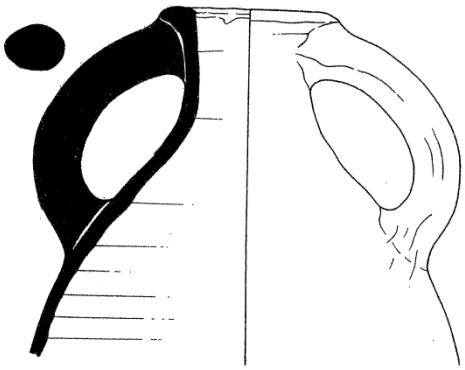


Fig. 4.21 Carminiello 17b type with an everted rim and more ovoid-shaped handles from the site of Carminiello ai Mannesi (Arthur 1998, Fig. 9, no. 4).

This amphora class presents a high degree of variability of shape and macroscopic characteristics of the fabric. It is increasingly clear that similar amphorae belonging to this large group were manufactured by numerous workshops in different geological areas, as also shown by the petrographic evidence.[581] A new typological seriation is therefore becoming necessary. It would certainly be more appropriate to divide the class into types and variants including the petrographic evidence as an important distinguishing factor.

A comprehensive model of forms for this heterogeneous amphora class is beyond the scope of this thesis. Nevertheless, the type is included in the discussion because an origin in the north eastern volcanic area of Sicily is strongly suggested on the basis of both published and new petrographic data. C. Capelli's analyses of several amphora sherds belonging to this class found in Rome[582] and in Capo d'Orlando[583] (Fig. 4.22) identified a homogeneous fabric group with an association of acid metamorphic

[579] Arthur 1998, 170.
[580] Luni: Lusuardi Siena-Murialdo 1991, pl. 6, nos. 1–3; Leptiminus: Dore-Schinke 1992, 136–137, no. 37.
[581] See in particular the analyses of similar types in Capelli 1998, 332–333.
[582] Saguì 1998, 321, Fig. 10, 2–8; Capelli 1998, 332, no. analyses 4593; 4600; Saguì 2001, 293–294, Fig. II.3.175–176. Nos. analyses 4600/CB11, 4593/OM15.
[583] Capelli in Spigo, Ollà and Capelli 2006, 462, group 4, Fig. 10. On the sample analysed see 456, Fig. 4, no. 2.

rocks with basic volcanites, narrowing down its possible geological origin to the north eastern corner of Sicily.

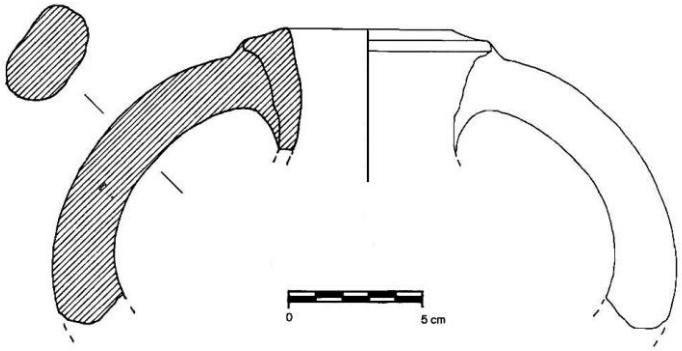


Fig. 4.22 Crypta Balbi 2 found in Capo d'Orlando which originated to the north eastern corner of Sicily (Spigo, Ollà and Capelli 2006, Fig. 4, no. 2).

New data

The only example of Crypta Balbi 2 analysed for this study comes from the Piazza Armerina Roman Villa in central Sicily (chronology of the context unknown).[584] The absence of 6th-century Crypta Balbi 2 specimens from the contexts analysed abroad should partially be connected to the choice of contexts and their chronological range, no later than the end of the 5th century AD.

4.8.5.2. An Early 5th-century AD Sicilian Predecessor of Crypta Balbi 2? (Plate X)

One specimen analysed for this study SA 60 (Plate X, no. 1) found in the end of the 4th-century/beginning of the 5th-century context of the Thermes du Levant[585] indicated the presence of basic volcanites and acid metamorphic rocks, suggesting an origin in north eastern Sicily in a geological area with volcanic rocks. Despite the presence of volcanites the fabric does not match the material associated with the Naxos or Catania production areas. Instead, the specimen presents close similarities with the *Crypta Balbi 2* fabrics with volcanites.[586] This strongly suggests the possibility of a common geological origin and/or the existence of a single production centre — hitherto unknown

[584] Not illustrated (SIC 428). Pers. observation. Petrographic analysis no. 8799 (C. Capelli pers. comment).
[585] Bonifay, Capelli *et al.* 2013, cat. 4.6.
[586] In particular the fabric presents similarities with the following thin-sections of specimens of Crypta Balbi 2: Capelli 1998, 332. Thin-section no. 4593 (from Celio, Ospedale militare, Late 5th-beginning 6th century) and no. 4600 (from Crypta Balbi). Spigo, Ollà and Capelli 2006, Thin-sections no.7086/1 and 7086/2 (Crypta Balbi 2 found in Capo d'Orlando).

— located somewhere in the north eastern region/corner of Sicily which also manufactured the later late 5th-/6th-century *Crypta Balbi 2* type.

The scanty information available for this suggested predecessor of *Crypta Balbi 2* — only one specimen — does not allow us to label it as a distinct 'type', but this evidence is nonetheless significant because it suggests a continuity of Sicilian amphora production in a hitherto unknown production area which made wine (?) containers for two centuries, between the Vandal and the Early Byzantine period. We thus see the persistence of a Sicilian agricultural production — probably of wine — which remained profitable and allowed for the production of a surplus which mainly circulated in Rome.[587]

4.8.6. General Concluding Remarks on Amphora Production in north eastern Sicily

A well-represented Sicilian amphora group was produced in the north eastern Sicily (30 specimens studied that can be assigned to a NE Sicilian production and 5 that can be assigned to the 'Strait of Messina') is characterized by inclusions of acid metamorphic rocks from the Palaeozoic basement of the Peloritan Massif (Fabric Groups 2 and 3). A homogeneous subgroup with volcanic inclusions is correlated to the Early Naxos amphora type, Naxos flat-bottomed amphora type (amphora Form 1, 2 and 3) and Naxos Keay 52 amphora type**.** The types were produced from the 1st to the 5th century AD in several kilns within the Naxos production area (Fabric Group 2). The study of Sicilian (CASR project) and overseas contexts has fully confirmed the basically uninterrupted export of these containers.

Within this production region my study has shed light on some important and wide-ranging dynamics that can be summarized as follows:

1. the imitation of Italic amphora prototypes (**Early Roman Naxos type**);
2. the production of distinctive containers linked to the city/production area where they were manufactured (**Naxos flat-bottomed amphora type)**

[587] For the 'Crypta Balbi 2' form attested in Rome: Saguì 1998, tipo Crypta Balbi 2, 321, Fig. 10 and note. 56. Saguì and Coletti 2004, 248, pl. III, Fig. 12; Panella, Casalini and Coletti (from the north eastern slopes of the Palatine) 63, Fig. 3.4.2 and 66 (from the Sanctuary of Magna Mater) 66, Fig. 30.

3. phenomena of shared extra-regional shape production or *morphological globalization* by which the shape/type of a given container is adopted within a much larger regional geographic *facies*, incorporating the wider territories on both sides of the Strait of Messina (**Keay 52 type**).
4. Phenomena of shared intra-regional amphora shape, indicated by the suggested late imitation (late 4th century) of the **NE Sicilian type 1.** This indicates the precise choice of the potters at a *figlina* near Naxos to produce a form used to trade Sicilian wine produced in the north eastern coastal region.
5. Suggested continuity of amphora production. This study has confirmed that at least part of the production of the 6th-/7th-century **Crypta Balbi 2 class** took place already at the beginning of the 5th century AD in an unknown production centre somewhere around the north eastern region/corner of Sicily (Fabric 3), as evident from the presence of metamorphic acid rocks and vulcanites (from Etna) in the fabric.

From an economic point of view the long persistence of amphora-making industries in the Naxos area indirectly suggests the existence of long-lasting contacts between a ruling class living in the city or *villae* and farmers on estates on the one hand and shipowners/*negotiatores* on the other. These relations are still difficult to define given the paucity of epigraphic data (stamps) on the amphorae, known only for the productions of the 1st century AD.

As far as distribution is concerned, this research has added some important information on Naxian wine amphora exports in the western Mediterranean, in the published evidence hitherto limited to Rome. The wine produced in the fertile hinterland of Giardini Naxos reached the markets of the east, southern France and Lepcis Magna in significant quantities (Chapter 7).

4.9. THE FLAT-BOTTOMED AMPHORA TYPES PRODUCED IN EASTERN SICILY/REGION OF CATANIA

In the introduction to this study we noted that the absence of amphora finds does not indicate that foodstuffs (or other commodities) were not traded in specific areas since perishable containers were also used. The case study presented below, however, exemplifies the importance of ceramic containers for the identification of agricultural exports — wine in this instance — and (indirectly) for determining wine production in exporting areas.

Specifically, this study has identified the series of *instrumenta* used to transport the wine produced in the large and fertile hinterland of the plain of Catania to extra-regional markets; hitherto its agricultural production was known only from literary and epigraphical sources (see Chapter 5, section 5.1.7.1.3).

4.9.1. The Approach Used in this Study

The very large number of fragments of this group (94 from overseas contexts, and 6 from S. Venera al Pozzo kiln) analysed for this study made it possible to define forms and variants produced in the volcanic area of central Sicily (Chapter 3, section 3.6.1, Fabric Group 1). This industrial micro-region produced a series of containers frequently attested in various Mediterranean consumption centres, first published in the Ostia excavations and listed as Ostia II, 522; Ostia III, 464; Ostia I, 453–454 (see above, Fig. 4.6). Also belonging to this group are the forms known as Mid Roman 1a and b (MR 1b and 1a).[588] Riley subdivided this amphora class into two categories on the basis of the rim: MR 1a with a biconical rim,[589] and MR 1b which included two different rim shapes.[590] He stated the need for *'future work'* to make a distinction between the three rims attested at Berenice. This study has ascertained that the three rim variants belong to a similar class of flat-bottomed containers and that they were all produced in the same eastern Sicilian geological area.

Given the difficulty of choosing new names for these containers, I thought it more appropriate to continue using the name MR 1a preceded by the name 'Catania' for the containers with a distinctly biconical rim which correspond to Ostia I, 453–454 and

[588] Riley 1979, 177–179.
[589] Riley 1979, Fig. 81, no. 215.
[590] Riley 1979, Fig. 81, no. 216 and 217.

Riley MR 1a (Fig. 4.23) since this term is now standard in pottery studies (especially in Anglo-Saxon scholarship) though it is clear that the term 'Mid Roman' amphora does not cover the complete chronological range of this container. It is firmly established from chronological data from consumption contexts that this 'Mid Roman' amphora was also a 'Late Roman' amphora and it is also found in post-Vandal contexts.

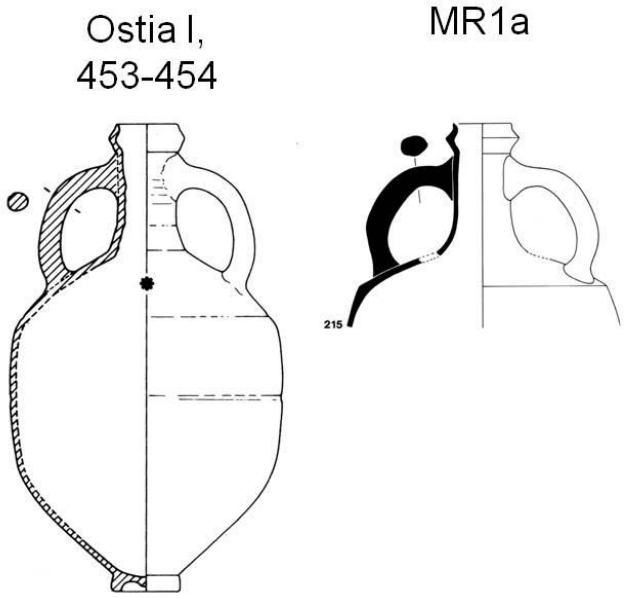


Fig. 4.23 Amphora types here named as 'Catania' Mid Roman 1a type (Ostia, I, 453–454 and Riley 1979, Fig. 81, no. 215).

The previous stages of the same type produced from the 'Early Roman period' which petered out by the mid-(?) 3rd century are here called 'Catania flat-bottomed amphora types' and are subdivided into forms using numbers (Form 1, 2 and 3)**.** They include Ostia II, 522, Ostia III, 464 and the Riley MR 1b (Fig. 4.24). These forms are roughly parallel developments of the same type, which may have been produced at different workshops (as evident from the different fabric sub-groups belongin to the main Fabric Group 1, see Chapter 3, section 3.6.1).

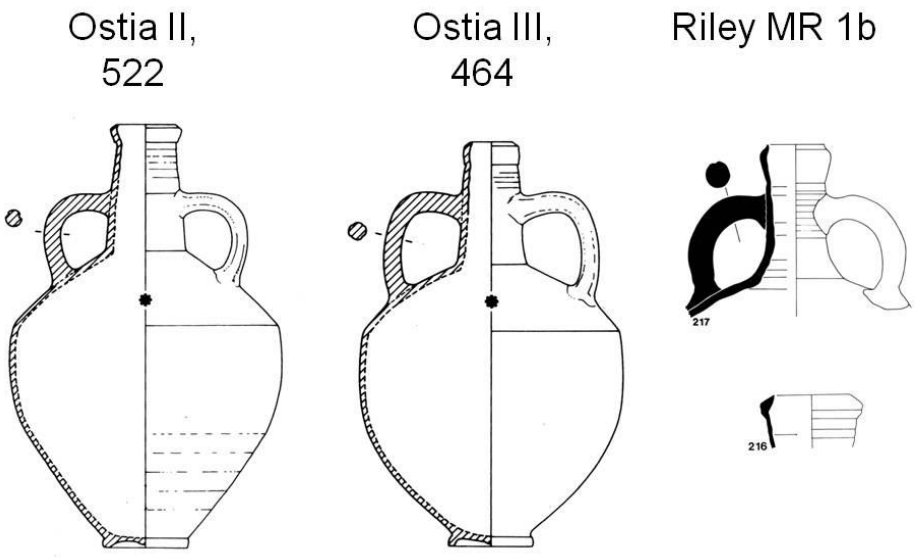


Fig. 4.24 Amphora types here named as 'Catania' Flat-bottomed type (Ostia II, 522; Ostia III, 464 and Riley 1979, Fig. 81, nos. 216–217).

My proposed definition is completed by the addition of the term 'Catania' referring to the new interpretation of this amphora group as a regional amphora production linked with the territory of Catania and with a very long history of manufacture. 'Catania' in this sense does not indicate the geographical location of a single workshop, but describes one of those *sub-regional manufacturing facies* identified in the *provincia* of Sicily (see above, section 4.5).

The only workshop known is located in present-day S. Venera al Pozzo, 14 kilometres north of Catania, while in the actual city of Catania/*Catina* there is no evidence of kiln/s producing this group of amphorae. Beyond the usual general issue connected to the state of archaeological research, in the specific case of Catania the lack of evidence for production workshops/kilns may also be due to the voluminous lava flows from Mount Etna which over the centuries have buried and destroyed several areas of the city and its ancient remains.

In this Sicilian sub-area several workshops[591] started to produce an amphora model, whose specific shape was possibly a trademark of the wine cultivated in the fertile volcanic area of Mount Etna. The lack of stamps and inscriptions on Catanian amphorae, and the absence of remains of amphora kilns in the colony of *Catina*, do not allow us to clarify whether the port city itself had control over the transport amphora industry. Nontheless, it is possible, that Catani served as the main port from which the

[591] In addition to S. Venera al pozzo kilns, the other production areas are suggested on the basis of fabric analyses carried out on amphora sherds (see *infra*).

amphorae carrying the wine produced in its fertile hinterland were shipped to overseas destinations.

All the different forms and chronological stages of this long-lasting amphora production are defined by a high standard of potting skills and by the adoption and persistence of similar morphological features, finishing and manufacturing techniques. Basically, the types produced within the region of Catania, both in S. Veneral al Pozzo and in the still-unknown workshops in the volcanic zone near the city, share a common technology of ceramic production. Specifically, the potters in this area shared the careful preparation of the clay which lacks large inclusions (especially noticeable in the S. Venera al Pozzo fabric, see Chapter 3, section 3.6.1, here termed 'pure group', 1.2.1); the adoption of a similar surface treatment (i.e. the whitish appearance of the containers' exterior due to the use of salt water); the careful manufacture (symmetrical handles attached with great care, surface uniformly smoothed, thin walls) and the persistence over time of certain key features (the narrow neck, the more or less-defined shoulder carination,[592] the profile handles and the sharpness of the rim) (For an in-depth description see Catalogue I).

An understanding of all these features intrinsic to the amphorae is essential to distinguish the MR 1a made in the region of Catania from other similar containers manufactured in other areas of the Mediterranean and northern Europe (see Chapter 6 on imitations).

4.9.2. The Early and Middle Roman Amphora Production in the Region of Catania

4.9.2.1. Catania Flat-bottomed Amphora Types Forms 1, 2 and 3 (first three decades of the 1st-*c.* 3nd century AD = parallel developments)

4.9.2.1.1. Catania Flat-bottomed Type, Form 1 (Fig. 4.25; Plate XI). I propose identifying this form with an amphora published in the Ostia excavations as Ostia II, 522 amphora.[593] The form presents close morphological similarities with the example published in Riley 1979, Fig. 81, no. 216 which was included in his MR 1b type. The

[592] The carinated shoulder is a significant morphological feature in the Catania amphora class and will be accurately imitated in the German common ware imitations of the Catania MR 1a amphora type (see Chapter 7).
[593] Ostia II, pl. XXIX, no. 522. Also published in Ostia III, 632, Fig. 44.

rim is slightly rounded on the exterior and variously flaring on the outside. The neck is tronco-conical with rills in the exterior.



Fig. 4.25 Rim associated to Catania flat-bottomed type, Form 1
(on the right, Ostia II, Pl. XXIX, no. 522; on the left Riley 1979, Fig. 81, no. 216).

Chronology and distribution

Augustan-Tiberian contexts from Lepcis Magna[594] indicate the early export of this form, which suggests Lepcis Magna as a primary trading port from the early phases of Catanian wine export. Catania flat-bottomed form 1 is attested in Ostia from the Flavian layers and its presence is constant in the Hadrianic layers (AD 70–170).[595] Only one fragment of this type comes from a pre-Flavian layer (layer II). The same variant is attested in the Carthage deposit phase 2 dated between AD 30/70. This form is usually found in mid-1st century AD contexts (Narbonne,[596] Arles and Pompeii[597]), and continues in the mid-2nd century (Corsica).[598] It is attested in the Bulebel site on Malta deposits at between the dating mid-1st century AD and early 3rd century AD.[599] In Carthage both form 1[600] and form 2 are found.[601] At Berenice Catania Form 1 is attested in the early to mid-2nd century AD[602] and it still occurs, probably residually, in the 3rd-century levels alongside the Catania MR 1a Form 2.

[594] Di Vita 1968, 58–61.
[595] Ostia III, 467.
[596] Narbonne/Port La Nautique variant Ostia II, 522 in a layer with the chronological range 30 BC–AD 70.
[597] Bonghi Jovino and Arena 1984, pl. 106, nos. 14–15.
[598] Quatrina context dated within the first half of the 2nd century AD.
[599] Maxine Anastasi pers. communication.
[600] Vegas 1994, tab. 7, no. 93. From Carthage see also inventory no. k90/156; k90/160 (fragments donated by S. Martin Kilcher)
[601] Kilcher 1998, Fig. 6, no. 1 from phase II (AD 30–70).
[602] Riley 1979, deposit 73.

New data

Catania flat-bottomed type, Form 1 is attested in Corsica[603] (Plate XI, 1), Narbonne[604] (Plate XI, 2–4) and Arles[605] (Plate XI, 5). The five samples analysed in thin-section all belong to the same Catania fabric sub-group, here termed the Catania granular group (see Chapter 3, section 3.6.1, 'granular group', 1.1), suggesting their production at the same workshop.

4.9.2.1.2. Catania flat-bottomed type, Form 2 *(*end 1st century-beginning (?) 3rd century AD) (Plate XII)

I propose identifying this form with the amphora Ostia III, 464,[606] first published in the Ostia reports. I suggest distinguishing two variants of the same form on the basis of a slightly different rim profile that varies in height. **Variant a** corresponds to the rim of Ostia III, 464 type (Fig. 4.26) which is slightly rounded on the exterior. Its height can vary, but is generally longer than rim **Variant b** (Fig. 4.27) which is shorter, flat on the exterior and always with an internal groove.

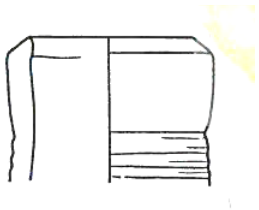


Fig. 4.26 Examples of 'Catania' Flat-bottomed type Form 2, variant A (rim diameter int. 6.5); (unpublished, from Carthage) (S. Martin-Kilcher).

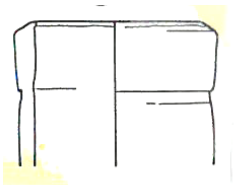


Fig. 4.27 Examples of 'Catania' Flat-bottomed type Form 2, variant B (rim diameter int. 6.8); (unpublished, from Carthage) (S. Martin-Kilcher).

Chronology and distribution

Form 2 is not published from the Berenice excavations. In Carthage it is attested in the third quarter of the 2nd century AD (AD 150–175). At the Thermes du Levant in Lepcis Magna the two variants of form 2 are both attested — probably both as residuals — in

[603] SA 20.
[604] SA 90; SA 91 and SA 92.
[605] SA 54.
[606] Ostia III, pl. IV, no. 464.

context 1 (*c.* AD 250)[607]. In Lepcis Magna Catania Form 2, variant a is attested from the end of the 1st century AD. It continues to be imported in the mid/third quarter of the 2nd century[608] and in contexts of AD 250–260 (residual?). In Sicily Catania Form 2, variant b is attested around the end of the 2nd century (villa Carboj).[609]

New data

The production of the suggested **variants a** and **b** are most probably contemporary. The ten specimens belonging to Catania flat-bottomed form 2 present two different sub-fabrics associated with the geology of the region of Catania (Catania granular fabric 1.1. and pure group 1.2). We can conclude that the same form was produced at two different contiguous production areas or in the same workshop by different group of *figuli*. The first hypothesis seems more plausible. The study shows the distribution of *Catania flat-bottomed form 2 variant a* (Plate XII, 1–4) at Lyons;[610] in Lepcis Magna (Plate XII, 2–4)[611] and in Carthage where sherds are attested in the mid/third quarter of the 2nd-century AD layers.[612] *Catania flat-bottomed form 2 variant b* is found in Lepcis Magna (Plate XII, 5),[613] at Carthage[614] and in Malta.[615] In Sicily it is attested in the Roman villa of Carboj in the Agrigento area.[616] From an underwater find outside Marseille (Cape Caveaux) comes one specimen (Plate XII, 6)[617] which can only dubiously be identified as a Catania flat-bottomed Form 2 on the basis of the fabric composition.

4.9.2.1.3. Catania FLAT-BOTTOMED TYPE, Form 3 (beginning 2nd century-beginning 3rd century? AD)

I propose identifying this form with an amphora specimen published in Riley 1979, Fig. 81, no. 217 (=Ostia III, Fig. 1053)[618] One complete example of this variant is stored in

[607] Bonifay, Capelli *et al.* 2013, cat. 1.5–6 and TL 075.1.
[608] Inland villa of Wadi er-Rsaf in Lepcis Magna, Pentiricci *et al.* 1998, 83, Fig. 13, 46–47 (from the third quarter of the 2nd century=AD 175).
[609] Sic 494, unpublished.
[610] SA 2.
[611] The fragments comes from an context with abundant pottery dated to around the end of the 1st century AD. (Lepcis 24; 31; 53).
[612] Unpublished, pers. observation (K 76/184 D; K 77/173).
[613] SA 58.
[614] Unpublished, pers. observation (K76/188).k91/9; k90/157.
[615] Unpublished, pers. observation (BLB12/39/17).
[616] Unpublished, pers. observation (Sic 494).
[617] SA 3.
[618] From Carthage, see Ostia III, 470.

the Archaeological Museum of Lepcis Magna (where a Catania flat-bottomed Form 2 is also attested).[619]

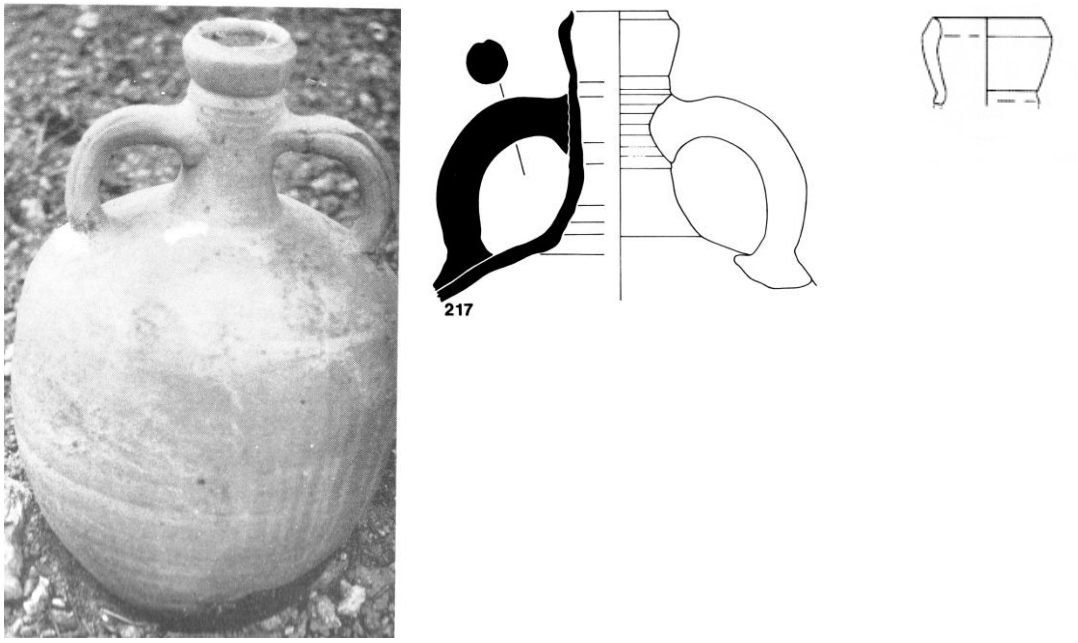


Fig. 4.28 Examples of 'Catania' Flat-bottomed type Form 3. No 1 from Carthage (after Ostia III, 470, Fig. 1053); No. 2 From Benghazi (Riley 1979, Fig. 81, no. 217); No. 3 from Rome Late Antonian age context (Ferrandes 2008, 262, Fig. 7, no. 54).

Chronology and distribution

This variant probably began production slightly later than the Catania flat-bottomed type**,** form 2. It is attested at Ostia in layers of the 2nd century.[620] In Sicily it occurs in the Roman villa of Carboj near Sciacca (province of Agrigento) around the end of the 2nd-beginning of the 3rd century AD.[621] The same type found in Lucciana, in northern Corsica, dates to a slightly earlier period, being attested in a second half of 2nd-century context.[622] At Berenice it is only attested in the 3rd-century levels, alongside the Catania MR 1a Form 2 (biconical rim).

[619] Pers. observation.
[620] Ostia, area N-E, Ostia III, 470.
[621] Pers. observation.
[622] Lang-Desvignes 2011, Fig. 7, no. 73.

New data

One amphora fragment of this form found in the Roman villa of Carboj, in the Agrigento area, was analysed within the CASR project.[623] It presents the features of the Catania pure group with very fine volcanic inclusions.

4.9.2.2. Summary on the Catania Flat-bottomed Amphora Type

The new data of this study are important evidence for the precocity and longevity of amphora manufacture in Catania (and wine export in ceramic containers) which started to produce flat-bottomed containers from approximately the Augustan-Tiberian period. The petrographic analyses demonstrated that the flat-bottomed types identified (Forms 1, 2, and 3) were all produced in the region of Catania as they have the same petrographic composition with volcanic inclusions and in one case the addition of sand as temper. These Early and Middle Roman period amphorae were manufactured in a similar manner: with great accuracy, and the use of salt water during the process which produced the characteristic whitish surface. The fabric is hard and red in colour, sometimes — but not always — with small black inclusions visible to the naked eye.

In this case too we are dealing with the production of a completely original container from a morphological point of view; this phenomenon is analogous to that described for the Naxos amphora tradition, and in particular the manufacture of the Naxos flat-bottomed types, Form 1, 2 and 3.

The new Catania 'amphora model' differs markedly from the Italic prototypes of the 1st century AD above all for the structure of the body and the handle profile. There are greater morphological similarities with the contemporary Naxian tradition of the late 1st century, here termed the Naxos Flat-bottomed type, Form 1. There are close parallels in the rendering of the horizontal grooves on the neck at handle-height, in the circular profile of the handles which are often fluted and in the shape of the body.[624] The later Catania MR 1a will lose the grooves on the neck, which appear smooth.

In my opinion the Catania manufacturing tradition developed in the mould of contemporary Naxian productions, using the 'Sicilian model' which seems intended to express the origin of the contents transported in it. At the same time, the Catania production creates from the outset a series of morphological specificities and key

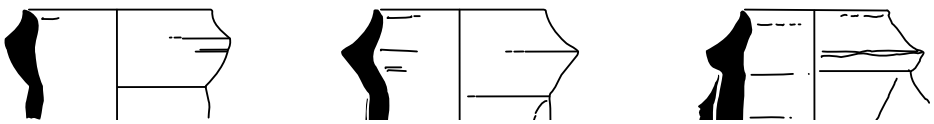
623 Not illustrated (SIC 493). Pers. observation. Analysis no. 8993 (C. Capelli pers. comment).
624 This morphological similarity is probably the reason the Naxos type was firstly assimilated to the MR1 types.

features which clarify the area where the artefact was made and — probably — the origin of its contents.

4.9.3. The Middle and Late Roman Amphora Production in the Region of Catania

During the Middle Roman period the potters from the Catania production area started to manufacture a flat-bottomed container with a different rim shape from the previous forms. The rim was probably manufactured by pushing the clay down along the outside of the rim.[625] This process created the iconic flaring, beveled biconical rim. This new rim changed over time, becoming more triangular in the mature phase of amphora manufacturing and lower and thinner in its final stage of development in the Late Roman period.

The new way of modelling a rim is a major change compared to the amphora production in the region of Catania together with the abandonment of the corrugated neck which invariably appeared in the Catania flat-bottomed amphora types (Form 1, 2, and 3, see above). On the other hand, some features such as the persistence of the ringed bottom, the carinated shoulder and the manufacturing technique do not change. This is evidence of the continuity of traditions in the production of the Catania amphora class over generations of potters in the same area. The Catania MR 1a type's development over time is here formally grouped into three main stages/forms on the basis of changes in the rim shape, indicated by numbers (Forms 1, 2, and 3, Fig. 4.29).



1 **2** **3**

Fig. 4.29 'Catania' MR 1a type rim development: from the left, Form 1, 2 and 3 (Bonifay, Capelli at al. 2013, Fig. 25).

4.9.3.1. A Survey of Previous Hypotheses on the Origin of the MR 1a

The decription of the new typology of the flat-bottomed containers, which were manufactured from the Mid Roman period owards in the Region of Catania, must be introduced by the much-discussed issue of the origin of the MR1 amphora. I present

[625] Schuring 1984, 169.

below brief history of previous studies on the Riley MR 1a, with particular attention to the various hypotheses about its origin.

One of the main problems in studying this amphora type was connected to the uncertainty regarding the location of the production centre(s). The small-footed ring amphora with the lower thicker biconical rim of its later stage of development was published with several names. It was first published from a 4th-century AD context of the Athenian Agora in 1959 with the name Agora M254, following the classification by H.S. Robinson.[626] Then it was published in 1973 in Ostia I reports and in 1979 by Riley from the Benghazi excavation (Fig. 4.30) Since then, various lines of investigation and a series of hypotheses as to its origin have been suggested in scholarly literature and are outlined below with the aim of defining the *status quaestionis* on the MR 1a's origin prior to the results of this study.

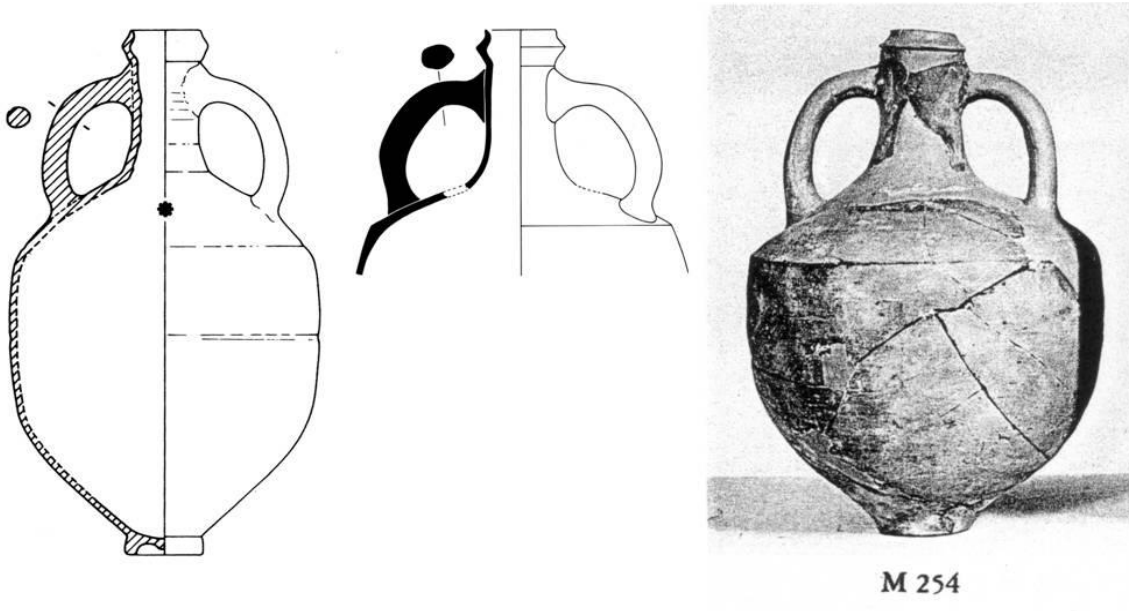


Fig. 4.30 The MR 1a type published under several names.
From left to right: Ostia I, 453–454 (Ostia I, 100, figs. 453–454); Riley MR 1a (Riley 1979, Fig. 81, no. 215); and Agora M254 (Robinson 1959, pl. 28, M254).

4.9.3.1.1. The North-African Hypothesis

A possible North-African origin for this amphora was tentatively suggested by Clementina Panella. According to the classification used in the excavation report of the Terme del Nuotatore in Ostia this type is called Ostia I, 453–454 (=MR 1a)[627] (see

[626] Robinson 1959, pl. 28, M254.
[627] Ostia I, 100, Fig. 453–454; Ostia III, 469–471, Fig. 46; Ostia IV, 230–232, 282.

above, Fig. 4.30). Panella cautiously linked its manufacture to Byzacena or, most probably, to Tripolitania, based mainly on the concentration of finds in Lepcis Magna.[628] Nevertheless, she also noted differences in the macroscopic appearance of the fabric both of Tripolitanian oil amphorae and Tunisian amphorae compared to these small containers.[629] She also stated that the number of stamps on this form, that might have helped to narrow down its geographical area of production, was particularly scanty and could not provide information on the origin. She concluded by saying that the overall question of their origin was not yet completely solved.[630]

Despite Panella's cautious approach, the archaeological literature of the 1970s and 1980s supported a Tripolitanian origin, calling the form 'piccola tripolitana'/'the small tripolitanian (amphora)'.[631] Daniele Manacorda[632] and Francoise Villedieu[633] agreed on a Tripolitanian origin. Simon Keay[634] suggested a Tunisian provenance, as did Patrick Galliou, who interpreted the evidence of MR amphorae in Rennes as evidence of contacts between north western Gaul and North Africa.[635] John Riley denied the Tripolitanian origin on the basis of the much higher frequency of the type in Ostia compared to Berenice itself, where it is not particularly common especially compared to the frequently attested Tripolitanian oil amphorae. He tentatively suggested a Tunisian origin based exclusively on the depiction of the MR 1b type in the Roman period-mosaic in Dougga (see below). Nevertheless he concluded that '*a more precise location remains elusive*'.[636]

[628] Panella 1973, 467–472, in partic. 471: 'Se dovessimo giudicare soltanto sulla base della concentrazione di ritrovamenti, non avremmo dubbi circa la provenienza dalla Tripolitania di queste anfore'.
[629] Panella 1973, 471: 'Non è comunque un'argilla simile a quella dei contenitori della Tripolitania, nè a quella delle anfore della Bizacena'.
[630] Panella 1973, 471: 'Il problema della provenienza sembra tuttavia irrisolto'.
[631] Manacorda 1977. See also Villedieu 1984, 180: 'petite Tripolitaine'.
[632] Manacorda 1977, 230–232. Manacorda 1977, 232: 'Per la forma Ostia 453–454, la Tripolitania sembra offrire gli elementi più convincenti'.
[633] Villedieu 1984. Several samples of MR 1a (Form 2 and 3) from Turris Libisonis in Sardinia.
[634] Keay 1984, 375–376 (Ampurias finds), 663–664, LXXXI Type, Fig. 170, no. 10. Keay 1984, 375: 'the fabric suggests a Tunisian or possibly a Libyan origin (Fabric 4)'.
[635] Galliou 1990. One MR 1a, Form 2 is attested in one of the Roman cemeteries of Rennes, containing a late 3rd-century AD hoard of coins and jewels.
[636] Riley 1979, 179.

4.9.3.1.2. The 'Iconographical Approach'

MR1 amphorae were long thought to be a North-African production because an earlier similar form was depicted in the 3rd century so-called 'Butlers Mosaic' from Dougga[637] (Fig. 4.31). The containers on the mosaic are similar in shape to the Early/Middle Roman period amphora form here termed 'Catania' flat-bottomed type, Form 2 (Fig. 4.32), for which an origin in the region of Catania has been ascertained by the new petrographic analyses.

The portrayal of containers from elsewhere in North-African material culture is not an uncommon phenomenon, as already noticed by M. Bonifay;[638] examples are the African lamps depicting the eastern Mediterranean/Aegean amphora Kapitän I or II.[639] On the other side, other types of material evidence (see below) show that the iconographic model of a servant carrying a flat-bottomed container/jug on his shoulder was widespread in North Africa.



Fig. 4.31, a: Detail of the 3rd century AD 'Butler's Mosaic' displayed at from the Bardo Museum (Tunisia) showing the flat-bottomed amphora which displays similarities with the Middle Roman period Catania container. Note the small flagon which the slave holds in his left hand (C. Franco photograph).

[637] Dunbabin 1978, 123, pl. 114; Yacoub 1996, Fig. 100.
[638] Bonifay 2004, 148.
[639] African lamps type Deneauve VII/sub type 1, Bonifay 2004, Fig. 178, no. 11.

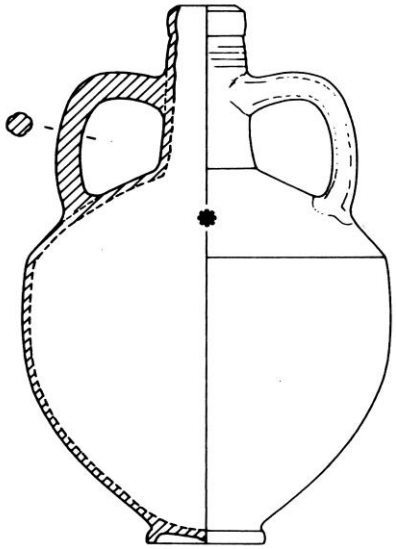


Fig. 4.32 The suggested amphora prototype depicted in the above mosaic here termed 'Catania' flat-bottomed type Form 2 (Ostia III, pl. IV, no. 464).

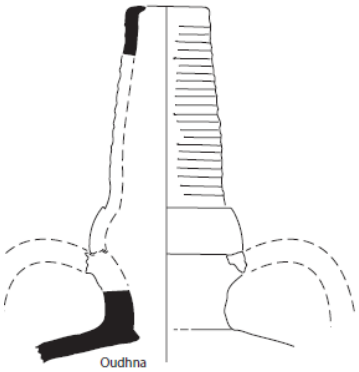


Fig. 4.33 Profile of a North-African flagon 'Bonifay type 48' from Oudhna (Bonifay 2004, type 48, 283, Fig. 157, no. 4).

In the mosaic the figure of one of the servants is carrying in his left hand a smaller container, probably for wine as suggested by the depiction of what appears to be vine leaves on his exterior surface. The same vine leaves are depicted in the flat-bottomed amphora which he carries on his shoulder.[640] The smaller one handle jug finds a morphological comparison with a series of flagons produced in North Africa from the end of the 2nd until the end of the 4th century AD, included by M. Bonifay in his type 48 (Fig. 4.33, above).[641] The iconographical representation of a similar smaller wine jugs is known from a terracotta figurine found in Carthage and dated to the 3rd century AD (Fig. 4.34), showing a man carrying the container on his shoulder. This recurrent iconographic *topos* is also shown by a series of lamps found in Sabratha and Volubilis[642] in which a man is carrying a flat-bottomed container in a way which shows similarities with the 'Butler's mosaic'(Fig. 4.35).

[640] In Chapter 5 I suggested that similar depictions of symbols on the exterior surface of Sicilian amphorae could give an indication on the quality (or colour of wine) transported in given containers to the buyers.
[641] Bonifay 2004, type 48, Fig. 157, nos. 1, 2, 4 and 7.
[642] Joly 1974, 111, no. 139, pl. IX.



Fig. 4.34 Representation of a *triclinarius* carrying a small flagon on the shoulder (Bonifay 2004, Fig. 157, no. 7).



Fig. 4.35 Lamp from Sabratha with the depiction of a man carrying a flat-bottomed amphora/jug on the shoulder (Joly 1974, 111, no. 139, pl. IX).

4.9.3.1.3. The Naxian Hypothesis

The issue of the MR amphora's origin was again raised by Roger Wilson in his substantial 1990 monograph on Roman Sicily. He firmly rejected a North-African origin on the basis of 'wasters of the same shape' — at the time still unpublished — from the city of Naxos on the north eastern coast of Sicily (see Chapter 2, section 2.3.1.1, Fig. 2.20) which he was able to study.[643] In the book no drawings or pictures of these wasters were provided. Their provenance from a middle imperial dump kiln in Naxos (Naxos wasters from Proprietà Spinella/Via Larunchi), at the time unpublished,[644] was only mentioned in a footnote (no. 128). This flat-bottomed amphora, rightly ascribed to a Naxian production, was classified by Wilson under the name of (Riley) MR1 amphora.[645] To illustrate the amphora manufacture in Naxos, Wilson published a profile of a complete 3rd-century MR 1a found in El Djem in Tunisia (Fig. 4.36).[646]

[643] Wilson 1990, 264, note 128.
[644] The first note on their existence was published in Lentini 1984–1985, 482, note 455.
[645] Riley 1979, 177–179.
[646] Wilson 1990, 264, Fig. 224b.

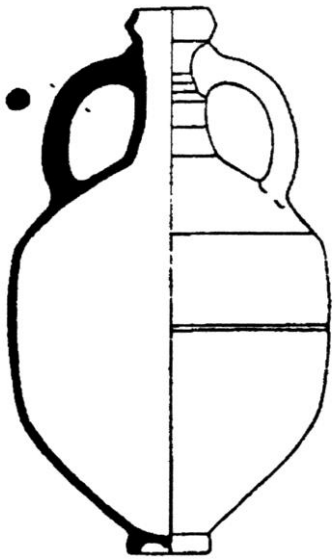


Fig. 4.36 Complete example of MR 1a published in Wilson 1990, Fig. 224b to show what he considered to be shape of the amphora wasters from Naxos (cf. Spinella kiln dump).

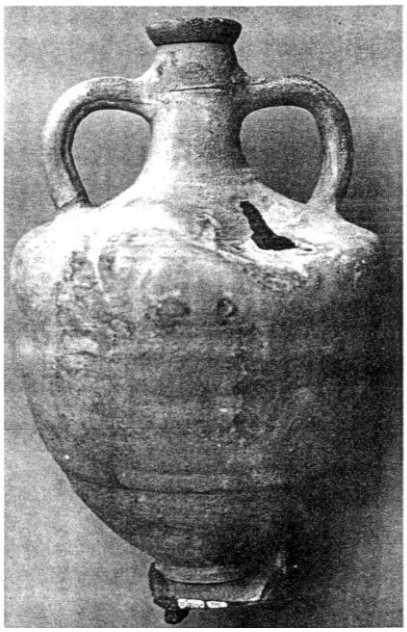


Fig. 4.37–a Waster of production from Naxos production area (Larunchi quarter) (Wilson 1999, 534, Fig. 317).



Fig. 4.37–b Restored example of the Middle Imperial Naxos flat-bottomed amphora (Wilson 1999).

Pictures of the amphora produced at the Naxos workshop and attested in the wasters found in the Larunchi/Spinella quarter were published by Roger Wilson in 1999 (Fig. 4.37 a and b).[647] Wilson repeated his assertion regarding the Naxian origin of the

[647] Wilson 1999, 534, Fig. 317.

MR amphora type in another occasion[648] and it was considered plausible by some scholars in subsequent years.[649]

A more in-depth analysis of the identification of the Middle Roman period flat-bottomed containers produced in Naxos is not consistent with the amphorae illustrated by Riley in 1979. The (Benghazi) MR1 amphora types present different morphological characteristics from the Naxian types, such as the presence of a biconical/triangular rim which do not appear in the Naxos class.

Roger Wilson was the first to bring to scholarly attention the much neglected topic of Sicilian amphora exports during the Roman Imperial period.[650] Nevertheless, the lack of accurate morphological descriptions and profile illustrations of the Middle Roman period amphora wasters from the Naxos workshop hampered the precise identification of the 'real' MR 1a with biconical rim now assigned to the Catania production area. As this study has shown, these are actually two different classes of containers which differ in morphology and — most importantly — in source of production.

To sum up, the Naxos workshop produced (at the earliest) from the first three decades of the 1st century AD onwards a flat-bottomed class of containers which is *merely* similar to the 'Catania' flat-bottomed containers and the 'Catania' MR 1a type. The Naxos flat-bottomed amphorae family has its own morphological evolution on three main forms[651] and it is less widely attested in the overseas contexts analysed within this study (Chapter 7 on distribution).

Despite the publication of the Naxos amphora wasters, during the 1990s/early 2000s most Sicilian scholars accepted Panella's suggestion of a North-African/Tripolitanian origin for Ostia I, 453–454/MR 1a.[652] Panella later suggested the possibility of several production centres manufacturing the same amphora type.[653] The suggestion was mainly based on petrographic studies of two specimens of this type found in Rome (Caelian Hill) for which a possible coastal Tripolitanian fabric was

[648] Freed and Wilson 1999.
[649] For example, Reynold 1995; Martin-Kilcher 1998; Panella 2001 and Tomber 2003.
[650] Data were, in fact, only known for the Late Roman Sicilian manufacture of Keay 52 amphorae in Naxos see Fallico, 1976–1977.
[651] Naxos flat-bottomed amphora type, Form 1 (from the first three decades of the 1st century unitil the 2nd century); Naxos flat-bottomed amphora type, Form 2 (from the late 3rd century-early 4th century AD);Naxos flat-bottomed amphora type, Form 3 (from the mid-4th century AD), see Chapter 4.
[652] Agrigento 1995, 280, inv. no. 86964, Fig. 79, attributed to a Tunisian production. Tortorici 2002, 297, no. 15, and Fig. 50 nota 100 (specimens recovered from the hinterland of Catania (Ramacca) and from Catania harbor).
[653] Panella 2001, 218, note 96.

suggested[654] and from a (probable) waster attributed to the same shape found in the area of a kiln in *Thaenae*/Thyna on the east central coast of Tunisia.[655] In both cases these identifications have been reviewed and corrected with the new petrographic analyses (see below). The thin-sections with volcanic inclusions excavated from the Caelian Hill context (see above), initially linked by Sfrecola to the volcanic district of Tripolitania, were studied again by C. Capelli for this study and attributed to the Catania granular group.[656]

Paul Reynolds first regarded the MR 1 as a Naxian production.[657] Later, he expressed doubts about this origin mainly based on macroscopic fabric differences compared to the Keay 52 amphora types produced at the Naxos kiln.[658]

Stephanie Martin-Kilcher initially considered the amphora a Tunisian container on the basis of macroscopic similarities with the Tunisian amphora fabrics attested among the finds in Augst and Kaiseraugst, in present-day Switzerland.[659] She later regarded the MR 1 as a Sicilian transport container, suggesting its production in Naxos or Agrigento.[660]

Roberta Tomber denied a Libyan or Tunisian origin, mentioning the Naxos kilns as the possible production area of two amphorae found in London.[661]

The new thin-sections prepared for this study from the specimens from northern Europe (Augst, Kaiseraugst and London) and Carthage have established an origin in the region of Catania for all the MR 1a sherds studied.

4.9.3.1.4. The Archaeometrical Approach

In 1984 Josine M. Schuring published a series of remarks based on stereoscopic observation and petrographic analyses of several amphora types from San Sisto Vecchio

654 Pacetti and Sfrecola 1989, 502–503 (presence of volcanic inclusions which were initially linked by Sfrecola to the volcanic district of Tripolitania. In fact the Gharian volcanic province of Libya comprises minor plateau lava. Nevertheless the samples match the Catania region fabric (granular sub-fabric), see *infra*.
655 Ben Lazreg *et al.* 1995, 131.
656 Thin-sections no. 3997 and 4036.
657 Reynolds 1995, 67.
658 Reynolds 2010a, 51, note 195.
659 Martin-Kilcher 1994, 449–450.
660 Martin-Kilcher 1998, 513, 515, note 24. See also the evidence from Carthage, Martin-Kilcher 2005, 209, Fig. 6.
661 Tomber 2003. Two MR1 amphorae from London. One being MR 1a Form 2 (Fig. 1, no. 1). Both the samples have been analysed within this thesis showing their Catania region origin (certain for SA 86 and probable for SA 87).

in Rome.[662] Fragments of MR 1a (published as Ostia I, 453–454) were petrologically analysed and assigned to her fabric group F.[663] The author, despite providing no information on the origin of the type, expressed some scepticism regarding its production in the same workshops that manufactured the cylindrical Tunisian and the Tripolitanian amphora types, mainly on the basis of different manufacturing technologies and the variation in fabrics when the specimens were compared.[664] She was also the first to observe the difference in fabric composition between the MR 1 and Keay 52 amphora type[665] (see also Chapter 3 on this point).

A description and micro-photo of the MR amphora fabric was provided in Peacock and Williams' volume on Roman Amphorae. The amphora corresponds to their type number 40.[666] The authors report Panella's suggestion of a North-African origin. The MR 1 fabric presents frequent sub-angular grains of quartz, fragments of limestone, some foraminifera, plagioclase feldspar and flecks of mica.

Theodore Peña has conducted research on the fabric of this amphora type, along with several other pottery forms attested in the Palatine Hill excavations. In his report he combined form and fabric information to create a clearer classification system that can express 'variability deriving from archaeologically significant factors, such as differences in manufacturing technique from one workshop to the next, diachronic change in forming technique etc.'[667] He identified three different variants of MRA 1a with different fabrics. Fabric group 2b (his MR 1 var. 1), attributed to the periphery of the Etna volcanic complex,[668] and was comparable with the fabric published in Peacock and Williams 1986.[669] Fabric groups 4b and 4C (his MR 1 var. 2 and 3 respectively) were attributed to north eastern Sicily.[670] Interestingly, Peña compared the fabrics of

[662] Schuring 1984.
[663] Schuring 1984, 168–170, Fig. 9.
[664] Schuring 1984, 170.
[665] Schuring 1984, 176. Keay 52 amphora fabrics were part of fabric group J1 and J2.
[666] Peacock and Williams 1986, 175–176, Class 40. The drawings of types a and b have been reversed in Fig. 93. According to T. Peña the fabric published in Peacock and Williams 1986, corresponds to his fabric group 2b (MR 1a, Variant 1), which he identified with a Sicilian origin possibly in the Etna volcanic complex, Peña 1999, 184.
[667] Peña 1999, 1.
[668] Peña 1999, 184. He also suggested for this particular variant a possible manufacture 'somewhere in the environs' of Catania, Peña 1999, 76.
[669] Peacock and Williams 1986, 175–176.
[670] Peña 1999, 186–187. Possible candidates for the source of production: 'somewhere between Ali Terme and northern tip of the island', Peña 1999, 74.

MR 1 with two fabrics associated with the Naxos workshop and observed that they were different.[671]

In terms of morphology, the types published by Peña belong to my group Catania MR 1a Form 2,[672] and Form 3,[673] which differs in chronology (see below), but have the same origin in the vicinity of Catania.

In the mid-2000s a systematic archaeometric approach mainly focusing on North-African pottery was adopted by Michel Bonifay and Claudio Capelli. Petrographic analyses were also carried out on *c.* 15 MR1 samples found in southern France (Arles and Lyon) and North Africa (Djerba and Lepcis Magna).[674] The results indicated that the majority of samples presented basic volcanic inclusions and acid metamorphic rocks[675] which ruled out their geological origin in North Africa. Only one specimen from Lyon[676] and one from Gargaresh (Libya),[677] were comparable with Tunisian fabrics on the basis of the presence of aeolian quartz grains. Overall, the analyses did not support the previous archaeological hypothesis of a major production in Tripolitania and a probable production in *Thaenae*[678] (see above), pointing to Sicily as the main source area and suggesting the presence of a minor North-African production.

4.9.3.2. The Catania MR 1a Type Form 1 (AD 190/250–275?) (Plate XIII)

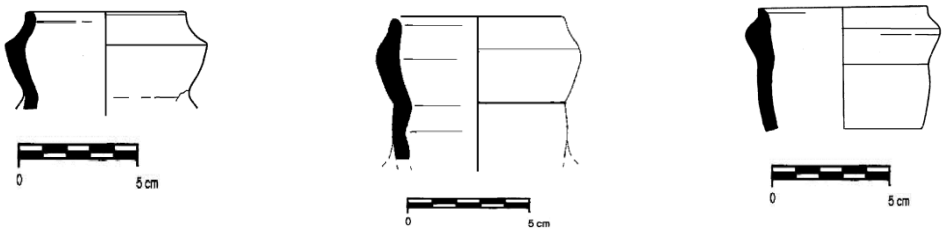
The MR 1a form 1 presents an asymmetrical thickened biconical rim which is sharper in profile in its upper part and slightly turned in at the top.[679] (Fig. 4.29 Form 1, and Fig. 4.38).

Chronology and distribution

This form can be dated from the late/end of the 2nd century until the mid/third quarter of the 3rd century (residual?). It is probably partially contemporary with the Catania flat-

[671] Peña 1999, 74.
[672] Peña 1999, Fig. 9, no. 10.
[673] Peña 1999, Fig. 9, no. 7 and 8.
[674] Bonifay 2004, 26, 146 and 148. Capelli and Bonifay 2007, 554. For Djerba: Fontana, Ben Tahar and Capelli 2009.
[675] Capelli and Bonifay 2007, 565, Fig. 10a.
[676] Capelli and Bonifay 2007, 565, Fig. 10b. Evidence from a specimen characterized by exclusive aeolian quartz and limestone/microfossil inclusions comparable with the Salakta fabric.
[677] Capelli and Bonifay 2007, 565, Fig. 10c. Evidence from a single specimen, considered a probable kiln waster which presents a fine-grained quartz-rich fabric.
[678] Ben Lazreg *et al.* 1995, 131.
[679] Bonifay, Capelli *et al.* 2013, Fig. 25a.

bottomed Form 3, while it is a later production than Catania flat-bottomed Form 2. The data from Lepcis Magna and its surroundings have had a significant impact on this variant's chronological range. A *terminus post quem* for the manufacture/export of MR 1a form 1 is provided by the Antonine context of the suburban villa of Wadi er-Rsaf in Lepcis Magna dated AD 150–180. Here MR 1a fragments with biconical rims are not attested, while several fragments of its predecessor Catania flat-bottomed form 2 (Ostia III, 464) are recorded.[680] The *Catania MR 1a Form 1* is the most commonly attested variant in the Roman fort at Gheriat el-Gharbia (Fig. 4.38, no. 1) in the Tripolitanian pre-desert.[681] It is also attested, probably as residual, in the mid/end 3rd-century deposits of the Thermes du Levant in Lepcis Magna (contexts 1 and 2),[682] where several sherds of the later 3rd-century Catania MR 1a form 2 are more widely present.[683] This early form is also attested in Apollonia (Fig. 4.38, no. 2) in present-day Albania.[684] In Malta it is attested in the old capital Melita as intrusive find in a context dating to the mid-to late- 4th century AD.[685] Particularly interesting is the attestation of form 1 in the coastal settlement of Ashkelon/*Ascalon* (Fig. 4.38, no. 3) in the southern coastal plain of Palestine, a few kilometres from Gaza.[686] Notably, these data attest to the distribution of the Catanian wine containers, though with few specimens, in the Eastern Mediterranean market already around the mid-3rd century AD. (The supply of the East will be further addressed in Chapter 7, section 7.4.5).



1 **2** **3**

Fig. 4.38 Examples of Catania MR 1a type Form 1: 1) from Gheriat el-Gharbia (Schimmer 2012, Fig. 4, n. 13); 2) from Apollonia (Shkodra and Shehi 2011, Fig. 96, no. 20); 3) from Ashkelon (Johnson 2008, 160, no. 455).

[680] Pentiricci *et al.* 1998, 83, Fig. 13, 46–47 (from the third quarter of the 2nd century=AD 175).
[681] Schimmer 2012, Fig. 4, no. 13 and 321, note 13 on the thin-section analyses supporting the Sicilian origin of the sherds from the fort.
[682] Bonifay, Capelli *et al.* 2013, cat. 1.7.
[683] Bonifay, Capelli *et al.* 2013, cat. 1.8–12; cat. 2.4–5.
[684] Fragment found in a demolition layer near the area of the Theatre with no specific dating evidence, Lahi, Shkodra and Shehi 2011, Fig. 96, no. 20.
[685] Pers. observation (inv. no. 49988 and 49290).
[686] Johnson 2008, 160, no. 455.

New data

In total, 6 specimens of *Catania MR 1a Form 1* were analysed. They all come from contexts 1 and 2 of the Thermes du Levant in Lepcis Magna[687] (Plate XIII, 1–6) which comprise layers ranging from AD 250 to 290. They all belong to the Catania granular sub-group, suggesting production at the same workshop.

4.9.3.3. The Catania MR 1a type Form 2 (*c.* AD 230/300 onwards) (Plate XIV–XVI)

In this form the biconical rim is separated from the neck by a small ledge. Slight differences in the triangular rim might be significant in terms of chronology as for the layers of the Thermes du Levant stratigraphy.

4.9.3.3.1. *Catania MR 1a type, Form 2, variant a* (*c.* AD 230/300)

Catania MR 1a form 2 variant a, is the 'classic' Riley Mid Roman 1a, which corresponds to the shape of the published specimen which gives the form its name.[688] It corresponds to the form Ostia I, 453–454[689] (Fig. 4.39) and has a symmetrical biconical rim with a flange at mid-height (Fig. 4.40).

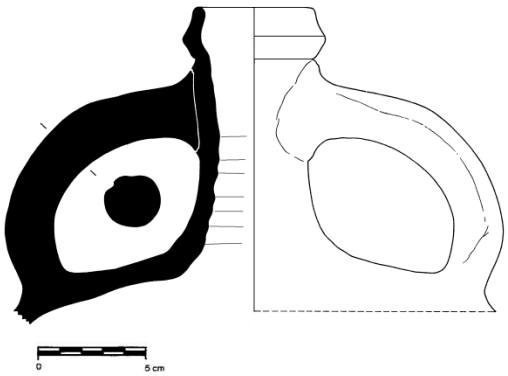


Fig. 4.39 Example of Catania' MR 1a type Form 2 variant A (redrawn from Ostia I, pl. XXVI, no. 354).

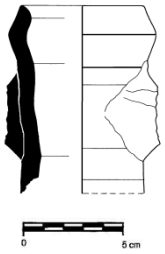


Fig. 4.40 Example of the rim associated to Catania' MR 1a type Form 2 variant A attested in Agrigento (redrawn from Lima 1995, Fig. 79, inv. 86/964).

[687] Lepcis 34; lep 25; lep 64; lep 85; lep 71 and SA 36.
[688] Riley 1979, Fig. 81, no. 215.
[689] Ostia I, 100, figs. 453 and 454.

Chronology and distribution

The beginning of manufacture of the MR 1a form 2, variant a, can be confidently dated to the third decade of the 3rd century AD on the basis of the Ostia deposit.[690] This variant is still widely attested in Lepcis Magna at the end of the 3rd century.[691] It is attested from the second quarter of 3rd century (AD 225–250) at Berenice.[692] In Ostia it is still found in 4th-century layers.[693] It is attested in Melita in Malta, [694] and in Spain, where it has been classified by S. Keay as 'type 81'.[695] In the Roman period cemetery in Krefeld-Gellep on the Lower Rhine in northern Germany Catania MR 1a form 2 and the later form 3 are attested in two different graves. To anchor their chronology I used the regional pottery found in association with the amphorae. Catania MR 1a form 2 is attested in a grave dated within the last quarter of 3rd century[696] (Plate XIV, no 1) while Catania MR 1a form 3[697] is attested in a tomb dating between 306 (*terminus post quem*) and the first half of the 4th century AD.

New data

The largest group of fragments analysed (19 specimens) belongs to the Catania MR 1a form 2 variant a. These new analyses have indicated the presence of different sub-fabrics within the main fabric Group 1 (see Chapter 4) in this form that suggest the existence of several workshops in the same geological area. This could indicate that large workshop used slightly different clays for different types; or, more probably, that there were a number of relatively small workshops in close proximity that may each have used slightly different clays and produced the same version of the same amphora form.

The Catania granular fabric sub-group (Fabric 1.1) is represented by 14 specimens, of which 9 come from Lepcis Magna[698] (Plate XIV, nos. 5–13); 3 from

[690] Ostia III, 470.
[691] Bonifay, Capelli *et al.* 2013, Cat. 2.6–9. See also *ibid*. Fig. 25, 2.7.
[692] Riley 1979, 179.
[693] Ostia III, 470.
[694] Pers. observation (inv. no. 49720).
[695] Keay 1984, Fig. 170. no. 10. Residual in a 6th-century AD context.
[696] SA 118: Pirling and Siepen 2003, 66, Grave 5508.
[697] SA 117: Pirling 1966, 141–142, pl. 101, no. 6 (Gellep II, Grave 1215).
[698] Lep 11; 33, 27, 59, 65, 61, 78, 87; 83.

northern European contexts[699] (i.e. Krefeld-Gellep, Koln, London) (Plate XIV, nos. 1, 3–4); and 2 from France[700] (Lyon and Marseille) (Plate XIV, nos. 2, 14).

The Catania pure fabric sub-group (Fabric 1.2) is attested in four specimens, all found at Lepcis Magna[701] (Plate XV, nos. 1–4).

The specimen in Plate XV, no. 5 from Lepcis Magna presents some morphological differences in the form of a less pointed biconical lip. From the point of view of the clay this specimen does not differentiate it from the main fabric group.[702]

4.9.3.3.2. *Catania MR 1a, Form 2, variant b* (AD 290/310?)

Catania MR 1a, Form 2, variant b (Fig. 4.41**)** is probably somewhat later than the 'classic variant' a. The rim tends towards the lower profile characteristic of the late form 3 (see below) without perfectly matching it.

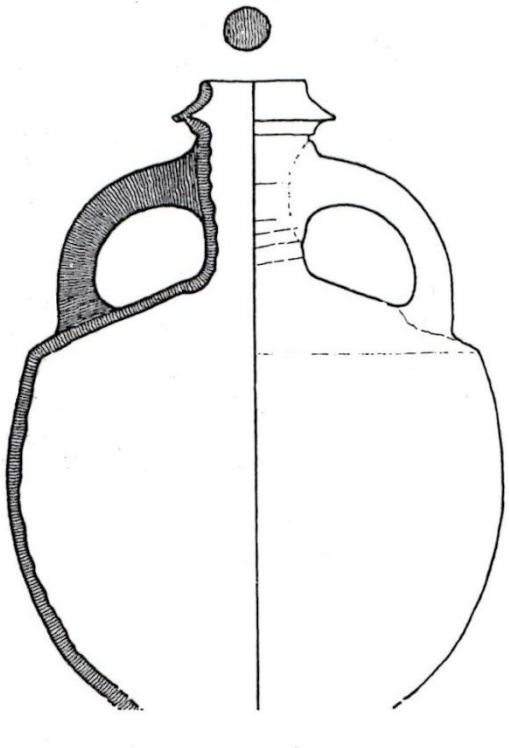


Fig. 4.41 Examples of Catania MR 1a type, Form 2, Variant b found in Trier**,** Germany (Hussong and Cüprers 1972, 22, type 52).

[699] SA 118 and 30.55 SA 87.
[700] SA 41 and SA 4.
[701] SA 35; SA 39; LEPT 8 and 26.
[702] SA 65.

New data

Seven specimens of this sub-variant were analysed. Five are attested in Lepcis Magna[703] (Plate XVI, nos. 1–5) in the same context as MR 1a form 2 variant A, but in the highest level of the stratigraphic sequence of context 2, dated *c.* AD 310, probably suggesting that it was a later variant**.**[704] Examples with the same rim have been found in southern France (Arles) (Plate XVI, no. 6) and in some northern European contexts such as the villa of Laufen-Müschhag[705] (Plate XVI, no. 7) and Trier[706] (Fig. 4.41).

4.9.3.4. The Catania MR 1a type, Form 3 (*c.* AD 310/320–440/450 ?) (Plate XVI–XIX)

The Catania MR 1a Form 3 has an asymmetrical small biconical rim which is sharper in profile in its lower part (Fig. 4.42 and 4.43). It corresponds to the amphora published as Agora M254 type from the Athenian Agora context.[707] This Late Roman development of the Catania prototype was made in the Sicilian workshop of S. Venera al Pozzo/*Statio Acium*[708] (Fig. 4.44), located within the region of Catania, and active in the 4th to the first half of the 5th century AD (Chapter 3). The end of manufacturing activities has been connected to the Vandal attacks on Sicily (AD 440 or 468).[709] The type with a biconical rim with a lower thicker profile studied was first defined as the Keay 52 type, and its appropriate identification as Mid Roman 1a was presented by the present author in a paper focusing on local and imported amphora types in Roman Sicily.[710]

[703] SA 37; SA 77; LEP 73; LEP 94, LEP 95.
[704] Bonifay, Capelli *et al.* 2013, cat. 2.10–11 (from US 195).
[705] Martin-Kilcher 1980, 54, Fig. 20, no. 1, pl. 50.
[706] Hussong and Cüprers 1972, 22, typus 52 (pl. 4). See also Martin-Kilcher 1980, 54, Fig. 20, no. 2.
[707] Robinson 1959, 108, pl. 28, M254.
[708] Amari 2006, 143, nos. 5–6.
[709] Branciforti 2006, 97–101.
[710] Franco 2008. For the type: Amari 2006, 143, no. 5; 144, no. 6.

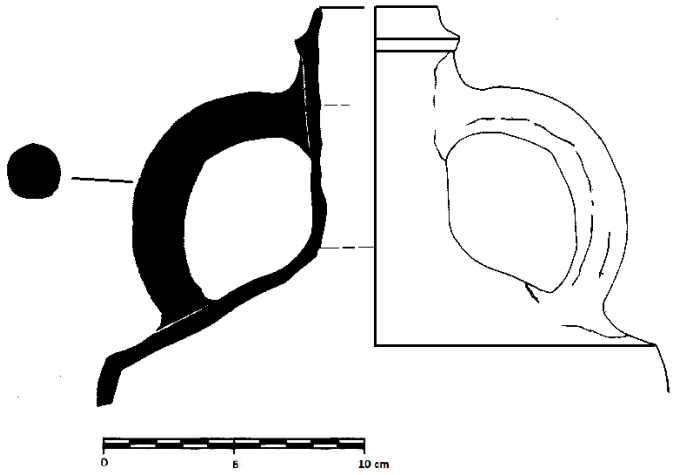


Fig. 4.42 Example of Catania MR 1a type Form 3 attested in *Turris Libisonis* (Sardinia) (redrawn from Villedieu 1984, 180, 320, no. 239).

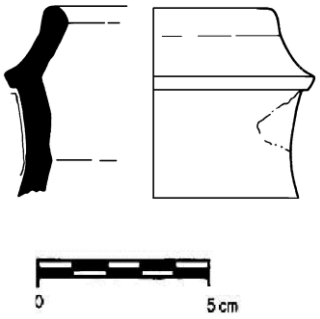


Fig. 4.43 Example of the rim associated with Catania MR 1a type Form 3 (redrawn from Ostia IV, no. 276).

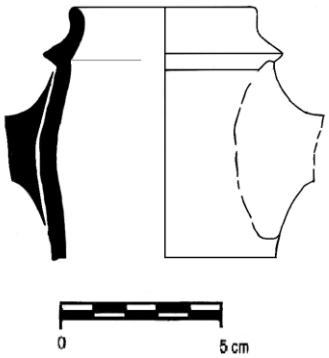


Fig. 4.44 Example of Catania MR 1a type Form 3 with a smaller rim (production of S. Venera al Pozzo workshop, redrawn from Amari 2014, Fig. 1.2)

A further evolution of this Late Roman type development is evident in changes to the rim shape and bottom that became progressively smaller in the 5th-century stage of manufacturing. This is evident in some of the published specimens from the S. Venera kiln[711] (Plate XXI, no. 1) and a series of sherds found in Arles (4 ex.) which also belong to the same fabric sub-group (Fabric 1.2., here termed Catania 'Pure Group').

Chronology and distribution

In Ostia this late form is attested in the 4th-/5th-century AD layers, along with Catania MR 1a form 2 probably attested as residual.[712] It is widely attested in Lepcis Magna

[711] SA 49.
[712] Ostia, room XI, layer I, Ostia III, 470.

from the early decades to the end of the 4th century (AD 400).[713] It is attested with one example on the Pampelonne wreck which sank near S. Tropez between the beginning and the first half of the 4th century.[714] In the East, specimens are attested in the Roman cemetery on the eastern slope of the Mount of Olives in Jerusalem (Fig. 4.45),[715] in the Yassi Ada 4th-century wreck,[716] (Fig. 4.46), in Athens[717] and in the Macronessos wreck.[718] The 5th-century variant is mainly attested in southern France (see below). A small trade is also attested in Malta from the evidence of a 5th-century variant of MR 1a for 3 from the Zejtun villa in Malta.[719]

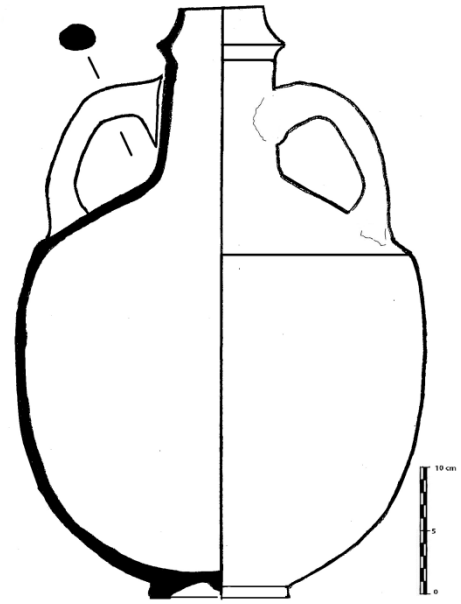


Fig. 4.45 Catania MR 1a type Form 3 from Jerusalem (redrawn after Bagatti and Milik 1958, 125, Fig. 28)

[713] Bonifay, Capelli *et al.* 2013, cat. 3.2 and cat. 4.2–4.
[714] Lequément 1976, 184–185, Fig. 8a.
[715] Bagatti and Milik 1958, 125, Fig. 28, 4; pl. 39. Estimated volume for this specimen has been established in 14.5 litres (V. Martínez).
[716] Bass, van Doorninck 1971, pl. 3, Fig. 26.
[717] Robinson 1959, 108, pl. 28, M254 (from Layer VIII); approximately 2 or 3 other specimens of the same type were found in the same layer.
[718] Franco, Mazou and Capelli in press.
[719] Anastasi 2010, no. 339.

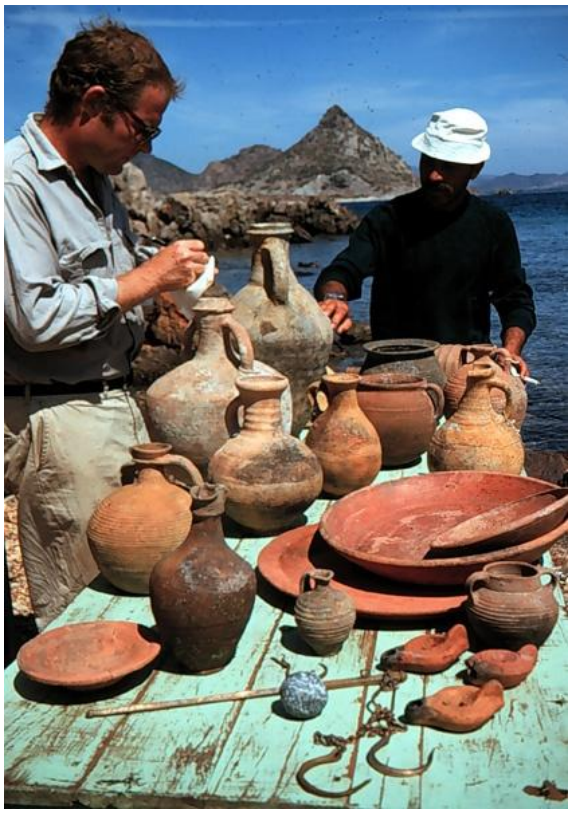


Fig. 4.46 Photograph of 'Catania' MR 1a type Form 3 from the Yassi Ada wreck; n.b. also the Keay 52 type behind it found in association (photograph: <http://nauticalarch.org> accessed 5 January 2014).

4.9.3.4.1. *The Catania MR 1a type, Form 3, 4th-century AD variant* (Plate XVII)

All the 11 sherds attributable to form 3[720] (Plate XVII, nos. 1–11) belong to a homogenous petrographic group which corresponds to the granular fabric sub-group (Fabric 1.1), suggesting the persistence of this unknown workshop which belonged to a highly organised system of production and commerce.

From the first half of the 4th-century urban context in Kaiser Augst/*Augusta Raurica* comes a rim sherd (Plate XVII, no. 12) presenting slightly different morphological characteristics though it belongs to the Catania granular group.

Examining distribution patterns, the specimens belonging to this form are attested in northern European terrestrial contexts (Krefeld-Gellep and Kaiser Augst/*Augusta Raurica*), Tripolitania (Lepcis Magna), southern France (Arles and Pampelonne) and as cargo in the Trypiti reef wreck which sank off Attica. In terms of chronology the specimens cover the whole 4th century.

During the 4th century no specimens of this chronological range have a fabric belonging to the Catania pure group or the fabric comparable with the S. Venera al

[720] SA 117, SA 115, SA 82, LEP 10, SA 73, LEP 17 and SA 75.

Pozzo fabric. This suggests that the latter workshop, in use also during the 4th century AD, was not involved in the overseas amphora trade at this time. What we can deduce from this negative evidence is primarily connected to the organisation of production at the S. Venera al Pozzo kilns during the 4th century, when its products were possibly exclusively or mainly destined for the local/regional market. This provisional conclusion will be confirmed or disproved only with the publication of MR 1a from regional contexts with petrographic information. However, the limited export of products from S. Venera al pozzo in the 4th century is confirmed by the results of the CASR project that uncovered no certain export of the S. Venera al pozzo amphorae in the Sicilian contexts analysed.[721]

4.9.3.4.2. *The Catania MR 1a type, Form 3, 5th-century AD variant (Plate XVIII)*

From the very beginning until the first half of the 5th century a different picture emerges. Beyond the habitual export of containers with the granular fabric attested in five examples[722] (Plate XVIII, nos. 1–5), the analyses showed the overseas export of specimens belonging to the pure group fabric attested with five specimens[723] (Plate XIX, nos. 1–5), of which 1 (Plate XIX, no. 1), can be assigned on the basis of morphology and comparison with reference fabrics to the S Venera al Pozzo amphora production.[724] This may reflect a slightly larger output at the S. Venera al Pozzo kiln during its last phase, especially compared to the previous 4th-century phase, and the absorption of its products in the overseas Mediterranean market for Sicilian wine. For a selection of the products of the Late Roman period S. Venera kiln see Table XXI, nos. 1.4.

4.9.3.5. Miscellany of Specimens of Catania Flat-Bottomed Type (1, 2 and 3) and Catania MR 1a (1, 2, and 3) (Plate XX)

For 27 samples which include the upper half of containers, handles and bases, in the absence of specific morphological features (such as the rim) their belonging to types and variants was suggested by the association of chronological data and generic morphological indicators. These specimens (Plate XX, nos. 1–11) were recovered from

[721] Pers. observation.
[722] LEP 48, SA 110, SA 112, SA 5 and SA 52.
[723] SA 24 and IRP.89.711.1141.
[724] SA 57.

contexts ranging from the 2nd to the early 6th century AD (where the containers appear as residuals) and include the Catania flat-bottomed type and Catania MR 1a type with different forms. The relative proportions of overseas exports of the two main fabric groups are constant within this group of unidentified types: 22 samples (23.5%) belong to the granular group and only 5 to the pure group (5.3%) out of 94 samples identified as Catania products found overseas. The larger numbers of the Catania granular group in Lepcis Magna and southern France reflects the greater market share of this Sicilian workshop.

4.9.4. General Concluding Remarks on Amphora Production in Eastern Sicily

The majority of the specimens analysed belong to the amphora class originated in the area of Catania, which is attested with 94 specimens out of 180 (52% out of all the amphorae studied and included in the catalogue). 45 samples out of 94 have been analysed in thin-sections, while the rest have been analysed under a polarized microscope. Six fragments out of 94 come from the S. Venera al Pozzo production area. These new data shed light on our understanding of the hitherto unknown role of the Roman colony of Catania in wine amphora production and distribution. The manufacture of the flat-bottomed amphora classes in eastern Sicily indicate the longevity of production and popularity of specific amphora forms, which were also imitated in other geographical areas (Chapter 6).

The significant results obtained from this study can be summarized as follows:

1. The Catania region amphora class presents general formal continuity over many centuries and a uniform fabric composition. The presence in the fabric of inclusions derived from basaltic rocks, associated with quartz and sedimentary inclusions, can narrow down the origin of several flat-bottomed amphora forms to the central eastern area of Sicily.
2. The study has attested the presence of multiple amphora workshops in the region of Catania. Of 88 samples from the Catania group found at consumption centres, 63 (71.5%) may have been produced at a single main production site belonging to the ‘granular group’ (Group 1.1). The containers made by this unknown

workshop were integrated into a system primarily aimed at the overseas export of Sicilian wine and the consumption of wine by a diverse range of foreign consumers (Mediterranean and northern European). The 'pure group' (Group 1.2) occurs less extensively (22 samples out of 84; 26.2%). The less attested fabric is related to the S. Venera al Pozzo Kiln (Group 1.2.1) which produced MR 1a in the Late Roman period; this is attested from consumption sites in total in only two specimens (2.1%) and is only associated with the 5th-century stage of amphora development.

3. Despite the presence of volcanic inclusions we can distinguish the Naxos amphora fabric from that connected with the region of Catania. The differences in fabric composition in conjunction with morphological differences established that Naxos and Catania, both with a long tradition of wine production,[725] made different amphora types. In the Naxos workshop, contrary to previous claims, there is no evidence for the production of MR 1.
4. The type MR 1a with a biconical rim represents the Middle and Late Roman stage of development of the Catania flat-bottomed amphora class and evolved from the previous Early Roman flat-bottomed forms. A continuous development of the amphora production in the region of Catania is evident from the mid-1st century AD until the end of its production by the mid (?) 5th century AD.
5. Process of imitation. The presence of 11 specimens out of 172 samples from consumption centres (6.4%) morphologically very similar to the Catania MR 1a, but with different petrographic characteristics, attests the imitation in other areas of Sicily (?), Tunisia, Tripolitania and Cyrenaica probably the export of wine (?) from these regions (see Chapter 6, section 6.2).
6. On a wider scale, it is evident that the MR 1a (late version) is not the forerunner of the Keay 52 amphora type as often asserted by scholars. The Keay 52 is a different amphora class initially produced in north eastern Sicily (see above). Furthermore, the archaeological data, such as the evidence from the foundations of the Arch of Constantine in Rome,[726] dated approximately to the first decade of the 4th century AD, show the partially contemporary export of the Keay 52 and MR 1a types. The role of the region of Catania as a wine exporter seems to end by the middle of the 5th century; the territory on the northern side of Mt. Etna,

[725] See the ancient literary evidence in Chapter 5.
[726] Pensabene and Panella 2001, 132, Fig. 14.

where Messina and Naxos are located, shows a longer production activity and overseas wine trade throughout the 5th century and beyond (see above, in particular the Crypta Balbi 2 class).

7. Economy. The indicator provided by the material evidence of containers presupposes the existence of organized agriculture and high economic yields able to satisfy both domestic demand and the extra-regional trade in wine surpluses. This organized, profitable and long-lasting (at least four centuries) production system certainly has its roots in the phase before the Augustan-Tiberian period, in other words the same period as the first amphora productions at Catania (Catania flat-bottomed type, form 1), going back in the late Republican period at the latest. I think it is likely that future research in the Catania area will identify a production of amphorae of the 'Italic type', perhaps imitating types Dressel 1, or Dressel 2–4, in accordance with a phenomenon that can be identified for the workshop of Naxos/*Tauromenium*.
8. From a commercial point of view the choice of containers of specific shapes which from the outset differ from Italic models and other contemporary amphorae shows a desire to create a model which was immediately recognizable on extra-regional markets as a 'physical symbol' of the geographic origins of their content. The amphora's shape served as a trademark of the area of origin advertising the local product following a process suggested for the Naxos flat-bottomed containers. Unfortunately, one cannot make assumption on who was involved in pottery manufacture also due to the lack of amphorae stamps.

4.10. North eastern Sicilian Amphora Production in the 3rd, 4th and 5th Centuries AD

Belonging to this Sicilian sub-group are a total of six amphora types which cover a period, determined on the basis of consumption sites, from the first half of the 3rd until (at least) the end of the 5th century AD. Wine containers were certainly manufactured in this area from the 1st century (*Vinum Haluntium*), but there is no tangible evidence of their production. Further north eastern Sicilian amphora productions may well come to light in the future.

This group includes some fairly well-known forms (such as Ostia I, 455; Ostia IV, 166; Termini Imerese types etc.) and other rarer and less frequently attested forms

(such as Bonifay 1986, nos. 39–40 and the Remolà amphora Tardia type C, D and E) whose places of origin have not been determined and which have been included in this group on the basis of the results of new petrographic analyses.

These amphora types are indicated here with the term *North eastern Sicilian amphora class* (abbreviated to NE Sicilian). The reference types are described by a number, i.e. NE Sicilian type 1, 2 and so on. Within these types we have identified different productions which differ both in morphology and fabric and/or manufacturing technology. In some cases, accurate archaeological data (such as wasters and reference fabrics from Group A) have made it possible to ascribe specific amphorae to workshops identified in the field.

4.10.1. North Eastern Sicilian Amphora Type 1 (=Ostia I, 455; Capo d'Orlando no. 3; Furnari Marina type) (Plate XXII–XXIII)

I propose including in the NE Sicilian amphora Type 1 specimens presenting morphological similarities with Ostia I, 455 type[727] (Fig. 4.47–4.50).

Chronology and Distribution

The type was first isolated in the Ostia excavations[728] where it appears from the first half of the 3rd century. More numerous find-spots at Ostia are attested from the second half of this century. The North eastern amphorae are not attested in the strata dated in the second half of the 2nd century, giving us a *terminus post quem* for their trade.[729] Their production along the northern coast of the Island is likely to have happened around the end of the Severan age when Sicily enjoyed a period of remarkable economic growth which may have favored the production of wine surplus which could be exported. In the western Mediterranean, this amphora type appears from the first half of the 3rd century onwards at Ostia, Pozzuoli, Pupput, Arles, Lyon, Lepcis Magna; and Lipari[730]. In the 4th and 5th century AD is traded to Rome,[731] where the container still appears, probably as residual, in the late 5th/early 6th century AD.[732]

[727] Ostia I, 98, Fig. 455; Ostia III, 485–487, 632, Fig. 47; Ostia IV, 232–235.
[728] Ostia I, 98, Fig. 455.
[729] Panella 1973, 487.
[730] Ostia from the first half of the 3rd century AD. More numerous find-spots from the second half of the 3rd century. The amphora type is not attested in the second half of the 2nd century layers (Panella 1973, 487); Pozzuoli/*Puteoli* second half of the 3rd century (De Filippo 2014); Pupput cemetery 3rd century context (Bonifay *et al.* 2004, 22, Fig. 8, no. 3); Arles Lyons second half of the 3rd century (Silvino 2007, 210, Fig. 15, no. 3); Lepcis/Thermes du Levant (Bonifay, Capelli *et al.* 2013), from the second half of the

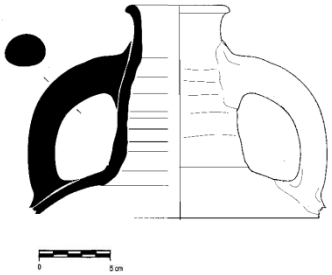


Fig. 4.47 NE Sicilian amphora Type 1 from Ostia (redrawn after Ostia I, 98, no. 455)



Fig. 4.48 NE Sicilian amphora Type 1 from Levanzo wreck (Royal and Tusa 2012, 41, Fig. 9, inv. SI06AA–0023, Keay 52 by the authors)

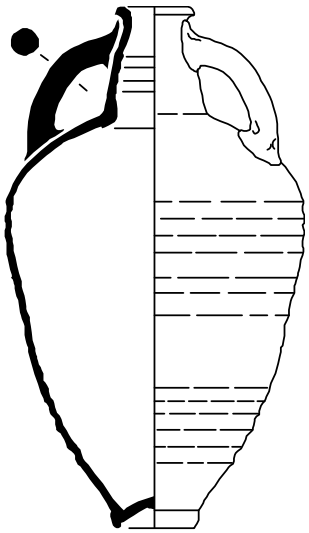


Fig. 4.49 NE Sicilian amphora Type 1 from Pupput (Bonifay *et al*. 2004, 22, Fig. 8, no. 3)

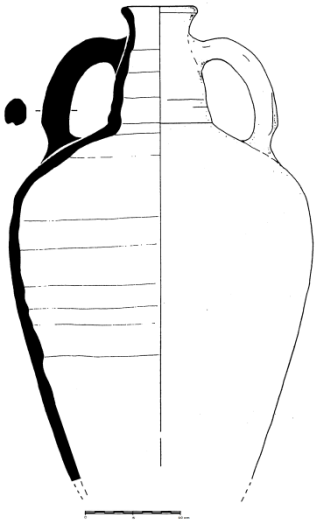


Fig.4.50 NE Sicilian amphora Type 1 from Lipari (redrawn after Messina 2000, 116, pl. IV, 2, cat. 9.)

3rd century (context 1) until the end of the 4th century (context 4); Lipari (Messina 2000, 116, pl. IV, 2, cat. 9, sporadic find).

[731] Lungotevere Testaccio Amphorae attested together with specimens of Ostia IV, 166, Incitti 1986, 90.

[732] Rome, Palatine East sequence, Peña 1999, 78, Fig. 11, residual?.

New data

The NE Sicilian type 1 presents considerable variability in manufacture and rim forms that can be associated with differences in the fabric composition. Four different areas of production can be distinguished:

4.10.1.1. ***NE Sicilian type 1 Caronia Marina production*** (mid-3rd/beginning 4th century AD)

The variant produced in the area of Caronia Marina (Plate XXII, nos. 1–2) has a granular fabric, brown/brick-red/dark reddish in colour, with numerous white matt and transparent inclusions; with a dark grey or brownish coat on the outside (Chapter 3, section 3.6.4, Fabric 4.1). The production in the area of Caronia Marina has been established with certainty by comparison with a thin-section (Group A) taken from amphora wasters found in Caronia Marina, in the district of Pantano[733] (Plate XXV, no. 2) and with other reference samples from the same production area held by C. Capelli in his laboratory.[734] The variant produced in Caronia occurs in a mid-3rd century context in Arles and in the late 3rd/first decade of the 4th-century AD layers in the Thermes du Levant in Lepcis Magna.

4.10.1.2. ***NE Sicilian type 1: unknown workshop production to be located along the North eastern coast of Sicily*** (mid-3rd century AD)

Three amphora specimens, from the mid-3rd-century levels of the Thermes du Levant in Lepcis Magna,[735] can be attributed to the NE Sicilian type 1 (Plate XXIII, nos. 1–3). One handle (Plate XXII, nos. 4) from the mouth of the Rhône has been hypothetically linked to this type mainly on the basis of fabric. Their fabric contains metamorphic components (Chapter 3, section 3.6.4, outliers) but does not match either Capo d'Orlando or Caronia Marina This suggests they were made in a geological area near the aforementioned production centres, indicating the existence of several workshops active during the mid-3rd century.

[733] The specimen was kindly donated by Dr Carmela Bonanno (Superintendency of Enna).
[734] Thin-sections are published in Cabella, Capelli and Piazza 2009.
[735] Bonifay, Capelli *et al.* 2013, cat.1.13 and 1.14.

4.10.1.3. ***NE Sicilian type 1 Furnari Tonnarella production*** (4th century? AD)

The reference sherd in Plate XXV, no. 2 comes from the area of the kiln dump site in modern-day Furnari Tonnarella (Chapter 2, section 2.4.1.2).[736] Morphologically it has a rather squat cylindrical neck, connected to a later production of the type Ostia I, 455. A better preserved amphora of the same type is illustrated in Fig. 2.25 showing the types of small amphorae manufactured in the Furnari area. Looking generally at the amphora evidence analysed during this study survey, the Furnari fabric was not found in any specimens selected, probably suggesting a smaller scale-local trade of products of the Furnari kiln.



Fig. 4.51 Photograph of NE Sicilian type 1 produced at Furnari Tonnarella workshop (Bonanno 2007, Fig. 3, no. 3).

4.10.1.4. ***NE Sicilian type 1 Capo d'Orlando production*** **(**4th/5th century? AD)

A form very similar to the prototype Ostia I, 455 type was produced at the Capo d'Orlando workshop (Chapter 2, section 2.5.1.1). It corresponds to an amphora published from the Capo d'Orlando kiln site and listed as Capo d'Orlando no. 3[737]/Type 4.[738] (Fig. 4.52). The chronology of its production, between the second half of the 4th and the 5th century AD, is based exclusively on the period of use of the kiln. Local production at the Capo d'Orlando kiln, was established on the basis of petrographic analyses of specimens belonging to the same type.[739]

[736] The sample was kindly donated by Dr Carmela Bonanno (Superintendency of Enna).
[737] Spigo, Ollà and Capelli 2006, 455–456, Fig. 4, no. 3.
[738] Ollà 2004, 112, Fig. 8, cat. 22.
[739] Spigo, Ollà and Capelli 2006. In particular on the local production of this type see the Capo d'Orlando local group, sub group 1.4.

With regards to the available data from overseas consumption sites, this study has not shown any NE Sicilian type 1 which can be related with certainty to the Capo d'Orlando workshop. Specimens produced at this workshop were spotted within the CASR project. Two amphorae were recovered from an underwater context of unknown date from Mazara del Vallo.[740]

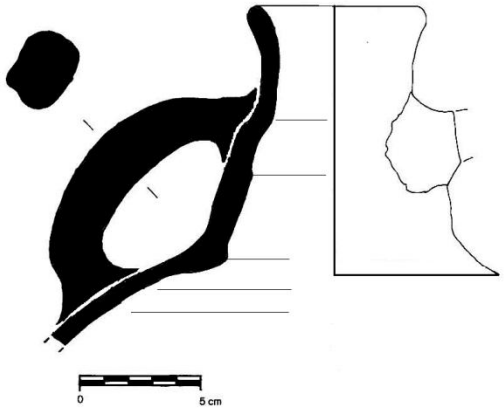


Fig. 4.52 NE Sicilian type 1 produced at Capo D'Orlando workshop (redrawn after Spigo, Ollà and Capelli 2006, 455–456, Fig. 4, no. 3).

4.10.1.5 Concluding remarks

The evidence from consumption areas defined the chronology of the NE Sicilian type 1, produced from the first half of the 3rd until the second half (end?) of the 5th century AD. The new data and the varied range of fabrics suggest that the same amphora prototype was produced over two centuries in four distinct production areas along the Tyrrhenian north eastern coast of Sicily, including the Capo D'Orlando, Caronia Marina and Furnari kilns. The Caronia Marina workshop mainly exported the container overseas from the 3rd century. The underwater discovery of Mazara del Vallo (Fig. I, Area 8) is an indication of the export of the Capo D'Orlando kiln's products. The petrographic evidence suggests that type 1 was imitated in the vicinity of the Naxos region in Area 2 (see Fig. I), opening up the possibility of a larger 'area of typological influence' (see above on this hypothesis).

[740] Amphorae not illustrated, now stored in the Soprintendenza del Mare, Palazzetto Mirto, Palermo. Pers. observation, SIC 156 (analyses no. 8656) and SIC 157 (analyses no. 8657). C. Capelli pers. comm.

4.10.2. North eastern Sicilian Amphora Type 2 (Ostia IV, 166 type; Termini Imerese 151 type; Capo d'Orlando nos. 6–7; Caronia type) (Plate XXV)

I propose to include what is here termed NE Sicilian type 2 in a class of amphorae first identified in the 4th-century Ostia sequence and listed as Ostia IV, 166[741] (Fig. 4.53). It is a container which presents similarities with Ostia I, 455 but is still slightly different.

This amphora has formal analogies with containers published from Sicilian contexts, in particular with a small container found in the Late Antique urban layers of *Thermae Imerenses*/Termini Imerese.[742] This amphora, published as 'Termini Imerese no. 151'[743] (Fig. 4.54) is part of a large amphora class currently known as 'Termini Imerese Types 151–354'.[744] It includes several different flat-bottomed containers, thought to be locally made, and initially thought to be traded on a small scale within a local context (see Chapter 3, section 2.4.7.1). The chronology of the 'Termini Imerese no. 151' dating back to the end of the 4th and the first three decades of the 5th century AD is based on evidence from the Termini Imerese layers, confirmed by other selected archaeological consumption contexts, such as the Jewish *hypogeum* in Lipari[745] where the same type is attested.

Morphological similarities can also be seen with one amphora published from the area of the 4th-/5th-century kiln in Capo d'Orlando whence it takes the name of Capo d'Orlando no. 6 and 7[746] (Fig. 4.55).

The same type has been also published from the area of Caronia Marina 'Pantano type'[747] (Fig. 4.56). Previous thin-section analyses undertaken on samples found in Caronia and in the workshops of Capo d'Orlando confirmed the likely provenance of the amphorae from north eastern Sicily, whilst also demonstrating the difference in fabrics between the specimen found in Capo d'Orlando and that from Caronia.[748] This study has established the overseas export of the variant produced in Caronia.

[741] Ostia IV, 232–233, pl. XXV, Fig. 166 (from 'Strato I and II at Ostia).
[742] Belvedere *et al.* 1993, 224.
[743] Belvedere *et al.* 1993, 73, 164, no. 151 (from US 21).
[744] Belvedere *et al.* 1993, 59–67.
[745] The context is dated to between the end of the 4th and the beginning of the 5th century AD, Messina 2000, 113.
[746] Spigo, Ollà and Capelli 2006, 456, Fig. 4, nos. 6–7.
[747] Bonanno 2007, Fig. 3, no. 1.
[748] Spigo, Ollà and Capelli 2006; Cabella, Capelli and Piazza 2009.

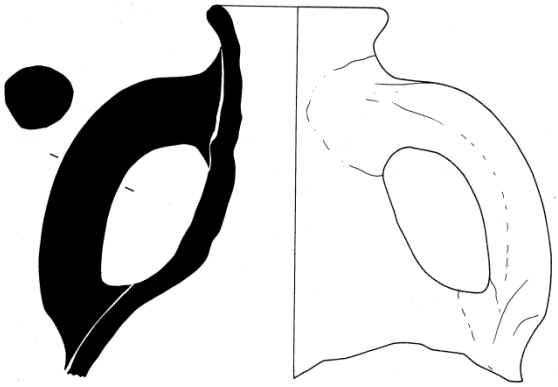


Fig. 4.53 NE Sicilian type 2 from Ostia (redrawn after Ostia IV, pl. XXV, Fig. 166).

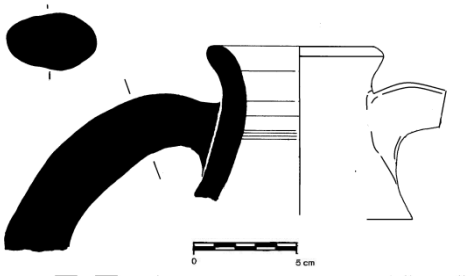


Fig. 4.54 NE Sicilian type 2 from Termini Imerese (redrawn after Belvedere *et al.* 1993, 164, no. 151)

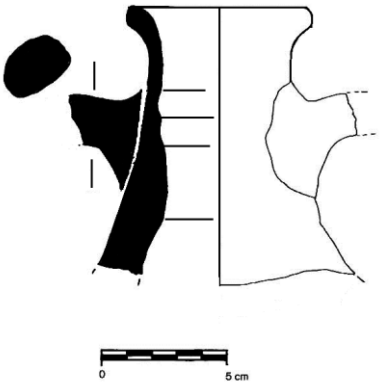


Fig. 4.55 NE Sicilian type 2 produced at Capo d'Orlando kiln (redrawn after Spigo, Ollà and Capelli 2006, 456, Fig. 4, no. 6)

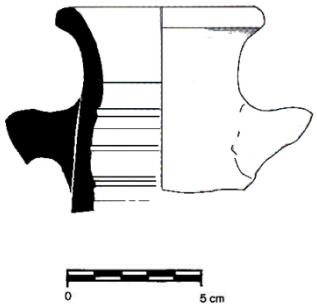


Fig.4.56 NE Sicilian type 2 produced at Caronia Marina workshop (redrawn after Bonanno 2007, Fig. 3, no. 1.)

Chronology and distribution

This type is attested in Sabratha in layers dated to between *c.* AD 300–*c.* AD 450[749] (Fig. 4.57). In recent years, similar containers have been found in several Late Antique Sicilian contexts. In the literature these forms are listed with different names: Ostia IV, 166; Ostia I, 455 type or 'Termini Imerese types 151–354'. They have been recovered mainly along the north coast (with the exception of the Palermo area and its hinterland) and on the island of Lipari (Fig. 4.58).[750] Similar types are also attested in several Late Roman contexts in Rome.[751] In particular, in the *c.* AD 450–475 layers of the North eastern slopes of the Palatine Hill this type is the most commonly attested of the amphorae produced in north eastern Sicily.[752]

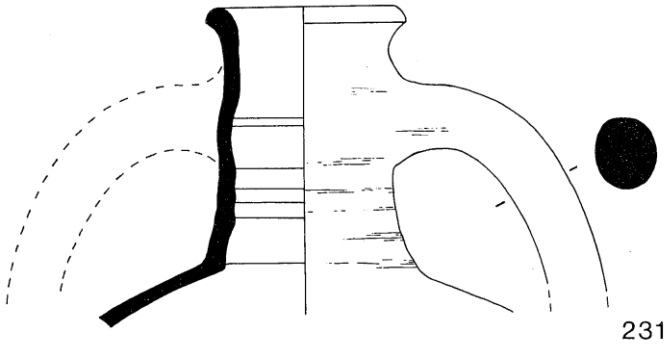


Fig.4.57 NE Sicilian type 2 from Sabratha
(Dore and Keay 1989, 64, Fig. 13, no. 231)

[749] Dore and Keay 1989, 64, Fig. 13, 231, type 22 which mistakenly also includes the type Palatine East 1(see Fig. 13, 232–233).
[750] Messina 2000, 116, pl. II, nos. 1–3; pl. III, no. 1; pl. IV, no. 1.
[751] From the sanctuary of Magna Mater and from published and unpublished contexts of the north eastern slopes of the Palatine Hill, Panella *et al.* 2010, 58.
[752] Casalini and Crespi 2010, 102, Fig. 1, 10–11: Termini Imerese, no. 151 (From the north eastern slopes of the Palatine Hill). Thin-section analyses have confirmed their origin in an area of acid metamorphic geology (fabric 6).

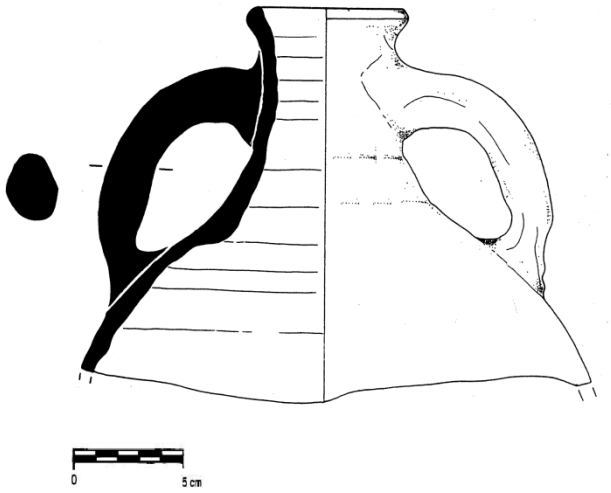


Fig.4.58 NE Sicilian type 2 from Lipari (redrawn after Messina 2000, pl. IV, no. 1).

New data

4.10.2.1. ***NE Sicilian type 2 Caronia Marina Production*** (mid-4th century AD**)**

The amphora sherd published in the Termini Imerese publication and listed as no. 151 (Fig. 4.54 and Plate XXV, no. 1) was analysed as part of the CASR project. The results indicated that the amphora was manufactured in the area of Caronia Marina (Fabric 4.1). Specifically, the sherd presents close similarities with reference sample SA 122 (Plate XXV, no. 2) certainly produced in the area of Caronia Marina (district of Pantano/fabric of reference). The outcomes of the thin-section analyses are particularly important in this instance because they shed light on the regional distribution of the products of the Caronia Marina workshop. Overseas an amphora sherd found in the mid 4th-century level in the Thermes du Levant SA 62 indicates an origin in the vicinity of Caronia Marina. The record suggests the full consolidation of the long-scale trade of Caronia Marina containers around the mid-4th century AD (see also below).

4.10.2.2. ***NE Sicilian type 2 Capo d'Orlando Production*** (4th-5th-century? AD)

Known by the archaeological data to have been produced in Capo d'Orlando (see above) this amphora type is not attested among the specimens analysed for this study.

4.10.2.3. Concluding remarks

In light of the new data from this study, we can locate the origin of the type listed as Ostia IV, 166 and Termini Imerese no. 151 in workshops on the north eastern coast of Sicily. In particular, the type previously classified as *'Termini Imerese no. 151'* was produced at the Caronia Marina workshop towards the mid-4th century AD. The production of what I here call NE Sicilian Amphora Type 2 had ceased by the end of the 5th century according to the find-spots of this class available from consumption sites.

4.10.3. NE Sicilian Amphora Type 3 (Remolà 2000 Amphora Tardia type D) (Plate XXVI)

What is here termed NE Sicilian type 3 is a previously unprovenanced amphora type whose Sicilian origin is suggested by the new analyses undertaken for this study.

This amphora is attested in the second-quarter of the 5th-century Vila-Roma dump in Tarragona city and in the sumptuous inland Vila dels Munts in the *ager Tarraconensis* at modern-day Altafulla, 12 kilometres from Tarragona.[753] The whole amphora from the villa is now stored in the Tarragona Archaeological Museum[754] (Fig. 4.59).



Figs. 4.59 NE Sicilian type 3 from Vila dels Munts Tarragona (redrawn after Remolà 2000, 241, Fig. 90, no. 4); on the right picture of the same amphora stored in the Tarragona Archaeological Museum (C. Franco).

[753] Remolà 2000, 241, figs. 71, no. 11 and 90, nos. 4–5. See also Remolà and Abelló 1989, 309, Fig. 167, inv. 8.220.

[754] MNAT, Els Munts-12= Remolà 2000, Fig. 90, 4 (Anfora Tardia Tipo D). In the Museum, the amphora is stored on the first floor, Room 5, no inventory number on display. It is indicated as an eastern Mediterranean amphora.

Other published specimens come from Rome/LungoTevere Testaccio context[755] (Fig. 4.60) and, dubiously, from the large late Roman rubbish dump in Benalúa/Alicante in Spain[756] (Fig. 4.61). For this latter example, it is difficult to confirm this attribution on the sole basis of the drawing. Furthermore, the late chronology of the Benalúa dump which spans the middle decades of the 6th century[757] seems too late for this type. Specimens of this type are not still known from Sicilian contexts.

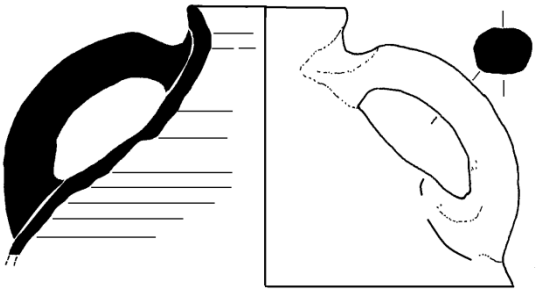


Fig. 4.60 NE Sicilian type 3 from Rome (redrawn after Incitti 1986, Fig. 313, no. 55)

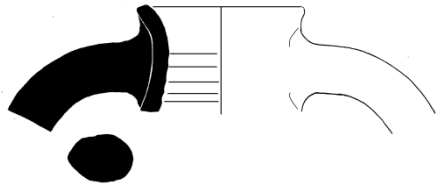


Fig. 4.61 NE Sicilian type 3? from Benalúa Spain (redrawn after Reynolds 1993, plate 95, no. 232)

New data

4.10.3.1. ***NE Sicilian type 3 Caronia Marina Production*** (mid-4th-second quarter of 5th century? AD)

One specimen (Plate XXVI, no. 1)[758] comes from the mid-4th century Thermes du Levant assemblages. Two other fragments were found in the second quarter of the 5th-century Vila-Roma dump in Tarragona (Plate XXVI, nos. 2–3).[759] The presence of mica-schist in the fabric indicates an origin in a metamorphic area. The thin-sections present close similarities with the Caronia Pantano fabric suggesting an origin in the vicinity of this workshop.

[755] Incitti 1986, Fig. 313, no. 55.
[756] Reynolds 1993, plate 95, no. 232 (context 42.2). The specimen (rim, small portion of neck and handle) was compared by Reynolds 1995, 84 to Remolà and Abelló 1989, 309, Fig. 167, inv. 8.220 on the basis of morphology and fabric description.
[757] For a review of the chronology: Reynols, Bonifay and Cau 2011, 20, context 76.
[758] SA 38: Bonifay, Capelli *et al.* 2013, cat. 3.1.
[759] SA 100: Remolà 2000, 241, Fig. 90, no. 5.

4.10.3.2. Concluding remarks

Around the mid-4th century AD the manufacturing area of Caronia Marina (district of Pantano) or a workshop nearby, started to produce a new amphora form here termed NE Sicilian type 3 which differs morphologically from the contemporaneous NE Sicilian type 2, Caronia Marina production (see above). This might suggest that different potters in the same production areas specialised in certain forms because of their slightly different forming skills, or more generally, we might assume a low standardization of manufacture characteristic of the Caronia production area. On the other hand, the capacity for commercial penetration of the wine produced in the hinterland of Caronia is abundantly clear; it primarily reached Rome, but also other important consumption sites such as Tarragona (perhaps redistributed from Ostia) and Lepcis Magna.

4.10.4. NE Sicilian Amphora Type 4 (Bonifay 1986, nos. 39–40; Termini Imerese 354 type 'con orlo ripiegato; Capo d'Orlando no. 4; Remolà 2000 Tipo tardío C) (Plate XXVII)

This amphora type, here termed NE Sicilian type 4, was first published from the Marseille/La Bourse context within the group of unprovenanced containers listed as numbers 39–40.[760] Here it occurred in a mid-5th-century context (period 1=Marseille context 1)[761] (Fig. 4.62) in association with Sicilian and Calabrian Keay 52 types (see above). This amphora form is also attested in several Sicilian contexts.

Morphologically, it presents similarities with the 'Termini Imerese no. 354 con orlo ripiegato' (Fig. 4.63) first published from the aforementioned Late Roman layers of Termini Imerese.[762] Similarities can also be established with a container found in the Capo d'Orlando area listed as Capo d'Orlando no. 4[763] (Fig. 4.64) and attributed to local production.[764]

Comparable containers were found in the cemetery of the city of Alesa/*Halaesa* (Fig. I, Area 1) — modern day Castel di Tusa 25 kilometres from Caronia Marina — in use from the 4th to the first half of the 6th century AD. The secondary use of these

[760] Bonifay 1986, 286, nos. 39–40; Bonifay and Villedieu 1989, Fig. 14.18.
[761] For an updated review of the chronology of this large deposit see Reynolds, Bonifay and Cau 2011, in partic. 19, context 42.
[762] Belvedere *et al.* 1993, 83, Fig. 354. See also Belvedere *et al.* 1993, 76, no. 205 with the same handle and body profile but slightly smaller rim.
[763] Spigo, Ollà and Capelli 2006, 456, Fig. 4, no. 4.
[764] This suggestion is only put forward by the excavators and it is not corroborated by thin-sections analyses carried out on samples certainly belonging to this amphora type.

amphorae as burial containers for infants is attested in seven cases.[765] No petrographic analyses have hitherto been carried out on these specimens. The specimens present rubefaction and some manufacturing defects which according to the excavators might indicate their production in the vicinity of Alesa. Aside from this fact, which in itself does not necessarily indicate local production, the combination of morphological features and the manufacture of the containers suggests their production among the North eastern Sicilian types (see below on manufacturing technique).

Other morphological similarities can be noted with a series of amphorae found outside Sicily, in the second quarter/mid-5th-century contexts in Tarragona classified by Remolà as 'Tipo tardío C'[766] (Fig. 4.65). This type is attested — always in very low proportions — in the Tarragona Vila-Roma dump which I was able to study and in other mid/late 5th–century contexts in Tarragona.[767]

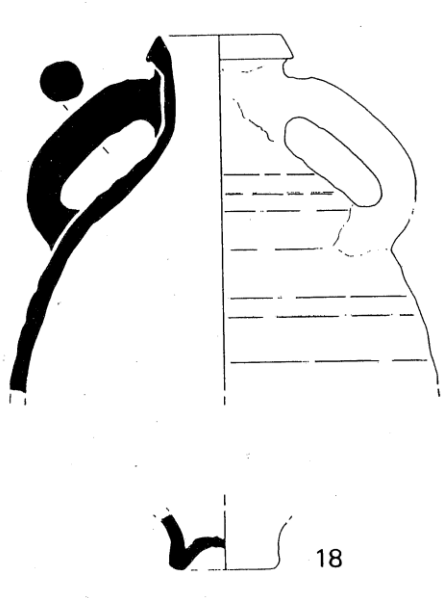


Fig. 4.62 NE Sicilian type 4 from Marseille/La Bourse (Bonifay 1986, 286, nos. 39–40).

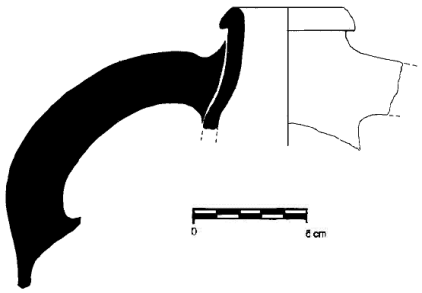


Fig. 4.63 NE Sicilian type 4 from Termini Imerese (redrawn after Belvedere *et al.* 1993, 83, Fig. 354).

[765] Scibona and Tigano 2009, 182, Fig. 18.
[766] In particular, Remolà 2000, 238, Fig. 90, nos. 1–3. See also Remolà and Abelló 1989, 309, Fig. 167, inv. 8.216.
[767] Remolà 2000, 238.

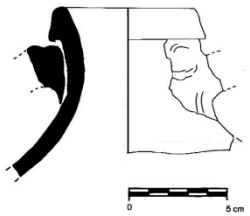


Fig. 4.64 NE Sicilian type 4 produced in Capo d'Orlando (redrawn after Spigo, Ollà and Capelli 2006, 456, Fig. 4, no. 4).

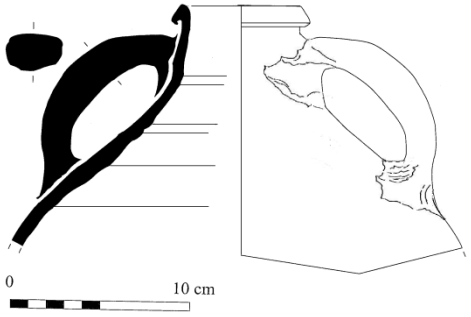


Fig. 4.65 NE Sicilian type 4 from Tarragona (redrawn after Remolà 2000, 238, Fig. 90, no. 1).

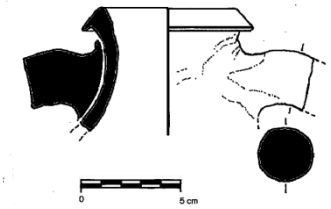


Fig. 4.66 Probable NE Sicilian type 4 from Rome/Lungotevere Testaccio (Incitti 1986, Fig. 314, no. 59).

Chronology and distribution

Precise chronological indications from several assemblages (Termini Imerese; Marseille/La Bourse; Rome; Tarragona/Vila-Roma dump)[768] show that the NE Sicilian type 4 was produced from around the mid-5th century onwards, at a later time than the NE Sicilian type 3.

Looking at the distribution pattern, it is interesting to note the association of the NE Type 3 (Fig. 4.60 above) and NE Type 4 (Fig. 4. 66) in the same Lungo Tevere Testaccio (*Porticus Aemilia*) context in Rome.[769] The evidence from this context is particularly significant for its chronological and economic implications. In the *Porticus Aemilia* the two amphora forms, among the unprovenanced and unidentified types, were recovered from different archaeological layers. The variant with a simple rim —

[768] Marseille/La Bourse (Bonifay 1986); Rome/Lungotevere Testaccio (Incitti 1986, 90, Fig. 314, no. 59); Rome/north eastern slopes of the Palatine (Casalini and Crespi 2010, 102); Tarragona/Vila-Roma dump (Remolà 2000).
[769] Incitti 1986, Fig. 314, no. 59.

corresponding here to NE Sicilian type 3 (at least 4 specimens) — were found in the layers of around the end of the 4th century, while the variant with a triangular rim — here NE Sicilian type 4 — characterized by the so-called '*orlo a becco'*, is attested from the mid-5th century layers, in perfect analogy with the Marseille/La Bourse context where the NE Sicilian type 4 is listed under no. 39–40.

New data

4.10.4.1. ***NE Sicilian Type 4 Caronia Marina Production*** (mid/second half of the 5th century? AD)

The fragments found in the mid-5th-century AD context in Marseille/La Bourse listed as Bonifay 1986, no. 39–40 were analysed for this study (Plate XVII, nos. 1–3).[770] They belong to a homogenous fabric group presenting close similarities with the fabric samples from the Caronia Marina production site (Chapter 3, section 3.6.4, Fabric 4.1). In particular close similarities have been established with the fabric associated with the NE Sicilian type 1, Caronia production (see above). An amphora base (Plate XVII, no. 4) from the late 4th-/mid-5th-century area of the Theatre in Arles has hypothetically been assigned to the same type corroborated by thin-section analysis, which indicates an origin in the Caronia Pantano area.[771]

The general shape of the NE Sicilian Type 4, the profile and position of the handles, and the small ringed bottom are very similar to the NE Sicilian Type 3 (see above). The only major difference is in the rim profile, slightly triangular and everted in Type 4, and simpler in Type 3.

[770] Marseille, La Bourse: Bonifay 1986, Fig. 9, no. 39; Bonifay 1986, Fig. 9, no. 40, and another fragment of this type (as type no. 40 not drawn).
[771] SA 48. In particular compared to thin-section no. 7291 (Cabella, Capelli and Piazza 2009, 59, Caronia local group CP1.1).

4.10.4.2. Concluding Remarks

The composition of the fabric of the specimens analysed for this study seems to suggest an exclusive manufacture of the NE Sicilian type 4 in Caronia Marina (Pantano workshop). The production of this type in Caronia is only corroborated by these new analyses: in the published data amphora wasters of a similar shape are not known from the Caronia area.

On the other hand, given the limited number of specimens of this type analysed for this study we should not completely rule out the possibility that the same amphora model was produced in more kilns, not yet located archaeologically. The discovery of similar amphora containers in other settlements along the north eastern coast (Fig. I, Area 1), such as Castel di Tusa and especially the production centre of Capo d'Orlando leaves open the possibility that the same form was produced at multiple production sites as already seen for other types (see above).

Overall, we have confirmation of the important role of the Caronia Marina workshop and the longevity of its amphora production. As a final note, we see the tendency of this specific workshop to adopt several different amphora shapes over time.

4.10.5. North Eastern Sicilian Amphora Type 5 (=Bonifay 1986, no. 41) (second half/last quarter of the 5th century AD)

This amphora was published among the amphorae of unknown origin from the mid-5th-century context of Marseille/La Bourse[772] (Fig. 4.67).

A similar amphora specimen from the *c.* AD 450–475 context of the North eastern slopes of the Palatine in Rome[773] (Fig. 4.68) has been assigned to north eastern Sicily on the basis of the petrography.[774]

A similar amphora comes from the mid-5th-century layers of Lungo Tevere Testaccio[775] (Fig. 4.69**)** and was found with other Sicilian containers, such as the NE Sicilian Type 3 and NE Sicilian Type 4 (see above).

[772] Bonifay 1986, 286, Fig. 9, no. 41 (rim diameter 5.3 cm).
[773] Casalini and Crespi 2010, 104, Fig. 2, 11. For the context chronology: Panella *et al.* 2010.
[774] The thin-section analysis performed showed fragments of metamorphic quartzite, gneiss and schistose rocks: Casalini and Crespi 2010, 108, fabric 6, Fig. 5a.
[775] Incitti 1986, Fig. 314, no. 60.

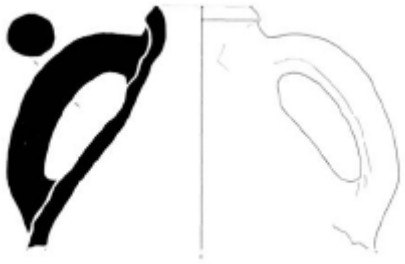


Fig. 4.67 NE Sicilian type 3 from Marseille/La Bourse (Bonifay 1986, 286, Fig. 9, no. 41)

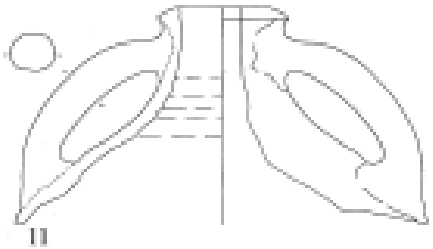


Fig. 4.68 Amphora from North Eastern slopes of the Palatine in Rome (Casalini and Crespi 2010, 104, Fig. 2, 11)

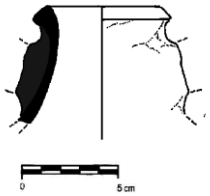


Fig. 4.69 Amphora from Lungotevere Testaccio in Rome (Incitti 1986, Fig. 314, no. 60).

The published evidence from the 5th-century Lungo Tevere Testaccio context shows that Rome was the major market for the numerous amphora classes originating along the north eastern coast of Sicily. The pattern of association in the contemporary context of Marseille/La Bourse, where the same amphora types are attested, depends in my opinion on trade with Ostia/Rome, rather than directly with Sicily.

4.10.6. North Eastern Sicilian Amphora Type 6? (Remolà 2000 Tipo tardío E) AD 425–450? (Plate XXVIII)

This previously unprovenanced amphora type was first isolated in the AD 425–450 dump of Vila-Roma in Tarragona, where it is classified as Ánfora tardía Tipo E.[776] (see Plate XXVIII, no. s. 1–2). Its small size might suggest that it was a wine container. Tentatively, and mainly on the basis of the fabric, we suggest that this type originated in north eastern Sicily. Further research on Sicilian contexts in this area might confirm this hypothesis.

[776] Remolà 2000, 241, Fig. 90, nos. 6–8. Remolà and Abelló 1989, 310, Fig. 168, inv. 8.225.

New data

4.10.6.1. ***NE Sicilian type 6? from an unknown workshop*** (mid-5th century AD?)

Two amphora sherds (Plate XXVIII, no. s. 1–2)[777] from the *c.* AD 425 Vila-Roma in Tarragona were analysed. In thin-sections the fabrics of the two specimens are comparable with each other. Both present a micaceous fabric with sparse to frequent colourless grains of quartz, quartzarenite and metamorphic material (See Chapter 3, section 3.6.4, Fabric sub-group 4. 2).

The fabric of the samples attributed to this type originates in an area of acid metamorphic geology. It is slightly different from the fabric associated with the Capo d'Orlando kiln and presents more similarities with the fabric associated with the Caronia Marina workshop. The limited geographical distribution of this type does not help to narrow down its area of origin, its chronology and pattern of distribution. With these minimal data the most plausible candidate for its production site is a (small) production area on the north eastern coast of Sicily. The association in the same dump with the contemporary NE Sicilian Type 3 and NE Sicilian Type 5 from the same geological area may support the existence of good connections between the smaller and larger production centres along Sicily's Tyrrhenian coast and a well-organised overseas distribution network of goods.

4.10.7. General Concluding Remarks on North Eastern Sicilian Amphora *Types*

Overall the specimens belonging to this group are represented by 22 specimens out of 178 (12.4%). The manufacturing centres of the 1st century AD in this area of Sicily can be hypothesized only on the basis of the literary sources (see Chapter 2 and 5); nothing is known of the productions of the 2nd century either from the sources or from archaeological data. The data from this study show that from the 3rd century onwards several workshops along the NE coast of Sicily produced and exported similar flat-bottomed types within Sicily and mainly to Rome. During the 4th century AD the wider picture shows a larger-scale export of containers overseas, especially those fired at the

[777] SA 98: Remolà 2000, Fig. 90.6; SA 99: Remolà 2000, Fig. 90.7.

Caronia Pantano workshop which certainly reached Tarragona, Lepcis Magna and Marseille.

Overall, the new finds show for the first time the long-distance exchange of this north eastern Sicilian wine container beyond the primary market of Rome, to other important harbour cities which were key points for the redistribution of commodities and goods delivered from all over the Mediterranean.

In the Late Roman period the amphora production of this geographic sub-*facies* differs from other contemporary Sicilian amphora productions. The Capo d'Orlando locally produced amphorae and cooking pots are characterized by the presence of a thin layer of liquid clay passed over the external surface with a stick (*stecca*) which gives a different colour than in the inside and a particular effect termed 'a lisca di pesce'/fishbone pattern in the Italian literature.[778] Between the 4th and the 5th century AD, the *NE Amphora Types* produced at Caronia Marina and other still unknown workshops generally share instead a low standardization of production and careless manufacture, evident for example in the rough way in which the handles are attached to the neck, with a paddle of clay and often at different heights. The containers share a similar fairly rough manufacturing technique (sign of low quality manufacture?), low standardization in the manufacture of the rim, the presence of rilling on the exterior; often the artefacts have a greyish surface, perhaps due to firing conditions. This is a picture which differs from the more standardized high quality productions of the same period in the Naxos area and Catania (see above), and is more reminiscent of the Late Roman and Vandal amphora productions, almost all unpublished, which are emerging in the region of Agrigento.[779] In this sub-area (Fig. I, Area 7) there was a fragmentation of production areas which produced containers, but also wares and tiles, destined for local consumption (see below).

This study has also made it clear that the large group of 'Termini Imerese 151–354' amphora types is composed of containers which differ in morphology, fabrics and origin. The form belonging to 'Termini Imerese type no. 151' (here NE Type 2) was manufactured in the Caronia workshop; the form belonging to 'Termini Imerese type no. 354' (here NE Type 4) was produced at two different locations: Capo d'Orlando and Caronia. Other amphora forms published in the Termini Imerese publication and

[778] Spigo, Ollà and Capelli 2006, 455.
[779] Rizzo *et al.* 2014.

connected by the excavators to this group[780] may have been produced in the western and central area of Sicily as suggested by their petrological components.[781]

4.10.7.1. Pattern of Production in the North Eastern Sicilian Area as Suggested by Amphora Typology and Manufacture

This study clearly indicates the coexistence of a *plethora* of manufacturing centres located in Area 1 (see Fig. I), which between the first half of the 3rd and the late 5th century AD produced containers which were poorly standardized from a formal point of view, used to transport the wine produced in the hinterland. This unusual organizational structure of the pottery workshops may reflect the subdivided agricultural land of this part of Sicily, with completely self-sufficient small and medium-sized farms owned by farmers who directed their surplus wine into the amphora containers produced in the immediate vicinity. The larger workshops in this area had direct access to the sea and were concentrated around *vici*; others which have not yet been investigated may have belonged to villas, tenant farms or farms inhabited by *vilici*. These suggestions draw a picture of an agricultural area profoundly different from that of other parts of Sicily, such as the central area with its vast *latifundia* controlled by large *villae* (e.g. Piazza Armerina). We can thus see a viticulture able for three consecutive centuries to meet increasing outside demand, particularly from the urban market of Rome (see Chapter 7) but also elsewhere. The complete absence of epigraphic data (stamps/*tituli picti*) does not allow us to determine who was involved in activities at the kilns. We could imagine that some of the free workmen who lived in these villages or in the rural houses scattered around the countryside were employed both in agriculture and in different capacities in manufacturing activities; this might also explain the low level of formal standardization of this varied amphora group.

4.11. Unidentified Sicilian amphora types from unknown workshops in Volcanic and Metamorphic areas of Sicily

In total six specimens have been assigned to a Sicilian origin on the basis of petrography. Three specimens, generically attributed to Fabric Group 3 (see Chapetr 3,

[780] Belvedere *et al.* 1993, 224–225.
[781] Results from the CASR project, C. Capelli pers. comment.

section 3.6.4), do not match any known known workshops and specific type. The amphorae SA 7 (Plate XXIX, no. 1) (North eastern type?) and no. 2 SA 8 (Keay 52?) (Plate XXIX, no. 2) come from the Pointe de la Luque B wreck which sank off Marseille around the central decades of the 4th century AD (*terminus post quem*: AD 333–335 based on stamps of North-African lamps).[782] The main cargo was composed of North-African cylindrical amphorae (Keay 25; Keay 27A; Africana IID) and 300 African lampes. In total three probable Sicilian amphorae were recovered, probably galley items. One of them belongs to the here termed *Naxos flat-bottomed type Form 3* and it is now stored in the Musée des Docks Romains in Marseille.[783] The base no. 3 SA 47 (Plate XXIX, no. 3) (unidentified amphora) from an unidentified amphora was found in late-4th/mid-5th century area of the Theatre in Arles.

The upper half of an amphora SA 113 (Plate XXX, no. 3) comes from a 4th-century underwater context in Arles. Its fabric with quartz, metamorphic rocks, mica schist and a volcanic plagioclase has been hypothetically attributed to the north eastern corner of Sicily.

A whole amphora SA 93 found in a mid 5th-century Valencia context has strong morphological similarity with the Carminiello type 17b?/Crypta Balbi 2, despite not showing the typical macroscopic appearance of the published amphora types.[784] For this amphora an origin in Spain has been suggested.

4.12. Some Remarks on Amphora Production in Central and Western Sicily

The data on the export of the flat-bottomed amphorae made in this large area of Sicily are still fairly scanty and suggest a picture of local distribution which differentiates it from other areas, which aimed more at the overseas/long-distance wine trade as illustrated above.

The only amphora specimens which can be attributed with certainty to central Sicily (Fig. I, Area 5) were analysed for the CASR project and come from the district of

[782] Bernard 1973, 579–585; Dovis-Vicente 2001.
[783] Pers. observation. The amphora is stored in the window 'Épave Pointe de la Luque B' and it corresponds to no. 197.
[784] Arthur 1998, 172–173, Fig. 9, no. 4. A red-brown/ red fabric, sometimes with a grey-brown core is attested for the containers associate this class.

Gerace, a few kilometres from present-day Enna.[785] The local Roman period production is corroborated by some amphora wasters (see Chapter 2, section 2.4.6.1). Morphologically, the forms seem to be an imitation or interpretation of the Catania region amphora forms (see Chapter 6). Central Sicilian fabrics do not appear in the overseas contexts analysed. These productions thus seem destined primarily for personal consumption and circulation within a small sub-regional area.

In the western area of Sicily (Fig. I, Area 7), which includes the Campanaio workshop and several small/medium (?) areas of amphora manufacture which have not yet been fully scientifically investigated within the Agrigento area (Chapter 2, section 2.4.5.2) we see a similar picture for the Late Roman period, and the Vandal period until the Early Byzantine period.[786] The production of an agricultural *surplus*, perhaps wine, was also carried through these small and heterogeneous amphorae which mainly circulated among those rural villages (*vici*) where the kilns also developed. Containers from this area of Sicily were not identified in the overseas contexts analysed but seem to circulate within their production areas or at any rate within Area 7 according to the results of the CASR project.[787]

[785] SIC 443–444. Specimens not illustrated. Pers. observation. Analyses no. 8943 and 8994 (C. Capelli pers. comment).
[786] Rizzo *et al.* 2014.
[787] In particular in the area of Agrigento (Pers. observation).

CHAPTER 5

CONTENT AND SHAPE

The question connected to the identification of the primary content of ceramic containers is, indeed, extremely important, as it has consequences with regard to the knowledge of the role of a given amphora in ancient trade and economy. There are several sources of information used to clarify the content of amphorae, among which archaeological, epigraphic and literary evidence. With regards to the flat-bottomed containers,[788] it has generally been claimed by scholars that they contained wine. In this chapter I analyse several forms of evidence with the intent to support or reject the notion that wine was the primary commodity transported in the flat-bottomed containers produced in Sicily. The forms of evidence are presented starting from the most convincing to the weakest. The second part of the chapter concentrates on investigating whether there is a connection between the flat bottoms and small capacity of the amphora and the type of content they might have contained.

5.1. THE PRIMARY CONTENT OF THE FLAT-BOTTOMED SICILIAN TYPES: FORMS OF EVIDENCE

5.1.1. The Material Evidence of Traces of Pitch on Flat-bottomed Amphorae of Certain Sicilian Origin

The personal observation that the majority of amphora bases (16 out of 28, 57%) analysed for this study still preserved more or less evident traces of a pitch lining visible to the naked eye (Fig. 5.1) is probably the most important evidence that supports the hypothesis of wine as the primary content of the Sicilian flat-bottomed containers.

[788] Flat-bottomed containers of different origin, such as from Gallia and central/northern Italy.



Fig. 5.1 Catania MR 1a from Apollonia with evident traces of pitch coating (M. Bonifay).

The presence of traces of 'resin'/pitch in Sicilian containers is also noted in the published literature.[789] These evident traces of pitch strongly indicate wine as the primary content. In general, this is not the case for amphorae carrying oil in which the pitch residues are invisible because they are absorbed into the archaeological materials.[790]

The traces of resin and/or pitch used in Roman times could be related to the use of linings that would waterproof the containers[791] (such as amphorae, barrels and *dolia*) and/or give extra flavour to the liquid.[792] Amongst the most appreciated resins in Roman times was the *pix bruttia* produced in the present-day region of Calabria,[793] and particularly used to line jars and amphorae because it would interfere with the taste of wine.[794]

5.1.2. The General Amphorae Morphology: Mouth, Neck And Base

As a packaging container used mainly for liquids and food, the morphological properties of amphorae were tailored to meet specific functional requirements and for

[789] See for example the traces of pitch found in some specimens of the amphorae manufactured in the Naxos workshop, Lentini 2001, 20–21.
[790] See on this last point the considerations expressed in Garnier *et al.* 2011.
[791] Colum, De Re Rustica, 12.18.5.
[792] Plin., Nat. Hist., XIV, 124. '*Ratio autem condiendi musta in primo fervore, qui novem diebus cum plurimum peragitur, adspersu picis* [...]'. 'The method of seasoning wine is to sprinkle the must with pitch during its first fermentation, which is completed in nine days at most' [translated by Rackham 1968].
[793] Plin., *Nat. Hist.*, XIV, 127. '*Pix in Italia ad vasa vino condendo maxime probatur Bruttia; fit e piceae resina*'. 'The pitch most highly esteemed in Italy for vessels intended for storing wine is that which come from the Brutii, it is made from the resin of the pitch-pine' [translated by Rackham 1968].
[794] Dion. Halic., *Antiqu. Rom.*, lX cerp., XX ,15.

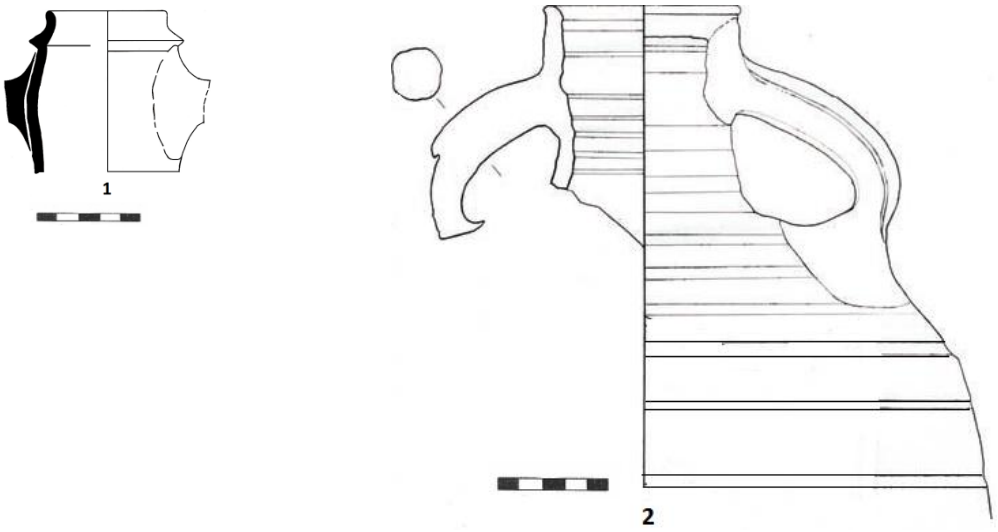
particular commodities. For example amphorae for olive oil tend to have a more bulbous shape and a wider neck than the amphorae primarily intended for wine, which tends to have a longer neck. Nevertheless, a convincing equation between amphorae and their content has yet to be achieved for most varieties as the same amphora shape may have been destined for different primary contents.

Furthermore, transport amphorae were also consumer packaging and they were manufactured in order to communicate the nature of their contents. We should imagine that buyers could to some extent determine the contents of the amphora on the basis of its shape, including the type of wine transported. Pliny states that the wine produced in the hinterland of *Tauromenium* when bottled in *lagonae*, i.e. small amphorae, was passed over for the *Mamertinum* wine which was produced near *Messana* and likely to be a better quality wine.[795] This implies that the buyers were inclined to associate a particular kind of small amphora with a specific wine.[796] The general Sicilian amphora design points towards wine as the primary product distributed in these containers on the basis of several morphological features.

5.1.2.1. *Mouth*

The Sicilian amphorae belonging to this 'large family' generally have a narrow mouth with an internal diameter between 5.5 and 7.5 cm and external between 7.5 and 9 cm (Fig. 5.2). The narrow mouth is more indicative of a wine content. The shape of the amphora had to facilitate filling but also the closure of the container. Generally, it was important for amphorae destined for fish products or olive oil for consumption to have a wider mouth that could accommodate the fish or a lid each time olive oil was removed for daily use. The only exception to a rather narrow mouth of the Sicilian containers is one amphora type produced at the S. Venera workshop with a mouth 10 cm wide (Fig. 5.3) probably carrying olive oil. In this instance the morphological differences compared with the other flat-bottomed types reflects the need to accommodate such different products.

[795] Plin., *Nat. Hist.*, XXIV, 66. *Est in eadem Sicilia et Tauromenitanis honos lagoenis pro Mamertino plerumque subditis.*
[796] On this consideration see also Peña 2007a, 65.



Figs. 5.2 and 5.3: No. 1. Representative amphora types from the kiln of S. Venera al Pozzo 1) MR 1a with internal rim diameter of 5.5 cm for wine content (redrawn from Amari 2014, Fig. 1.2) ; No. 2) Globular amphora with internal rim diameter of *c.* 10 cm intended for oil content (?) (redrawn from Amari 2008, Fig. 13).

5.1.2.2. *Long Neck*

The amphora types originating in the region of Catania have a long thin neck and thin walls. The narrow mouths reduce the surface in contact with the air, making the wine less likely to spoil. A long neck was also useful for providing space for the additional gas released by the fermentation of the wine in the container. The ancient sources provide suggestions that this was known, as in Macrobius, *Saturnalia*, 7.12.13–16 '[…] The best wine is found in the middle of a bottle. […] In wine bottles the top part is spoiled by its proximity to the air, contact with which spoils it. […] Wine is scarcely safe in a full bottle let alone when exposed to the air.'[797]

5.1.2.3. *Flat Base/Ringed Base*

The presence of a ring-footed base is characteristic of other widely exported amphorae (Fig. 5.4) that were manufactured from around 40 BC, and especially from the Augustan period, in different regions of the Roman Empire — such as the Gallic amphora series (1–9); the 1st century Pompeian flat-base Dressel 2–4; the 1st-/3rd-century Italian amphorae (Forlimpopoli A–D and Spello); the 3rd-/4th-century Empoli type, but also the Late Roman 3 amphora[798] and the Kapitän 2 amphora type that in the current literature

[797] Humphrey, Oleson and Sherwood 2009, 147–148.
[798] A series of scientific analyses on sherds of this type have shown the presence of an organic coating compatible with a wine content, Pecci, Salvini and Cantini 2010, 364.

are all thought to have transported wine as their primary content. In a few instances the nature of the content has been identified with a high degree of certainty.[799]

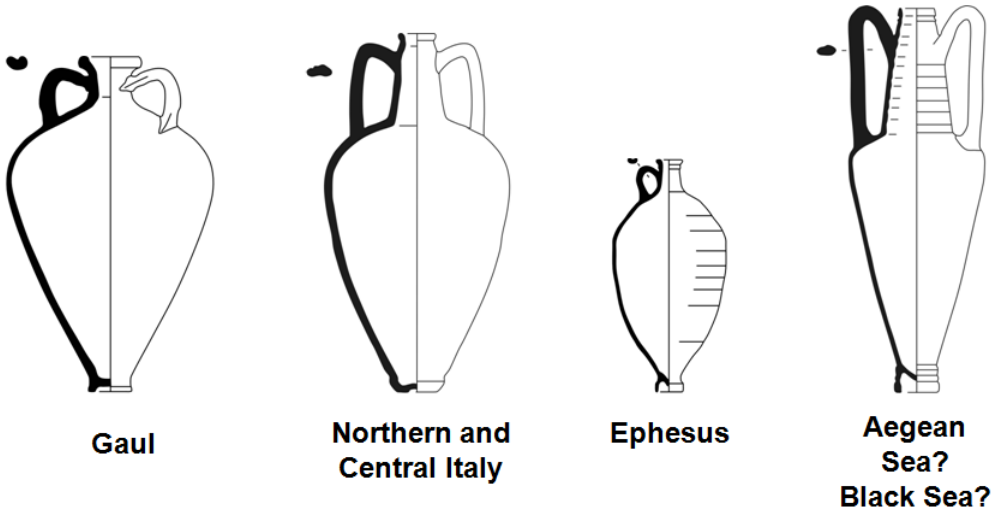


Fig. 5.4 Representative Roman period amphora types with a ringed foot which are thought to have transported wine as a primary content (C. Franco, amphorae to scale).

[799] This is true of the Gauloise type 3, 4 and 5 for which numerous tituli picti mention different types of wine and wine-related products, including amineum and picatum, Laubenheimer 2004. Furthermore, a recent gas chromotagraph analysis carried out on a specimen of a 'Empoli amphora' has confirmed that the container was used to transport wine, Pecci, Salvini and Cantini 2010.

5.1.3. Ergonomies and Amphora Capacity

Transport amphorae were used to package, store and distribute foodstuffs.[800] Their shape had to facilitate both transport by sea and post-distributional storage. The small size and relatively light weight of the Sicilian types made them ergonomically efficient in the sense that they could have been easily handled by one person, as is evident from the butler's mosaic of Dougga (Fig. 5.5).

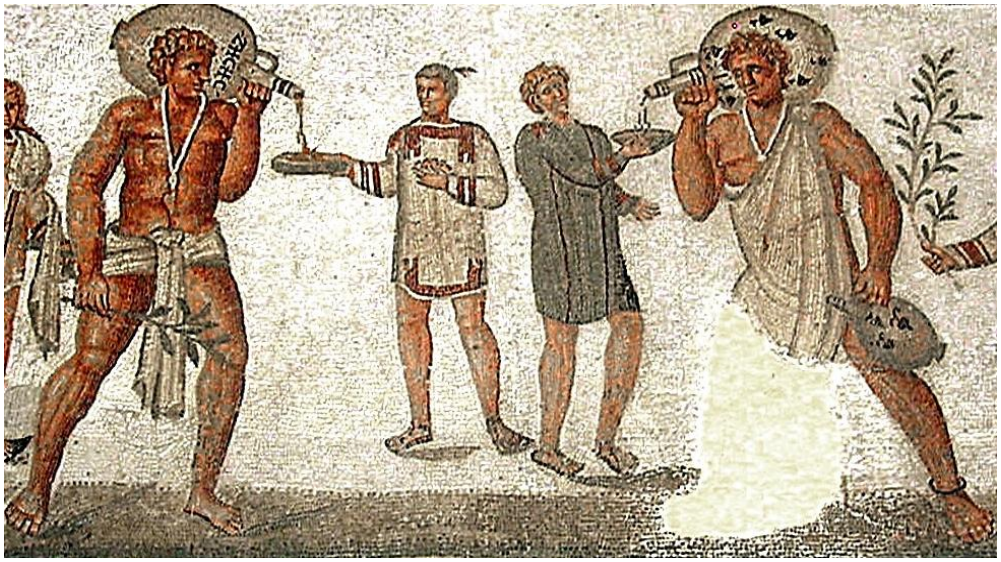


Fig. 5.5 The so-called butler's mosaic of Dougga in which is evident that the small amphorae could be handled by one person

In my opinion, the generalized adoption of the flat/ringed-foot base which allowed them to stand unsupported and their small size can be connected with their use as table-amphorae.[801] A 'table amphora' in this context is a small amphora that could be supported in an upright position by a flattened base and from which the content (wine and wine-related products) was served directly. I do not mean that the amphora was part of the table service or that it was sold empty for its value as a vessel. As can be seen from the depiction in the aforementioned mosaic in Dougga (see above, Fig. 5.5), similar ring-footed small amphorae could also be used to serve drinks (wine in this instance) directly from the container.

A significant proportion of wine amphorae were presumably opened and emptied upon reaching their destination or decanted into other smaller vessels.[802] In fact, the spike of the heavier and bigger containers was particularly suited for careful

[800] The use of amphorae as 'transport containers' is the main feature that differentiates the status of wine amphorae from the dolia which were fixed facilities, Peña 2007a, 48–49.
[801] In this sense the distinction between transport amphorae (employed for the packaging and distribution of foodstuffs) and table amphorae is meaningless.
[802] Peña 2007a, 50.

control while decanting. It served as a third handle when inverting the container to pour out its content. In the case of the Sicilian types we could speculate that their small capacity and flat base might be connected with an immediate/quick consumption of the content which was not decanted into other table vessels for consumption.

5.1.4. Stamps and Painted Inscriptions on Flat-bottomed Amphorae of Probable Sicilian Origin

Amphora stamps and *tituli picti* provide an invaluable addition to our knowledge of amphora production and transport, information on the involvement of individuals and the relation between the producer of the amphora's contents and of the vessel itself.[803] Painted inscriptions and scratched graffiti are often a sort of 'container label' aimed at giving information on the commodity conveyed in them and the reuse of amphora as packaging containers.[804]

Specifically on flat-bottomed amphorae it is worth remembering the interpretation of graffiti and *tituli picti* on some flat-bottomed containers found in the Athenian Agora. They have been interpreted as an indication of numerical values relating to the weight of the empty containers and as an indication of chronological period.[805] For these specimens a Sicilian origin is only suggested on the basis of morphological similarities with certain Sicilian containers.[806] A 1st-century AD Naxos container from Arles and a Catanian container from the Thermes du Levant in Lepcis Magna have *tituli picti*, but are unfortunately still unpublished.[807]

I do not include here the evidence of several full sized 1st-century amphorae terminating with spikes found in Pompeii which in the current literature have been interpreted as Sicilian wine containers on the basis of painted inscriptions. These containers which typologically are similar to the Dressel 26 type, number of *c.* 35–40 and carried the *titulus pictus* consisting of a letter T followed by one A or AU: TAVR and variants (such as TAR). It is generally accepted by the scholarly community that the

[803] A recent debate in Remesal- Rodríguez 2004, in partic. 349–362. While stamps applied before firing, and so these are directly related to the operators involved in the amphora production, time and place of pottery manufacture prior to filling or shipping.
[804] Peña 2007a, 99–114; 123–133.
[805] Robinson 1959, 105–106, M230: graffito read as '[weight] of pot 15 [Roman] pounds'; M232: graffito numerals read as 'The tare weight of the vessel is 16 Roman pounds, 2 ounces'; M233: *titulus pictus* read as '8th year of the indiction'. The indiction is a recurring fiscal period of 15 years, used as a chronological unit in ancient Rome.
[806] See, among others, Robinson 1959, 95 (M123), 105–106 (M230, M232).
[807] Pers. observation.

tituli refer to *vinum Tauromenitanum*,[808] largely on the basis of the above mentioned passage of Pliny the Elder. In 1990 R.J. A.Wilson published this fullsized amphora type as a 'Sicilian amphora'.[809] T. Peña in 2007 argued that the amphorae in Pompeii carrying the *titulus* TAVR and its variants represent the big amphorae for Sicilian wine, while he identified the small amphorae shape as the '*urnalia sicula'* cited in a *tabula cerata* belonging to the Murecine archive from Pompeii[810] (see below for the *tabula*).

I believe that further study is required of this intriguing topic, combined with petrographic analyses on all the amphorae which bear the TAVR found in Pompeii. The containers carrying the *vinum* from *Tauromenium* would have originated in a region near the city of Taormina, their mineralogy should therefore be comparable with an origin in a metamorphic area and they should also have (rare) volcanic inclusions. These volcanic inclusions are, in fact, part of the fabric of the flat-bottomed amphorae produced from the beginning of the 1st century in Naxos, which was the outlet of *Tauromenium* in Roman period. It should be also important to study these type of amphorae from Sicily. There is no evidence of any wasters or even fragments of the same type from Tauromenium and Naxos. In my knowledge, Dressel 26 types published from Sicilian contexts are only seven or eight in number.[811] Their distribution is quite random, suggesting that this amphorae type is not still easily identified by the excavators. One comes from a funerary context in Lipara,[812] three fragments from Caronia Marina,[813] one from the hinterland of Caltagirone,[814] one from Segersta[815], and one from Terrasini.[816] None of them bears a similar *titulus pictus* of the example in Pompeii.

5.1.5. The Evidence of Scientific Analyses

In the last 40 years the chemical analysis of residues to identify the nature and origins of organic remains in archaeological materials has developed significantly. The characterization of the original content of amphorae and other ceramic porous materials

[808] Wilson 1990, 263 and Peña 2007b. For a list of amphorae from Pompeii carrying the *titulus* TAVR, see also Muscolino 2009, tab. 3.
[809] Wilson 1990, 263, Fig. 223.
[810] *TPSulp.* 80, Peña 2007b, 251–252.
[811] Review of the Sicilian edited ceramic finds.
[812] Meligunìs II, 6, pl. CCXXVI 1b, grave no. 5.
[813] Lindaghen 2006, 111.
[814] Bonacini 2007, 45.
[815] Denaro 1997, 542, pl. XCV, XCVI, 1. The amphorae bear a stamp PTE, pl. XCVI, 3.
[816] Giustolisi 1975, 54, no. 59, inv. no. 178.

(such as floors and vats) through these analyses is now relatively widespread.[817] So far no amphorae specimens of certain Sicilian origin have been analysed using these techniques. Scientific evidence is available for a specimen of Keay 52 type, which is part of this large amphora class and was produced at the north eastern tip of Sicily and in southern Calabria. A gas chromatograph study of a foot fragment of a Keay 52 from the Schola Praeconum I deposit has suggested that the amphora analysed contained wine.[818]

5.1.6. Ancient Literary References to Wine Production in Sicily

The literary and historical evidence available testifies to the excellence and broad chronological range of the ancient Greek and Roman Sicilian wine industry. The widespread wide practice of viticulture on the island is very ancient, dating back to the settlements of the first Greek colonies, that is to say, at the end of the 8th century to the beginning of 7th century BC.

In Homer's epic tale we find the reference to a kind of vine (most probable a wild type of vine), cultivated by the Cyclopes, that produced "large bunches of grapes".

> ἮΩ κε σὺ χαίρῃς καί γὰρ Κυκλώπεσσι φέρει ζείδωρος ἄρουρα οἶνον ἐριστάφυλον,
> καί σφιν Διὸς ὄνβρος ἀέξει ἀλλά τόδ' ἀμβροσίης καί νέχταρός ἐστιν ἀπορρώξ.
>
> Hom., *Od.*, IX, 357-359.

> For the corn-growing land brings wine from large cluster of grapes for the Cyclopes, made to flourish for them by the rain from Zeus; but this <drink> is a fragment of ambrosia and nectar" [transl. by Dawe 1993].

These ancient vineyards could have been planted and cultivated in the north eastern area of Sicily where, according to the ancient identification, the Cyclopes lived[819]. The

[817] A substantial bibliography on the analyses of organic residues in amphorae is available. See for example, Rotshild-Boros 1981; Evershed 2008 and the recent studies of A. Pecci (Pecci 2007; Pecci, Salvini and Cantini 2010; Pecci *et al.* 2013).).
[818] Keay 1984, 267 with bibliography cited.
[819] For the earliest sources for this identification see Thucydides (6.2.1) and Euripides's play Cyclops. Theocritus, writing at the beginning of the 3rd century B.C., locates the Cyclops in the territory of Mount Etna, that was characterized by 'ἄμπελος ἀ γλυκύκαρπος' 'vineyards growing sweet grapes' (*Idy*., XI, 45 ff.).

wine produced from Sicilian vineyards would have typically been, according to Homer, of a lower quality than the 'sweet, unmixed, drink of the gods'[820] produced in the remote Thracian land of Ismar, which Odysseus offered to Polyphemus.[821]

5.1.6.1. *Sicily as the "Country of Wines"*

The ancient origin of wine-making in Sicily is well known by the ancient sources (see. supra Homer for example)**.**

In Strabo (*c.* 58-21 BC) one finds the term Οἰνωτρία/Oinotria 'the country of all wines' used by the geographer to refer to the western part of Calabria and to the north eastern cusp of Sicily.

> 'Οἱ γὰρ παλαιοὶ τὴν Οἰνωτρίαν ἐκάλουν Ἰταλίαν, ἀπὸ τοῦ Σικελικοῦ πορθμοῦ μέχρι τοῦ Ταραντίνου κόλπου καὶ τοῦ Ποσειδωνιάτου διήκουσαν [...]'. Strab., V 1,1.
>
> For the ancients used to call only Oenotria Italy, although it extended from the Strait of Sicily only as far as the Gulfs of Tarentum and Poseidonia [translated by Jones 1969].

The practice of viticulture on the Island was uninterruptedly recorded by ancient sources over the following centuries of the Greek classical period, when Sicily represented one of the biggest centres for wine trade amongst Greek and non-Greek (Italic, Punic, Gallic, etc.) ethnic groups. In the centuries preceding the Roman conquest the main evidence of the cultivation of wine is provided by the narration of historians and bucolic poets of Greek or Siceliote origin, who provide good descriptions of the conditions of the Sicilian countryside from the 5th century to the beginning of the 3rd century BC.[822] Given that these accounts have been summarised in a study by C. van der Mersh[823] on the production of Sicilian wine amphorae between the 4th and the 3rd

[820] '[...] ἡδύν ἀκηράσιον, θεῖον ποτόν', Hom., *Od.*, IX, 205.
[821] '[...] α'τὰρ αἴγεον ἀσκὸν ἔχον μέλανος οἴνοιο, ἡδέος, ὅν μοι δῶκε Μάρων [...]', Hom., *Od.*, IX, 196-197. I had a goat skin of dark wine, sweet, which Maron had given me [transl. by Dawe 1993].
[822] Amongst them, Hippys of Region (5th century BC) quoted by Atheneus of Naukratis (Deipn., 31b); Polykleitos of Larissa (4th century BC); Archestratos of Gela (4th century BC); Theocritus (first half of 3rd century BC); Timaeus of Tauromenium (350–250 BC). For a review, see Van der Mersch 1994, 28–29.
[823] Van der Mersch 1994, 27–30.

century BC I shall not dwell upon them in this work. A few other sources of information about Greek Sicily come from the execution of paleobotanic analyses and from some results of rural archaeology.[824]

5.1.6.2. *Representational Evidence Pertaining to Sicilian Wine Production on Sicilian Coins*

Iconographic evidence of the importance of local wine production in Sicily is only available for the Greek Archaic and Classical periods. The interesting thing is that this evidence comes from the cities located in the north eastern area of Sicily and the central Ionian coast which were both involved in Roman-period amphora manufacturing.

The best evidence consists of a series of coins minted by the Greek colonies of *Naxos* (Giardini Naxos), *Katane* (Catania), *Kalacte*, Caronia Marina) and the Sicel fortress of *Tauromenium* (Taormina). Naxos in particular provided a rich selection of wine-related coins. In around 530 BC the city of Naxos issued a series of coins carrying the head of a bearded Dionysus on the obverse, and on the reverse a bunch of grapes (Fig. 5.6). These were followed around 460 BC by a series of tetradrachms depicting a bearded Dionysos and a Silenus in the act of raising a cup of wine (Fig. 5.7). From *Katane* a series of coins is known, dating to the end of 5th century BC, carrying the head of a Silenus on the obverse, and a bunch of grapes on the reverse. *Tauromenium* preferred Dionysiac themes and the head of Apollo on its local coins (Fig. 5.8). For Caronia Marina the evidence consists on Dionysiac themes and a bunch of grapes (Fig. 5.9).



Fig. 5.6 Example of coin from Naxos showing on the obverse the head of Dionysos and on the reverse the inscription NAXION and a bunch of grapes on a stalk (IGCH 2061).

[824] Van der Mersch 1994, 94–95.



Fig. 5.7 Obverse, head of a bearded Dionysos and on the reverse the inscription NAXION and nude Silenus holding a kantharos. (Brett, Greek Coins (MFA), no. 0302).



Fig. 5.8 Coin from *Tauromenium* showing on the obverse a head of Apollo and on the reverse the inscription TAURIAN around bunch of grapes.



Fig. 5.9 Coin from *Kalacte* showing a head of Dionysos and on the reverse a bunch of grapes.

5.1.7. Roman Literary References to Wine Production in Sicily

On the production of wine in the Roman period our knowledge is mainly based on a limited selection of *excerpta* from Cato,[825] Varro,[826] Columella,[827] Pliny[828] and

[825] Cato, *Agr*. 6, 4 (on the *Murgentinum* wine, wine from Morgantina).
[826] *R. R*, I, 25 (on the different varieties of *Aminaeum* wine, possibly originated in Sicily).
[827] Colum., *De R. R*., IX, 3. (on the *Aminaeum* wine).
[828] Plin., *Nat. Hist*., XIV, 35 (on the wine from Morgantina); Plin., *Nat. Hist*., XIV, 66. (on the wine produced in the hinterland of *Messana* and called Potitian wine after the name of its original grower); Plin., *Nat. Hist*., XIV, 25 and 66 (on the wine produced by the hills of the city of *Tauromenium*).

Strabo.[829] This literary evidence deals with Sicilian wines, reflecting the rich variety of vines of distinct taste and flavor cultivated in the island. Nevertheless these ancient sources, although of a central importance, give us just some geographic definition to the distribution of vineyards on the island, while not answering questions about wine production, the social background of wine-growers, evolution of wine demand over time and changing patterns of viticulture in Sicily. Similarly the cultural behaviour connected to the use of wine and its consumption among Sicilian aristocrats in Roman Period is not emphasised by the ancient sources. It is possible to point out a striking difference with Greek Sicily in which the association of wine with aristocracy and with the 'Greek' self-identity is often mentioned by the ancient sources (since Homer's epic tale, see above) and featured in the iconography such as vase-paintings, jewelry and coins (see above).

The Roman written sources supply very little information on economic topics such as the sale, shipping, or marketing of wine and very few of them preserve information on the Sicilian wine trade. Overall, the literary corpus suggests that viticulture in Sicily prospered and was mainly concentrated in the Etna region, in the territory of Messina and along the north eastern coast of the island. It is probably no accident that these are the same areas where both archaeological data and petrography indicate evidence for the manufacture of the flat-bottomed transport containers studied in this thesis.

5.1.7.1. *The Wine from Eastern Sicily (North Eastern Tip and Central Eastern Coast of Sicily)*

The evidence provided by local amphorae findings and archaeological studies places the most important cultivation of wine in the Roman period in eastern Sicily, and, in particular, in the area of the modern-day Messina, Naxos, Taormina and Catania at the foot of the Mount Etna. The ancient sources and archaeological findings[830] as well seem to suggest the viticulture in this area of Sicily was prosperous and mainly concentrated in the Etnean area**.**

[829] Strabo., *Geogr* VI 2,3 (on the wine produced in the hinterland of Messana and called Mamertino/Μαμερτῖνον). Strab., *Geogr*., VI, 2, 3 (on the agricultural production in the proximity to Mount Etna).

[830] For example the amphora fragments marked by stamps with the name Νάξιος. R.J.A. Wilson 1999, 532–533.

5.1.7.1.1. *The Wine from Messana*

The geographer Strabo mentions the wine produced in the hinterland of Messene/Messina and called Mamertino/Μαμερτῖνον, explaining the 'historical' reasons for its peculiar denomination:

'Τοσοῦτον δ' ἐπεκράτησαν οἱ Μαμερτῖνοι παρὰ τοῖς Μεσσηνίοις, ὥστ' ἐπ' ἐκείνοις ὑπῆρξεν ἡ πόλις, καλοῦσί δέ Μαμερτίνους μᾶλλον ἅπαντες αὐτοὺς ἢ Μεσσηνίους, εὐοίνου τε σφόδρα τῆς χώρας οὔσης, οὐ Μεσσήνιον καλοῦσι τὸν οἶνον, ἀλλὰ **Μαμερτῖνον**, τοῖς ἀρίστοις ἐνάμιλλον ὄντα τῶν Ἰταλικῶν'. Strabo., VI 2,3.

The Mamertini prevailed to such an extent among the Messenii that they got control of the city; and the people are by all called Mamertini rather than Messenii; and further since the country is exceedingly productive of wine, the wine is called not Messenian, but Mamertine, and it rivals the best of the Italian wines [translated by Jones 1954].

The Mamertines were Italians who had served as mercenary troops for Agathocles of Syracuse, originally hired from Campania. After his death in 288 BC they took possession of Messina exterminating most of the population and holding the town for over 20 years. The Romans invaded Sicily during the First Punic War, after they had been called in by the Mamertines who were seeking military assistance after their defeat against Hiero ruler of Syracuse, on the river Longanus.[831]

In Pliny's passage on the list of the best Italian fine wines, he ranks the wine from *Messana*/Messina being at the fourth place.[832] Furthermore, he gives us some chronological indication concerning the consumption of the wine and its high consideration by Roman drinkers since Julius Caesar (100/101–44 BC):

Quartum curriculum publicis epulis obtinuere a Divo Iulio — is enim primus auctoritatem iis dedit, ut epistulis eius apparet — Mamertina circa Messanam in Sicilia genita. Plin., *Nat. Hist*., XIV, 66.

[831] Polyb., *Historiae*, 1.9.7-9 (on the battle of Longanus); 1.10.1-2. (on the Roman involvement).
[832] He mentioned Caecuban wine as the first, Falernum second, Alban and Surrentine in a third class. See Tchernia 1986, 345–347 and Tchernia 1997.

For public banquets the fourth place in the race has been held from the time of his late Majesty Julius Caesar onwards — for he was the first person to bring them into favour, as appears from his letter — to the Mamertine vintages grown in the neighbourhood of Messina in Sicily [translated by Rackham 1968].

Other sources record the Sicilian origin of the Mamertine Wine, as the pharmacologist and botanist Pedanius Dioscorides (40–90 AD), which refers to the Μαμερτῖνος wine in his encyclopaedia about the qualities of medical herbs:

ὁ Μαμερτῖνος, γεννωμένος δέ ἐν Σικελίᾳ. Ped., V, 6, 7–8.

The 'Mamertine' (wine), originated in Sicily (translation: C. Franco)

The rhetorician and grammarian Athenaeus of Naucratis as far as the beginning of the 3rd century AD refers to the quality and origin of Mamertine wine, which he also considers produced in Sicily:

Ὁ δὲ Μαμερτῖνος ἔξω μὲν τῆς Ἰταλίας γίνεται, καὶ γινόμενος ἐν Σικελίᾳ καλεῖται Ἰωτάλινος. Ἡδὺς δ΄ ἐστί, κοῦφος, εὔτονος. Ath., *Deipn*., I, 27d.

Mamertine is produced outside of Italy, and when produced in Sicily is referred to as Iotaline. It is sweet, light and full-bodied [translated by Olso 2006].

5.1.7.1.2. *A less Well Known Wine from the North Eastern Tip of Sicily: The Potitian Wine*

In the course of the just cited survey/list of the best Italian wines Pliny, in book XIV, mentions another high-quality wine produced in the hinterland of *Messana*, called Potitian wine after the name of its original grower:

'*Ex his Potitiana ab auctore dicta illo cognomine, proxima Italiae laudantur praecipue*' Plin., *Nat. Hist*. XIV, 66.

Of these the Potitian, so called after the name of its original grower, is particularly highly spoken of; it grows <in the part of Sicily> nearest to Italy [translated by Rackham 1968].

It is the only remark about this type of wine cultivated probably in the north eastern tip of Sicily '*proxima Italiae'*.

5.1.7.1.3. *Wine from Catina*

In Roman times, Strabo remarks on the quality of wine from Mount Etna and the areas close to Catania, which he qualifies as ευάμπελος (of the beautiful vineyards) and χρηστόκαρπος (that produces good fruit), praising its agricultural productivity from a quantitative and qualitative point of view.[833] Strabo, in particular, finds the reason for the agricultural excellence of the north eastern area of Sicily in its proximity to Mount Etna and in the properties of volcanic ash:

Ὅταν δ', ὁ Ποσειδώνιος φησί, γίνεται τὰ περί τὸ ὄρος, κατατεφροῦται πολλῶ βάθει τά Καταναίων χωρία. Μὲν οὖν σποδός, λυπήσασα πρὸς καιρόν, εὐεργετεῖ τὴν χώραν χρόνοις ὕστερον, **εὐάμπελον** γὰρ παρέχεται καί χπηστόκαρπον, τῆς ἄλλης οὐχ ὁμοίως οὔσης εὐοίνου. Strab., *Geogr*., VI, 2, 3.

According to Poseidonius, when the mountain is in action, the fields of Catanaeans are covered with ash-dust to a great depth. Now although the ash is in affliction at the time, it benefits the country in later times, for it renders it fertile and suited to the vine, the rest of the country not being equally productive of good wine [translated by Jones 1954].

And again:

[...] ἔχειν τι οἰκείωμα πρὸς τὴν **ἄμπελον** εἰκὸς τὴν Αἰτναίαν σποδόν.
Strab., *Geogr*., VI, 2, 3–4

[833] Strabo., *Geog*., VI, 2, 3. He quotes the Greek geographer Posidonius (135–151 BC).

So the ashes of the Aetna, it is reasonable to suppose, have some quality that is peculiarly suited to the wine' [translated by Jones 1954].

Strabo thought, therefore, that the volcanic ash contained some substances which enriched and made fertile and suitable the soil for the cultivation of vineyards (εὐάμπελον γῆν). It is interesting, moreover, his parallel between the fertility of the volcano Vesuvius on the Bay of Naples and Mount Etna:[834]

Τάχα δὲ καὶ τῆς εὐκαρπίας τής κύκλῳ τοῦτ' αἴτιον, ὥσπερ ἐν τῇ Κατάνῃ, φασί, τὸ κατατεφρωθὲν μέρος ἐκ τῆς σποδοῦ τῆς ἀνενεχθείσης ὑπὸ τοῦ Αἰτναίου πυρὸς **εὐάμπελον** τήν γῆν ἐποίησεν. Strab., *Geogr*., V, 4, 8.

Perhaps, too, this is the cause of the fruitfulness of the country all around the mountain; just as Catane, it is said, that part of the country which had been covered with ash-dust from the hot ashes carried up into the air by the fire of Aetna made the land suited for the vine [translated by Jones 1969].

5.1.7.1.4. *The Wines from Tauromenium*

The *vinum Eugeneum* mentioned by Cato[835] and Pliny, instead, is characteristic of the agricultural region of *Tauromenium.* The etymology of the name of this wine, Eugeneum, seems to reflect the quality of the wine itself and has a Greek origin coming from the adjective εὐγενής, -ές; well born (literally), high in rank, or (figuratively) generous, from which the Latin ***eugeneus.***

Pliny notes the existence of this wine produced by the hills of the city of *Tauromenium*:

Eugeniam Tauromenitani colles cum generositatis cognomine misere Albano tantum agro, quoniam translata statim mutatur. Plin., *Nat. Hist*., XIV, 25.

[834] Strabo, *Geog*., V, 4.8 (ὄρος τὸ Οὐεσούιον).
[835] Cato, 6, 4 '*Qui locus vino optimus dicetur esse et ostentus soli, Aminnium minusculum et geminum eugeneum* [...]' In soil which is thought to be best adapted for grapes and which is exposed to the sun, plant the small Aminnian, the double eugeneum...' [translated by W. D. Hooper 1979].

The *eugenia*, with its name denoting high quality has been imported from the hills of Taormina to be grown only in the territory of Alba, as if transplanted elsewhere it at once degenerates [translated by Rackham 1968].

The next quote from Pliny gives an indirect indication on the practice of exporting vines from their original place of cultivation to different territories:

Namque est aliquis tantum locorum amor ut omnem in iis gloriam suam relinquant nec usquam transeant totae. Plin., *Nat. Hist*., XIV, 25.

For in fact some wines have so strong an affection for certain localities that they leave all their reputation behind there and cannot be transplanted elsewhere in their full vigor [translated by Rackham 1968].

The wine of *Tauromenium* is quoted being at the fourth place in his list of the best Italian wines:

Est in eadem Sicilia et Tauromenitanis honos lagoenis pro Mamertino plerumque subditis. Plin., *Nat. Hist*., XIV, 66.

In Sicily also is grown the Taormina vintage, which when bottled in *lagonae* is often passed off for Mamertine. [translated by Rackham 1968].

5.1.7.2. *Wine from the Northern Coast of Sicily*

The only explicit mention of wine produced along the coast of northern Sicily is made by Pliny, who mentions the existence of a sweet fortified wine coming from *Haluntium*. Pliny reports that the wine from *Haluntium* of Sicily had a totally distinctive flavour (not wine-like) that made it similar to *mulsum*, a spiced wine sweetened with honey added in just before drinking and served as an aperitif at the beginning of the meal:

Vinum omne dulce minus odoratum; quo tenuius, eo odoratius. colores vinis quattuor: albus, fulvus, sanguineus, niger. psithium et melampsithium passi genera

sunt suo sapore, non vini, Scybelites vero mulsi, in Galatia nascens, et ***Haluntium*** *in Sicilia.*

Plin., *Nat. Hist*., XIV, 80.

All sweet wine has less aroma; the thinner a wine is the more aroma it has. Wines are of four colours, white, brown, blood-red and black. Psithian and black psithian are kinds of raisin-wine with a peculiar flavour which is not that of wine: Scybelites is a kind of must (mulsum) produced in Galatia, and Aluntium another produced in Sicily. [translated by Rackham 1968].

5.1.7.3. *Wine from the South Eastern Area of Sicily*

5.1.7.3.1. *The Wine from Syracusae*

There is evidence of wine production in Syracuse from Greek Hellenistic times (4th-3rd century BC).[836] This evidence mentions the cultivation of a particular vineyard called *Byblinos*,[837] which was probably established in the colonial territory during Greek archaic times. There is, however, no known reference to this in written Roman sources. There is, therefore, a clear imbalance between the mass of information about wine produced in Messina, Taormina and Catania and the absence of reference to production from Syracuse. The latter must be considered as an *argumentum ex silentio* and must surely not induce one to assume that wine production in Roman Syracuse was irrelevant. A legendary origin has a sweet wine produced in Syracuse which took its name from the tyrant *Pollio* of Syracuse.[838] This area of Sicily nowadays has an outstanding reputation in terms of vineyards due to the production of a sweet white dessert wine named Moscato di Siracusa.

[836] For example the Hellenistic poet Archaestatos of Gela which is mentioned by Athenaeus (Ath., *Deipn*., I 31b), and Hippys of Reghion who mentions the wine called Πόλλιος/Pollios, which derived from a specific vine variety called Βιβλία/Biblia firstly cultivated in continental Greece.
[837] Ath., *Deipn*., I 29b–c.
[838] Ath.,1, 31; Eliano, *v .h*. XII, 31.

5.1.7.3.2. *The Wine from the Hinterland Between the River l'Ippari end Dirillo* (Fig. I, Area 6). *The 'Mesopotamium Wine'.*

The ancient *itineraria* identified the '*Plaga Mesopotamium'* in the Sicilian territory located between the Ippari river, on the East, and the Dirillo river on the West[839]; in today's hinterland between Gela and Camarina. A couple of *tituli picti* from Pompeii and a inscription from Carthage have been interpreted as a remind of the wine '*Mesopotamium'* which on the basis of the above mentioned itineraria was located in Sicily.[840] A new study on those incriptions could instead led to a better and more verisimilar interpretation, which could change the tradional link to this suggested wine from Camarina.

5.1.7.4. *Wine from South Western Sicily*

For the Roman period the cultivation of wine is attested in the southern coast of Sicily. Diodorus,[841] referring to the defeat of Triokalas during the Second Slave Ware (around 100–99 BC) give indication of the cultivation of wine (and olive trees) in the hinterland of the town, which the majority of the scholars have identified as the present-day Caltabellotta about 45 kilometres northwest of Agrigento.[842] Diodorus mentioned some qualities of the territory of Triokalas, such as the presence of water, the fertility of the soil and its strong defence system.

From Diodorus we know that the grreck city of *Akragas*, modern day Agrigento — in the same south area of Sicily in the 6th and 5th century BC produced and exported large quantitative of wine and olive oil to Carthage, which at the time was still not planted with such as commodities, making a large profit.[843]

'At this time, it so happened, both the city and the territory of the Acragantini enjoyed great prosperity, which I think it would not be out of place for me to describe. Their vineyards excelled in their great extent and beauty and the greater part of their

[839] Uggeri 2004, 217–221.
[840] CIL IV, 2602–3 in Pompeii has ME and MES, that was initially read as MES(ogiles); CIL VIII, 22640, 8 (from Carthage); Callender 1965, 37 (from Vindonissa). See also Wilson 1990, 191.
[841] Diod., 36, 7, 3.
[842] Giustolisi 1982.
[843] Diod., 13, 81, 4–5. Pace, arte e civilta della sicilia antica I, Milano, 1935, 340; 381, no. 2. Scramuzza 1937, 270.

territory was planted in olive-trees from which they gathered an abundant harvest and sold to Carthage.'[844]

Very little information is available on the *Inykinos* wine produced in the Sican town of *Inykos*, probably located in the Belice valley in the south western Sicily, and said to be 'of sweet taste' by Photios (8th century AD source).[845]

5.1.7.5. *The Expositio Totius Mundi et Gentium*

The *Expositio totius mundi et gentium* was written initially in Greek, sometime between 347 and 361 CE, by an anonymous author. It survives in two Latin translations, probably made at the end of the 5th or in the first half of the 6th century AD. This source quotes both the territory of the modern day Calabria and Sicily as well renowned productive which produced **'**a lot of excellent wine**'**.[846] It is the only passage in the text which mentions exports from Italy and several scholars have linked this information to the production in both region of the wine amphorae Keay 52 from the early decades of the 4th century onwards.[847]

5.1.8. Documentary Evidence

Documentary evidence (papyri, legal sources and church documents) preserves some information on Sicilian wine production, especially for the mid-5th and 6th century AD as attested from the *Registrum Epistolarum*[848] of Pope Gregory the Great (AD 590–604). The scant information on the existence of viticulture is always dealt with in the broader context of information on the management of Sicilian land, which in late antiquity was divided into *massae* and *fundi.*[849] On the other side, for the 6th century there is an almost complete lack of evidence of amphora production (see Chapter 2, section 2.8.5 on this point).

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[844] Diod, 13, 81, 4. Translated by: Diodorus of Sicily in Twelve Volumes with an English Translation by C. H. Oldfather. Vol. 4–8. Cambridge, Mass.: Harvard University Press; London: William Heinemann, Ltd. 1989.
[845] Esichio; Stephano Byzantino.
[846] Exp., 53 '*vinum multum et optimum'*; On Sicily Exp., 65 '*multa bona generat'*.
[847] For example in De Salvo 2005, 176.
[848]Gregorii I Papae, Registrum Epistolarum, MGH, Epistolae, I-II (edd. Elwald e Hartmann, Berolini 1891–1899).
[849] Different scholars have analysed agricultural subjects in Gregory's writings, such as Mazzarino 1980; Puglisi 1986; Vera 1986, 430–447; Cracco Ruggini 1982–1983, 487 ss., esp. no. 14. More recent studies in Caliri 1997 and Rizzo M. 2002.

5.1.9. Epigraphic Evidence on Wine Production in Sicily

In terms of numbers, almost all Sicilian inscriptions in Latin belong to the Imperial period, and for many it is difficult to give a more precise indication of chronology.[850] Despite the flourishing of agriculture on the island deducible from the literary evidence, there is an overall paucity of Roman-period inscriptions dealing with activities and industries connected to agriculture. These inscriptions are even more significant if considered in the context of evidence for the long-distant export of wine as attested by material culture.

For the city of Catania, which as demonstrated in this thesis was one of the most important and long-standing areas of wine production and overseas export of amphorae, the documentation provided by two inscriptions is particularly interesting. One comes from Ostia (CIL XIV 364), and seems to attest the existence of a *corpus fabrum navalium* in Catania,[851] showing the importance of the city port and its infrastructure. Another noteworthy inscription testifies to the existence of a *cuparius*, in other words a producer of barrels (CIL X 7040) which may have been employed as wine containers. Unfortunately, neither the context nor the date for this inscription are known beyond its find spot in present-day Catania.

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A series of Late Roman/Early Bizantine texts on stone for the angelic protection of crops mentioning the cultivation of vines are known from present-day areas of Comiso,[852] Noto and Modica in south eastern Sicily.[853]

[850] See on this point Bivona 1984, 25 and more recently Prag 2002 with a useful bibliography of the publications employed in collating the data of Sicilian inscriptions.
[851] CIL XIV 364. *[D.] M. / [C. Granio] C.f.Quir. Maturo / [decurioni et II]viro Ostiensium /…[corp]oris mensorum Ost/[iensium]…rum patrono corp(oris) / [curatorum n]avium marinarum / [et navium a]mnalium Ostiens/[ium dendr]ophorum Ostiens/[ium]…lium Ostiensium / …atinensium*.
[852] Manganaro 1994, 497–498, figs. 12–13 a–b.
[853] Bevilacqua and Giannobile 2000 with bibliography cited. The texts are dated between the 5th and the 6th century AD.

From Akre, present-day Palazzolo Acreide, comes a reference to a ὑλιστρίον, interpreted as a press in which grapes were pressed and the must fermented, or the place where wine was filtered.[854]

Another inscription of the 5th century AD comes from Aguglia,[855] in the territory of present-day Noto, and refers to a *ἀνπ <π> ελοσεργονίτα interpreted as a viticulturist[856] or contractor of vineyards.[857] This latter evidence testifies to the presence of vineyards and the production of wine in a part of Sicily where the production of amphorae is not known, nor expressly mentioned in the classical sources. The lack of kiln sites may suggest that the wine in this area could have been transported in containers, such as barrels or skins, which are not preserverved in the archaeological evidence. This reminds us that a holistic vision of the ancient world is needed to draw plausible historical and economic conclusions (see Chapter 8, section 8.4 on this point).

5.1.10. Representational Evidence Pertaining to the Content of Flat-Bottomed Amphorae

Iconographic evidence on the wine content of flat-bottomed containers presenting similarities with the type produced in the region of Catania (cf. Riley MR1) is available in two instances.

The so-called 'butler's mosaic' (see above, Fig. 5.5) from Dougga, in northern Tunisia, dating to the middle of the 3rd century AD, presents a drinking scene: two servants are serving two other characters (the participants at the symposium) with wine from flat-bottomed amphorae on their shoulders. The amphorae bear an inscription in ancient Greek saying *PIE* ('Drink!') — on the left amphora — and *ZHCHC* ('You will live') on the right-hand amphora which also depicts what appear to be vine leaves. The depiction of vine leaves on one flat-bottomed amphorae and one small flagon (on the flagon, see Chapter 4, section 4.9.3.1.2, Fig. 4.31 and 4.33), both carried by the slave depicted on the right-hand, makes clear the wine content of the containers. The inscription is an (abbreviated?) fortune inscription known in similar versions from several Roman period ceramic vessels and glass beakers, both in Greek letters[858] and in

[854] Pugliese Carratelli 1953; Pelagatti 1970, 436. Cracco Ruggini 1980, 56–57, no. 16.
[855] Now stored in the Archaeological Museum of Syracuse, Inv. no. 13408.
[856] Pugliese Carratelli 1953, 184–189, figs. 3–4.
[857] Manganaro 1963, 64–65.
[858] Such as 'Drink and you will live well' or 'Drink and you will live long'.

Latin.[859] Interestingly, in the mosaic, the two amphorae of identical shape carried wine of different colours. The right-hand amphora holds red wine, while the other one contains an amber liquid that can be identified as 'white wine'.[860] Similarly, the two small flat-bottomed amphorae have different decorations (specifically, only one amphora is adorned with vine leaves). One can suggest that the use of different decorations on amphorae of the same shape was aimed at indicating whether the wine they held was red or white. It is intriguing to think that Sicilian flat-bottomed containers may had *tituli picti* or even painted symbols (such as vine leaves) to indicate their content and the type of wine.

Ancient Roman sources provide a description of the 'white vines'[861] celebrating the strong yet sweet taste, which strengthened with age, and amber colour. White wine was certainly more expensive than the red table wine exported in bulk. It is difficult to say with certainty that this depiction is realistic, implying that the same amphora type could carry wine of different style or from different areas of production. Only judging from the depiction it seems that the flat-bottomed amphorae — possibly originating from Sicily — could perhaps contained both red and white wine.

A depiction of a Catania amphora type is now attested in Thessaloniki in the Early Christian wall paintings from the twin barrel-vaulted tombs in the city's East Cemetery[862] (Fig. 5.10 and 5.11). On the basis of the pictorial motifs the grave paintings have been dated in the first half of the 4th century AD. The lack of funerary inscriptions and vessels found inside the graves do not allow us to narrow down the chronological range. In the frescos the main typological features of the (Riley) MR 1a type (no. 1 in figure) , such as the high rim, the carinated shoulder, the ringed bottom and the arched handles are reproduced.[863] The suggestion that the primary content was wine is here corroborated by its representation alongside other Roman period containers though to have held wine (see above), such as Kapitän 2 amphorae (no. 2) and a one-handled version of two LR 3 amphorae (nos. 3 and 4).

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[859] For example, 'BIBE VIVAS MULTIS ANNIS' (Drink and you will live many years).

[860] On the different colour of wines see Plin., *Nat. Hist.*, XIV, 80, '*Colores vinis quattuor: albus, fulvus, sanguineus, niger'.*'Wines are of four colours, white, brown, blood-red and black' [translated by Rackham 1968].

861 On the sources Tchernia 1986, appendix 2.

862 Papanikola-Bakirtzi 2010, 274–275, Fig. 4; Pelekanidou 2005, 197–198, figs. 3–5. See also Bonifay 2010, 1036.

863Franco in Franco, Capelli and Mazou in press.



Fig. 5.10 Wall painting depicting amphorae in a cellar from a tomb in the East Cemetery of Thessaloniki depicting one MR 1a amphora (no.1), one Kapitän 2 amphora (no. 2) and two LR 3 amphorae (nos. 3 and 4). (Archaeological Museum of Thessaloniki, photograph: M. Bonifay).



Fig. 5.11, a: Wall painting depicting amphorae (MR 1a, Kapitän 2 and LR13), a metal jug and a hunting scene (running dogs, an hare and a deer)
(Archaeological Museum of Thessaloniki photograph: M. Bonifay).



Fig. 5.11, b: Recostruction drawing of the same wall painting (Papanikola and Bakirtzi 2010, Fig. 3).

The depiction of decorated metal jugs standing in small tripods, metallic chandeliers and the array of delicacies, such as salted fish and cured meats hanging on the wall of an imaginary cellar (Fig. 5.12), gives a sense of luxury**,** wealth and comfort. This reflects the idea of the material well-being of the Elysian Fields but also new Christian belief as shown by the representation in the same wall painting of a peacock and a deer which symbolically allude to Paradise and life in heaven. Overall the fascinating combination of symbolism (fruits, plants, animals) and realism (transport amphorae from different geographical areas and foodstuff) reflects the main features of the Early Christian painting style. On the basis of the pictorial motifs the grave paintings can be dated from the 3rd to the first half of the 4th century. The lack of funerary inscriptions or any vessels found inside the graves do not allow to a more detailed chronological range. On a larger scale the depiction gives an intriguing hint of the prestige of the 'exotic' Sicilian wine on wealthy tables alongside other luxury commodities. Despite the lack of published data on MR 1a find-spots from Thessaloniki it is possible to infer that the amphorae were traded in this major Mediterranean port and they were known to the city's wealthiest family for which the tomb's paintings must have been commissioned.



Fig. 5.12 East Cemetery of Thessaloniki, wall painting depicting salted fish and cured meats hanging on the wall (Archaeological Museum of Thessaloniki, photograph: M. Bonifay).

5.1.11. Geography/Locations

Sicily has a favourable combination of geographical position, good climate and particular pedological features which made it particularly suited for the cultivation of vines. The geographical areas most suitable for wine production are the central eastern area (calcareous soils); the central western area and south western Sicily (clayey soils); the region south of Syracuse (karst and calcareous plateau); the east coast, particularly the district of Taormina-Etna, and the low volcanic plateau in the territory of Pachino (volcanic areas).

The proximity of known Sicilian amphora kilns to the areas described in the ancient sources as wine-producing estates give some general suggestions of help in identifying the content of the amphorae produced in specific territories. The choice of locations for the cultivation of vines depended in ancient times — as it does now — upon the geological composition as well as the nature and quality of agricultural soils, which were carefully chosen and prepared for the planting of vineyards.[864] For example the volcanic zone near the city of Catania seems to be particularly well-suited to the cultivation of the vine due to the existence of sun-exposed and well-drained terraces, in

[864] Brun 2003, 31.

accordance with the advice of Virgil, that '*Apertos Bacchus amat colles*'[865]/Bacchus loves open hills. The persistence of the local wine-making tradition in the same areas – such as the Etna region; north coastal Sicily and the west (region of Agrigento) might also suggest the continuation of an established industry.

5.1.12. Concluding Remarks

While the nature of the content of Sicilian flat-bottomed amphorae cannot be demonstrated with absolute certainty until it is confirmed by analyses of the organic residue from a number of specimens, the heterogeneous evidence outlined above points to wine as the primary content of the flat-bottomed containers included in the typology and most exported overseas. The two depictions mentioned above (Fig. 5.5 and Figs. 5.10–12) suggest the high quality of the wine transported and give some information on the way these amphorae were used. Finally, it should be noted that there is an absence of specific ceramic forms related to the olive oil industry, such as *ampullae* and *unguentaria*, amongst the vessels manufactured in the same areas where flat-bottomed amphorae were made. This evidence might also support the prominence of the production of transport containers destined for wine. The only probable exceptions are the 4th/5th century AD amphora types produced at the S. Venera workshop[866] in the area of Catania (Chapter 2, Fig. 2.33) and at Campanaio in the region of Agrigento (Chapter 2, Fig. 2.43) for which an olive oil content might be possible. Neither of these amphorae travelled outside the area of manufacture. I do not want to suggest that olive oil was not widely cultivated and used in Roman Sicily,[867] simply that it was not systematically exported in ceramic vessels. Most probably other containers, such as skins ore re-used imported amphorae, were used for transporting olive oil from the estates were olives were cultivated to the nearby markets and cities.The long-distance trade connections evidenced by the flat-bottomed amphorae were directed at and limited to the more profitable high-quality wine export.

[865] Virg., *Georg*., II, 112–112.
[866] Amari 2008, figs. 13-14.
[867] See Scramuzza 1937, on literary sources on Sicilian oil production.

5.2. Some Suggestion on the Primary Content of Sicilian Flat-Bottomed Containers

Wine thus seems to be the agricultural product most likely to have represented the primary content of the flat-bottomed amphorae made on the island. The next question concerns the type of wine they contained and whether its characteristics are in any way related to the shape of the containers.

5.2.1. A Sweet Wine?

Today Sicily produces and exports a broad variety of sweet DOC wines[868] whose cultivation is concentrated in specific areas: near the island's western tip[869] (Fig. I, Area 8) and the south eastern coast[870] (Fig. I, Area 4) and on the smaller islands (Pantelleria[871] and the Aeolian Islands[872]). The introduction of these specific vines in these particular regions of Sicily is in all cases later than the Roman period.[873] The production of sweet wine in particular was introduced to the Island by the Arabs[874] who also successfully developed new techniques of irrigation[875] and cultivation such as the farming terraces in Pantelleria made of thousands of stone walls where the bunches of grapes used to made Zibibbo are left to dry.

The success of wine making and the introduction and success of new vinemaking techniques in a Muslim environment raises a few questions given a prohibition of drinking alcohol in the Islamic tradition. Beside the fact that several critical analyses of passages of the Quran have revealed that wine is also mentioned as 'good food' and the prohibition of consumption takes place only in specific contexts,[876] I would add that the period of Muslim control over the Island may have not discouraged the production and the consumption of wine. After the Muslim conquest, Sicily

[868] Controlled designation of origin.
[869] Marsala wine produced in the present province of Trapani.
[870] White wines: 'Moscato di Siracusa' produced in the province of Syracuse and 'Moscato di Noto' produced in the towns of Noto, Rosolini, Pachino and Avola within Syracuse Province.
[871] Moscato and Passito di Pantelleria, so-called 'Zibibbo wine' introduced in Pantelleria under the Arab conquest of Sicily. The name comes from the Arab word '*zibib'* that means 'grape.'
[872] 'Malvasia delle Lipari' introduced under the Arab conquest of Sicily.
[873] Barresi *et al.* 2003.
[874] The former Muslim control over the island lasted *c.* two centuries, from AD 902 until the Norman conquest which started in AD 1091. Nevertheless, Muslims were definitely expelled from the Island only after the death of Frederick II in AD 1250.
[875] It is well known, that most of the words used linked to agriculture and water sources used in the present-day Sicilian dialect derive from Arabic.
[876] See for example Kueny 2001.

witnessed a sort of mass conversion to Islam due mainly to enjoy the privileges (mainly of economic nature) which were reserved for Muslims. This period was apparently marked by a total lack of respect for the laws of the Quran as is pointed out by the 10th-century account of Sicily during the Kalbid-Fatimid dynast written by Ibn Hawqal. The writer depicts the Muslim population of Sicily as being not particularly religious, and even vicious.[877]

Turning back to Roman-period wine, the possibility that the wine contained in the amphorae, and especially those of Catania, might have been a sweet wine was suggested to me by A. Wilson. Indeed, the sweetness of some Sicilian varieties was already known to Latin authors (see above). The wine of Messina was sweet (*Mamertinum* wine), described as 'sweet, light and full-bodied'; also sweet was the less well-known '*Inykinos*' wine, perhaps made at Partinico in the Belice valley; so was the *Pollio* wine introduced by the legendary Pollis Argivo, tyrant of Syracuse. Certainly the best known of the sweet wines was produced in the hinterland of *Haluntium* — modern-day Castel di Tusa — which was like '*mulsum*', i.e. a spiced wine sweetened with honey added just before drinking and served as an aperitif at the beginning of the meal. Finally, for the island of Pantelleria Pliny and Columella describes how grapes were dried in the sun, then macerated with wine to add sugar and aroma to the wine.[878]

Although the hypothesis that there was a connection between form and the type of wine is an intriguing one, we currently lack concrete evidence in confirmation of this theory. Specifically: containers of the 1st century AD used to export the wine of *Haluntium* and Messana to which the Roman sources explicitly refer are not yet known.

It seems unlikely to me that the Mamertino wine made near Messina was bottled in the flat-bottomed containers manufactured at Naxos in the 1st century as these were used for the transportation of '*Tauromenium* wine'. Messina will certainly have had its 'own amphora shape', not necessarily flat-bottomed and not yet known from finds. Finally, as concerns the production of the flat-bottomed Catania amphorae, the sources provide no explicit mention of the sweetness of the wine from this area, making it even

[877] Ibn Hawqal translated by Michele Amari in his Storia dei Musulmani di Sicilia (History of the Muslims of Sicily, 1854. [Sicilian Muslims] 'Non usano la circoncisione, né osservano le preghiere, né pagan la limosina legale, né vanno in pellegrinaggio; appena avvien che digiunino il ramadhan e che facciano il lavacro in un sol caso. […] non essere in Palermo begli ingegni né uomini dotti, né sagaci, né religiosi, non vedersi al mondo gente meno svegliata, né più stravagante; men vaga di lodevoli azioni né più bramosa di apprendere vizi'.

[878] Plin., *Nat. Hist.*, XIV, 82; Columella, *de Re Rustica*, XII, 39, 1.

more difficult to establish a relationship between the shape and the properties of the wine it contained.

5.2.2. A Honeyed Wine?

The evidence of a trade of an '*urnalia sicula*' in Puteoli is attested from a *tabula* (wax tablet) from the business archive of the *Sulpicii*. The table *TPSulp*. 80 is dated to AD 53 (Jun 21).

Theophilus Aphrodisius fratri sal(utem)
Accipies de nave Octa amphoras vini
Sematas VI, aceti LXXVII, urn[a]lia sicula
XVI mellis (?), X m [---], am[ph]or(am) I defri=
Ti, a[am]phora(m) I s[---] VE

The containers (*urnalia*) were traded in the ship along with *amphorae* and *sematae* (half of an amphora) of wine and wine vinegar and *defrutum*.[879] Unfortunately the word after *sicula* is not entirely preserved. Camodeca translated the word as '*mellis*' suggesting that the *urnalia* from Sicily carried *mulsum*, i.e. the alcoholic beverage, not aged, composed of a mixture of wine and honey.[880] The above text refers to '*urnalis*'[881] which in Latin refers to a container with the capacity of an *urna*.[882] A urn is a Roman measure of capacity for fluids, which corresponds to half an amphora (i.e. 13.1 litres).[883] It is primarily connected to the use for water, but it also denoted a vessel for holding any other substance such as wine[884] and also solids.

In the middle of the 1st century the AD Naxos and Catania production areas were already producing the small flat-bottomed amphorae and they both reached Pompeii (see Chapter 7, Table 7.10). They both have a slightly bigger capacity (15 litres) than the 13 litres of an *urna*.

[879] See also Peña 2007b, 251–252 for the suggestion that all the amphorae cited in the text were of a Sicilian origin. He identified the different variant of the containers cited in the tabula - amphorae and sematae - in some amphora types found in Pompeii named in the current literature as Scotti Type 2020 and Dressel 26. Despite this hypothesis is interesting I think it would be more cautious to firmly establish the origin of the aforementioned type. In particular the type known as Type Scotti 2020 is of African origin (=Ostia LIX type), Michel Bonifay pers. commuication.
[880] Camodeca 1999, 184, 610 (photography and apograph).
[881] *Urnalis*, Cato., Agr. 13, 3.
[882] Dig. 33, 6, 16.
[883] Cat., *Agr*. 148, 4; Plin., *Nat. Hist*., XVII, 263; Hor. *Sat*. i, l 54.
[884] For example in Digest, XXXIII, 6 '*vinum Surrentinum in urnalibus habebat diffusum'*.

It might also be that these *urnalia* from Sicily were filled (in a secondary use) with (Sicilian) honey which was traded to the Bay of Naples area in transport jars of some types.[885] It is also worth noting that Sicilian honey was considered one of the best varieties. Honey from *Hybla* in south eastern Sicily, about 15 kilometres from Syracuse, was praised in one of Martial's epigrams.[886] The city itself no longer existed in Martial's time (the second half of the 1st century AD), so the indication of the city probably referred to a larger territory in the same geographical area of the island. It is of course possible that the honey was used in Roman Sicily to prepare *mulsum* and that this spiced wine was traded abroad. Nevertheless, I think it is risky to generalize in the attempt to establish a definite link between '*siculae urnae*' and a honeyed wine content. What is more interesting about this source is the explicit connection between the shape and capacity of the container *urnalia* and Sicily, especially in light of the archaeological data showing the production of small-capacity amphorae. In other words, *urnalia sicula* may in the 1st century have been a generic term used to designate Sicilian wine containers.

5.2.3. Low-Alcohol Wine?

Both A. Marzano[887] and J. M. Vidal[888] suggested that the lower alcohol content of the wine produced in Roman times in central Italy (Upper Tiber Valley) and its consequent easier and quicker spoiling, once opened and in contact with the air, was the reason for the adoption of the new small flat-bottomed amphora type manufactured in the same territories (so-called Spello type, Forlimpopoli types, Altotiberine types etc.). They both established a connection between the soil types and climate of the regions of central Italy that still today produce low alcoholic-gradation wines which do not age easily and need to be consumed relatively quickly once the container is open.

If it is indeed possible to suggest that the small capacity of the flat-bottomed amphorae was primarily intended for the consumption of wine within a few days[889] after opening, I find it difficult to deduce that the adoption in Roman Sicily of the Italic amphora model was connected to the feebleness and low alcohol content of the wines they contained. This also extends to the possible content of the copies of Sicilian-shape amphorae (MR 1a) which were produced both in North Africa and Germany (the latter

[885] This is the hypothesis accepted by Peña 2007a, 105.
[886] Martial, 13,105.
[887] On the hypothesis Marzano 2007, 166.
[888] Vidal 2009.
[889] 2–3 days (Marzano) or 3–5 days (Vidal).

not proper transport amphorae but jugs probably containing a liquid content such as wine as well, for both see Chapter 6).

The small Sicilian flat-bottomed amphorae were produced, among other areas, also in the volcanic soil of the territory of Catania created by several layers of lava flows. It is a complex mineral entity which differs greatly from the rest of Italy and even of Sicily. The wines produced in this area today are full-bodied wines with richly nuanced flavors.[890] These wines thus have organoleptic properties which differ — both in antiquity and the present — from the wines of central Italy. In conclusion, once again we cannot establish an explicit or universal connection between the morphology of amphorae and the type of wine.

Sicilian wines were very popular in the Roman world and were considered high quality wines. Given this, I believe that at least for the specific instance of our Sicilian amphorae I can refute the opinion of J. M. Vidal. On the basis of a passage from Juvenal[891] Vidal believes it is possible to establish a link between references to the low quality of the wines and the type of vessels used for their transport, i.e. the *lagonae* produced in the Upper Tiber Valley. According to Vidal, Juvenal reinforces the idea that Upper Tiber Valley wines were low-quality or low-priced wines, describing the poor quality of the services of a lawyer and stating that he received as payment 'several goods of little value: a rancid ham, a basket of old onions and five bottles or jars of wine brought down the Tiber'.

Although the term *lagona* may indeed refer to a type of small ceramic wine storage container[892] a series of data from inscriptions allows us to conclude that already by the Early imperial period the word *lagona* was also employed to refer to amphorae or full-size wine containers as attested by the epigraphic[893]and literary evidence. For example, when Martial praised Domitian for cleaning up Rome because he had forbidden stalls from jutting out into the streets and he had turned Rome into a tidy open market, he specifically lauded his prohibition against wine-vessels (*lagonae*) chained to

[890] Carricante and Nerello Mascalese varieties.
[891] Juv., VII, 121, *Quod uocis pretium? Siccus petasunculus et uas/pelamydum aut ueteres. Maurorum epimenia, bulbi / aut uinum Tiberi deuectum, quinque lagonae*.
[892] Tchernia 1986, 255, note 117. On the sources see Hilgers 1969, s.v. amphora, 35–36, 99–102 and lagoena, 61–65, 203–205, no. 205.
[893] As in the case of the Dressel 2 and Dressel 30 amphora types, Peña 2007a, 375, note 48.

pillars on the streets. In this context he probably used the term *lagonae* to wine jars in general.[894]

Furthermore in the specific case of Sicilian wines the small capacity of the amphorae seems to depend on the higher quality of the wine they contained in the case of similar varieties.

This can be deduced from a passage of Pliny in which it is clear that *vinum Tauromenitanum*, in other words the wine made in the hinterland of Taormina, was bottled into two different sized containers: full-size amphorae and the *lagonae*. When bottled in the *lagona* it often passed for the more expensive *Mamertinum* wine made in the area controlled by Messina and in any case in nearby areas.[895]

Est in eadem Sicilia et Tauromenitatis
Honos lagonis pro Mamertiino plerumque subditis (Plin., *Nat. Hist.*, XIV, 66)

To conclude, the term *lagona*, when used to mean a small wine amphora, in explicit reference to Sicilian wine refers to a container which held the best quality wine, in direct contrast to the theory proposed for the amphorae produced in the Upper Tiber Valley.

A continuity of the link between the term '*lagona'* and Sicily can be suggested after the end of the Roman period. In the 7th century Isidore of Seville writing his *Etymologiae*, which was a sort of summary of the 'classic' Roman period knowledge written from a series of previous compendia and handbooks, makes a sort of explanation of the linguistic links between the Greek and the Latin terms used to refer to containers for liquid ('wine and water vessels').

DE VASIS VINARIIS ET AQVUARIIS.

Oenophorum vas ferens vinum; οἶνος enim vinum est.
De quo est illud (Lucil. 139):
Vertitur oenophori fundus, sententia nobis.
Flascae ex Graeco vocabulo dictae. Haec pro vehendis ac
recondendis fialis primum factae sunt, ude et nuncupatae;
postea in usum vini trasierunt, manente Graeco vocabulo
unde sumpserunt initium. **Lagoena** et **Sicula** Graeca nomina sunt,

[894] Martial, Epigramm. 7.32.7: '*Nulla catenatis pila est praecincta lagonis'*/No column is chained with (wine) containers now (writer translation).
[895] Plin., *Nat. Hist.*, XIV, 66 and XXIII, 33. On the phenomenon of the adulteration of the origin of wines and imitations in the Roman period see also Tchernia 1980, 309.

inflexa ex parte ut fierent Latina. Illi enim **λάγηνος** ,
nos lagoena; illi **Σικελή** nos **Siculam** dicimus.

In particular: '*Lagoena* and *Sicula* are Greek names. When they are inflected they became latin (words): they (i.e. the Greek speaking people) say *lagenos*; we (say) *lagoena*; they say *sikele*, we say *sicula'*. Despite this laconic mention, I believe that Isidor is displaying the coeval use of the 'the Sicilian jug/flagon for wine', that had become a paradigm for a 'small-size amphora for wine', beyond the origin of the container. It shows the continuity, the long-duration and the impact that this specifically Sicilian form intended for wine had for centuries in the Mediterranean.

5.2.4. A Young Wine?

The Greek physician Galen of Pergamum writing in the second half or the 2nd century AD on the effect of wine according to their age stated that 'certain wines which are harmful when are young, are beneficial for the stomach when they age'.[896] To prove this point he recalls the example of the Sicilian variety of the Aminaios wine. Following the first period of Greek colonisation, the cultivation of the wine *Aminaios* — mentioned by Pliny among 'the most renowned autochthonous wines of Italy'[897] — was established in Sicily. The community of the AMI(NAIOI) lived, according to tradition, in southern Italy, in the area between Sybaris-Laos and Posidonia, all cities of Greek origin.[898] Yet, the term '*Aminaeum*' in Roman custom referred to a series of related vineyards, the majority of which were of white grapes. The best quality was cultivated in Campania, whereas a more standard type was produced in *Bruttium* and in Sicily.[899] High quality wine of this type was exported widely in the Mediterranean Basin.[900] The cultivation of this grape variety was widespread in Italy at the time of Cato[901] and it was highly praised by many ancient sources which made frequent mention of it, ranking it as one of the best wines in the Roman Period.

[896] Writer translation. See Kuhn, X, 834-835 (Gal, *De methodo medendi* X, 835); Tchernia 1986, 279; Wilson 1990, 263–264.
[897] Plin., *Nat. Hist*., XIV, 25 '*Et hactenus potissima nobilitas datur peculiaribus atque vernaculis Italiae* […]'. […] vines peculiar and indigenous to Italy [translated by Rackham 1968].
[898] Vandermersh 1994, 26, with bibliography.
[899] On this type of vineyards see also Tchernia 1986, 185–186; 197–201; 350–353; Peña 1999, 47, no. 151.
[900] There are epigraphic records on the 'Aminaean' wine exported to Egypt dated back to the 1st and 2nd century A.D., Rathbone, 1983, 81–98.
[901] Cato; *Agr*. 6,4.

Turning back to Galen, he stated that Aminaios 'when bottled in *megala kerameia* (i.e. full-sized amphorae) is harmless, while when bottled in *micra lagynia* (i.e. small capacity wine container) causes stomach-ache and migraine'.

This is a very important literary source for at least two reasons. Firstly, Galen suggests that the wine transported in the smaller amphorae did not age a lot when it was first bottled; while when it was packaged in the bigger amphorae it had aged. Secondly, it also implies that at the time he wrote the full-size wine amphorae were in existence, however, they have at present not yet been identified either in the archaeological material or from other sources.

In Rome the aristocrats appreciated old wine and considered the taste of aged wine more desirable than that of young wine.[902] We might conclude therefore that in this instance the full-size amphorae were carrying a more expensive matured wine. Unfortunately, we do not have any reliable information from the ancient sources on the area/areas of Sicily where the famous Aminaios vine variety was cultivated. Nevertheless we also cannot exclude that this particular kind of grape was cultivated in the hinterland of Catania or even Naxos from where the small-amphorae have been now identified with certainty.

[902] Athen., I, 26c–27d in which he quotes Galen for the Italian wine ageing ability. See also Brun 2003, 84–87 on the Roman period techniques to facilitate the aging of wines.

5.2.5. Concluding Remarks

Romans certainly differentiated numerous wines and recognized that their quality was highly variable. I tried to investigate whether it is possible to ascertain a connection between the quality of the wine and the adoption of the amphorae shape. The different sources of information which I have taken into account, such as literary sources, previous studies and interesting new suggestions, do not in my opinion reinforce the argument that there was a specific connection between the flat-bottomed shape and the quality of the wine. Different qualities of wines, such as the low quality wines from central Italy with lesser alcoholic content which could last less long without deterioration and the more expensive *Mamertinum* wine were in fact bottled in the same small amphora model.

In Chapter 1 I have demonstrated how in my opinion the adoption of the flat-bottomed shape between the end of the 1st century BC/beginning of the 1st century AD depended on the need for standardization, both in size and shape, which was one of the consequences of a mature phase of Romanization in Sicily. The trade of the commodity transported in those standardized 'Roman shape amphorae' is the result of a full involvement of Sicilian *possessores* and wine traders in the free-market Roman long-distant trade.

Nevertheless, it is probable that the general shape of the Sicilian containers, which I defined as a 'Sicilian morphological koiné' (see Chapter 4), i.e. the typical handles, the long neck and the profile of the rim, might have contributed to help the buyers to associate a particular kind of amphora with a specific wine[903] or territory.[904.]

In terms of general quality of the content, the sources point mainly toward a good quality wine. Producing quality wine generally demands greater financial resources than cheaper and more voluminous production. A. Tchernia[905] has shown how different varieties of wine and vineyards had a different economic impact depending on their type. According to his hypothesis, the product of vineyards of excellent quality and small productivity were meant to travel long distances and were primarily intended for high-class customers. Vineyards with high productivity, instead, were cultivated close to the big cities where the wine was intended to be sold. That also means that for the

[903] As suggested from Plin., *Nat. Hist*., XIV, 66 on Mamertinum wine.
[904] As suggested in the case of the urnalia sicula and also when considering the imitation in Germany of the shape of the amphorae produced in the area of Catania (see Chapter 6).
[905] Tchernia 1986, 184–196.

lower-class people who lived in cities the quality of the wine was secondary to the necessities of consumption. This description does not take into account the case of Rome, where an abundance of wines cultivated at a remarkable distance from the *Urbs* could be found — the containers of these wines being the visible archaeological indication of this phenomenon; this can be explained, according to the author, by the custom of the free distribution of wine to the poor, and I would add to the existence of an extremely wealthy class which made Rome a more attractive market for wine merchants than even other big cities.

I believe that the pattern of distribution of Sicilian amphorae (Chapter 7) in the Mediterranean coast but also — more importantly — in the hinterland of Gaul, along the Rhine and in Britain, in Germany, in Jerusalem and in Middle Egypt is in itself a good evidence of the distinctive value of the wine transported in the containers and can be considered as an indicator of the estimation of Sicilian wine for the foreign buyers.

CHAPTER 6

NEW DATA ON IMITATION OF THE SICILIAN MR1

6.1. INTRODUCTION

In Chapter 4 we showed that in Roman Sicily each workshop, in defined geographical regions (Fig. I, Area 1, 2 and 3), manufactured specific containers distinguishable on the basis of shape and manufacturing techniques. It was shown that the Riley MR 1a amphora originated in the region of Catania and represented the Mid-Roman stage of a series of flat-bottomed containers produced from the Early Imperial period. This small flat-bottomed container with a biconical rim was made at more than one workshop by several generations of potters with minimal changes[906] mainly related to the rim shape, while maintaining the same general body shape and handle profile which made the form easy to identify for traders and buyers in extra-regional markets. The success of this amphora type is reflected by imitations made in various territories as shown by the archaeological record and the outcome of previous petrographic analyses.

This chapter aims to present the new information assembled for this study on the imitation of the Sicilian MR 1a type by presenting three main sources of data: 1) the direct examination of specimens of MR 1a type produced at the Latrun kilns in Cyrenaica and imitating the Sicilian prototype; 2) in-depth fabric analyses from the overseas and Sicilian contexts which I was able to study; 3) the direct examination of forms imitating the Sicilian MR1 prototype from several contexts in Germany.

In the second part the new data on imitations in North Africa (Tunisia, Tripolitania and Cyrenaica) and probably in non-volcanic areas of Sicily are presented. The different degrees of closeness in copying the Catania prototype and the difference in techniques of manufacturing are highlighted.

The third part focuses on southern Germany with the aim of understanding the logic and motivations behind the production of local jugs or table amphorae copying the appearance of the MR 1a. In particular I wanted to examine whether this resulted from

[906] The standardization of the various parts composing an amphora model is also governed by economic factors: maintaing the same model in the workshop ensured rapid execution and lower costs, see Chapter 2 on similar remarks.

artistic or stylistic choices, or served as a way of advertising the local (wine?) by exploiting the high reputation of 'exotic' Sicilian wine.

6.2. Processes of Imitation in North-African Provinces: The new data

This study, through a larger catalogue of forms and fabric data, has demonstrated the preponderantly Catanian origin of MR 1a and its predecessors (see Chapters 3 and 4). The published sherds found in Rome (Caelian Hill); Augst, and London, initially thought to come from North Africa (Tunisian and Tripolitanian) (see above) were analysed and shown to belong to the Catania fabric group.

The study also noted the existence of phenomena of various types or degrees of imitation and 'morphological interpretations' of the MR1 amphora type in different geographical areas. The evidence for imitation was established on the basis of typological, technological and petrographic criteria (Chapter 3). Eight samples, four of which thin-sectioned (3.6% out of the 111 examined) have petrographic characteristics related to the territories of the North-African provinces, from *Africa Proconsularis*, in particular *Byzacena* and *Tripolitana*, stretching up to *Cyrenaica.* Another distinct group (Chapter 3, section 3.6.5, Fabric Group 5) presented a different mineralogical composition in which quartz is the predominant constituent and that completely lacks the volcanic inclusions associated with the Catania area of production. In this instance an origin in Sicily cannot be ruled out and is suggested here. The latter hypothesis represents a novelty in the picture of production centres for imitiations hitherto proposed.

6.2.1. The Cyrenaican Imitation of a Sicilian Amphora Type

6.2.1.1. *The 'Latrun MR 1a' production*

As already noted, the Sicilian origin of the MR 1a is now fully confirmed. Other archaeological discoveries have also provided evidence for the production of the same type in Cyrenaica. Excavation (2009–2012) in ancient *Erythron*, modern Latrun, 25 kilometres from Apollonia (Fig. 6.1), discovered a Roman bath complex, a basilica and

a large kiln dump of local pottery production.[907] In the kiln dump numerous wasters of amphorae similar to MR 1a were found.

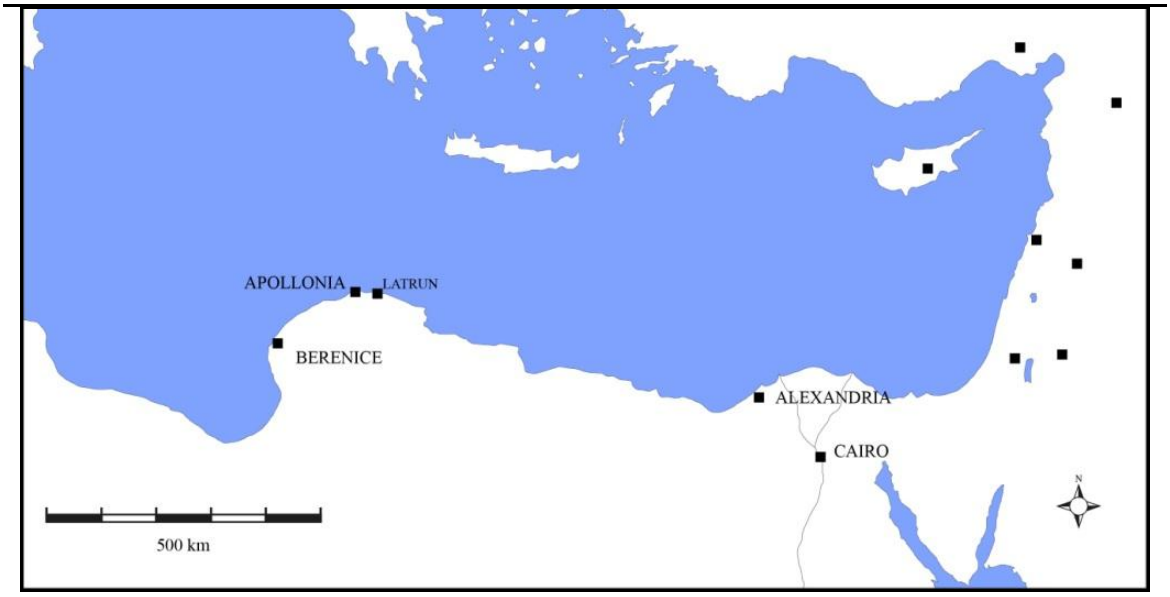


Fig. 6.1 The location of Latrun (ancient *Erythron*) and Apollonia in Cyrenaica (Mazou and Capelli 2011, 73, Fig. 1)

This potter's dump was connected by the excavators to a kiln found just north of the baths (not yet excavated) in the heated rooms of the *balneum*, which had been abandoned at the end of the 3rd/beginning of the 4th century AD.[908] The production of amphorae probably ranges from the end of the 3rd century to the beginning of the 5th century, when it seems to stop.[909] The amphorae, several of which were overfired, have been divided by the excavators into two main groups on the basis of differences in morphology of the rim: Latrun 1a (Fig. 6.2) and Latrun 1b (Fig. 6.3).

[907] Michel 2011, 28–34; Mazou and Capelli 2011; Mazou 2012.
[908] Among the local wares, amphorae, storage vessels, jugs, cooking wares and lamps were identified.
[909] Chronological range based on the evidence from the production site and not from consumption sites. The extent of the export of these Cyrenaican containers is in fact still very small (see above).

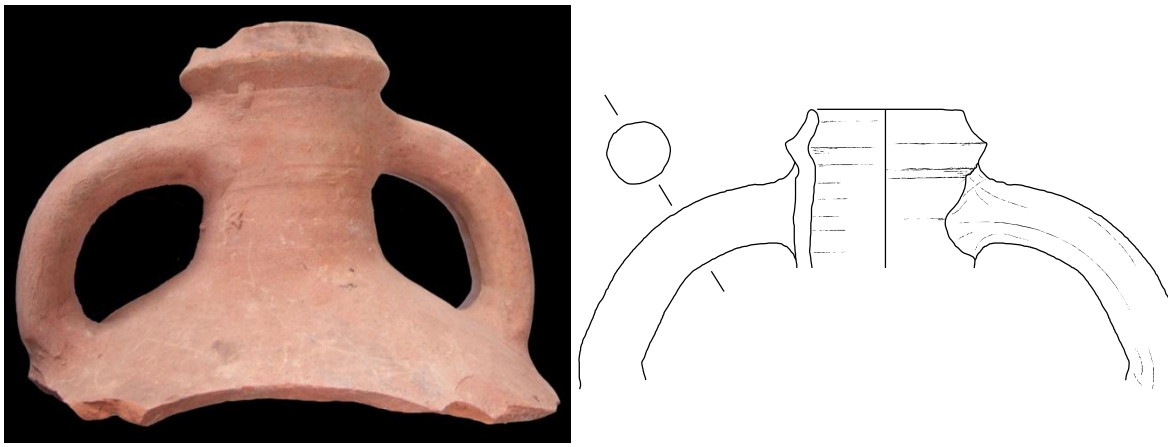


Fig. 6.2 Examples of Latrun Amphora 1a (after Mazou and Capelli 2011, 73, Fig. 2).

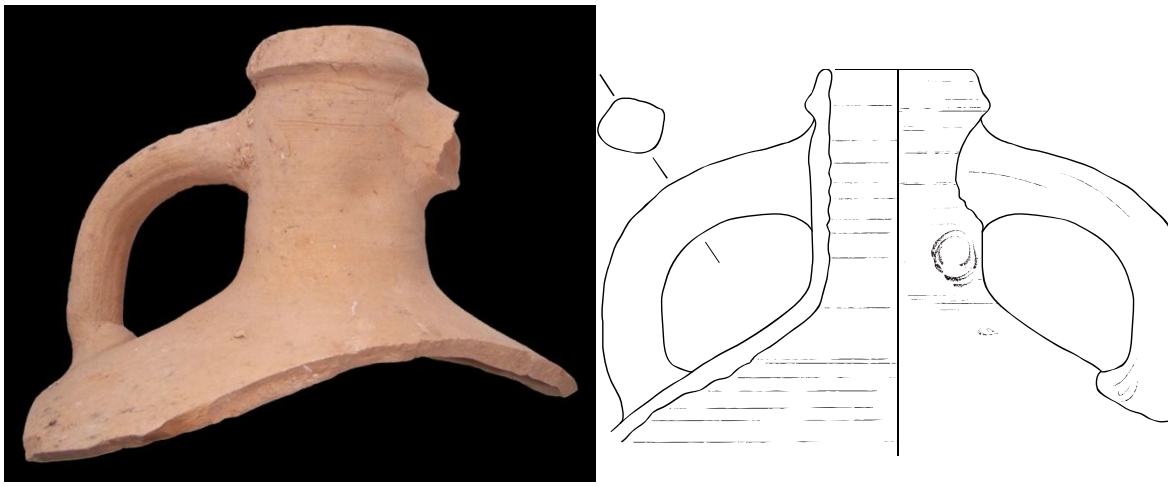


Fig. 6.3 Latrun Amphora 1b/Cyrenaican MR 1a variant 1 (Mazou and Capelli 2011, 73, Fig. 3).

On the basis of these more recent archaeological finds we can conclude that there were two certain production regions in very distant geographical territories: the central eastern region of Sicily, and Cyrenaica, producing a MR 1a amphora type, the latter imitating the Sicilian amphora prototype in its 4th-century AD development.

In order to better distinguished the two productions a comparative study was recently presented by the writer and L. Mazou, the excavator of the Latrun dump, in collaboration with C. Capelli which analyzed in thin-sections several samples from the two production regions.[910] The Cyrenaican fabrics are very different from all the

[910] Paper presented at the International conference *Per Terram, Per Marem, Production and Transport of Roman Amphorae in the Eastern Mediterranean* held in Nicosia, Cyprus.

Sicilian ones. Their inclusions are composed of calcareous microfossils, micritic limestone fragments and quartz individuals.

In this study we introduced a system of nomenclature intended to distinguish the two MR 1a productions, which are named 'Cyrenaican MR 1a' and 'Catania MR 1a'. We also illustrated a series of macroscopic differences between the two productions which are visible in hand specimens and can be used by pottery specialists as guidelines to better identify the origin of MR 1a samples.[911] The flat-bottomed amphorae fired in the Latrun kiln shared with the Catania MR 1a a similar biconical rim and overall shape, but the Latrun types are otherwise characterized by a wider and shorter neck in contrast with the slender neck of the Catania containers (*c.* 12 cm in diameter *vs* 8–10 cm for the Catania containers.) The Cyrenaican MR1 rim diameter comes in two sizes: 7/8 cm and 5/6 cm. The base also comes in two sizes: 8/9 and 9/10 cm diameter.

Crucial in distinguishing between the Sicilian and Cyrenaican productions is the appearance of the fabric and manufacturing techniques. The fabrics of the Cyrenaican amphorae appear medium-fine to the naked eye. The colour varies between red-orange, beige, brown yellowish to orange yellowish and has small numerous grey or white inclusions (Fig. 6.4) which are never attested in the Catanian samples (Fig. 6.5) (for the fabrics from the region of Catania see Catalogue I). Some white/yellow spots from carbonate elements are visible on the outside of the fabric to the naked eye, suggesting that the amphorae were fired at the kilns at a low temperature (<900°C).[912]

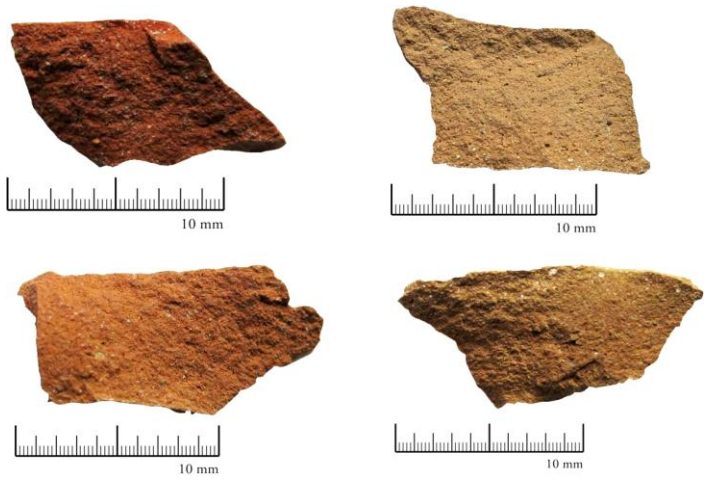


Fig. 6.4 Photographs of Cyrenaican MR 1a produced at Latrun kiln in which the white/grey inclusions are visible (Franco, Mazou and Capelli in press, Fig. 1).

[911] Franco, Mazou and Capelli in press.
[912] Mazou and Capelli 2011, 75.



Fig. 6.5. Photographs of Catania MR 1a fabric with its typical compact and cleaned fabric red in colour with a few visible black inclusions and moderate proportion of white lime (sample on the left), (C. Franco).

Compared to the high-quality execution of the Catania MR 1a, with symmetrical handles, a smooth surface and the whitish wash on the exterior (Fig. 6.6 and 6.7) (see also Catalogue I for its description), the quality of production of the types produced at Latrun is fairly second-rate, with many lumps of clay on the external surfaces, deformed necks, and handles with non-symmetrical rounded sections, sometimes very roughly attached to the neck and body (Fig. 6.8). The same rough finishing is attested in a whole amphora stored at the Apollonia Archaeological Museum (Fig. 6.9), which is likely to be a regional Cyrenaican sample.[913]

The chronological data show that the Latrun production of flat-bottomed containers imitating the Catania MR 1a begins in the Late Roman period. This study, on the other side has ascertained that the 'MR 1a'shape is a development of previous Early/Middle Roman forms manufactured in the volcanic region of East Sicily, hence demonstrating the Catanian identity of the later form with biconical lip. The production of similar forms in other areas of the Mediterranean, among which Cyrenaica, are therefore imitations, having being produced at a later time than the Catania prototype.

[913] Franco, Mazou and Capelli in press.



Fig. 6.6: Catania MR 1a specimen showing the smooth surface of the container (C. Franco, specimen stored in Arles Archaeological Museum).



Fig. 6.7 Catania MR 1a specimen showing the extra strengthening of clay positioned in the upper part of the neck. Note the careful manufacturing technique and the finishing of the biconical rim (C. Franco, specimen stored in Krefeld-Gellep Museum).

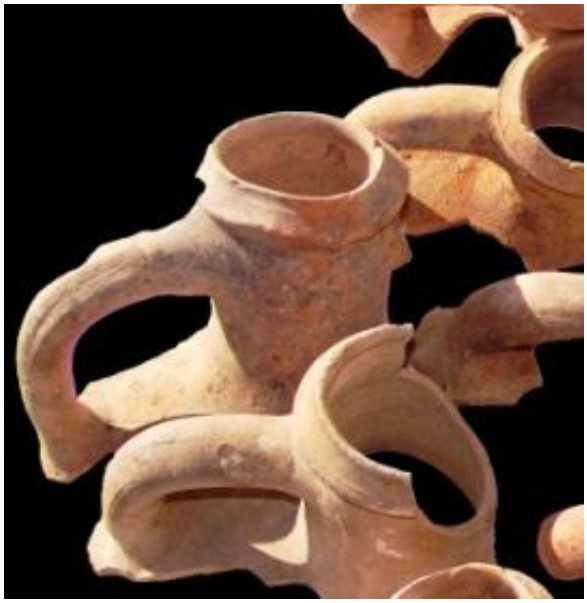


Fig. 6.8: Specimens of amphorae MR1 type produced at the Latrun workshop. Note the second-rate quality of production, with lumps of clay on the external surfaces and deformed necks and handles (Mazou and Capelli 2011, Fig. 5).

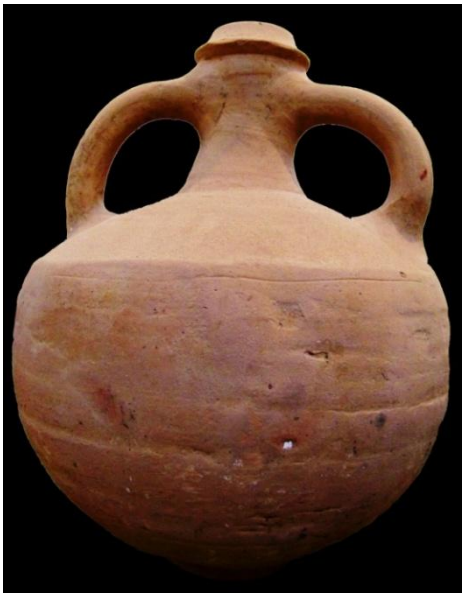


Fig. 6.9: Complete example of MR 1a amphora stored in the museum of Apollonia (Libya) of a suggested Cyrenaican production (Franco, Mazou and Capelli in press, Fig. 6.2).

6.2.1.2. ***Cyrenaican Amphorae: New Data from this Study*** (Plate XXXIV, nos. 1–3)

The study confirmed the export of containers with circular handles and a flat base presenting the characteristics of Cyrenaican fabrics. No specimens of Cyrenaican origin have been found with a preserved rim. Two fragments of handles of circular cross-section with a Cyrenaican fabric (Plate XXXIV, nos. 2 and 3) were recovered from the Roman fish salting factory on the peninsula of Tróia on the south western coast of Portugal (Roman *Lusitania*). In the same site three handles originated somewhere in the region of Catania have also been identified. Specimen no. 2 in particular presents a composition similar to the samples from the Latrun production centre (see above). The fabric is mostly composed of calcareous microfossils, rounded to angular limestone, and quartz inclusions, and is compatible with the local Cyrenaican geology characterized by sedimentary sequences. A flat ringed base (Plate XXXIV, no. 1) with a Cyrenaican fabric comes from a mid-4th century AD context of the Thermes du Levant in Lepcis Magna. The outer walls of the body preserve fairly evident rillings, which make the specimen very different from the smooth exterior body of the Catania version of MR 1a. The base shows more similarities, both in morphology and in macroscopic appearance with a base published from the cited production centre of Latrun in Cyrenaica and thought to be local production.[914] Unfortunately the lack of specimens with a surviving rim does not allow us to establish definitively that the surviving fragments belong to the MR 1a type.

Aside from the typological identification of the containers, this study has nonetheless made a significant contribution to our knowledge of broader economic and distributional aspects of the Cyrenaican products. Although we cannot, in the present state of knowledge, argue for a constant large-scale trade in the Cyrenaican MR1 variant, we can point to some commercial export of Cyrenaican products, as attested by new find-spots in Portugal (Tróia) and Tripolitania (Lepcis Magna). Certainly the Cyrenaican MR 1a amphorae were commercially exchanged in areas closer to production centres and they are attested in other parts of Cyrenaica and in Egypt,[915] but we cannot as yet determine the scale of this activity. No Cyrenaican MR 1a amphorae have yet been identified further east or in other areas of the western Mediterranean (beyond the fragments analysed here). This is not in itself evidence of a lack of exports

[914] Mazou and Capelli 2011, Fig. 4.
[915] Franco, Mazou and Capelli in press. In both regions Catania MR 1a amphorae were also traded (see Chapter 7).

of these products, but serves to illustrate how little work has been done so far on this production.

The evidence for the export to Italy (Ostia, Rome, Milan and the several contexts in the present-day Veneto Region, and also in Dalmatia) during the 3rd century AD of the (as yet unidentified) foodstuff carried in the Riley's Mid Roman 8 amphorae,[916] shows that there was an extra-regional market for Cyrenaican product, apparently mainly traded to the north of the Adriatic Sea and northern Italy. The Mid Roman 8 amphora type was produced during the first half of the 3rd century AD in at least three Cyrenaican port cities — Benghazi, Tocra, Apollonia — [917] and more recently wasters of the same type have been found in the Latrun workshop.[918] A. Wilson, on grounds of morphology, has suggested that the container held olive oil, although he also opened up the possibility it coud transport salted fish, due to the amphora type wide mouth.[919] It would be helpful to study the specimens of MR 1a attested in eastern Italy with a broad programme of petrographic analyses to verify their origin and identify the presence of any Cyrenaican products. Hitherto the published materials which I was able to examine from these areas on the Adriatic Sea and unpublished materials from Aquileia, Padova and Trieste through drawings and photographs of the fabrics indicate a Catanian origin (See Chapter 7, section 7.4.11 and Table 7.10).[920] The latter fact supports the idea of a limited trade in Cyrenaican MR 1a, and the independence of the trade in the foodstuffs stored in the contemporary MR8 containers.

6.2.2. Tunisian Imitation of MR 1a Amphora Type

6.2.2.1. *Generic Tunisian Production*

The rim SA 22 (Plate XXXIII, no. 1) recovered from a context of the second quarter of the 3rd-century AD in Arles (AD 225–250) can be ascribed to a generic Tunisian production. The rim is reminiscent of the shape of Ostia III, 464 rim, here termed

[916] On the amphora type Riley 1979, 193–194, no. 244 and 245. Fragments of MR8 amphorae have been found in Cyrenaica at Benghazi, Tocra and Ptolemais.
[917] Wilson in Wilson, Schörle and Rice 2012, 368, note 1.
[918] Mazou in press.
[919] Wilson in Wilson, Schörle and Rice 2012, 368. He also quoted a 3rd-century passage of the *Digest* (19.2.61.1) on the shipping of olive oil and wheat from Cyrenaica to Aquileia to further stress the export of Cyrenaican oil to the Adriatic.
[920] Pers. observation.

Catania flat-bottomed type, Form 2. A handle of circular section and a ringed bottom with a concave interior are associated with this fragment.

6.2.2.2. *Byzacena Region: Salakta/Sullecthum Region Fabric*

One neck found in a second half of the 3rd century layer in Lyon SA 46 (Plate XXXIII, no. 2), presents similarities with the *Sullecthum*/Salakta fabric. The coastal town of *Sullecthum* in the Sahel region of southern coastal Tunisia, ancient Byzacena,[921] had a number of ceramic workshops, none of them fully investigated, which mainly produced Africana IA amphorae which carried both oil and salted fish for export mainly in the late 2nd and 3rd centuries AD.[922] The sherd found in Lyon presents grey and white quartz, clinopyroxene and calcareous inclusions.[923] The rim and neck of this specimen are particularly similar to the Catania MR 1a, especially judging from the drawing; however, the fabric and exterior surface are easily distinguishable from the eastern Sicilian prototype (Fig. 6.10). The amphora presents the typical macroscopic characteristics of the Salakta fabric, such as the bicolour fabric, brick-red to grey on the exterior, and numerous small white inclusions visible to the naked eye.



Fig. 6. 10 Photograph of fabric of Salakta imitation of Catania MR 1a found in Lyon (Plate XXXIII, no. 2, SA 46, no. analysis 9677) (photograph T. Silvino).

6.2.3. Tripolitanian Imitations of MR 1a Amphora Type

Tripolitana, in present-day western Libya, was an important production area for amphorae, cooking pots, lamps and red slipped wares (TRS) in the Roman period. The fabric is distinct from those of *Zeugitana* and *Byzacena* (see above).[924] Among the specimens analysed, a Tripolitanian fabric was identified in three sherds all found in the

[921] The fabric corresponds to fabric 2.6 in Peacock's classification (1984). On the Sullechtum-Salakta atelier, Bonifay 2004, 26, Fig. 12a, with bibliography; Capelli, Ben Lazreg and Bonifay 2006.
[922] Bonifay 2004, 111.
[923] The sherd had already been published in Capelli and Bonifay 2007, 554, Fig. 10b.
[924] Bonifay 2004c, 9–10 for amphorae; Hayes 1972, 304–309 for ARS.

Thermes du Levant ceramic assemblages in Lepcis Magna. Two come from layers dated to the mid-3rd century (AD 250–260).[925] (Plate XXXIII, nos. 3 and 4) and one (Plate XXXIII, no. 5) was found in the layers of the early 4th century (AD 300–310). The specimens no. 3 and no. 5[926] belong to a relatively homogeneous coarser fabric group of Tripolitanian origin with shared characteristics such as the iron-rich clay matrix. The density of inclusions and abundance of very well-sorted rounded quartz and fossiliferous limestone, of relatively large size, suggests that this fabric may have had temper added. This group is characterized by the presence of white spots visible macroscopically. Specimen no. 4 presents a finer grain with fine-grained quartz and its origin in Tripolitania is suggested only on the basis of general similarities with the petrographic composition of nos. 3 and 5.

Examining the morphology, no. 3 and no. 5 have a slightly triangular rim which only superficially resembles the biconical rim of MR 1a; No. 4 is a true imitation of the Sicilian type given the adoption of its most prominent features such as the biconical rim with the horizontal flange at mid-height (cf. Catania MR 1a form 2), long narrow neck and fluted curved handles. Macroscopically, this specimen differs from the Catania MR 1a type for the presence of an overfired grey core, and a reduced surface which is red in the core.

6.3. IMITATION OF MR 1A AMPHORA TYPE IN NON-VOLCANIC AREAS OF SICILY?

The study has highlighted the presence of a group of seven fragments (6.3% out of 111 analysed) presenting morphological similarities with the MR1 type without matching the Catania fabric group. These fragments can be differentiated in terms of textural aspects as well as by their mineralogical composition. In thin-sections the specimens show the ubiquitous and predominant presence of rounded quartz, accompanied by subordinate limestone and fossils, with no volcanic inclusions (Fabric Group 5). From a distributional point of view these fragments with quartz are mostly attested in contexts in southern France[927] (Plate XXXII, nos. 1, 2 and 5) (three fragments), while one specimen[928] (Plate XXXII, no. 4) comes from Lepcis Magna. Chronologically the

[925] Bonifay, Capelli *et al.* 2013, cat 1.27 and 1.28.
[926] SA 74.
[927] SA 30, SA 13 and SA 44.
[928] SA 56.

contexts range from the beginning of the 3rd century to the mid-4th century AD. In all these contexts Catania MR 1a were also exported (see Chapter 7).

The data from the CASR project add more information from Sicilian contexts. Nine amphorae, out of a total of 40 specimens analyzed in thin-sections, have shown a similar generic compositional characteristics and presence of quartz.[929] Only in three cases did the specimens imitate the Catania MR 1a type; more often (six examples) they are different amphora types which follow the general Sicilian regional facies of the small flat-bottomed containers, less standardized than the MR1 type and each with a different rim shape. The specimens come exclusively from central and western Sicilian contexts, specifically from central Sicily (Fig. I, Area 5: Enna and Piazza Armerina Roman Villa), from inland western Sicily (Fig. I, Area 8: Segesta), from the north western coast of Sicily (Fig. I, Area 9: Roman villa in Castronovo di Sicilia) and from the central southern coast and hinterland (Fig. I, Area 7: Sciacca and Canicattì). The distribution in these areas of Sicily may suggest an origin in the western/central areas of the island. Of interest is the suggestion from their overseas distribution that the specimens with quartz may have been shipped to southern France and Lepcis Magna by the same shippers responsible for the supply of the amphorae produced in the region of Catania.

6.4. Concluding Remarks on MR 1a imitation in North Africa and Sicily

The results of this study from overseas contexts have confirmed the existence of a minor African production of MR1 — or very similar amphora types — in 1) Tripolitania, 2) Tunisia, possibly the Salakta region, and in 3) Cyrenaica. These few samples are characterized, respectively, by inclusions mostly composed of 1) medium-grained (aeolian) quartz, 2) aeolian quartz and limestone/microfossils and 3) calcareous microfossils, micritic limestone fragments and quartz.

The results of the CASR project raised the possibility of a limited (?) production of imitations in other areas of Sicily (central/western part? Catania fabric without vulcanities?). Imitations are currently attested with certainty by only three specimens.

[929] Pers. observation; C. Capelli pers. comment. Fragments not illustrated in the catalogue of this thesis. They are SIC 138 (analysis no. 8638); SIC 180 (analysis no. 8680); SIC 182 (analysis no. 8682); SIC 424 (analysis no. 8924); SIC 443 (analysis no. 8943); SIC 444 (analysis no. 8944); SIC 471 (analysis no. 8971); SIC 523 and SIC 525.

The remainders are sub-regional forms which do not imitate the Catanian type but belong to the Sicilian flat-bottomed amphora production (unpublished CASR data).

Examining the data from overseas contexts one can see the limited number of imitations and the consequent limited geographical distribution of these types (Fig. 6.11). Overall, types imitating the MR 1a circulate in far smaller numbers than the Catanian production. Sicilian imitations in particular seem essentially limited to regional exchange. In general, at the present state of knowledge, imitations do not seem to have represented serious competitors to Catanian wine on the market. The specific motivations of a commercial and economic nature underlying imitations of the Catania form remain to be defined.

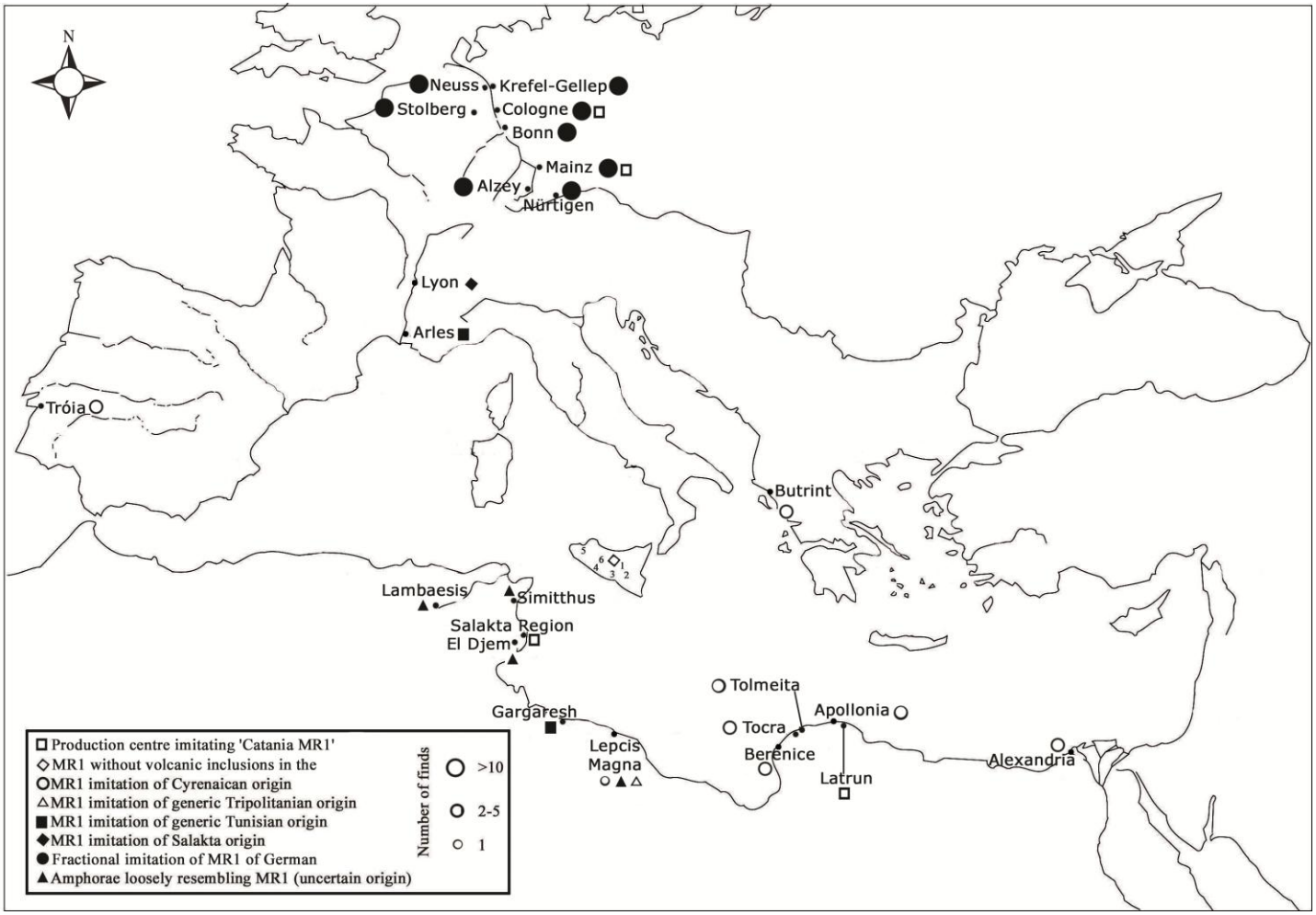


Fig. 6.11: Map of the Mediterranean showing the distribution of MR1 findspots of non-Catania origin and location of production centres imitating the 'Catania MR1a'. Samples from Sicily 1–6: 1) Enna/Gerace, 2) Piazza Armerina, 3) Agrigento, 4) Sciacca, 5) San Vito lo Capo, 6) Monte Iato (C. Franco).

6.5. IMITATION OF MR 1A IN SOUTHERN GERMANY: NEW DATA

The manufacture of closed vessels, imitating in the form of fractional containers the 'Catania MR'1a type, is attested in the productive areas of Cologne and Mainz, in present-day central and south western Germany (Fig. 6.12). I propose to differentiate the imitation of miniature-shaped MR1 in Germany from the full-size copies of MR1 of North-African origin, which have been illustrated before. In my view the production of small fractional containers imitating full-size MR 1a amphorae was directed to supply different needs for the local German buyers compared to the North-African community. These containers were possibly intended as table amphorae or miniature versions of MRa for sampling Sicilian wine rather then commercial amphorae (see below on this hypothesis).

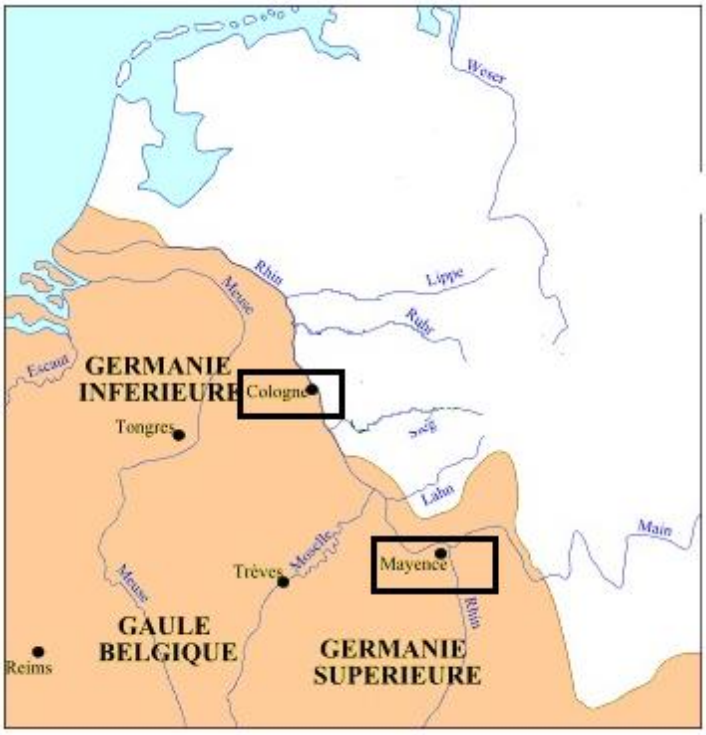


Fig. 6.12 Germany with the indication of Cologne and Mainz (redrawn from Peron and Feiffer 1987).

In Cologne/*Colonia Claudia Ara Agrippinensium* straddling the Rhine and capital of the Roman province of *Germania Inferior* a 4th-century AD production has been established on the basis of chemical analyses of few specimens whose results did

not rule out local production.[930] 180 kilometres to the south, the same types were produced in the third quarter of the 3rd century AD in Mainz/*Mogontiacum*, an important military town and *Germania Superior*'s capital in the Roman period, in a strategic position at the confluence of the Main and the Rhine. Local production dated *c*. AD 275–285 has been established based on the fabric characteristics and the discovery of four wasters of this type.[931]

These closed vessels/jugs are known in the current literature as Gellep 85 (Fig. 6.13) from the list of pottery recovered from the Roman-period Krefeld-Gellep cemetery, near the civilian settlement of Gelduba, just a few kilometres west of the Rhine, where they were first identified.[932]

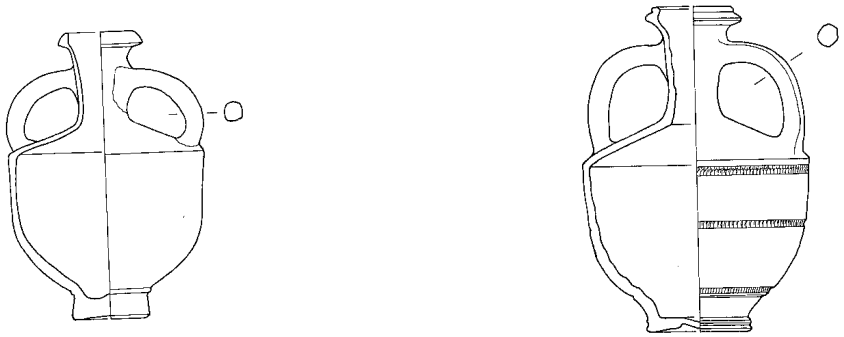


Fig. 6.13 Jugs type Gellep 85 produced at the Cologne workshop in Germany (Liesen 2000, pl. I, no. 1 (Height 14.5 cm) and 2 (Height 18 cm).

They correspond to Type 925 from the aforementioned production area of Mainz.[933] Unlike those attributed to the Cologne workshop, the examples from Mainz are full-size copies of the MR 1a (see Fig. 6.14). This small-medium jug/table amphora (see Fig. 6.15 and 6.16 for the smaller different dimensions of the German copies compared to the Catania MR 1a) is mostly attested in Late Antique funerary contexts in present-day Germany and eastern Belgium where it appears during the first half of the 4th century AD.[934]

[930] Liesen 2001; Höpken 2005, pl. 181, 42–105, 42–106 and 42–107.
[931] Heising 2007, Local pottery group WG 20: 149, 370.
[932] Pirling 1966, 79; Hussong and Cüprers 1972, 54, Type 65; Brulet 1990, 53, Type F 12; Vanvinckenroze 1991, 104, nos. 454–455.
[933] Heising 2007, Type 925, 108–109, 370, pl. 142. Two fragments published attributed to local production. Diameter of the rim 7,2 cm.
[934] They are particularly numerous in the burials of the cemetery of Krefeld-Gellep, at Neuss, Cologne and Bonn. Liesen 2001, 483, note 6 with bibliography cited.

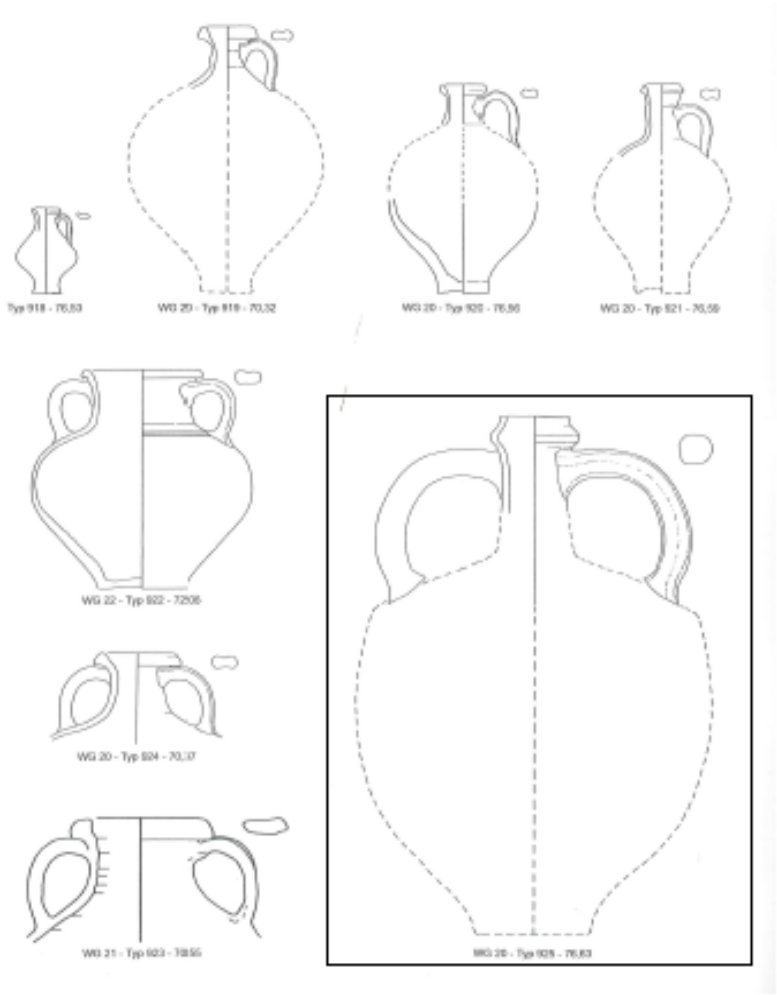


Fig. 6.14 German copy of a MR 1a produced at the Mainz workshop, Note the suggested dimension of the amphora (in a rectangle) compared to other local jugs (Heising 2007, pl. 142, Type 925, from Mains workshop).

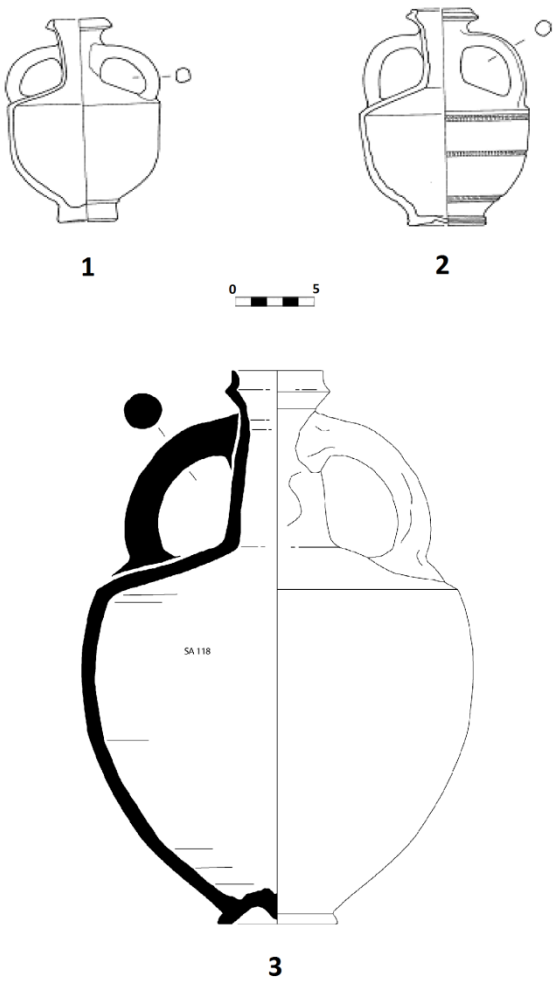


Fig. 6.15 Comparison between the smaller German copies type Gellep 85, attributed to Mainz workshop, (no 1 and 2) and a full-size Catania MR 1a amphora found in the cemetery of Krefeld-Gellep (No. 3 = SA 118). Vessels to scale (C. Franco).

A sample of these jugs, thought to be produced in the Cologne production area, which are now stored at the Romano-Germanic Museum in Cologne and in the Museum Burg Linn in Krefeld, were drawn and analysed as part of this reaserch project (see Pl. XXXV, nos. 1–3; Pl. XXXVI).[935]. Macroscopically, the Cologne forms are very different from the original Sicilian MR 1a. They are smaller in size (the three samples drawn are 15, 19.2 and 25 cm in height) and appear different to the naked eye given the

[935] Pl. XXXV, no. 1 (inv. no. 24, 253). Volume: estimated at 0.44 litres (V. Martínez). H. 15 cm; D. rim ext. Max. 4.1 cm; D. rim int. 3; H. Rim 0.7 cm; D. Neck 2 cm; H. neck 4.2 cm; D. shoulder 10.4 cm; D. ringed base 3.9; H. Ring 0.8; Pl. XXXV, no. 2 (inv. no. 84, 1063). Volume: estimated at 1.17 litres (V. Martínez) H. 19.2 cm; D. rim ext. Max. 5.5 cm; D. rim int. 3.2; H. Rim 0.8 cm; D. Neck 3 cm; H. neck 5 cm; D. shoulder 14 cm; D. ringed base 4.8; H. Ring 1.5; Pl. XXXV, no. 3 (inv. no. 67, 940). Volume: estimated at 1.44-1.62 litres (V. Martínez**).** H. 25 cm; D. rim ext. max 6 cm; D. rim int. 4.3; H. Rim 1.1 cm; D. handle max. 1.5 cm; H. Neck 7. 5 cm; D. neck 3.8 cm; D. shoulder 15.3 cm; D. ringed base 5.5; H. Ring 1.8 cm.

striking differences in fabric. The fabric colour of these smaller copies ranges from very pale brown to whitish (7.5 YR 7/4). Less common is a red coating which adheres poorly to the whitish exterior. The fabric is well fired, compact and well purified. Overall it is a good-quality pottery production. In the case of the Mainz workshop the copies are made in smooth ware (in German: *Glattwandige Ware*), meaning that the surface underwent an additional smoothing treatment after turning. The fabric is tempered with quartz and feldspar. None of the specimens analysed has stamps or marks.

Looking at the shape, there is no doubt that these small containers closely resemble the original MR 1a amphora type of which they are explicit imitations. The German artisans carefully copy the placement of the handles of the original versions, circular in section, which join the jug below the rim and on the shoulder near the junction with the distinct carination, the carinated shoulders, the ringed base and the whole body form. Some effort is made to reproduce the distinctive biconical rim, which resembles that of the amphora version. There is no standardization in the height of the vessels (see Fig. 6.16) which ranges from 14.5 to 38 cm in the Cologne production; the reconstructed height of one specimen from the Mainz workshop has been established as 50 cm, more or less the same size as the original. I was not able to see the specimen attributed to the local production in the Mainz workshop. Its suggested full-size heigh (see above, Fig. 6.14) is only hypothetical, as the specimen was partly preserverd with only the rim and one handle.

In some cases the Cologne imitations present characteristic decorations on the neck and shoulder with horizontal bands or wavy lines and, most strikingly, anthropomorphic depictions, including representations of the gods of the day of the week.[936] If on the one hand, therefore, the German potters closely copied the morphological features of a container which differs in origin and primary function, they also seem to have had an active creative role within their production, adding to these copies some decorative and iconographical elements completely unrelated to the original.

[936] Fremersdorf 1959, 42.



Fig. 6.16 Photograph of the Germanic copies (left) and the original amphora Catania MR 1a (right) showing the different dimensions (and capacities) of the copies (dimensions to scale), Archaeological Museum of Cologne (C. Franco)

Another key observation is that these copies were produced in several heights: tall (50 cm), medium (30/35 cm), and short (15/20 cm), with consequent different capacities, and also with morphological variants (especially in the rim and bottom). It is difficult without a consistent sampling of the vessels to establish whether they were produced in large, medium, and small modules with fractional measurements. The estimated vessels capacities for three of these jugs (See Plate XXXV, nos. 1-3) established by V. Martínez seem to point towards the production of fractional units of volume. The estimated volume ranges between 0.44 litres for the smallest specimes (Pl. XXV, no. 1), to 1.62 litres for the biggest one (Pl. XXXV, no. 3).

Not surprisingly, these close copies of the MR 1a are integrated within the wider pottery traditions of Germania Superior and Inferior (*Germania Secunda* after Diocletian), and appear more commonly than the class of amphora used as a model. Their imitation fits into the pre-existing traditions of local pottery production of common wares (jugs, plates) and fine ware. Both the Cologne and Mainz workshops of Late Antiquity manufactured several other types of vessels commonly found in urban (Fig. 6.17) and funerary contexts (Fig. 6.18).

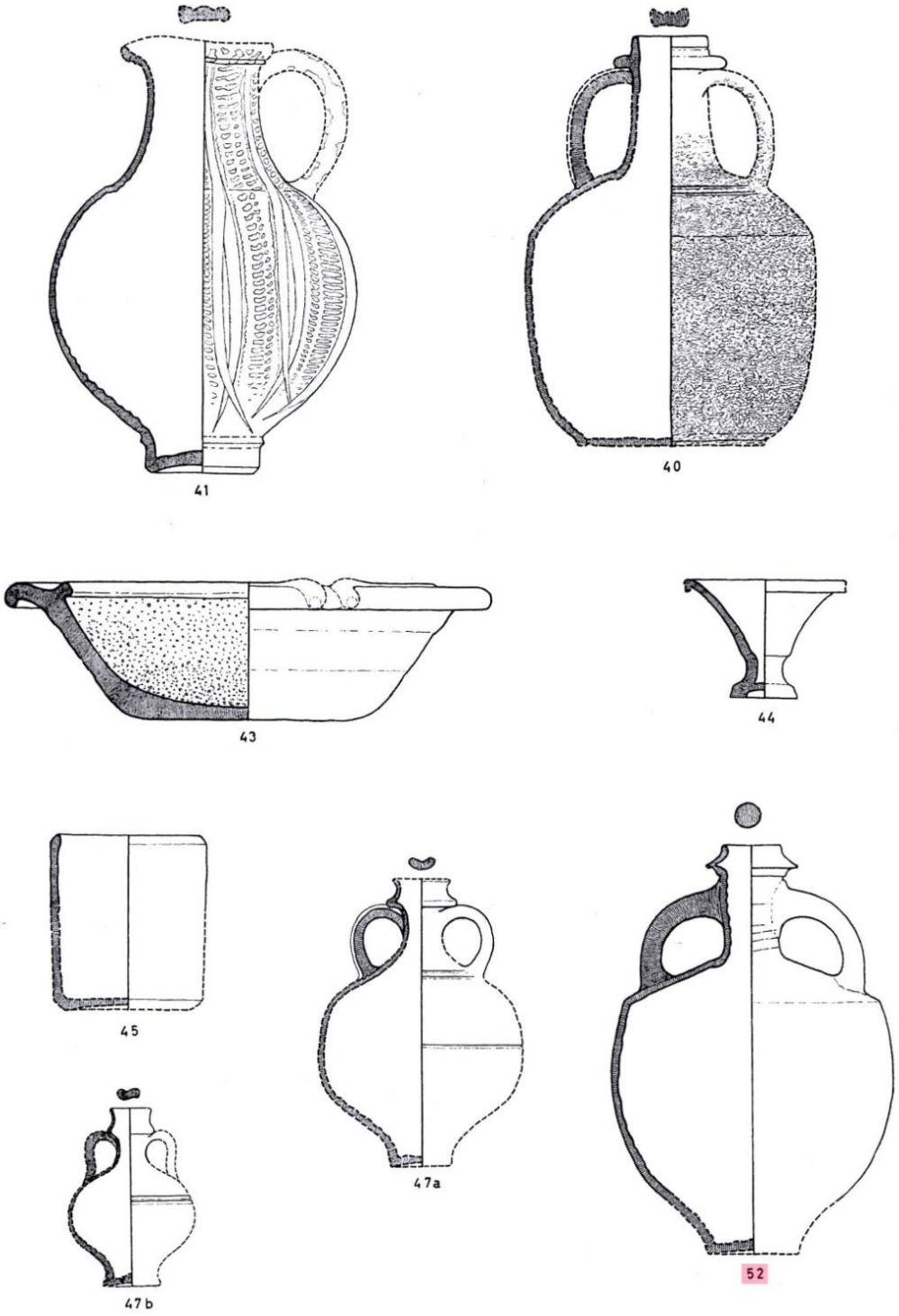


Fig. 6.17 Regional common ware forms found in association with a Sicilian (?) MR 1a amphora type. The type is indicated with no. 52 in the table (from Trier, Imperial Baths-*Kaiserthermen*). Scale 1:4; MR 1a height: 40 cm (Hussong and Cüprers 1972, pl. 4).

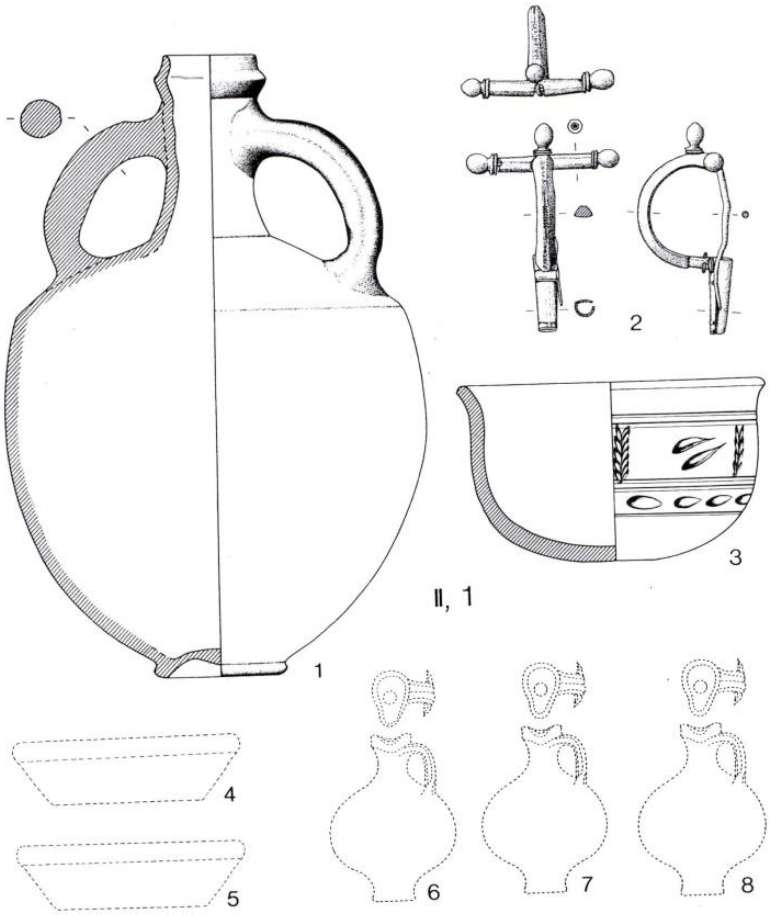


Fig. 6.18 Regional German common wares – jugs, plates and red glaze ware – (nos. 3–10) found in association with a Sicilian MR 1a amphora (no. 1) from a late 3rd-century funerary context of S. Severin in Cologne (Päffgen 1992, pl. 23,1, grave II, 1. MR 1a published was also published in Fremersdorf 1933, pl. 42B, 13).

Examining the function of the Gellep 85 jugs they presumably held liquids given the morphology (narrow neck and rim diameter), but there is no clear evidence that they were primarily intended for wine or other alcoholic beverages. Their frequency of distribution in burials might indicate cult use in funerary contexts. In my opinion, these jugs are not miniature versions of the original transport containers, as in the case of the German imitations of Dressel 20 and Dressel 23 amphora types.[937] The phenomenon of miniaturization sometimes has a symbolic meaning: the smaller objects evoke the normal-size versions copied and at the same time effectively remove themselves from the sphere of normal everyday use. In my opinion this is not true of our copies,

[937] On the Dressel 20 miniaturization, Oelmann 1914, Fig. 27, 29b. On the Dressel 23, Unverzagt 1916, 23, Fig. 12,1.3.

produced in sizes that would have permitted a function as utilitarian containers for the storage/transport of liquids.

As it is reasonable to suppose that they were carrying liquids, we should consider the possible nature of their content to better interpret the meaning of their manufacture. This sort of imitation in a very different geographical and even cultural environment implies considerable familiarity with the amphora imitated and consequently the wine transported in it. Consequently, key points to develop any further ideas/opinion on these imitations are the quantitative data on the trade in MR 1a, the chronology of imports to northern Europe and the origin of the copied container itself.

The published evidence on Sicilian MR 1a finds from Germany and Switzerland is quite scanty: around a total of 15 pieces are known (see Chapter 7, section 7.4.3 and Table 7.23). From a chronological point of view it is interesting to note that the manufacture of the copies is virtually contemporary with the first appearance of the original Catania region amphorae around the last quarter of the 3rd century and seems to increase at the peak of exports in the mid-4th century AD. The only study hitherto focusing on imitations of the MR 1a was significantly entitled 'Imitation of North-African amphorae in Cologne'.[938] As already specified in this study, petrographic analyses indicated that all the specimens analysed from the northern European market (Germany, Switzerland, London) originated in the area of Catania and not in Africa. This is a significant point that tells us which region's amphora was copied. It is clear that the MR 1a were distributed from Arles through the river Rhone in France and the Rhine in Germany.

We also now have clear evidence that another contemporary Sicilian type was exported to Arles: the Naxos flat-bottomed type produced in the region of Taormina (Chapter 7, section 7.4.1.4.1.1 and Table, 7.15). Though attested in Arles, this type was not traded to Germany. The most plausible reason is connected to the choice of consumers from northern Europe who preferred the quality or taste of wine from the region of Catania. Summing up, with all these points in mind we can reconstruct the following scenario:

1. Consumers/drinkers in northern European contexts were aware of the taste of wine from Catania.

[938] Liesen 2001.

2. The potters in Germany were copying a Catania amphora type carrying Catanian wine.

After defining these important aspects I suggest three possible scenarios for the fractional imitation of MR 1a:

1) Production of fractional/small jugs imitating the 'Catania MR 1a' intended to be filled with local wine. The possible extent of wine production in the territories of Roman Germany is not yet fully developed, as the archaeological evidence of rural villas, traces of vineyards and wine presses is still overall quite rare.[939] Regional wine production (villas and wine presses) is attested in the Moselle valley soon after the Roman conquest and subsequently further north in the Middle Rhine Valley.[940] Archaeological remains of ancient vineyards are preserved along the Rhine valley and in the Neckar valley, the Neckar river being is a major right tributary of the river Rhine, and have been linked to the production of the local Gauloise4 amphora.[941] The majority of the rural villas located along the Moselle, all dated from the late 3rd century AD onwards, have only been found during rescue excavations. Further studies and excavations may shed more light on the wine production production in these regions during earlier periods, such as during the course of the 2nd century AD when the regional workshops manufactured selected forms of ceramic containers,[942] amongst which was a flat-bottomed local imitation of Gauloise 4 type. Interestinlgy, local amphora production seems to stop around AD 300, probably indicating a generalized switch to barrels from the Late Antique.

2) Turning to the small-version of MR 1a, and developing the previous hypothesis further, one could also argue that the potters of Mainz and Cologne produced the Catania-inspired forms (small and full-size) to be filled with local wine which was reminiscent for the users of a 'Sicilian-style wine', appealing to a clientele who lived far from the Mediterranean and wanted to taste a wine 'alla siciliana'.

This phenomenon is attested for the imitation of the Coan amphora shape filled with Coan-style wine.[943] The form, from the mid-1st century BC, was adopted by

[939] See now the sudy of Tyler Franconi on the possibility of establishing clearer links between local amphorae and wine production in Roman period Germany, Franconi forthcoming.
[940] Brun and Gilles 2001. Brun 2005, 134 ff. with illustration of the main villas and wine presses and bibliography cited.
[941] Brun 2005, 133.
[942] Tiberian period amphora production in Augst and Middle Roman forms such as Dressel 20, Gauloise 4 and Niederbieber 74/75.T. Franconi suggested the Dressel 20 were intended for local beer, Franconi forthcoming.
[943] Grace 1961.

numerous workshops around the Mediterranean and beyond, turning into an 'established' western Mediterranean Roman amphora form (=Dressel 2–4).[944] The type of wine made from the white Coan (*leucocoum*) vintage and exported in the original Coan amphora was known for being both sweet and salty.[945] Coan wine had indeed a peculiar taste, which was well-known in the Mediterranean, and in demand at Rome and abroad, despite never bring ranked among the very top wines by the sources. Cato the Elder in 160 BC recorded a step-by-step recipe for imitation of the *vinum Coum* made with sea water and mixed Italic grapes.[946] The grapes, which had been previously left to dry under the sun, were left to macerate in a *dolium* partially filled with seawater (made of fresh water and salt sourced far from the shore) for three days. The infused grapes were then crushed in a wine press and their juice decanted into fresh jars to ferment. Pliny the Elder, who quoted Cato's recipe, recommended that the wine should ferment for four years before becoming potable.[947]

Archaeological evidence (see above) indicates that wine from Catania arrived in the Late Roman period Rhine valley in the highly recognizable form of transport amphora, i.e. MR 1a type. The development of local imitations in common ware may have been encouraged by the lower cost of this suggested local/regional wine content compared to the more expensive imported Sicilian wine; or alternatively by the fact that it was easier to come by than exotic Sicilian wine.

In the view of Martin-Kilcher when potters at *Augusta Rauricorum* (Augst) chose to copy the Gauloise 4 type, they were deliberately appealing to a clientele who lived far from the Mediterranean, yet who wanted their wine 'à la romaine'.[948] Following this approach, the imitation of the distinctive Catanian wine containers could be aimed to directly remind buyers of a high quality and exclusive or costly product.

The small copies of MR 1a found in burials may have represented local attempts to duplicate the symbols of power/wealth regardless of the primary function of the jars, which in fact were not used for the same commercial function as the transport containers. The copies in this context could aimed to remind their viewers of the imported wine amphora and the *status* of the consumers.

[944] See now Moore 2011 on imitation of Coan-amphorae in Italy, which for the author were not intended to passing the product off as true Coan wine.
[945] On ancient Coan wines, see Sherwin-White 1978, 236–241.
[946] Cato, *Agr*. 112.
[947] Plin., *Nat. Hist.,* XlV, 79.
[948] Martin-Kilcher 1994, 56.

3) Recently, M. Bonifay has linked the production of these small versions of MR1 to the general need/opportunity to transfer the wine (or oil) into skins in order to reach the inland cities more easily. This way of transportation of wine along the Rhône-Saone axis can explain the reason of the local production of the Gellep 85 jugs. According to this hypothesis the small copies were perhaps intended for the retail of small quantities of Sicilian wine which was traded in wooden barrels [949] The relative scanty evidence of the Sicilian MR 1a imports in Germania (see above on this point) may in fact alternatively suggest that Sicilian wine mainly arrived in barrels in northern Europe. The necessity to decant local or imported wine in smaller containers have also taken into account by Jean-Pierre Brun in regard that the German copies of Gauloise 4 amphora type, which were produced from the mid-2nd and in the course of the 3rd century AD. Brun has argued that these more manageable flat-bottomed containers were used by the local buyers and merchants as smaller flagons for the resale of the Mediterranean wine transported in the Moselle Valley and Rhine Valley in the bigger wooden barrels.[950]

The three hypotheses cited above are all plausible and may be better defined by an in-depth study of the find contexts, chronological and morphological aspects of the Gellep 85 type in Germany and other areas of northern Europe (Fig. 6.19, above).

6.6. REASONS FOR THE IMITATION OF SICILIAN AMPHORAE

In modern usage the term ‘imitation’ indicates a deliberate attempt on the part of the maker/seller to ‘deceive’ potential customers by offering an artefact which copies the original only in its superficial appearance. In the case of African red slip ware[951] (ARS) or Roman African cookwares[952] (ACW) imitations are artefacts which copy the originals from a morphological and decorative point of view, without possessing their technological features. In the case of transport containers used for wine, what is

[949] Bonifay in press.
[950] Brun 2005, 146, note 24.
[951] Bertolotti and Murialdo 2001, 322, note 17.
[952] The quartz-rich African fabrics enabled cookwares to maintain a high level of thermal shock resistance which made their products particularly desirable and technically better than imitations made outside the region, Leitch 2010, 50.

counterfeited is their content.[953] According to this reading, imitations of the MR 1a (see above) fraudulently sold their own content by passing it off as wine from Sicily, the original production area of high quality wine; they thus appropriated the fame and inter-provincial renown of Catanian wines as a way to establish their own products on extra-regional markets. Examples of the falsification and adulteration of wine in the Roman period are well known from the sources; suffice it to recall the case of Falernian wine recorded by Galen.[954] He, writing in *c.* AD 180, doubted that all the Falernian wine on sale in the Roman Empire could possibly be genuine on the basis of the small physical extension of the authentic Falernian vineyards which were cultivated on the slopes of Mt. Falernus near the border of Latium and Campania. Therefore, Galen concluded that other wines produced in other territories were passed off as Falernian wine through adulteration. Another example is that, already mentioned, of Taormina wine passed off as the Mamertine wine of Messina when packed in small amphorae.[955] The data collected on imitation of the Sicilian amphorae does not seem to provide certain evidence for this.

Examples of the imitation of wine transport containers in the Roman period are numerous and well known.[956] Amphora imitations should always be interpreted by examining broader commercial and economical relationships.[957] In fact, imitations primarily concerned those containers whose shape had proved successful in shipping and transporting goods over long distances or that carried popular or renowned foodstuffs.

A classic example is the shape of the Italic Dressel types 2–4 which almost certainly imitated the Hellenistic wine amphora produced on the Aegean island of Cos. On the other hand, the Dressel 2–4 was itself imitated, and production sites for Dressel 2–4 outside Italy have been identified in Spain,[958] Gaul,[959] North Africa,[960] Egypt,[961] etc., i.e. in the same provinces where the amphora form was traded.[962]

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[953] See Tchernia on this point 'Les adulterations et les falsifications dureront, helas, bien apres Galien et n'ont pas commence avec lui', referring to the imitation of the Falernian and Mamertinum wine in Roman period, Tchernia 1980, 309.
[954] Galien, *De antidotis*, Kuhn, XIV, 77.
[955] Plin., *Nat. Hist.*, XIV, 66 and XXIII, 33.
[956] Other forms include, Dressel 1 were imitated by the Pascual 1 amphora produced in Tarragona. The Galouise 4 amphora type was imitated in Spain as Dressel 28, probably in Sicily (Naxos) and in North Africa as Dressel 30.
[957] Panella 2001, 182; 2002, 624.
[958] Miró 1998.
[959] See Dangreaux *et al.* 1992 for the types of amphora attributed to Lyons production.
[960] Bonifay 2004, 146, Fig. 59 (amphora type 56).

Scholars have mainly linked the motivations which led potters from different regions to copy the same container to the technical advantages of this new form, which had a better-weight-to-capacity ratio without sacrificing structural solidity.[963]

Amphora researchers have therefore developed two main paradigms to help explain why a given amphora form was made at several workshops in different areas in antiquity. The first approach stresses the shape and, in this specific instance, the impact of choosing the flat bottom and its consequences for transport and implications for economic processes. The other hypothesis stresses the idea that imitation of a given amphora type depended on the awareness of the origin and possibly the quality/taste of the wine/foodstuff stored inside it, acquired by buyers thanks to the wide-ranging export of the container, and in this specific instance, can be connected to the specific taste or quality of Sicilian wine.

6.6.1. Economic and Technical Advantages of the Flat-Bottomed Container

The first approach supports the idea of a generalized use of flat-bottomed wine containers for economic and market reasons, linked also to changes in transport methods, without excessive emphasis on the visual indication of the content and without the intention to imitate a successful 'branded' type to benefit from the high reputation of another city's wine, or other products.

The ergonomic study of the amphorae is useful when one considers that the majority of them were traded by marine transport.[964] The need of an optimization of space in the ship as well as the minimization of amphorae breakage during the export was both reflected in amphora design. The choices of a long-bodied shapes terminating with a heavy spike were multiple: a pointed heavy bottom gave maximum strength against impacts, could balance the weigh of the amphora and — most importantly — maximized the space in the hold of a cargo ship. The spikes of the amphorae could interlock to prevent shifting during the travel and allowed the containers to stay packed in layers. The first layer was leaned against the hull, and then the others were leaned against the first layer (Fig. 6.19).

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[961] Empereur 1986.
[962] On Dressel 2–4 imitations see Panella 2001, 182. Dressel 2–4 production is attested also in Switzerland, Britain, Lebanon, Turkey and Black Sea, see now Moore 2011, 97, note 43.
[963] Panella 1981, 59; Peacock and Williams 1986, 24; Carandini 1989a, 512.
[964] Marmaras, Poulakakis and Papakostopoulos 1999, 365–367; Twede 2002.



Fig. 6.19 Reconstruction of an amphora cargo in a ship illustrating how the containers were positioned in different layers and held by a rack and roping which might have kept them from shifting (Museum of Underwater Archaeology at Bodrum Castle, Turkey).
Source: <http://en.wikipedia.org/wiki/File:Amphorae_stacking.jpg> accessed 12 April 2014.

The spikes of subsequent layers were positioned in between the amphorae nested below[965] (Fig. 6.20). On the ground (in shops, warehouse, cellars) spike-bottomed amphorae could be stores in several different position, even upside down, as shown in Pompeii's 'Garum shop' which appeared at the time of the destruction by the lava of Vesuvius in AD 79 emptied and waiting to be filled of salted fish for sale (Fig. 6.21).

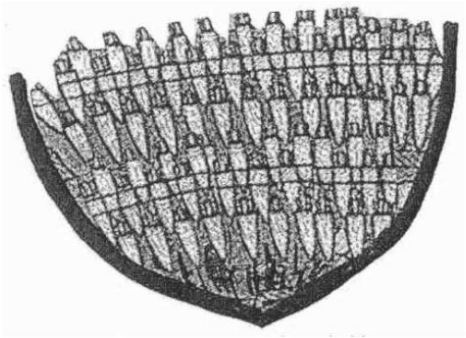


Fig. 6.20 Reconstruction drawing showing the amphorae toes of subsequent layers nested in between the shapes below (Twede 2002, Fig. 5)



Fig. 6.21 Spike-bottomed amphorae stacked in the corner of the so-called Garum shop in Pompeii.
Source:<http://www.uca.es/en/cargarAplicacionNoticia.do?identificador=1863> accessed 14 April 2014.

[965] Twede 2002, 101.

Despite the logistical efficiency and benefits of the long-shape body terminating in a sharp spike for transport by sea, the same shape was bulky for overland transportation,[966] when the heavy transport amphorae were to be transferred inland from the coast or from their production centres to the ports. When from the mid-1st century BC flat-bottomed containers started to be produced in the production centres in the Rhone valley in Gallia (Gauloise amphorae types) we see that the kilns were located inland,[967] demonstrating that this new amphora shape was originally adopted for a comparative ease in transportation by means other than sea-going ships. The smaller and flat-bottomed shape was more suitable for local and overland transport on riverine barges (Fig. 6.22). P. Arthur has even suggested that the Gauloise amphorae were developed to accommodate smaller amounts of the wine brought in ships in larger amphorae and *dolia*, making the commercialization of the wine inland more manageable.[968]



Fig. 6.22 Bas-relief depicting the transport of wine in barrels and flat-bottomed amphorae on a riverboat across the Durance river, hauled upstream by teams of in Roman Gaul (Musée Lapidaire d'Avignon, Fondation Calvet)
Source:<http://commons.wikimedia.org/wiki/File:Halage_sur_la_Durance_Amphores_et_tonneaux_gallo-romains.jpg> accessed 14 April 2014.

By the beginning of the 2nd century AD we already see a widespread 'proliferation' of flat-bottomed containers: almost all the amphorae primarily intended

[966] Amphorae were also discarded in dumps near ports, suggesting that the long-distance traded foodstuff were repackaged for further distribution inland. See also the evidence of the discarded amphorae of Monte Testaccio towards Rome very largely composed of Dressel 20 amphorae.
[967] Laubenheimer 1986.
[968] Arthur 1991, 76.

as wine containers that were circulating in the western Mediterranean had a flat bottom.[969] The widespread developing of a new flat-bottomed, smaller type of amphora from the 1st century AD in central Italy (Spello and Forlimpopoli types) has been associated with the importance of fluvial transport as a preferred method of transporting amphorae and goods (see Chapter 1, section 1.6), particularly in regards to the Tiber as a fundamental axis for communications and penetration of goods and foodstuff into the inland and to Rome,[970] and to the use of rafts for river transport.[971]

In Chapter 1 I have already expressed the need for a more cautious approach to explain the coeval production of flat-bottomed containers in Sicily. I concluded that the undeniable greater suitability of the new shape for transport on riverine barges was not the primary reason for its generalized adoption on the island. Sicilian flat-bottomed amphorae, indeed, travel as great distances as their Hellenistic wine spike-bottomed amphorae predecessors. The new shape was instead a strategic choice adopted by potters and wine producers during the Augustan period to enter the overseas market producing the 'standard wine amphora' sold on the Mediterranean arena.

Similarly, this suggestion can be applied to the North-African flat-bottomed amphora production. The Tunisian (Nabeul and Salakta) and Algerian wine amphora Dressel 30[972] have a small knob at the base of the amphora or a flat-bottom which imitates the Gallic shape (Fig. 6.23).

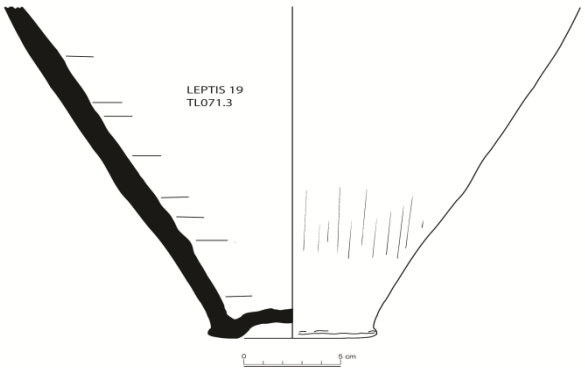


Fig.6.23 Flat-base of a Dressel 30 amphora type of Salakta production, from Lepcis Magna, Thermes du Levant (M. Bonifay).

[969] Panella 2002, 184.
[970] Panella 1989, 139–140.
[971] Vidal 2009, 234 (on the flat-bottomed amphorae produced nearby Rome).
[972] Bonifay 2004, 148–149.

In North Africa, internal communications relied on a few key river routes for the seasonal transportation of goods in small boats, such as the Mejerda and the Miliane, while the bulk of goods were transported overland by networks of roads.[973] On the basis of previous suggestions it is my opinion that the adoption in some workshops of Byzacena, Tripolitania and Cyrenaica of amphorae resembling or loosely imitating flat-bottomed Sicilian MR1 is not linked to functional characteristics — such as better transportability or more efficient use of cargo space — but is the final link in that 'proliferation' of the generic flat-bottomed amphora as the typical 'wine container'. This phenomenon follows the same process/pattern that started in Sicily itself from the 1st century AD, which I have linked to a wider process of cultural and economic changes typical of the Augustan period (see Chapter 1 and conclusions).

A few specimens of amphorae of uncertain origin loosely resembling the MR1 type with the adoption of the carinated shoulder, the flat bottom, small dimensions and the triangular/biconic rim are attested in North-African contexts: from the Flavian Hypogeum of Lepcis Magna[974] (Fig. 6.24); at *Simitthus*/Chemtou[975] (Fig. 6.25) and from El Djem[976] (Fig. 6.26).

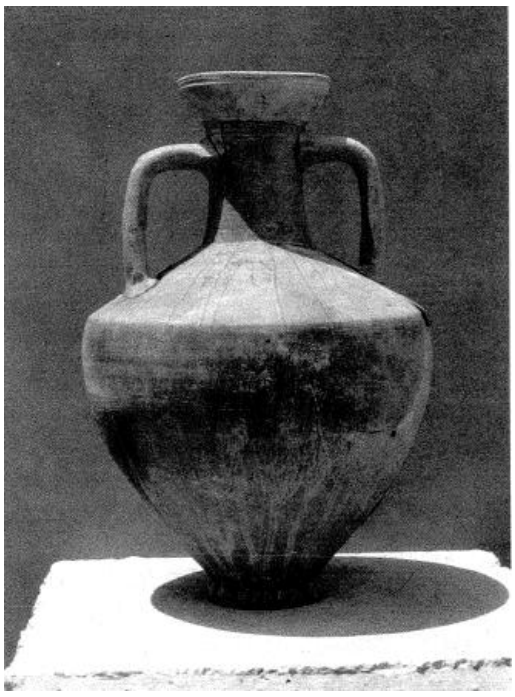


Fig. 6.24 Amphora from the Flavian Hypogeum, Lepcis Magna (Di Vita-Evrard *et al*. 1996, pl. LIV, Fig. b).

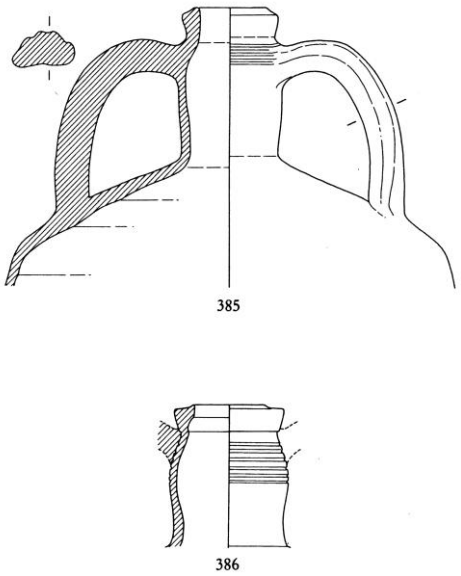


Fig. 6.25 Amphorae from Chemtou (Vegas 1994, cat. 385–386).

[973] Leitch 2010, 120–121 with bibliography.
[974] Di Vita-Evrard *et al*. 1996, pl. LIV, Fig. b.
[975] Vegas 1994a, cat. 385 and 386.
[976] Bonifay 2004, 148, Fig. 80 (from the warehouse).

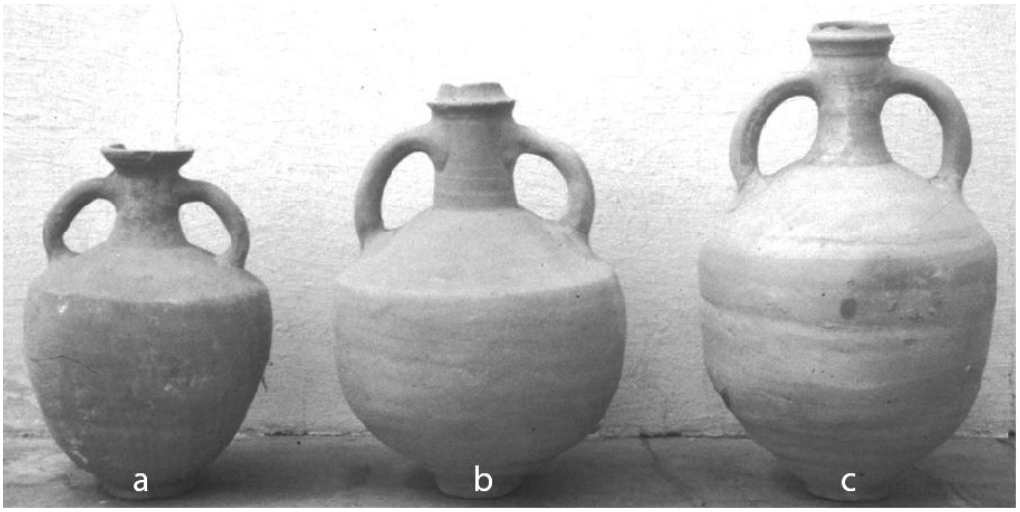


Fig. 6.26 Flat-bottomed amphorae from El Djem, see in particular type A which differs from the Sicilian prototype. Type B (MR 1a Form 3); Type C (MR 1a Form 2) (Bonifay 2004, 148, Fig. 80).

In this case the production shows a greater difference between the prototype and its imitation, and the main aim of the potters is in this instance to be able to create a package imitating only the 'general idea' of the prototypes.

In the case of the Cyrenaican workshop in Latrun, the shape of flat-bottomed amphorae fired in that specific workshop, closely resemble containers of the Catania MR 1a. This suggests the constant exposure of merchants, middlemen, and buyers to the original Catanian forms. The Catanian flat-bottomed forms were certainly not unfamiliar to North-African consumers and workshops at least from the 1st first century AD, and to a greater extent from the 3rd and 4th century AD. Interestingly, imitation in Latrun seems to start (judging from the published data) when the distribution of Catanian wine increased in the eastern Mediterranean, suggesting awareness of the wine transported in the container and a common long-distance supply network.

6.6.2. Adoption of the Form as a Means to Indicate a Wine More Like that of Catania

This approach suggests that the Catania flat-bottomed form was used as a way of suggesting to buyers/consumers of the wine that it was a 'Catanian-style' or more generally 'Sicilian-tasting' wine. This does not necessarily imply an intention to counterfeit the product in question, passing it off as an original; it does however indicate the export of containers from Catania to the geographical areas which produced similar

amphorae. The context which best exemplifies this is southern Germany, with its imitations of the MR 1a form (see above).

6.7. Concluding Remarks on Imitations of Catania MR 1a

In this chapter, I observed that the traditional view of amphora imitations that sees the practice of imitation as aiming to benefit from the reputation of the content of the original amphora should be replaced by a more complex and fluid view, which also considers the markets and the needs of the sellers for which the models and imitations were destined.

The imitation of the Catania MR 1a model in North-African markets provides further evidence of the use of Catanian amphora for long-distance export to the regions that imitated them. By contrast, we have little evidence at present for the export of imitation products to Sicily.[977] The imitations in any case usually seem to travel over shorter distances than the original Catanian containers, with the exception of a couple of circular handles of a Cyrenaican origin found in Tróia (Pl. XXXIV, no. 2 and 3) and the Salakta MR 1a from Lyon (Pl. XXXIII, no. 2). We should probably assume that the original models and their various imitations exploited different market systems/practices. Catania amphorae were used for bulk shipping to a vast market where they were recognized — by importers or intermediaries, but also by individual buyers — as 'Sicilian wine' amphorae. It is precisely the extent of commercial exchange that encouraged those involved in this trade in various capacities (wealthy landowners, dependents, people involved in the *figlinae*) to create and maintain for centuries a standardized form whose packaging identified the area of origin of the content.

I do not think that these considerations apply to imitation amphorae. These containers are less informative than the corresponding Sicilian models, which were sold and known literally throughout the Mediterranean. Furthermore, the imitations and the re-interpretation of the basic MR 1a amphora from unknown workshops (see above, Fig. 6.24–26) seem to have been distributed on a smaller scale (see above, Fig. 6.11 with distribution map). If this is confirmed, those who bought them at smaller markets must have had a degree of familiarity with these amphora models and known where the

[977] This is true if one consider some of the MR 1a without volcanities in the fabrics as imported containers of North-African orgin.

wine packaged in them came from. In this case, the desire to counterfeit the origin of the wine by using a well-known packaging is unlikely.

These preliminary remarks suggest the existence in Antiquity of a trade in similar amphorae to different types of markets: 1) widely exported original amphorae of 'recognizable shape' traded on long-distance markets; 2) imitation amphorae more suited to regional/local markets. As such, the imitations are only 'inspired' by amphora forms that were particularly widely exported and recognizable, but are not actually aimed at counterfeiting their contents. On the other hand, one would not exclude that the Sicilian-inspired MR 1a imitations were aimed at signalling a 'style' (not the origin) of wine.

Turning to the smaller imitation of the Catanian type in two German pottery workshops, it is not implausible that those working in the pottery industry recognized the potential of experimenting with this particular amphora shape. The exact economic goals are hard to define (cf. the three main hypotheses on the reasons for the imitation as above expressed). We should not underestimate the presence of imitations in funerary contexts (alongside the original Catania MR 1a), as if the use of these jugs (and their content?) also had a symbolic meaning link
were found.

THIRD PART: DISTRIBUTION AND TRADE

CHAPTER 7

DISTRIBUTION IN SICILY AND OVERSEAS TRADE OF SICILIAN AMPHORAE

7.1. INTRODUCTION

This chapter explores the overall distribution and trade of Sicilian transport containers within Sicily and elsewhere. The study covers different types of location, including urban and rural contexts, ports and shipwrecks, in an attempt to explain the economic dynamics behind the different amphora distribution patterns.

The data are presented beginning with the evidence from the production areas of Sicily and moving on to that from the western Mediterranean, northern Europe and the eastern Mediterranean. Both published and unpublished data and evidence from the collection of fabrics are presented and collated in tables in Catalogue II.

This distribution study has produced an overall picture of the areas to which the various Sicilian amphora types were exported and where they were absent (see Figs. 7.1–7.5 for the amphorae distribution in Sicily and Figs. 7.6–7.9 for amphorae distribution overseas). The maps offer both a geographical and chronological range of information (division in four main phases: Early; Middle; Late and Vandal/Byzantine periods) and raise questions about the broader economic dynamics (see Chapter 8). To better evaluate Sicilian wine export/distribution through comparison with other imported wine containers I discuss the evidence of other amphora-borne commodities from different areas of the Roman Empire.

The final section of the chapter investigates possible trade routes for Sicilian flat-bottomed containers using the data from wrecks and their cargoes and the pattern of distribution of the containers.

7.2. THE DISTRIBUTION OF SICILIAN FISH-SAUCE AMPHORAE IN THE EARLY ROMAN PERIOD

In the Early Roman Period, north western Sicily seems to have enjoyed a flourishing economy based on the production of tuna and fish *salsamenta* as suggested by the

manufacture of Dressel 21–22 in Alcamo Marina (Chapter 2, section 2.2.3.1.2). It is probably no coincidence that Dressel 21–22 types are mainly found in the north western area of the island[978] (Fig. 7.1). They are attested in the Roman city of Lipara,[979] in Caronia Marina,[980] in the Roman villa of Terme Vigliatore S. Biagio,[981] Termini Imerese[982] and its hinterland,[983] at the villa of Costa Schiavo,[984] Monte Iato,[985] San Vito Lo Capo,[986] Segesta,[987] near ancient Solunto[988] and the surrounding rural area (Solanto),[989] at Resuttano,[990] Terrasini,[991] Vendicari, Entella and Lampedusa,[992] Terrasini (underwater find), Collesano near Palermo, in Palermo (museum collection),[993] and Monte Pellegrino.[994] In east central Sicily, Dressel 21 are only attested in Catania (underwater find)[995]. In the north eastern region, specimens of Dressel 21 have been in found in Milazzo,[996] in the hinterland of Tusa[997] and the suburban area of Messina (rural settlement in present-day Via Catania).[998]

Outside Sicily, fragments of Dressel 21–22 (from different production sites) known from the published data indicate a broad distribution of this type in the western Mediterranean as far away as Pompeii, Cumae, Ostia, Rome, Settefinestre, Luni, Fréjus and Lyon, with occasional eastern discoveries, for example in Alexandria, Ephesus, Jerusalem and Bodrum in Turkey[999] (Fig. 7.2).

[978] Distribution map in González Muro 2009, 468, Fig. 25.
[979] *Meligunìs* IX, 2, 365, cat. 25; *Meligunìs* X, 371.
[980] Bonanno and Sudano 2007, 439.
[981] Tigano 2008, 77–78, pl. 57, no. 311.
[982] Identification by the writer. Belvedere *et al.* 1993, 219–220, nos. 699, 1175, 712, 634, 2 and 33.
[983] Himera III, 2, 351.
[984] Cucco 1995, 169.
[985] Isler 1989, 22; 2003, 68, Fig. 51, no. 80.
[986] Purpura 1982, 53–54, Fig. 12, nos. 17, 18 and 19.
[987] Ascribed to a regional production, Denaro 1997, 541, pl. XCIV, figs A2, A9, A24, A25 and A123.
[988] Purpura 1986, 143; Wilson 1990, 402– 403, no. 129.
[989] Lo Cascio 1990, 35, Fig. 6, nos. 1, 2, 4; 37, Fig. 7, nos. 1, 2, 4.
[990] Burgio 2002, 93, UT 38, no. 4; 100, UT 47, no. 1; 108, UT 53, no. 3.
[991] Purpura 1977, 57, Fig. 7C.
[992] Denaro 1995, 199.
[993] Wilson 1990, 402.
[994] Giustolisi 1979, 85, pl. E, 21.
[995] Tortorici 2002, 306.
[996] Ollà 2009, 258–262, figs. 15–20.
[997] Burgio 2008, 136, nos. 3–4, figs 113, 154.
[998] Bonanno 2001, 201.
[999] Botte 2008, 162, note 2, Fig. 24 for a Dressel 21–22 distribution map; Botte 2009, 155–156, Fig. 3, with bibliography of finds.

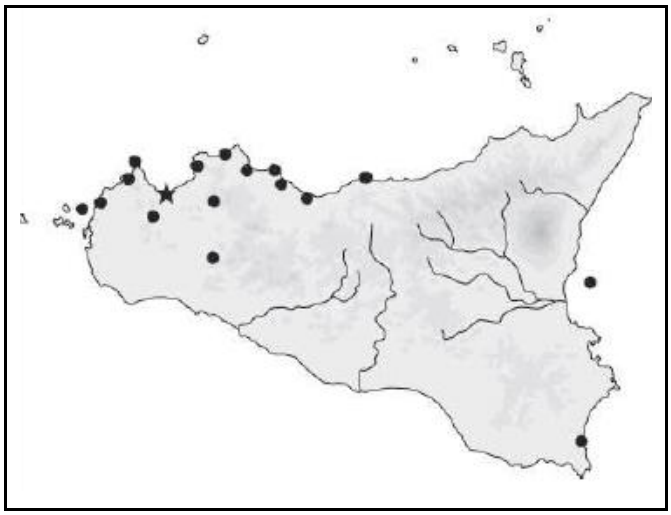


Fig. 7.1 Distribution of Dressel 21–22 amphorae in Sicily (González Muro 2009, Fig. 25).

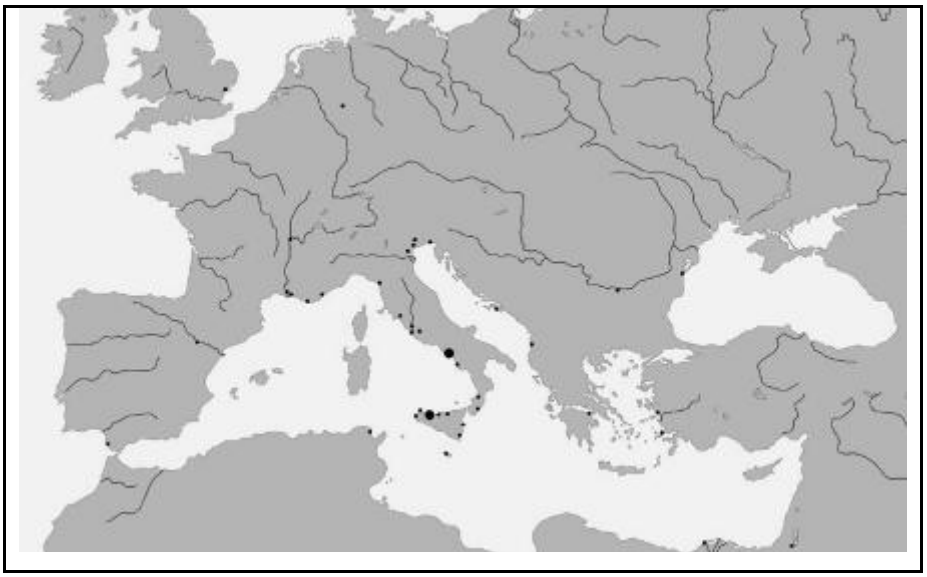


Fig. 7.2 Distribution map of Dressel 21–22 amphorae in the Mediterranean (after Botte 2009).

Analyses by C. Capelli of specimens found in Cumae and Pompeii have shown that most were produced in Sicily.[1000] In the 'Garum Shop' in Pompeii (I, XII, 8), scientific analyses carried out by the University of Cadiz in collaboration with the University of Venice confirmed the presence of several Sicilian Dressel 21 types, with a preponderance of types produced in Calabria.[1001]

[1000] Capelli and Piazza 2006, 171–173.
[1001] Bernard Casasola *et al.* 2012 in press.

7.3. The Distribution and Trade of Sicilian Flat-bottomed Amphorae in Sicily: 1st–6th Centuries AD

The distribution of flat-bottomed amphorae on the island from the 1st to the 6th century AD (Fig. 7.3 and Tables 7.1–9 in Catalogue II) is fairly uneven, with a higher proportion in coastal settlements and major cities, both on the north eastern Tyrrhenian and Ionian coast, and along the south western coast. They are less frequently found in the inland settlements of central Sicily and on the south eastern tip of the island. The amphorae that do travel in Sicily are those primarily destined for export, whereas amphorae not attested elsewhere in the Mediterranean, such as those produced in Central Sicily (Enna, district of Gerace) or in Western Sicily that were not traded,[1002] had a very limited distribution in Sicily, mainly within their production area. This is particularly true of the Late Antique and Early Byzantine flat-bottomed containers produced on the south western side of the island, at Campanaio, Giammaritano, and Cignana,[1003] that seem to travel only within the general production area in the hinterland of Agrigento.[1004]

Overall, even the Sicilian wine amphorae that do travel abroad seem to be more common within their production area. For example, the majority of the Late Roman north eastern amphora types made at several locations along the Tyrrhenian coast of Sicily have been found in settlements on the northern coast of Sicily, such as Termini Imerese, Patti, Tusa, and in the Aeolian Islands, especially Lipari.

Only the Catania region amphorae, despite the low figures, seem to have travelled more extensively within Sicily, at least from the 2nd century AD, being attested in Agrigento, in the south western area of the island, in western and central Sicily.

The early export of Catania flat-bottomed containers to Enna (district of Gerace) and the locally produced imitations[1005] can be explained by the heavy commercial traffic between Enna and the port of Catania. Livy[1006] and Cicero[1007] mention that the wheat produced in the interior of Sicily as far away as *Henna*/Enna (distance *c.* 72 kilometres)

[1002] See the suggested Sicilian origin of the amphora type M230 found in the Agora of Athens, Robinson 1959, M230.
[1003] In Cignana they represent approximately 14% of excavated amphorae, Rizzo and Zambito 2010.
[1004] See in particular the amphorae published in Lima 1995, 238, pl. XXIV, 8–9; XXV,1.
[1005] Bonnanno 2008.
[1006] Livy, 27, 8, 19.
[1007] Cic., 2, *Verr*., 3, 192.

was brought to *Catane* harbour and then traded to Italy. *Henna*, though in the interior of the island, was well-connected to the coast by road and thus provided a market for goods from the region of Catania and imported amphorae.

Looking at the pattern of distribution, there seems to be a sharp distinction between coastal and inland find-spots of Sicilian flat-bottomed containers with most rural sites of the interior, the latter virtually closed to regional wine trade in ceramic containers[1008] (See above, Fig. 7.3). Only larger rural settlements of the interior connected to *villae* (such as S. Luca or Gerace) have more heterogeneous assemblages with Sicilian wine imports (Naxos and wine cultivated within the region of Catania), as well as goods imported from outside Sicily.

Overall, although Sicilian wine transported in flat-bottomed amphorae travelled within Sicily, in particular along the north eastern, south western and eastern coasts, the figures combined with the pattern of distribution do not support the idea that regional wine conveyed in ceramic containers was widely exported in Sicily.

I would therefore suggest that the flat-bottomed types that travelled widely abroad (cf. contexts in Rome, Arles, Lepcis Magna and Malta, in the latter the most abundant imported amphorae) such as the Catanian amphora types or Keay 52[1009] were mainly produced for overseas transport, while the production of amphorae for local transporation was dependent on and principally aimed at local communities.

Given their inconsistencies, the number of regional amphora find-spots cannot reflect the extent of local agricultural production (wine in this instance). In other words, despite the new evidence suggesting that wine production was a significant component of Sicilian economic specialisation in the Roman Period as attested by overseas export, the quantification of local amphorae from the island is not a reliable method for estimating, even roughly, the quantities of wine produced (the same is true of fish-sauce production given the scanty find-spots of regional Dressel 21–22 in Sicily, see Fig. 7.1, above). Most of the wine produced and consumed locally in small and medium-sized communities was probably transported in vessels not preserved in the archaeological record, such as wooden barrels and animal skins. This would explain why not a single Sicilian amphora sherd has been found in the hinterland of Termini Imerese, extensively

[1008] However, this distributional tendency may be connecte to a different research intensity.
[1009] The low percentage of Keay 52 amphorae in Sicily (almost absent in the western area) is particularly striking, and point towards the conclusion that this type was mainly produced to supply the Roman market.

explored in the last 20 years by a series of systematic surveys,[1010] despite the presence of several amphorae produced on the north western Sicilian coast in the city's Late Antique contexts. We should also not underestimate the reuse of imported amphorae in small rural settlements (for example in Campanaio and Verdura).

A more realistic picture of the broad scale of regional wine (or olive oil) production may come from improved knowledge of wine processing equipment and the analytical study of the infrastructure needed to support wine production beyond local subsistence needs, and its export (i.e. pressing facilities, farms/rural settlements, *villae* and their *partes rusticae*, roads, ports), in conjunction with data on the production of local containers. As a final note, I would also emphasise the need for a study of the still neglected local production of domestic pottery (such as jugs, table amphorae etc.) or closed glass forms to complement our knowledge of wine transport amphora production.

[1010] Belvedere *et al.* 1993.

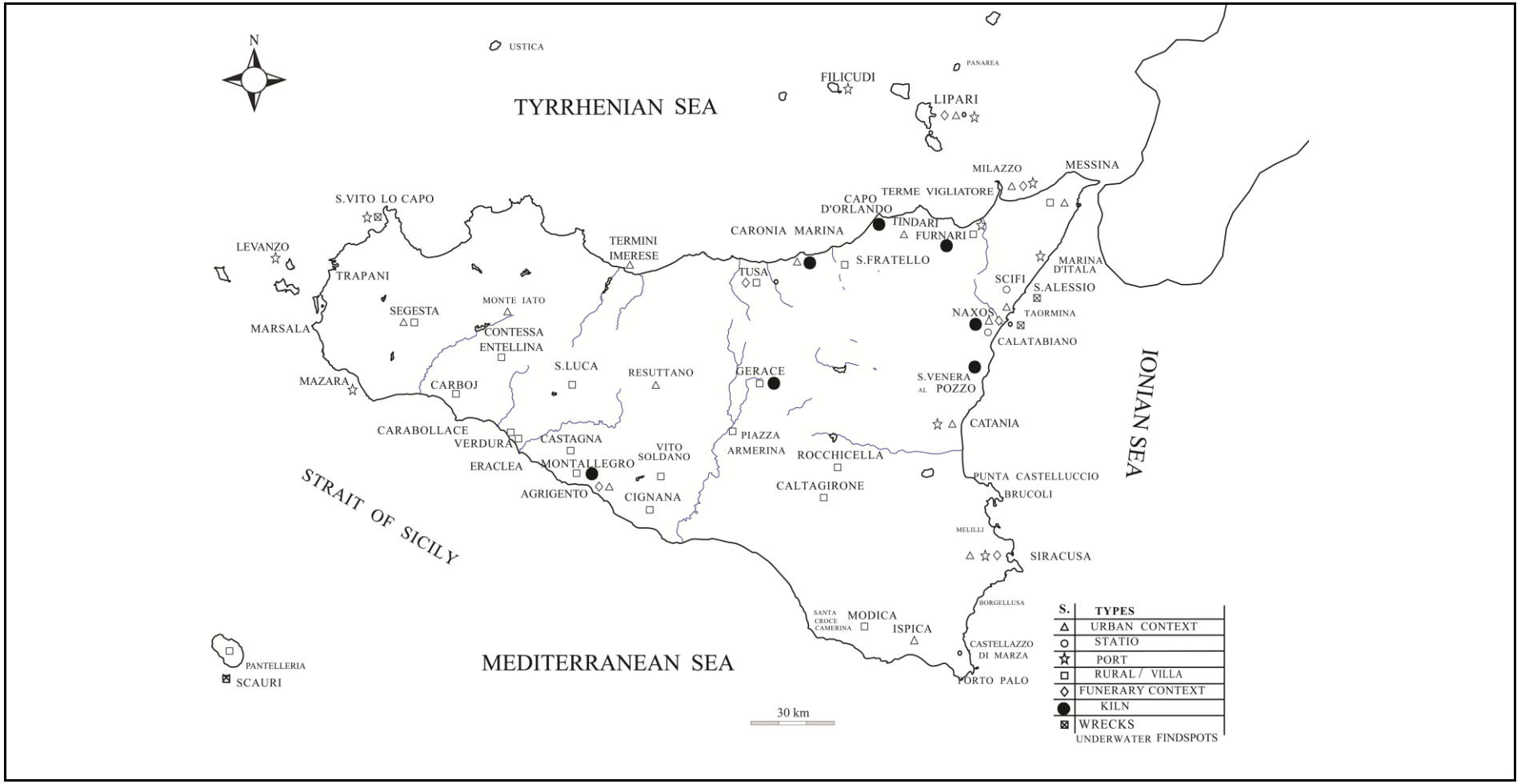
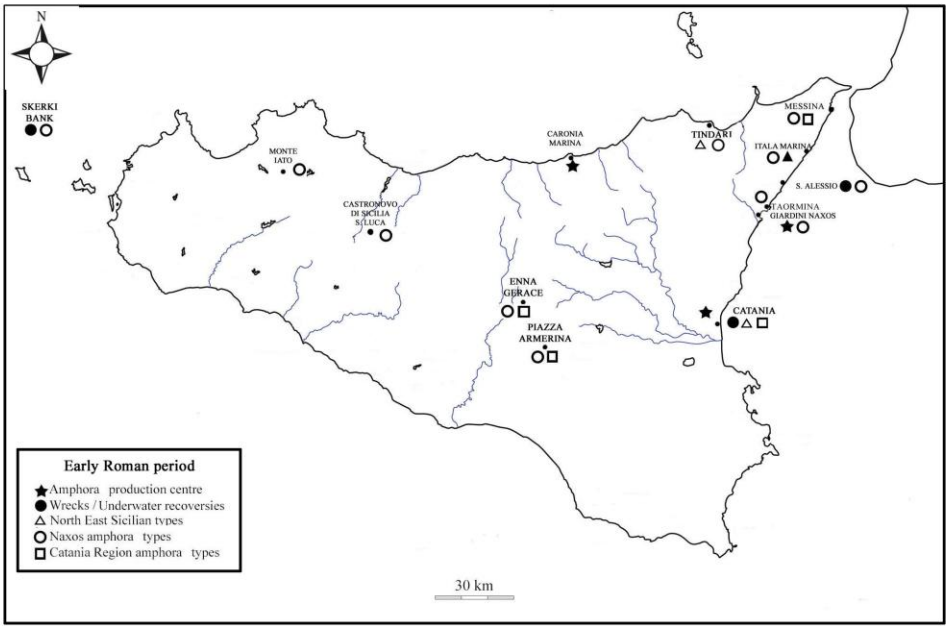


Fig. 7.3 Distribution of Sicilian flat-bottomed amphorae in Sicily (AD 1–500), indicating the type of archaeological context (C. Franco).



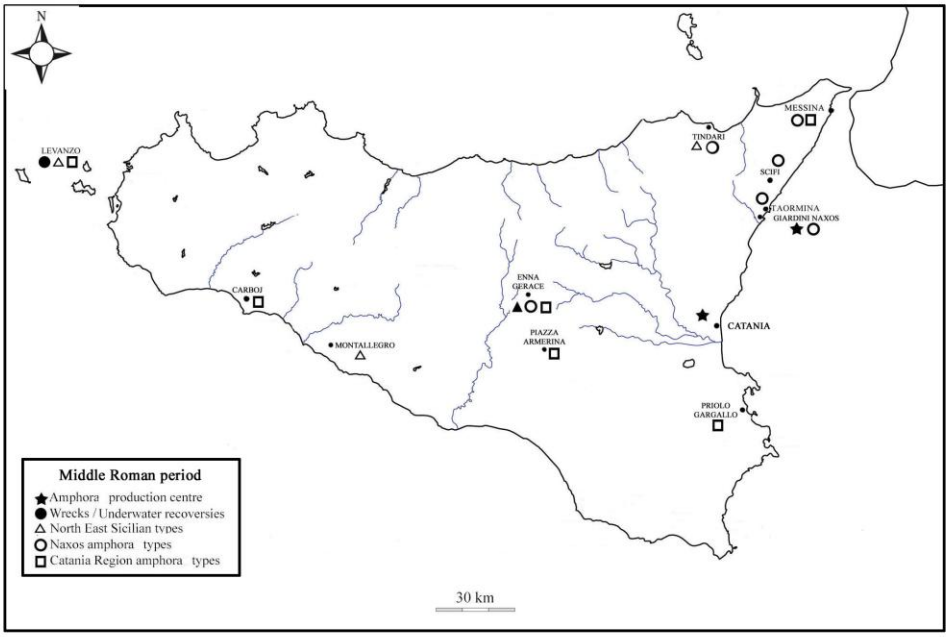


Fig. 7.4 Distribution map of Sicilian flat-bottomed amphorae in Sicily in the Early and Middle Roman periods (C. Franco).

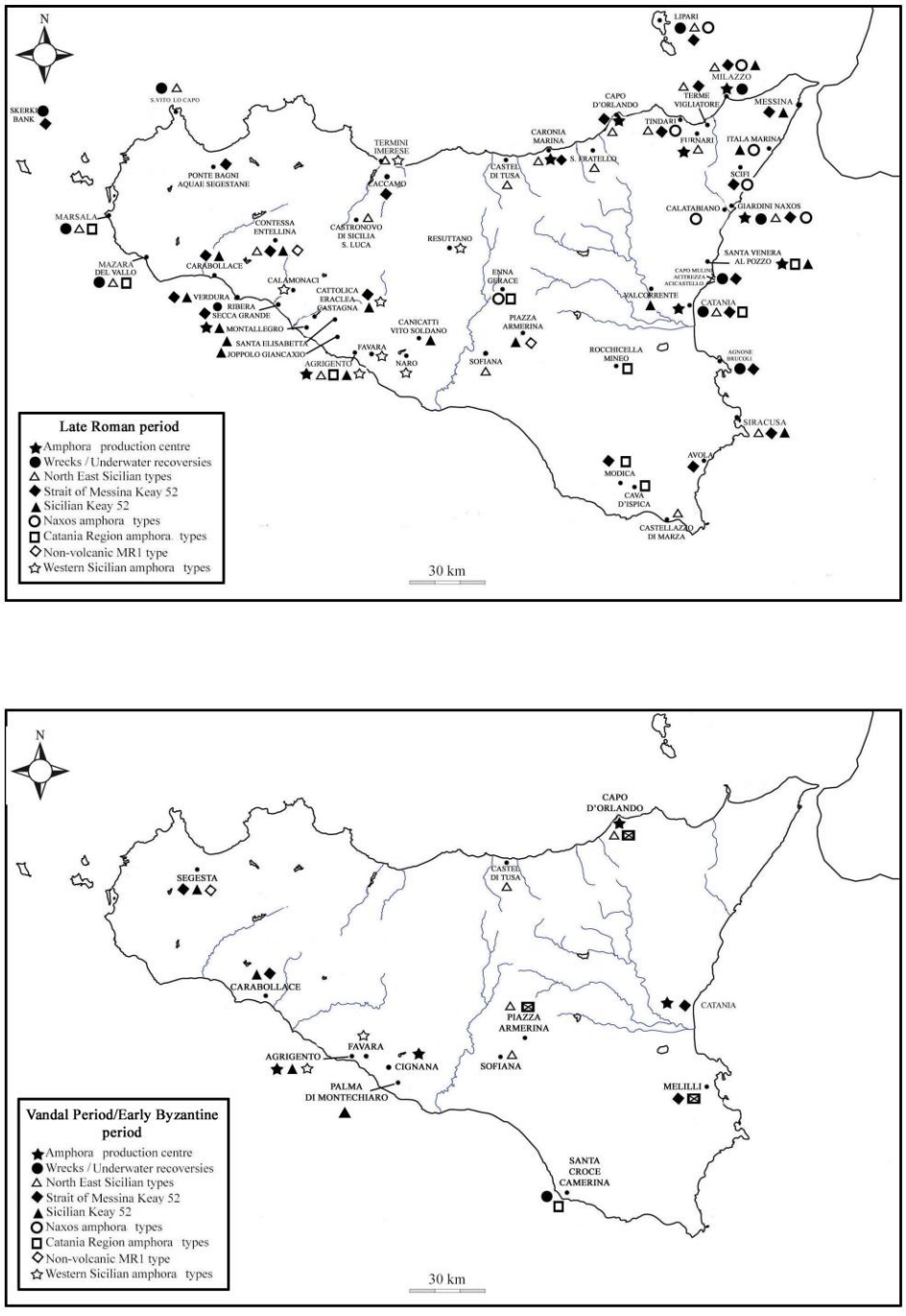


Fig. 7.5 Distribution map of Sicilian flat-bottomed amphorae in Sicily in the Late and Vandal/Byzantine periods (C. Franco).

7.4. Overseas distribution of Sicilian flat-bottomed amphorae (Figs. 7.6–7.9)

List of the sites in the distribution maps:

1 Genoa, Liguria, Italy
2 *Luni*, Liguria, Italy
3 Pisa, Tuscany, Italy
4 Cecina, Tuscany, Italy
5 Puntone di Scarlino, *Portus Scabris*, Tuscany, Italy
6 Roselle, Tuscany, Italy
7 Settefinestre/Orbetello, Tuscany, Italy
8 Lugnano in Teverina, Tuscany, Italy
9 Trincere, Latium, Italy
10 Macchia Tonda, Latium, Italy
11 Valle del Sacco/Anagni, Latium, Italy
12 Naples, Campania, Italy
13 *Cumae*, Campania, Italy
14 *Puteoli*/Pozzuoli, Campania, Italy
15 Pompeii, Campania, Italy
16 Punta Tresino, Campania, Italy
17 Aquileia, Friuli-Venezia Giulia, Italy
18 Verona, Veneto, Italy
19 Altino, Veneto, Italy
20 Trieste, Friuli-Venezia Giulia, Italy
21 Ariano nel Polesine, Veneto, Italy
22 Comacchio, Emilia Romagna, Italy
23 Ravenna, Emilia Romagna, Italy
24 Brindisi, Apulia, Italy
25 Lecce, Apulia, Italy
26 Hydrus/Otranto, Apulia, Italy
27 Rome, Latium, Italy
28 Ostia, Latium, Italy
29 Gustinja, Croatia
30 Brijuni, Croatia
31 Zadar, Croatia
32 Spalato, Croatia
33 Durres, Albania
34 Elbasan, Albania
35 Apollonia, Albania
36 Butrint, Albania
37 Empuries/*Ampurias*, Spain
38 Tarragona/*Tarraco*, Spain
39 Vila dels Munts, *ager Tarraconensis*, Spain
40 Valencia/*Valentia*, Spain
41 Benalua/Alicante, Spain
42 Cartama, Malaga/*Malaca*, Spain
43 Algeciras, Spain
44 Seville/*Hispalis*, Spain
45 *Italica*, Spain
46 Troia, Portugal
47 Tourega, Portugal
48 Merida/*Emerita*, Portugal
49 Lanzarote, Canary Islands
50 Arles, France
51 Les Saintes, Arles, France
52 Fos-sur-Mer, Arles, France
53 Marseille, France
54 S. Tropes, France
55 Nimes, France
56 Narbonne/*Narbo Martius*, France
57 Bourges/*Avaricum*, France
58 Rennes, France
59 Lyon/*Lugdunum*, France
60 Mariana, Corsica
61 Lucciana, Corsica
62 Impasse, Quatrina, Corsica
63 Campiani, Corsica
64 Suale, Corsica
65 Calvi, Corsica
66 Grosseto-Prugna, Corsica
67 Porto Torres/*Turris Libisonis*, Sardinia
68 Pantelleria (in land surveys)
69 Scauri wrek, Pantelleria
70 Malta (several contexts)
71 London/*Londinium*, England
72 Krefeld-Gellep, *Gelduba*, Germany
73 Düsseldorf, Germany
74 Cologne/*Colonia*, Germany
75 Trier/*Augusta Treverorum*, Germany
76 Breisach, Germany
77 Kaiser Augst/ *Augusta Raurica*, Switzerland
78 Laufen-Müschhag, Switzerland
79 Sion/*Sedunum*, Switzerland
80 *Lambaesis*, Algeria
81Carthage/Tunis, Tunisia
82 Nabeul/*Neapolis*, Tunisia
83 Kelibia/*Clupea*, Tunisia
84 Souk el Abiod/*Pupput*, Tunisia
85 Sidi Jdidi/*Aradi*, Tunisia
86 El Djem/*Thysdrus*, Tunisia
87 Sidi Khalifa/*Pheradi Maius*, Tunisia
88 Thyna/*Thaenae*, Tunisia
89 *Meninx*, island of Djerba, Tunisia
90 *Sabratha*, Libya
91 *Oea*/Tripoli, Libya
92 *Lepcis Magna*, Libya
93 Misurata, Libya
94 Gheriat el-Garbia, Libya
95 Apollonia, Libya
96 Benghazi, Sidi-Khrebish, Libya
97 *Boreum*, Libya
98 Tocra/*Taucheira*, Libya
99 *Tolmeita*, Libya
100 Alexandria, Egypt
101 Tell el Fara'/*Bouto*, Egypt
102 *Coptos*, Egypt
103 Actium/*Nikopolis*, Greece
104 Trypiti wreck, Greece
105 Athens, Greece
106 Corinth, Greece.
107 Yassi Ada wreck, Turkey
108 Ephesus, Turkey
109 Bodrum, Turkey
110 Beirut/*Beritus*, Lebanon
111 *Caesarea Maritima*, Israel
112 Ashkelon/*Ascalon*, Israel
113 Jerusalem, Israel
114 *Gortina*, Crete
115 Cyprus

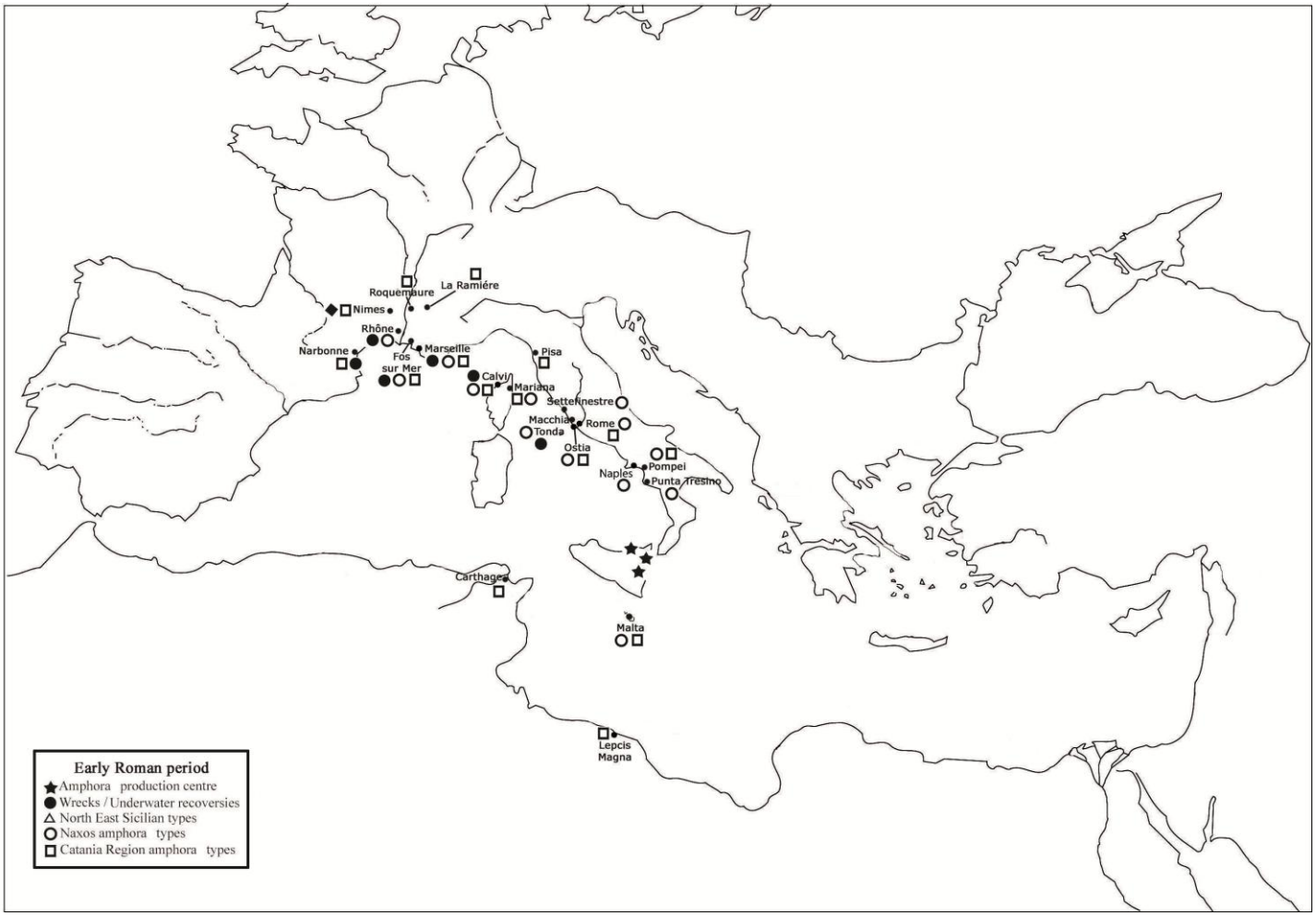


Fig. 7.6 Distribution of flat-bottomed Sicilian containers in the Mediterranean and Northern Europe in the Early Roman period (C. Franco).

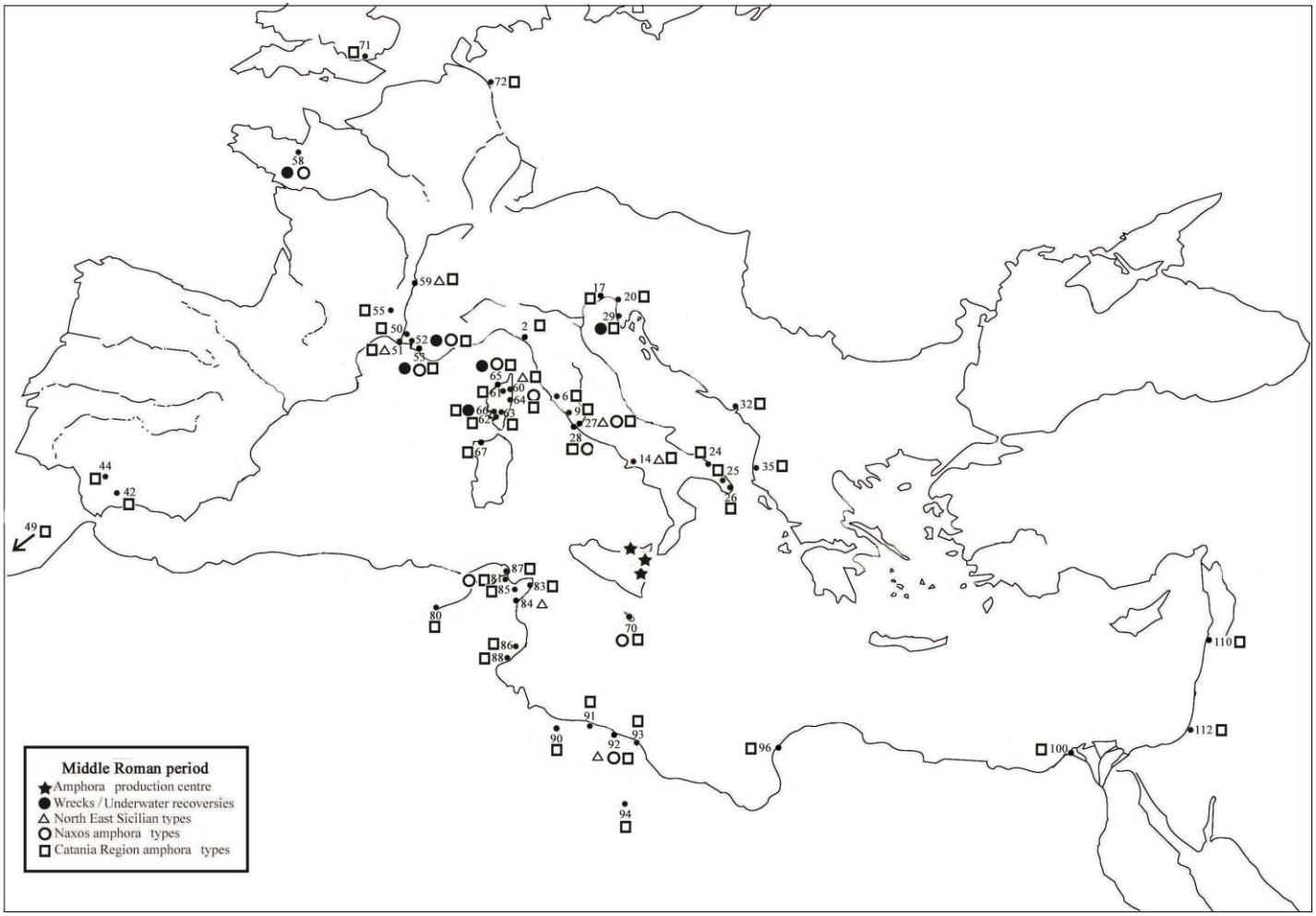


Fig. 7.7 Distribution of flat-bottomed Sicilian containers in the Mediterranean and Northern Europe in the Middle Roman period (C. Franco).

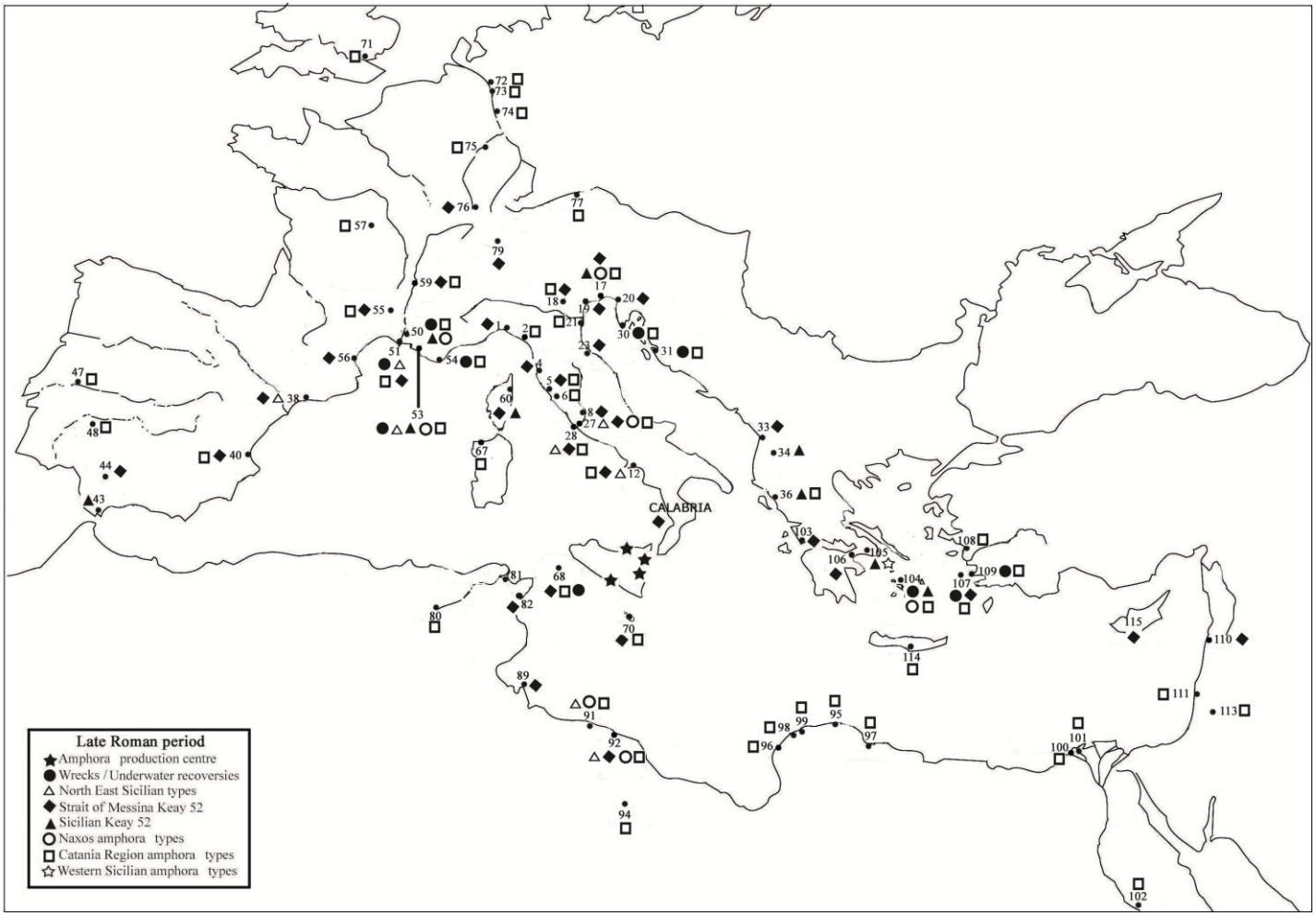


Fig. 7.8 Distribution of flat-bottomed Sicilian containers in the Mediterranean and Northern Europe in the Late Roman period (C. Franco).

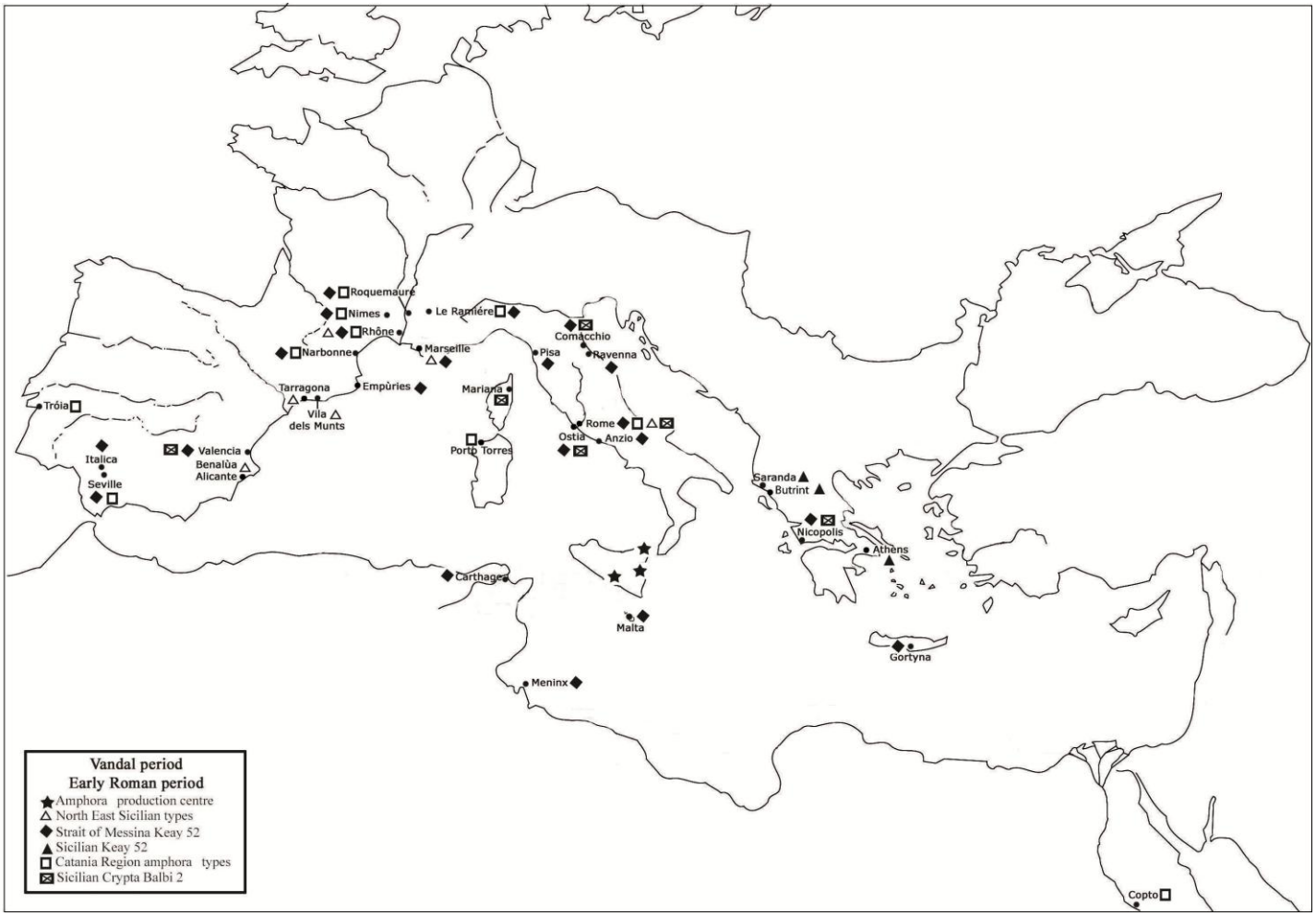


Fig. 7.9 Distribution of flat-bottomed Sicilian containers in the Mediterranean and Northern Europe in the Vandal and Early Byzantine period (C. Franco).

7.4.1. The Distribution and Trade of Sicilian Flat-bottomed Amphorae in the Western Mediterranean (1st–6th Centuries AD)

7.4.1.1. Italy (Cat. II, Tab. 7.10)

Outside Ostia and Rome, Sicilian wine containers (Naxos and Catanian types) are found at sites on the western side of the Italian peninsula from present-day Campania to the coastal arch of Liguria. Amphorae circulated throughout Etruria and appear to have been distributed more widely at coastal sites and major towns on the Tyrrhenian coast. Rural and inland settlements are rarely a target for Sicilian wine, probably because these markets were mainly served by local wine containers (Spello, Forlimpopoli and Empoli types). The export of Naxian wine amphorae is dominant in the first half of the 1st century, after which Catanian wine containers take over the market.

The Italian sites along the Adriatic coast seem to favour Catanian wine, especially from the mid-3rd century and during the 4th century AD. In the Adriatic regions of Italy, Sicilian MR 1a Form 2 and Form 3 are both attested. The find-spots are more numerous in the excavated contexts of Aquileia and its hinterland. With its river and sea port, Aquileia appears to be a major market for Sicilian wine (both from the region of Catania and Naxos). It is unclear if the supply of Sicilian wine to the northern Adriatic was controlled and distributed by Aquileia. The distribution pattern of Catanian wine containers is identical to that at the contemporary context of the Istrian Peninsula (see Cat. II, Tab. 7.13). Not a single fragment, instead, has yet been found in *Dacia*, *Pannonia* and *Moesia Superior*.

Other than Ostia/Rome, the import of north eastern Sicilian amphorae is particularly rare in Italy. The NE types seem to circulate from the first half of the 3th century exclusively along the Tyrrhenian coast (see Naples).

During the 5th and 6th centuries AD, Keay 52 amphora types are the most widely exported Italian amphorae in the Adriatic area.[1011] The impossibility of ascertaining their origin severely limits our understanding of Sicilian wine imports to this part of Italy. A different picutre has emerged for excavated 5th-and 6th-century AD archaeological contexts in the Tyhrrenian area, such as Pisa, where Keay 52 imports (wine from Calabria or Sicily) are rare.[1012] The wine circulating in this period is the

[1011] Auriemma and Quiri 2007, 50, note 19.
[1012] Such as from the territory of Pisa, Del Rio and Vallebona 1996, 490; Costantini 2014, 986.

cheap regional wine produced in northern Etruria and the Valdarno in Tuscany, packed in the 'Empoli amphorae' from different sources.[1013]

7.4.1.1.1. *Rome, Latium* (Cat. II, Tab. 7.11)

Rome was a major market for Sicilian wine containers, which reached the city from the beginning of the 1st century onwards, at least from the Tiberian period[1014] until the 7th century AD.

The Naxos Early type first appears in the Janiculum-via Sacchi excavation with a handle fragment[1015] in the Late Augustan assemblages (1 NMI, 0.65% of all the amphorae attested) but the fragment could be linked to the following period, indicating the same chronology for the export of this type as the Ostia assemblages. This Naxos amphora reached a peak in percentage terms in the Flavian layers (AD 68–96; 3 NMI, 4.35%) and is still found in the Antonine assemblages (6 NMI).

Catania region flat-bottomed containers Forms 1 and 2 (=Ostia II, 464 and Ostia, II, 522) are first attested in the Flavian layers (2 NM, 2.9%) and reached a peak in the following period, with 28 specimens in total around the mid-2nd century. Interestingly, one fragment of a Catania flat-bottomed Form 3 is attested in the late Antonine period assemblage,[1016] indirectly demonstrating that this form appeared later than the earlier Catania Form 1 and 2 (see Chapter 4, section 4.9 on the amphorae typological development).

Between the 1st and the end of the 4th century, Catanian amphorae are common in urban contexts in Rome, with more sizeable imports during the first half of the 4th century AD.

Rome was also the principal market for the Keay 52 amphora, with imports mainly from *c.* AD 350 (several contexts on the north eastern slopes of the Palatine) to the 7th century (Crypta Balbi).

The most detailed recent evidence for amphora imports to Rome between the 4th and the late 5th century comes from the Late Antique assemblages from the north eastern slopes of the Palatine,[1017] between the present-day Via Sacra and Piazza del Colosseo. In

[1013] Costantini 2014, 986 with bibliography.
[1014] See also Rizzo 2003 on the flat-bottomed containers of Sicilian origin attested in 1st-/2nd-century assemblages in Rome.
[1015] One handle of Ostia II, 523, Ferrandes 2008.
[1016] Ferrandes 2008, Fig. 7, no. 54.
[1017] Panella *et al.* 2010.

the mid-4th-century Palatine assemblages, the south-Calabrian and Sicilian Keay 52 represented 23% of all the Italian amphorae attested (represented by Empoli amphorae).[1018]

From the early decades of the 5th century AD, the picture changes again: Catania containers (MR 1a form 3) are more rarely found in excavated Roman contexts. I take this evidence as a sign of a decline in the export of Catanian wine (as evidenced only by ceramic containers) before the Vandal period.

The chronological evidence from the Palatine (Temple of Cybele) and Caelian contexts suggests that in percentage terms the trade in Catania MR 1a was similar to that in Keay 52 (Calabrian and Naxian/Sicilian) in the second half of the 4th century AD.[1019] However, MR 1a decline significantly by the first half of the 5th century AD[1020] in favour of Keay 52. From the second half of the 5th century AD, Keay 52 and NE Sicilian types, including the amphorae produced at the Caronia Marina workshop (see the new analyses in Chapter 3, section 3.6.4) take a significant 18% share of total amphora imports.[1021]

In the AD 480–500[1022] deposit on the north eastern slopes of the Palatine Hill, Keay 52 of different origins (mainly Calabrian as shown by the analyses) account for 17% (=123 MNI) of all amphorae.[1023] NE Sicilian types are attested with 27 specimens; Crypta Balbi 2 types are rarer (8 MNI) probably due to the early chronology of the deposit.

This late Palatine Hill assemblage is particularly important because it shows the absence of Catanian wine containers: Sicilian wine imports to Rome appear to be dominated by the north coastal and north eastern (region of Messina) types. The evidence also suggests that at this time the distribution pattern of Sicilian amphorae in Rome is more similar to that of Marseille (cf. La Bourse context, below) than to the excavated contexts of Arles, where Keay 52 are less common and Catania MR 1a Form 3 continues to be imported in the second half of the 5th century AD. Other evidence from

[1018] Casalini 2014.
[1019] Ostia I, 453 (4.5%) *vs* Keay 52 (7.5%), Pacetti 1998, 191, pl. 1.
[1020] Temple of Cybele: Ostia I, 453= MR 1a (6%) *vs* Keay 52 (18%), Pacetti 1998, 191, pl. 2a. Caelian Hill: Ostia I, 453 (3%) *vs* Keay 52 (19%), Pacetti 1998, 191, pl. 2b.
[1021] From the second half of the 5th century AD: Temple of Cybele: Ostia I, 453 (1.5%) *vs* Keay 52 (18%), Pacetti 1998, 191, pl. 3.
[1022] The deposit has been interpreted as the result of a single operation aimed at preventing the collapse of a portion of the vaulted spaces constructed during the Neronian period, Panella *et al.* 2011.
[1023] Casalini and Crespi 2010, 101.

late 4th-to mid-5th-century deposits in Rome comes from Lungotevere Testaccio where only NE Sicilian types are attested (=lack of Catania containers).

In the Crypta Balbi deposit, Keay 52 types (of different origin) are the most common amphorae after the North-African Spatheia.[1024] By the 7th century, Keay 52 were only made in Calabria, as shown by petrographic analyses on samples found in the 7th-century layers in the Crypta Balbi in Rome (for a 7th-century context in Marseille see *infra*). At this time, North eastern Sicilian wine amphora imports to Rome are only represented by the Crypta Balbi 2 amphora type.

7.4.1.1.2. *Ostia, Latium* (Cat. II, Tab. 7.12)

At Ostia,[1025] the Terme del Nuotatore excavations span the late 1st to 7th centuries AD. Naxian wine containers are attested from the Tiberian-Claudian period until the end of the 1st century.[1026]

Catanian wine reached Ostia from the end of the 1st century until the early decades of the 2nd century in Catania Form 1 and Form 2 amphorae, and in the second half of the 2nd century AD in the Catania Form 3 amphora. From the first three decades of the 3rd century, Catanian wine arrived in Ostia bottled in the new MR 1a form with a biconical rim, attested up to the end of the 5th century AD. The share of Naxian wine seems to decline compared to Catanian wine already from the end of the 1st century AD.

From around the third decade of the 3rd century AD, the Ostia assemblages show that the wine amphorae produced on the north eastern coast of Sicily were imported, attested with the type here termed NE Sicilian type 1. It was followed from the 4th and during the 5th century (layers I and II) by the NE Sicilian type 2. A few specimens of Keay 52 and Sicilian Crypta Balbi 2 come from a sunken-floored structure of the Constantinian Basilica showing that wine from NE Sicily and *Bruttium* was still imported to Ostia in the early 7th century, probably for the Roman market.

7.4.1.2. Istrian Peninsula (Cat. II, Tab. 7.13)

The wide-ranging success of Catania amphorae is evident from their distribution to coastal sites of the Istrian peninsula on the Adriatic coast from the Middle Roman period, suggesting a close connection to maritime trade as the main means of

[1024] Saguì 1998, 312, Fig. 6.
[1025] Distribution in Ostia was also illustrated in Chapter 5.
[1026] Panella 1973, 472 'dall'età tiberiano-claudia all'età flavia'.

distribution. Hitherto the penetration of Catanian wine containers inland is not attested. A concentration of Catania MR 1a was found in the Castrum on Brijuni, an island off the Istrian peninsula at the head of the Adriatic. There is no evidence for imports of Naxos containers. Keay 52 are not commonly found in Croatia and Albania. In Late Antique Durrës in Albania, the supply of North-African fine ware and amphorae is less significant than imports from the eastern Mediterranean,[1027] suggesting stronger commercial ties with the East than with the West and southern Italy.

7.4.1.3. Iberian Peninsula and Spanish Islands (Cat II, Tab. 7.14)

7.4.1.3.1. *Lusitania*

In Lusitania (modern-day Portugal and parts of SW, W and NW Spain) the evidence for Sicilian amphorae is limited to three unpublished fragments of circular handles analysed for this study. These forms came only from the region of Catania. Two fragments were found at a Roman fish salting factory at Tróia on the south western coast and one at the Roman villa of Tourega.

The Tróia factory, one of the largest in the western Empire, has being extensively re-excavated in the past twenty years, allowing for a more in-depth definition of the phasing of fish-sauce production from the 1st century to the beginning of the 6th century AD.[1028]

The Roman villa at Tourega in southern Portugal was located on the outskirts of the capital *Ebora Liberalitas Iulia.* The main excavated ceramic assemblages come from the bath complex.[1029] The Catania sherd was found in a surface layer covering a large corridor south of the baths. Despite the paucity of evidence and the lack of chronological data, its identification in this context is particularly significant given the rarity of other identified wine amphorae from the *villa*, only 1.3% of the identified containers (96.8% being containers for fish products). These data indicate that imported wine was a luxury item (if we assume that wine consumption was satisfied by local wine production) and that Catanian wine was considered sufficiently exotic or high quality to be imported.

[1027] Shkodra 2006.
[1028] Pinto Magalhães and Brum 2010; 2012.
[1029] Vaz Pinto, Viegas and Ferrer Dias 2004.

In terms of supply, the specimen found in Tourega may either have travelled up the Atlantic coast or have been exported from Merida, the capital of the *Lusitania* province, where one whole (Catania) MR 1a form 3 amphora has been found.[1030] In the latter case, the commercial route would have involved both overland and river travel from the eastern Algarve region and up the Guadiana River towards Merida.

7.4.1.3.2. *Tarraconensis* (Cat II, Tab. 7.14)

7.4.1.3.2.1. *Tarraco*/Tarragona

The pottery assemblages from *Tarraco*/Tarragona, the capital of the Roman province of *Tarraconensis***,** have been extensively studied and fully quantified over twenty years. Information on the relative proportions of each amphora type in Tarragona is available, providing precise data on volumes of trade and imports to the city. In this favourable context of a detailed understanding of trade contacts with various areas of the Mediterranean, it was possible to undertake further research on the unidentified amphorae with a view to identified Sicilian amphorae within the quantified assemblages. The main aims were threefold:

1. to identify Sicilian types among the unidentified amphorae;
2. to characterize Keay 52 amphora fabrics and thus attribute each specimen to a region of manufacture or production site.
3. To quantify Sicilian types traded in Tarragona and thus elucidate patterns of commerce.

To obtain these results, three large pottery assemblages were chosen from city dumps dating from the mid-3rd to the 5th century AD. Common,[1031] cooking and fine wares were examined to get a sense of sea-borne and local trade. The study of pottery from dumps is particularly important because it provides insight into the type of vessels and the array of foodstuffs (stored in durable containers) imported to a site during a specific period. It also provided an opportunity for statistical comparisons among

[1030] Lequement 1976, Fig. 8b.
[1031] The flat bottom and thin walls of Sicilian amphorae might have led the excavators to consider them table amphorae.

several classes of material, and, more importantly, supplied significant information about local production, the movements of goods and trade patterns.

The 3rd-century dump: Abocador del carrer Castaños

This large dump was located near the city port and dated to around the mid-3rd century. It is one of the most important ceramic assemblages of this period in Spain.[1032] The dump was formed before the area of the Early Roman *horrea* was intensively occupied by suburban domestic structures of a private nature, continuing until the end of Late Antiquity.[1033]

Approximately 350 diagnostic amphora sherds were recovered from the 3rd-century AD context. The most common amphora types were regional Spanish and Portuguese amphorae for oil (Baetican Dressel 20 and Tejarillo types); for wine (Baetican Beltrán 68; Tarraconensis Dressel 2/4) and fish (Baetican Beltrán IIB; and 72?); and Tunisian oil and fish amphorae (Africana I, IIA, IID1 and D2).[1034] Among the unidentified amphorae, several fragments presented eastern Mediterranean fabrics (on a macroscopic basis). The fragments were very small and often only handle fragments were preserved.

No Sicilian types were identified with certainty in the dump. These new data, in conjunction with the minimal presence of MR 1a in previous published data, confirm the lack of trade in Sicilian wine to Spain in the 3rd century AD, or at least, none in the deposit analysed.

The absence of Sicilian wine containers in a period when their presence began to increase in the other western provinces of the Empire is particularly significant. The lack of Sicilian wine in the 3rd century confirms the information from the published data. Overall, the amphora composition of the 3rd-century dump mirrors the general trend attested in other contemporary contexts in the city. The main foodstuff production regions are Tarragona, southern Spain and North Africa. A very small number of amphorae were imported from the eastern Mediterranean.[1035]

[1032] Abocador del carrer Castaños, TCS-1 (phase I–IV). Brief presentation of the pottery in Macias Solé 2004, 85–87.
[1033] Macias Solé 2000.
[1034] North-African vessels such as ARSW (main exported forms in fabric A and C), coarse wares (basin Uzita 2 and 3) and cooking pots (Hayes 181, 182, 183, 184 and 197) were also common in the context.
[1035] Evidence for similar trends in Remolà 1998, esp. 798.

The 5th-century dump: Parcela 22B del PERI-2 (AD 400–450)

The second dump is a pre-Vandal context dated from the early to mid-5th century.[1036] It is connected to the construction of the suburban residential area near the city harbour. Of 1051 MNI, 150 amphorae (14.2%) of varying origin were recovered. The most numerous were southern Spanish types (Keay 13A/C–D; 19A–B and 23), followed by North-African (Keay 25; *spatheia*; Keay 35?), Italian (Empoli type), eastern Mediterranean containers (LR 1, 3 and 4) and the late version of Cretan amphorae (Vila-Roma 8.198 type).[1037] Among the group of unidentified amphorae (48 MNI), I identified three fragments of Keay 52 amphorae[1038] with visually different fabrics. Thin-section analyses confirmed the different geographical provenance of these specimens, two of which were produced in the Strait of Messina (Pl. VII, nos. 3–4) and one on the north eastern tip of Sicily (area of Messina?) (Plate V, no. 3). The fabric of the latter differed from the Naxos Keay 52. Indeed, in this late phase (mid-5th century AD) the Naxos Mastrociccio workshop must have almost ceased production (on the kilns of Mastrociccio see Chapter 2, section 2.4.2.1). Imports of other Italian commodities (wine) are evidenced by the 4.6% 'Empoli' amphora types in the dump (7 NMI). They are more numerous than the Keay 52, showing a wider market for this average-quality wine produced abundantly along the Tyrrhenian coast of Italy and around the Arno valley.

Overall, the study showed the sporadic presence of Calabrian/north eastern Sicilian Keay 52 amphorae, probably with a stronger Calabrian than Sicilian component in trade. However, both were likely traded along the same routes and loaded at the same major re-distribution centre.

It is also worth stressing the complete absence of Catania MR 1a types (even as residuals in the 5th-century dump) and of the 5th-century flat-bottomed types manufactured in northern Sicily; the latter are attested in other 4th-/5th-century excavated contexts in Tarragona (see below).

[1036] Parcela 22B del PERI-2 (AD 400–425). Brief description of the context in Remolà and Arnau Trullén in press.
[1037] Remolà 2000, 234: ánfora tardía Tipo A; Bonifay, Capelli *et al.* 2013, 116–117.
[1038] The Keay 52 amphorae were recovered from US 5200 and 5253, in association with Keay 19 A–B (4th-century shape); Keay 25C; LR1, LR3 and LR4; ARSW: Hayes 59, 61B, 73,76, 80, 91A–B, 50B, no. 60.

Undoubtedly, the most significant result from *Tarraco* is the identification of the import of the wine amphorae produced at the Caronia Marina workshop, on the northern coast and north eastern tip of Sicily. The new evidence comes from the Early Vandal ceramic assemblage of the Vila-Roma dump. This assemblage is one of the most important sources of vessels and amphorae for the second quarter of the 5th century in the north western Mediterranean.[1039] Some later ARS forms, such as Hayes 99 — dated from the late 5th century — [1040] and Hayes 91C — dated around the early decades of the 6th century — [1041] have been recognized,[1042] but they must be considered intrusions in an otherwise rather homogeneous context.

The figures for the dump show the prevalence of regional and local amphorae (Baetican, Lusitanian and Tarraconenis) with a total of 36%. North-African and eastern products are roughly equal, at *c.* 25% of the total amphorae. Significantly, Keay 52 types were not attested in this dump in the published evidence, but I identified a neck of a North eastern Sicilian Keay 52 amphora with a flat handle (pl. VI, no. 2) presenting petrographic and morphological similarities with a specimen found in the slightly later context of La Bourse in Marseille (pl. VI, no. 1). Other than this neck no other Keay 52 was recognized in this extensive dump in Tarraco, confirming the low imports of this amphora type into *Hispania Tarraconensis*. For the Keay 52 type, we see an increase between the second half of the 4th and the first half of the 5th century AD. In the 5th-century dump in Tarragona, Keay 52 containers represent only 2% of the total amphorae. This percentage is surpassed by that of Empoli amphorae (5%), produced between the Tiber valley and the Tyrrhenian coast in Late Antiquity. Other excavated contexts confirm these relative proportions: Empoli amphorae are attested with 4 to 10% in several domestic and funerary contexts, compared to a lower *c.* 2% for Keay 52.[1043] Significantly, these analyses demonstrated for the first time the export of Sicilian Keay 52 produced in the (north) eastern area of Sicily. Numerically they are of little importance (under 1%).

[1039] Updated chronology based on a review of the fine ware, Reynolds, Bonifay and Cau 2011, esp. 19, context 40. For the context: Remolà and Abelló 1989, esp. 308; Remolà 2000, 46–50.
[1040] Bonifay 2004, 181.
[1041] Bonifay 2004, 179.
[1042] Remolà 2000, 48.
[1043] For other Keay 52 from Tarragona see, Keay 1984, 267–268 (evidence from mid-late 5th century AD); Aquilué 1997, 86 (first quarter/mid-5th century AD); Remolà 2000, 202–204, Fig. 70, 5–8 (mid-4th/mid-5th century AD contexts in Tarragona); Remolà and Arnau Trullén in press.

The most important result is the identification for the first time of the trade to *Hispania Tarraconensis* of Sicilian wine produced along the north eastern coast of the island in around the second quarter of the 5th century. The samples chosen for analysis belonged to previously unidentified groups of containers (*c.* 14% in the published evidence). Here these types have been named NE Sicilian type 3 (Plate XXVI, nos. 2–3), NE Sicilian type 4 (Fig. 4.54) and NE Sicilian type 6 (Plate XXVIII, nos. 1–2). These amphora types represented a very small proportion of the assemblages. Despite these low numbers, their presence is significant because it shows that northern Sicily produced sufficient wine for containers to be traded in north eastern Spain around the second quarter/mid-5th century. It is reasonable to suggest that a series of small kilns in north eastern Sicily were producing similar wine amphorae traded together toward a major harbour (Portus?) whence they were directed to Rome and other coastal cities.

Calabrian/Sicilian Keay 52 and Capo d'Orlando/Caronia Marina types are attested in Rome (see in particular the evidence from the mid-5th-century layer of the Eastern Slope of the Palatine Hill and Monte Testaccio). This trend may indicate that the amphorae were traded from Portus, where merchants purchsed north eastern Sicilian and southern Calabrian products. The bulk of exports from the harbour was represented by mass-produced Empoli amphorae which carried the — possibly cheaper — average quality wine from Central Italy. Interestingly, Empoli amphorae are not attested in Sicily. This is another clue that wine was traded from the Sicilian ports to Portus, with return cargoes of other products (Eastern amphorae?/Spanish amphorae?), but not the regional central Italian wine amphorae. Calabrian (Sicilian?) Keay 52 continue to be imported to the city until the early decades of the 6th century AD, i.e. the beginning of the Early Byzantine period.[1044] The trade in Calabrian (NE Sicilian ?) wine is relatively important in the inland city of Seville, the ancient *Hispalis* (see Cat. II, Tab. 7.14), where an appreciable number of Keay 52 types have been found in Vandal and initial Early Byzantine contexts.[1045] Keay 52 are also attested in nearby *Italica* (see Tab. 7.14). Catanian wine containers from Seville are only known as residuals in Vandal and early Byzantine contexts. Calabrian wine was probably redistributed to inland Spain from several large ports on the east coast of Spain or even the south coast of France, such as Tarragona or Marseille, where there is evidence for Keay 52 exports until the Early Byzantine phase (see Fig. 7.9 and Cat. II, Tab. 7.14 and 7.16 with cited bibliography).

[1044] See also Remolà 2000, 204 for similar considerations.
[1045] See for example Amores Carredano, García Vargas and González Acuña 2007.

7.4.1.3.2.2. *Valentia*/Valencia **(Cat. II, Tab. 7.14)**

The ceramic assemblages from the Roman *colonia* of *Valentia* have been exhaustively studied in recent years and the results extensively published.[1046] The excavated ceramic contexts dating between the end of the 2nd century BC and the 7th century AD show the import of a great variety of amphorae from Hispania, North Africa, the Italian peninsula, and the eastern Mediterranean. Southern Italian and Sicilian wines are attested in extremely low quantities in these contexts, with a few specimens from Catania[1047] and more numerous Calabrian/Sicilian Keay 52. I was able to study three published specimens of flat-bottomed containers in thin-section. Specifically, these were one Catania flat-bottomed Form 3,[1048] one MR 1a form 3[1049] from the region of Catania and one Calabrian Keay 52,[1050] both found in one of the city dumps (Les Corts dump), deposited between the end of the 5th and the beginning of the 6th century. The two flat-bottomed amphorae, found intact in the mid-5th-century level of destruction of a small production area[1051] installed in the remains of a disused Imperial public building in Plaza de La Almoina and analysed in thin-section, were compatible with a local Spanish production (Pl. XXX, no. 3). Flat-bottomed types from Naxos and amphorae from Capo d'Orlando/Caronia Marina workshops are not hitherto attested in Valencia and its territory.

The analysis of the amphora imports to Valencia confirmed the extreme rarity of Sicilian wine containers. No Keay 52 or other Sicilian types are known from the coastal city of Cullera, the ancient *Portum Sucrone*, on the southern boundary of Valencian territory.[1052] However, trade with the Italian peninsula is evidenced by the presence of Empoli amphorae,[1053] which, as already noted above for Tarragona, are widely attested in north western Spain, in contrast to the rarity of Sicilian wine amphora types.

Several small amphorae were recovered from the 6th-/7th-century layers of the excavations of La Almoina. On the basis of the published drawings, I suggest they are a

[1046] For an updated review of imported amphorae in the main ceramic assemblages of Valencia and its territory during the Late Roman Period see Ribera and Rosselló 2012.
[1047] Sabatares context (4th century AD) and Les Corts dump (5th-6th century AD).
[1048] Pascual *et al.* 1997, 185, Fig. 4, no. 14, inv. no. U130. Residual in Les Corts dump context.
[1049] Pascual *et al.* 1997, 185, Fig. 4, no. 23.
[1050] Pascual *et al.* 1997, 185, Fig. 4, no. 23. Inv. no. U147. Thin-section analysis no. 42.
[1051] For the context see Ribera and Rosselló 2007, with bibliography on previous excavations.
[1052] Rosselló and Villa 2005.
[1053] Rosselló and Villa 2005, 150, Fig. 15,6.

Crypta Balbi 2 and a Calabrian/Sicilian Keay 52 with a tall neck.[1054] Another single example of Keay 52 comes from a well in the area of the *macellum*, located along the eastern side of the city forum.[1055] The chronology for the contents of the well, the early decade of the 5th century, is provided by the ARS (Hayes 61B, 67, 91A) and other amphorae (Keay 23, Beltrán 72; Keay 6 and Eastern LR4).

Overall, the wider picture shows that at these eastern Spanish sites the Sicilian wine trade was particularly marginal around the end of the 2nd/3rd century AD (just one Catania Form 3 in *Valentia* and no specimens in *Tarraco*), and export seems to be concentrated in the Early Vandal period (see the *Tarraco* dump) for the types produced in north eastern Sicily. The extreme paucity of MR 1a was also noted by P. Reynolds.[1056] The evidence from amphora distribution suggests that these sites were not 'targets' for the Sicilian wine trade and that imports were more casual or traded on through intermediate emporia rather than being part of a specific trade flow. The same pattern of distribution is evident for 1st-to 3rd-century Spanish amphorae for wine, fish-sauce and olive oil traded to Sicily.[1057] Iberian imports, judging from a review of the published data, are distributed among the main port cities along the Tyrrhenian coast of Sicily (in particular Palermo, Tyndaris, Caronia and Lipari) and towards the north western tip of the island (Segesta, Entella, Monte Iato and Marsala). Their distribution may indicate closer connections with the supply of Spanish amphorae to Rome, which reached Sicily from Portus /Rome and nearby Tyrrhenian markets.

7.4.1.4. Gaul (Cat. II, Tabs. 7.15–18)

7.4.1.4.1. *Provence and the Rhone Valley*

The majority of the materials studied from the southern Gaul region were found in well-stratified pottery assemblages analysed in detail, quantified and published in numerous important articles. The identification of Sicilian amphorae from these assemblages is therefore particularly significant, not only because it shows the export of Sicilian wine

[1054] Pascual, Ribera and Rosselló 2003, 94, Fig. 19, in particular the amphorae 8ALM5906-10 (Crypta Balbi 2) and 8ALM5906-5 (Keay 52).
[1055] Ribera and Rosselló 2007, 189–190, inv. no UE 3270–1. In the fabric angular common quartz, mica flecks and limestone are visible.
[1056] He mentioned one MR 1a in NE Spain (one example). MR 1a were absent in Alicante.
[1057] For the Early Imperial period, a few Dressel 7–11 (*garum* and *salsamenta*), Baetican and Dressel 2–4 tarraconensis (wine), Haltern 70 (*defrutum*/olives?/wine?), Dressel 14 (*salsamenta*), Beltrán I/Dressel 11 (*salsamenta*), Beltrán IIB (*salsamenta* and wine) are known.

to this area but also for its statistical meaning. The quantified data on Sicilian types have been compared with the figures for other Mediterranean amphora imports, providing more reliable information on the pattern of Sicilian wine distribution.

7.4.1.4.1.1. *Arelate*/Arles **(Cat. II, Tab. 7.15)**

Arles, in present-day Provence, was a focal point for Mediterranean trade in southern France from the Late Republican period onwards, due to its geographical position and potential for exploiting the Rhône corridor. The city was the gateway for commercial relations with the interior of France and the markets of northern Europe.

The evidence of Sicilian amphorae from the city is particularly abundant and significant. By processing a significant quantity of material (more than 50 fragments) dating from the 1st to the end of the 5th century AD, this study allow us to reconstruct commercial trends of Sicilian wine imports over time.

The specimens analysed in thin-section and under the stereomicroscope[1058] come from seven urban archaeological contexts, several underwater finds from the Rhône, two river shipwrecks, the local Archaeological Museum collection and two excavated areas just outside Arles interpreted as harbour installations connected to the main port of Arles (1st century to the beginning of the 3rd century AD). The new petrographic analyses from these contexts revealed that the specimens belong to the two main petrographic sub-groups which both originated in the Catania area but used different materials/clay (Chapter 3, section 3.6.1). This also confirms that the amphorae of the same shape produced in Catania were part of a complex network of production and large-scale wine distribution.

Evidence from the Rhône: Underwater Discoveries and Riverboat Wrecks

The earliest Sicilian amphorae imported to Arles are the three specimens of the Naxos Early Roman type belonging to the cargo of a flat-bottomed riverboat that sank in the ancient port of *Arelate*, on the right bank of the Rhône. This exceptionally well-preserved 'Arles-Rhône 3' wreck[1059] was excavated from 2008 and is complete with its

[1058] All the Sicilian amphorae collected from Arles are included in Catalogue I.

cargo of pottery, glass, jewellery and limestone blocks. The pottery dates to between AD 60 and AD 120.

Four Catania MR 1a come from the 'Arles-Rhône 7' wreck that sank between the 4th and the beginning of the 5th century AD.[1060] The percentage of Catania amphorae in the cargo (approximately 6% of the amphorae attested) is low compared to imports of North-African wine/oil/*salsamenta* (42%) and Eastern Mediterranean wine (16%); nevertheless it represents the majority of Italian wine imports (60% of identified Italian imports). The other Italian wine imports are one Empoli amphora and one Calabrian Keay 52.[1061] Significantly, the Catania amphorae are the only Sicilian imports attested on the wreck. Another Catania MR 1a Form 2[1062] comes from the 2nd half of the 3rd-century level identified just below the Arles-Rhône 7 wreck. Another 14 amphorae were recovered from this layer, the majority from North Africa (Africana IB; IID and IIC1), with one Late Gauloise 4. From a 3rd-century underwater context comes the flower-shaped handle of a MR 1a produced in Catania.[1063]

The vibrant economy of the port of Arles is attested by the discovery of amphorae[1064] with Sicilian petrographic characteristics that are not identical to known types. These specimens suggest the penetration into southern France of containers manufactured at smaller Sicilian workshops, which nevertheless engaged in commercial activities. Their export might indicate the existence of trade between the port of *Arelate* and another major port (possibly Portus /Rome), that received a wide range of amphora-borne products from Sicily.

[1059] Long, Rival and Marlier 2009.
[1060] Long and Duperron 2011a. (=SA 25 and SA 27; and RH.09.Z5.AR7.270 and RH.09.Z5.AR7.214).
[1061] Long and Duperron 2011a, 44.
[1062] RH.09.Z5.AR7.284.
[1063] RH.07.A61.1320.
[1064] SA 29 and SA 113.

Less information is available for 2nd-/3rd-century contexts in Arles. For this study, only 2 specimens of Catania MR 1 were recovered from a Middle Roman imperial context. They belong to a classic version of the MR 1a (var. 2)[1065] and to a container with flower-shaped handles.[1066]

The majority of the evidence comes from five Late Roman and post-Vandal deposits.[1067]

In the district of Esplanade, outside the ramparts in southern Arles, a well-stratified ceramic assemblage dating from the end of the 3rd century to the beginning of the 5th century has been studied in detail.[1068] The trend emerging from the published data suggests a lack of Sicilian imports during the 3rd century AD. The Catania MR 1a Form 3 appears between the mid/third quarter of the 4th century when it represents 8.20% of 125 MNI amphorae[1069]. The only other Italian wine imports in this context are Calabrian/Sicilian Keay 52 (30 MNI of 134 amphorae), which are found mainly in the mid-4th-century layers, with fewer in the early 5th-century deposit (context 6B).[1070] The ceramic assemblage of this period is dominated by North-African imports (olive oil, *salsamenta* and wine). In the 5th century AD no MR 1a are recorded.

Six rims of MR 1a Form 3 (late variant)[1071] were among the Sicilian MR 1a recovered from an urban context dated to around the early 5th century.[1072] Two were selected for thin-section analysis given the peculiar rim shape, different from other MR 1a late variants.[1073] Despite these differences, all the sherds present the characteristic Catania granular fabric.[1074] This may suggest low standardization in the process of manufacture in the last phase of MR 1a production at a major workshop or the

[1065] Long and Duperron 2011a, Fig. 5, no. 3.
[1066] Context: Arles-Saint-Césaire, inv. no. SCS.TDM.11 US423 (handle).
[1067] Contexts analysed: the district of Esplanade (4th-first half of the 5th century AD); the Area of the Roman circus (4th century/beginning of the 5th century AD); the area of IRPA (*c.* AD 400); the area of the forum *cryptoporticus* and the area of the Roman Theatre (second half of the 5th century AD).
[1068] Congès and Leguilloux 1991; Piton 2007.
[1069] Piton 2007, 288, Fig. 1, nos. 2–3. Its Catania in Catania is based on morphology and macroscopic description of the fabric and exterior surface: 'Pâte fine, allant du rouge brique au rouge orange. La surface de ces amphores est souvent de couleur blanchâtre à jaune ou gris clair'.
[1070] Congès and Leguilloux 1991, 222 (published as eastern Mediterraean containers).
[1071] IRP.89.711.1033; IRP.89.711.1141; IRP.89.711.1144; IRP.89.711.1145; IRP.89.711.1146; IRP.89.608.341 (SA 112) and IRP.89.608.342 (SA 110).
[1072] Piton 1998, esp. Fig. 6, nos. 36–4: Catania MR 1a Form 3 (North-African imports by the author); Fig. 6, no. 47: Keay 52.
[1073] SA 110 and SA 112.
[1074] The fabric differs from the S. Venera al Pozzo fabric.

manufacture of this type in a number of smaller nucleated workshops using similar clays/raw material. Another Catania MR 1a var. 3 comes from the excavation of the Cryptoporticus with similar chronology.[1075]

Another ceramic assemblage of the late 4th century AD was recovered near the disused Roman Imperial circus. The available evidence shows the contemporaneous imports of MR 1a Form 3 and the earliest specimens of Keay 52 in around this period. In particular, 12 MR 1a and 14 Keay 52 types were identified, representing *c.* 5 % of all the amphorae recovered.[1076] Significantly, these are the only Italian wine imports attested, as Empoli amphorae were not recovered from this context.

Three fragments (out of 150 MNI amphorae) are imports from Sicily (0.44%) in the late 4th-/mid-5th century ceramic assemblages from the Theatre area[1077]. Interestingly, they all belong to different types produced in different areas of the island: from the region of Catania, the Caronia Marina workshop and north eastern Sicily.

The distribution trends show that Calabrian wine is first introduced into the market at Arles in the late 4th century AD, reaching its peak when Catanian wine imports diminish from the mid-5th century onwards; they are still exported in the 6th century AD, but in lower quantities than at Marseille.

Catanian wine continued to be imported to Arles until the early Vandal period and diminished by the second half of the 5th century AD, as shown by the ceramic evidence from a dump in the district of Esplanade.[1078] In the excavated contexts no MR 1a are attested, while *c.* 30 fragments of Keay 52 have been discovered in layers of the end of the 4th century AD, decreasing considerably from the beginning of the 5th century AD. Trends at Marseille indicate a general increase in Keay 52 exports from this chronological phase onwards (see below, La Bourse). The specimens of Catania MR 1a found in 6th-century AD contexts should be considered residual.

[1075] SA 24.
[1076] For the context: Piton and Djaoui 2008.
[1077] Richarté and Glibert 2008.
[1078] On the context, Congès and Leguilloux 1991.

7.4.1.4.1.2. *Les Saintes area*

Recent excavations around the ancient mouth of the Rhône in present-day Les Saintesrevealed a small number of containers produced in several areas of Sicily.[1079] Of 276 amphorae, only three were Sicilian and 1 Calabrian. I analysed a North Eastern Sicilian type 1[1080] of the mid-3rd century AD manufactured in the area of Caronia Marina; one Catania MR 1a;[1081] one handle produced in the metamorphic area of Sicily[1082] probably belonging to North Eastern Sicilian amphora type 1; and one Keay 52 type probably produced in Calabria.[1083] In terms of chronology, imports from Sicily seem to be more frequent from the 3rd century onwards, while they are not attested in this context in the 1st and 2nd centuries AD.

7.4.1.4.1.3. *Fos-sur-Mer* (Cat. II, Tab. 7.15)

Excavations have been carried out at the site of Fos-sur-Mer, the outer harbour of Arles, which was particularly active during the Early Imperial period. 469 amphorae (MNI) and other pottery dated to between the 1st and the beginning of the 3rd century have been brought to light. The most numerous wine amphora types are the 3rd-century regional Gallic amphorae (70.8%), followed by Greek types (8.6%), the Tarraconensis type (7%); and eastern Mediterranean imports (1.6%). The Italian material, composed of two MR1 types and one Forlimpopoli amphora, represent 6.4% of the total wine amphorae.[1084] Distribution studies on these smaller harbours near Arles have demonstrated the trade, though in limited numbers, of Sicilian (and southern Calabrian) wine containers to smaller ports probably for redistribution into interior southern Gaul.

Overall, the evidence strongly suggests that Arles and its territory was a specific target market for Sicilian wine, which then reached the military settlements on the Rhine.

[1079] On the excavation, Long and Duperron 2011b.
[1080] Long and Duperron 2011b, 103, Fig. 10, no. 3 and 114 (= SA 111).
[1081] SM0.06.08.
[1082] SM0.11.Z5.D4.348.
[1083] SMO.06.97/199.
[1084] Marty and Zaaraoui 2009, 419.

7.4.1.4.2. Marseille and Other Southern French Contexts

7.4.1.4.2.1. *Massalia*/Marseille (Cat. II, Tab. 7.16)

Imports of Sicilian amphorae to Marseille start in around the 1st century AD as shown by the unpublished Naxos Early Roman type finds from underwater contexts (cf. DRASSM). During the 2nd and 3rd centuries, imports from the region of Catania are the most numerous among the Sicilian containers, followed by rare imports of Naxian wine. Catanian wine containers do not seem to be imported after the first half of the 4th century AD (in contrast to Arles), while during this phase wine from Naxos/north eastern Sicily is more abundant in Marseille than in Arles, which was dominated by imports of Catanian wine containers. A hint of the preference for North eastern Sicilian imports in the market of Marseille may be the provenance of the Sicilian amphora cargo from the Pointe de la Luque B wreck which I had the opportunity to study. The wreck sank off Marseille in the middle decades of the 4th century AD, with a cargo composed only of amphorae produced at Naxos workshop and somewhere in north eastern Sicily (area of Messina?). Judging from the composition of the Sicilian cargo, the ship may have stopped at the port of Messina which certainly acted in Roman period as a major centre for the re-distribution and export of the containers produced in nearby workshops (i.e. Naxos and other as yet unidentified amphora production centres).

From the 5th century AD onwards, Marseille appears to be the principal market for Sicilian and Calabrian Keay 52 as clearly shown by the La Bourse context where they represent 10–16% of the total amphorae in Period 1 (mid-5th century AD).[1085.] By contrast, Keay 52 specimens, though present, are rarer in an early 5th-century context at Arles (see above). From the last third of this century, Keay 52 appear to decline slightly in Marseille with 7% of the total amphorae.[1086] Keay 52 exports to Marseille peak in the Vandal period, but are still found in a context dated to the third quarter of the 7th century AD when Italian imports are represented only by one Calabrian Keay 52.[1087]

[1085] Bonifay and Pieri 1995, 114. See also Loseby 1992, 185, tab. 2. Keay 52 types from the La Bourse context are rightly ascribed to an Italian origin *vs* the previous statistical assessment of the La Bourse context which classified Keay 52 as eastern Mediterranean amphorae (Bonifay 1986, 297 and Bonifay Villedieu 1989, 33).
[1086] Bonifay and Pieri 1995, 116 (context 12).
[1087] Bien 2007, Fig. 5, no. 78. Specimen analysed by. C. Capelli who confirmed its Calabrian production.

7.4.1.4.2.2. *Narbo Martius*/Narbonne (Cat. II, Tab. 7.17)

To date, three Catania flat-bottomed form 1 amphorae have been found in Narbonne in a context dating to AD 40–70.[1088] There is a lack of evidence for Sicilian imports in the following centuries, until the mid-4th century AD. The distribution trends of amphora imports in Late Antique and Early Byzantine Narbonne (funerary and urban contexts) show that Iberian exports (Tarraconensian wine, Baetican oil and fish sauce, Lusitanian fish sauce) dominate assemblages between the 4th and the 6th century. In the funerary context of Rue de l'Hôtel Dieu[1089] 68% of all the amphorae attested are Iberian, followed by North-African containers, mainly Keay 25 and 36 (25%). Eastern amphorae (mainly LR1 and LR4) are less common (9%), while Italian imports are only represented by two Calabrian/Sicilian Keay 52. A parallel is the 5th-century urban context of Ilot Saint-Eutrop[1090] where Iberian amphorae are dominant (19 MNI, 50% of all amphorae). Eastern amphorae are also attested with high percentages (12 MNI, 31%), followed by North-African containers. Even here, Italian containers are represented only by Sicilian/Calabrian Keay 52 (1 MNI, 1.36%).

To sum up, the market of Narbonne between the 4th and 6th century is dominated by Iberian products. Italian imports are extremely rare and come from a southern rather than central Italian source (i.e. Empoli amphorae). The rarity of the Keay 52 is in striking contrast to the coeval known assemblages of Marseille (especially La Bourse), and to a lesser extent, Arles (see above). On the other hand, the lack of Empoli containers at Narbonne is striking and contrasts with their relative abundance in the contemporary contexts of Tarragona on the same coast (see above). These differences are a clear reflection of the existence of different supply methods at these major coastal cities — Narbonne, Marseille, Arles and even Tarragona — during the same phase.

Amphorae manufactured in the region of Catania predominate in Narbonne, as also indicated by the finds from the excavation of the harbour Island of Saint-Martin, in the present-day town of Gruissan, 12 kilometres southeast of Narbonne. The site has been proposed as the location of an ancient harbour forming part of a complex port system serving the *colonia* of *Narbo Martius*.[1091] Eleven fragments of handles, both fluted and

[1088] Sánchez 2009, Fig. 270, nos. 1 and 2.
[1089] Ginouvez *et al.* 1996–1997.
[1090] Alessandri, Pierri and Sánchez 1998.
[1091] For the context, Sánchez *et al.* 2000.

circular in section, belonging to containers originated in the region of Catania were recovered in an excavation carried out in 2011 and still unpublished.[1092] Unfortunately, the handles are residual finds, as they were found in numerous deposits dating from the 6th to the mid-6th century AD, when the production of Catania containers had already stopped.[1093] Although limited in numbers and chronological information, this group of specimens is of economic significance because it confirms that Catanian wine was shipped to the harbour and was travelling to the *Provincia Narbonensis.*

7.4.1.4.3. *Concluding Remarks: the Evidence from Marseille and Arles*

The new analyses of the fragments in conjunction with published information have demonstrated that Sicilian flat-bottomed containers were exported to southern Gaul continuously during their long period of production (1st–6th onward AD) but not in identical proportions.

The concentration of MR 1a along the southern French coast had already been noted by Riley[1094] and C. Panella.[1095] The identification of their origin in the region of Catania along with the ascertainment of the Sicilian origins of other types not previously identified by scholars now allows us to see strong distribution patterns in distinct macro-areas of southern France. The distribution of Sicilian wine containers is therefore more complex than it would at first appear, supporting the impression that Arles and Marseille received the containers from different sources.

There are notable dissimilarities in the Sicilian wine supply of Arles and Marseille, namely the reduced range and rarity of amphora forms from the region of Catania and the high frequency of Keay 52 types at Marseille.

From the beginning/central decades of the 1st century AD, the wine produced in Naxos and Catania was exported to both Arles and Marseille. A significant observation is the apparent decrease of Sicilian wine imports during the 2nd century AD when both Catania and Naxos types are poorly represented in the excavated contexts of these cities. This may not be coincidental, and should probably be explained by the hegemony of the regional wine conveyed in the Gallic amphora types attested in almost all the southern

[1092] US4142; US2165; US2042; US2109
[1093] The chronology of production of Catania amphorae goes from the very beginning of the 1st century AD to the early Vandal period (in the course of the second half of the 5th century AD), after that the production seems to stop completely.
[1094] Riley 1979, 179.
[1095] Panella 2001.

French contexts excavated. From the 3rd century AD onwards, Sicilian wine exports come mainly from the region of Catania and the north eastern coastal Sicily (specifically the Caronia Marina workshop).

From the 4th century AD, Gallic amphorae are in general decline and their production ends around the end of the same century. Meanwhile, from the beginning of the 4th century wine, fish-sauce and oil from North Africa increasingly predominate over all other imports in Arles, Lyon, Marseille and Bordeaux, reaching percentages of between 70% and 81%.[1096] Eastern Mediterranean wine imports in this period come mainly from Crete and Asia Minor (Ephesus region).

Overall, Sicilian wine imports from three areas — Catania, Naxos and NE coast — rise again from the beginning of the 4th century with a peak from the second half of the 4th century until the beginning of the 5th century AD. The types of this period are the Catania MR 1a form 3, Sicilian/Naxian Keay 52, NE Sicilian types, Naxos flat-bottomed amphora Form 3, the latter only attested in Arles in the museum collection and not from excavated archaeological contexts. The Catania MR 1a is attested in contexts until the second half of the 5th century (i.e. until the end of its production) and appears as residual in 6th-century layers (cf. Arles). Southern Calabrian Keay 52 are exported to Arles from the end of the 4th but never in large numbers; nevertheless, they are more numerous than Sicilian amphorae by the second half of the 5th century.

In Arles, the commercial trade in Sicilian wine containers, although long-lasting, declines by the last decades of the 5th-century AD. Imports from southern Calabria (Keay 52 types), though attested until the beginning of the 6th century, are less common than in Marseille and their proportions appear to decrease in the 6th century. In quantitative terms, the market of Arles was dominated by Catania products, which then travelled onwards to the settlements on the *limes* (in Switzerland and Germany) along river trade routes. The large quantity of MR1 find-spots in the 4th and 5th centuries is not only evidence of the importance of Catanian wine production in these two centuries but also of the nature of this container as an amphora specialized for export, especially if we compare the proportion of MR 1a find-spots to excavated coeval Sicilian contexts where they are considerably rarer. At Marseille, the highest frequency of Sicilian containers is in the mid-5th century (Vandal Period). Overall, the Marseille market does not favour the import of Catanian wine (already in sharp decline from AD 430–440 onwards, but still exported to

[1096] For a review of the pattern of amphora distribution and trade from the main stratigraphic contexts in Provence in Late Antiquity see Bonifay and Raynaud 2007, esp. 96–102.

Arles) There was instead a more marked concentration in the range and quantities of amphorae from north eastern (coastal) Sicily and southern Calabria (Keay 52).

Given this evidence, I believe that Marseille and Arles were supplied with Sicilian wine in different ways over the centuries. From the 1st to the mid-5th century AD, Arles seems to be connected with the supply to Rome and the 'preference' for Catanian wine is connected to the northern market sites (at the end of the supply chain), where Catania MR 1a were the only Sicilian types attested. The Marseille market in the same period shows a more 'sporadic' presence of Sicilian wine containers. From the mid-5th century onwards, the amphora evidence indicates that Sicilian and Calabrian types took a growing share of the Marseille market. The pattern of distribution at this period is similar to that of Rome, while Arles (and the northern European market to which the river town was connected) was less interested in southern Italian wine.

7.4.1.5. *Central and North western Gaul* (Cat. II, Tab. 7.18)

7.4.1.5.1. *Lugdunum*/Lyon

In the province of *Lugdunensis,* quantitative figures from several contexts in the capital *Lugdunum*/Lyon are useful for observing trends in Sicilian wine imports to inland Gaul. The city is located well inland, but is connected to the coast by the river Rhône.

I had the opportunity to study some unpublished materials from urban excavations (Place des Célestins,[1097] avenue A. Max) and to carry out petrographic analyses on published materials (Parc Saint-Georges).

The general rarity of Sicilian wine containers in Lyon is shown by the study of the pottery assemblages from the Hôtel de Gadagne. Sicilian imports (Catania, Naxos and NE Sicilian amphorae types) are not attested in the layers dating to between AD 20 and the beginning of the 3rd century AD (phase 1–3). In the end of the 4th/beginning of the 5th century layers (phase 4), only one specimen (of 41 MNI of amphorae) belonging to a Keay 52 has been identified.[1098]

[1097] On the context, Bonnet *et al.* 2003.
[1098] Batigne-Vallet and Lemaître 2008, 251, Fig. 51, 84/41.

Catanian wine imports are generally attested in low quantities at least from the beginning of the 3rd century AD (Célestins), reaching a peak by the mid-4th and continuing to be imported until the beginning of the 5th century (Saint-Georges). Isolated find-spots are still attested in mid-5th century layers (Clément V). In the Saint-Georges context[1099] in the mid-3rd century layers, of 495 amphorae MNI only two Catania MR 1a and two North-African MR 1a were recovered; in the second half of the 3rd century, out of 49 amphorae, two were Catania MR 1a, one Calabrian flat-bottomed type and one African imitation of MR1 produced in the area of Salakta. In the mid-4th century layers, out of 86 amphorae, four were produced in Catania (MR 1a form 3). Finally, in the end of the 4th/early 5th century AD phase only one specimen of Catania MR 1a (of 31 total amphorae) was identified.

Around the same phase the market of Lyon opens up to wine transported in the Calabrian/Sicilian Keay 52 (like Arles, see above). The same phenomenon is indicated by the urban excavation of Clément V:[1100] in the mid-4th century layers samples of Catania MR 1a are attested (MNI 2); between the end of the 4th/beginning of the 5th Catania imports (MNI 2) are associated with the Calabrian/Sicilian Keay 52 (MNI 2); finally, imports of Catania MR 1a (MNI 2) end within the first half of the 5th century AD.

In summary, the distribution pattern of Sicilian amphorae can be compared to that of Arles, with a predominance of Catania imports and a low frequency of Keay 52, rather than Marseille. Central and north western Gaulish contexts have hitherto shown the import only of Catanian wine containers.

[1099] Silvino 2007.
[1100] Ayala 2000.

7.4.2. The Distribution and Trade of Sicilian Flat-Bottomed Amphorae in Main Western Mediterranean Islands

7.4.2.1. *Corsica*/Corsica (Cat. II, Tab. 7.19)

The island of Corsica was strategically located along the Carthage-Rome-Marseille route and was probably used as a trading port between Rome/Ostia and Marseille. On Corsica, published and unpublished data from urban excavations, wrecks and underwater recoveries have signalled the presence of Sicilian amphorae in western settlements (Calvi, Quatrina, Grosseto-Prugna), along the east coast (Lavezzi wreck, Suale, Mariana, Lucciana, Bonifacio wreck) and inland (Campiani). The data suggest a more marked concentration of the Early/Middle Roman Catania flat-bottomed types in the harbour of Calvi, on the west coast of the island. Overall, finds of North eastern Sicilian amphorae occur more sporadically on the island and only along the east coast. Naxian wine containers are attested mainly in the Early Imperial period and are rarer, especially compared to the Catania region wine containers which are the most numerous of the Sicilian amphorae found on Corsica. The evidence from Mariana, on the east coast, with the concentration in the Late Antique period of finds of the so-called 'Empoli amphorae' (30 MNI) and common ware produced in central Italy in the same contexts as Sicilian amphorae (43 MNI in total), reflect a similar source related to the supply to Rome.[1101] This would also explain the presence of Keay 52 amphorae of different origins (Calabrian and Sicilian) and of North eastern Sicilian Crypta Balbi 2 in the Early Byzantine periods, both found in association in Rome in the same chronological phase.

7.4.2.2. *Sardinia*/Sardinia (Cat. II, Tab. 7.20)

In Sardinia, quantities of MR 1a of Catania origin[1102] have been found at *Turris Libisonis*/Porto Torres, where they represent a constant feature of assemblages from the 3rd to the 5th century AD. They are attested from the 3rd-century layers (0.80% of total amphorae), increasing through the 4th century and reaching a peak of 14.2% in around the mid-4th century AD.[1103] Quantities diminish sharply after AD 470 (6.40%), and they are attested in 6th-century layers (2.90%). From the excavation, one drawing of MR 1a form

[1101] As in *Turris Libisonis*/Porto Torres in Sardinia.
[1102] Identification based on the macroscopic description and morphology of the samples drawn.
[1103] Villedieu 1984, 178, 180 (Period IVc).

1[1104] and form 3 have been published.[1105] Again at the Roman Port of Turris *Libisonis* the import of Catanian wine is likely to be related to the supply to Rome.

7.4.2.3. *Cossyra*/Pantelleria (Cat.II, Tab. 7.21)

On the island of Pantelleria, the presence of MR 1a (56 fragments)[1106] comes from surveys carried out inland. MR 1a or other Sicilian containers are not attested from the area of the main harbour (Scauri port). Illustrations of the MR1 findspots have not been published, so they can be attributed to a Catania origin only with doubt. The strong commercial links between Pantelleria and Agrigento, especially in the 4th and 5th century AD,[1107] could in my opinion foster the suggestion that Agrigento traded its local/sub-regional small flat-bottomed wine amphorae to the Island (see Chapter 2, section 2.4.5.2 on local production of flat-bottomed containers within the Agrigento territory). These containers might not have been recognized and confused with the 'classic' MR1 amphora type. Further studies are therefore essential on the amphorae from the island to distinguish different types and production.

7.4.2.4. *Melita*/Malta (Tab. 7.22)

An updated trend of commercial flows of Sicilian containers in the Maltese archipelago from the 1st to the end of the 4th century has been reached using the unpublished evidence gathered by M. Anastasi for her doctoral research on Roman Malta that she kindly allowed me to examine.[1108]

The Maltese contexts (urban, rural and funerary) of the Early Imperial Period yielded numerous examples of both the Early Imperial Naxos type[1109] and Catania flat-bottomed types form 1 and 2,[1110] which reach the island (at least) from the mid-1st century AD. In this phase Sicilian amphorae are the most commonly imported wine containers and have been found in association with Maltese amphorae (probably for

[1104] Villedieu 1984, Fig. 240
[1105] Villedieu 1984, Fig. 239.
[1106] Baldassari and Fontana 2002, 985, tab. 2 (the amphorae were published as Tunisian containers).
[1107] The locations share a very similar pottery and amphorae assemblage compositions: pottery and foodstuff from the Gulf of Hammamet in Tunisia (both in Agrigento and Pantelleria) and high quantity of Pantellerian wares in Agrigento and in all excavated Late Roman contexts located along the coastal south western Sicily (pers. observation and CASR project).
[1108] Anastasi forthcoming.
[1109] Bruno 2009, Fig. 38, no. 1 and 2.
[1110] Bruno 2009, Fig. 38, no. 9 and 10.

local olive oil) and also with wine amphorae from Central Italy (so-called Spello amphorae). Examining the pattern of distribution, Sicilian wine amphorae were found in both rural and urban contexts, though their use in funerary contexts is also very likely given the complete examples of Naxos Early Roman type[1111] discovered in the stores and a drawing of a complete Catanian type from a funerary context.[1112] Amongst the finds from 1st-century contexts there are a few Dressel 21–22 of uncertain origin (perhaps western Sicilian?).[1113]

Although imports from Eastern Sicily continued during the 2nd and mid-3rd century, there is a clear decrease compared to the Early Imperial period. Wine from the region of Catania— represented by Forms 1 and 2 — appears to lose importance in comparison to other wine imports, mainly from North Africa. Wine from *Tauromenium*/Naxos is attested by a 'limited number' of Naxos flat-bottomed containers, probably form 1, found at Tas-Silg and the Roman villa.[1114]

From the mid-3rd to the 4th century AD, Catanian wine reached a peak with a notable increase compared to the previous phase. The continuity of strong links with the region of Catania is documented by imports of all the main forms of evolution of Catania MR 1a (i.e. Form 1, 2 and the late Form 3). Interestingly, in this phase there is no evidence for imports of the contemporary Naxos flat-bottomed amphorae (form 2 and 3) or of the flat-bottomed types produced on the north eastern coast of Sicily, whereas both are documented in several North-African coastal centres (Sabratha, Lepcis Magna etc.).

Judging from the available data, it is likely that from the mid-2nd century until the end of the 4th century the Maltese archipelago was bypassed by the distribution circuit running from north eastern coastal Sicily and north Ionian Sicily, that instead reached North Africa, while maintaining exclusive contact with east central Sicily, also evidenced by the numerous millstones made of volcanic rock found in various sites on Malta.[1115]

Between the 5th and mid-6th century, commercial supplies of wine from *Bruttium* and the Strait of Messina seem to have recovered, as shown by limited quantities of

[1111] Sagona 2002, 1112, no. 15, Fig. 242.1.
[1112] Mayr 1909, tab. No. 20.
[1113] Bruno 2009, 180.
[1114] Bruno 2009, 181, note 49. No drawings of these types are provided, but the author compares them to a photograph of the flat-bottomed type produced in Naxos and published in Ollà 2001, 49, Fig. 8.
[1115] Bruno 2009, 177.

Keay 52.[1116] The 'isolation' of Malta from the north eastern Sicilian/Messina Strait region is evident given the complete lack of Crypta Balbi type 2 amphorae produced in the Early Byzantine period.

To sum up, the commercial links between Sicily and Malta are documented throughout the Roman and Early Byzantine period, with a peak in Catania region wine imports after the Severan age and before the 5th century AD. By the early/mid-3rd century, imports from Naxos appear to have stopped completely. The establishment of Catania amphorae on the Maltese market may indicate the expansion of Catanian wine production at this period. Direct trade with Catania or Syracuse can be suggested (see routes below).

[1116] Bruno 2009, 181, Fig. 39, nos. 9–11.

7.4.3. THE DISTRIBUTION AND TRADE OF SICILIAN FLAT-BOTTOMED AMPHORAE IN NORTHERN EUROPE

7.4.3.1. Northern Europe (England, Germany and Switzerland) (Cat. II, Tab. 7.23)

Exported Sicilian amphora forms found in England, Germany and Switzerland seem to be produced exclusively in the region of Catania. The samples of MR 1a analysed from contexts in northern Europe are homogenous in terms of fabrics (see Chapter 3, Table 3.1). Two amphora fragments from the Villa Bad Kreuznach in Germany, published as MR 1a, were analysed for this study. They are not MR1 and are not of Sicilian origin.[1117] In terms of individual contexts, Sicilian containers are attested in an inland *villa* (Laufen-Müschhag: Pl. XVI, no. 7);[1118] in funerary contexts (Krefeld-Gellep: Pl. XIV, no. 1;[1119] Pl. XVII, no. 1[1120] and Pl. XX, no. 1,[1121] and Cologne:[1122] Pl. XIV, no. 4); in urban ceramic assemblages (Düsseldorf,[1123] Kaiser Augst:[1124] Pl. XVII, no. 5 and 12; Pl. XX, no. 8-9; Trier,[1125] and Sion);[1126] in military contexts (Breisach[1127] and Mainz)[1128] and in the area of a religious building (London:[1129] Pl. XIV, no. 3) XXII, no. 2).

The chronological pattern of exports to northern Europe is of particular significance, as wine seems to have been imported from Catania from the mid-3rd until the end of the 4th century AD (covering the last phase of the Middle Roman period and the whole Late Roman period), concurrent with the main overseas export period of Catania MR 1a. It is important to note, in relation to the export of a 'Roman style' amphora, that late amphorae (after the mid-3rd century AD) are very rarely found in Germany.[1130] The appreciation of 'exotic' wine from Sicily in Germany might have

[1117] For the specimens see Ehmig 2007, cat. 075 (V–124–0553) and cat. 125 (V–148–211).
[1118] Martin-Kilcher 1980, 54, Fig. 20, no. 1, pl. 50.
[1119] Pirling and Siepen 2003, 66, Grave 5508, VII, Tab. 2, no. 1.
[1120] Pirling 1966, 141–142, Gellep II, Grave 1215, I, tab. 101, 6.
[1121] Pirling and Siepen 2003, VI, pl. 116, 1.
[1122] Fremersdorf 1933, 23–24, Abb. 1; Fremersdorf 1959, pl. 42, B13. Another Catania MR 1a amphora is stored in the Archaeological Museum in Cologne (unpublished, pers. observation).
[1123] Katarzyna Kus comments, Unpublished, Pers. observation.
[1124] Martin-Kilcher 1994, 449–450, pl. tab. 250, inventory numbers 5649; 5650; 5651.
[1125] Hussong and Cüprers 1972, 22, pl. 4, 52.
[1126] Keay 52: Dubuis, Haldimann and Martin-Kilcher 1987, 165, nos. 22 and 23.
[1127] Zagermann 2011,142, no. 2168, pl. 87, inv. no. 2988.
[1128] Ehmig 2003, 29, note 70, cat. 0748, pl.26; Cat. 1535, pl. 25; Cat. 1621, pl. 26; cat. 2422 pl. 26.
[1129] Tomber 2003, 108, Fig. 1, no. 1 and 2.
[1130] Tyler Franconi, personal comment.

fostered the imitation of MR1 at the production centres of Cologne and Mainz Nevertheless, the actual volume of imports is particularly low in these areas, as only 10 specimens of Catania amphorae are hitherto known from Germany, giving a total of 210 litres of wine imported (21 l x 10 MNI),[1131] opening the possibility that Sicilian wine was traded in wooden barrels to these territories (see Chapter 6, section 6.5 on this hypothesis).

A still unpublished Catania MR 1a comes from the small Germanic settlement under modern Düsseldorf, on the right bank of the Rhine. The settlement is located *c.* 10 kilometres south of the important trading post of *Gelduba*, on the left bank of the Rhine, where a few Catania MR 1a amphorae were found (see table above). The specimen from Düsseldorf may have been traded by the same merchants operating in *Gelduba* and/or shared the same distribution networks. In present-day Switzerland, six imported Catania amphorae are attested at Augst/*Augusta Raurica* in contexts dated from the 3rd to the mid-4th century AD:[1132] one comes from a *villa* near Kaiseraugst/*Castrum Rauracense*,[1133] and four from the military centre and provincial capital of Upper Germany Mainz/*Mogontiacum*,[1134] in contexts ranging from the 3rd to the 4th century AD.[1135] From the end of the 3rd century AD, Mainz and Augst share the same pattern of amphora distribution.[1136] This is also confirmed by imports of Catania MR 1a in both settlements. In Germany, Calabrian/Sicilian Keay 52 are only attested with four individuals from the late fort at Breisach.[1137] A few have been found in Switzerland (Sion).[1138]

Overall, the distribution of Sicilian wine amphorae is concentrated in the Rhine region and closely related to river trade, with movements from the river Rhône in France and along the Rhine. Settlements in northern Europe were most probably supplied directly from Arles.

A different supply of amphorae is suggested in other Roman-period ceramic assemblages found north of the Alps, where Sicilian imports never had a significant

[1131] Estimated average capacity of MR1 amphora (21 l).
[1132] Martin-Kilcher 1994, 449–450.
[1133] Martin-Kilcher 1980, 53–54, Fig. 20.
[1134] Ehmig 2003, 29.
[1135] I was able to see pictures of the specimen found in Mainz and kindly provided by Ehmig. I had initially requested to sample the fragments in the Landesmuseum Museum in Mainz. Apparently they were nowhere to be found.
[1136] Ehmig 2003.
[1137] Zagermann 2011.
[1138] Dubuis, Haldimann and Martin-Kilcher 1987, 165, nos. 22 and 23.

share of trade. In contrast to the 3rd-/4th-century AD contexts of the Rhine basin (see above), the province of *Raetia*, encompassing eastern and central Switzerland, the present-day Tyrol and part of Germany, have not yielded any Sicilian wine amphorae. The major towns in the province, such as *Aelia Augusta* (Augsburg), *Brigantium* (Bregens) and *Cambodunum* (Kempten), imported eastern Mediterranean wine amphorae in the 1st and 2nd centuries, followed by a marked decline after the mid-2nd century AD.[1139] This might explain the complete absence of Middle and Late Roman Catania MR 1a from this area.

[1139] Schimmer 2009.

7.4.4. The Distribution and Trade of Sicilian Flat-bottomed Amphorae in North Africa (Cat. II, Tabs. 7.24–7.28)

African coastal sites were well supplied with flat-bottomed amphorae from Sicily. Catanian wine containers were the most frequently exported of the Sicilian containers and reached specific markets, such as Carthage and Lepcis Magna[1140] (see the case study below), from the early decades of the 1st century AD. These towns may have received the containers through direct links with the main ports of eastern Sicily (see below, routes). Naxos containers reached the North-African market in fewer quantities and are attested mainly from the mid-3rd century onwards. NE Sicilian containers took a small share of the market in Sicilian wine. In my opinion, this trend follows a similar pattern to that identified in Malta, where the available data show that the main import was the Catania MR1 class. Catanian wine containers arrived most abundantly in North Africa during the 3rd and 4th centuries AD, decreasing in terms of quantity and distribution just before the Vandal period (see above, Figs. 7.8 and 7.0, and Cat. II, Tabs. 7.24–7.28). The long duration and wide penetration of Sicilian/Catanian wine exports in the typical oval flat-bottomed amphorae may also have led local potters to manufacture small containers ending in a ringed bottom more or less accurately imitating the Sicilian prototypes (see Chapter 6, Figs. 6.24–6.26). Sicilian/Calabrian Keay 52 are attested during the 5th and the first half of the 6th century (see Carthage for example), but overall finds are scarce.

With the exception of Carthage in Byzacena, the main targets of Sicilian wine were coastal locations and well-connected inland settlements, with good access to ports, in Tripolitania (Tab. 7.27) and southern Byzacena (Tab. 7.26). However, it is probable that Sicilian containers were also traded in Zeugitana (Tab. 7.25), and other less excavated areas such as Numidia,[1141] (Tab. 7.24) or the inland regions of Tunisia. See also the imitation of MR 1a in Cyrenaica (Chapter 6, section 6.2.1 and Tab. 7.28).

A summary of the emerging trend of Catanian wine export to Cyrenaica has been also presented in an article in press co-written by the writer..[1142]

[1140] The abundance of (Riley) MR1 specimens in Lepcis Magna is the reason that they were initially considered Tripolitanian containers, Panella 1973, 471.
[1141] As in the case of the Catania amphorae recently identified in a late 3rd-/4th-century deposit in Lambaesis, in present-day Algeria, Amraoui and Bonifay in press.
[1142] Franco, Mazou and Capelli in press.

7.4.4.1. *Tripolitana* (Cat. II, Tab. 7.27)

7.4.4.1.1. *Lepcis Magna*

As already noted, the largest group of Sicilian amphorae studied for this project came from the well-excavated pottery assemblages of the Thermes du Levant in Lepcis Magna, which provide valuable information on the import of wares and foodstuffs from the mid-3rd century to the beginning of the 5th century AD. Results of the new fabric analyses, typological seriation and statistical data on Sicilian transport containers from Thermes du Levant have been recently published in the excavation report on which I collaborated.[1143]

Data on the previous period — from the 1st to the second half of the 2nd century AD — can be obtained by examining the amphorae (almost all for wine) placed in tombs on the outskirts of Lepcis Magna and in contemporary pottery assemblages (see Cat. II, Tab. 7.27).

Sicilian containers already reached the city in the Augustan-Tiberian age[1144] (Catania MR 1a form 1). Imports of amphorae produced in the region of Catania were significant throughout the 1st to the mid/third quarter of the 2nd century. In the suburban villa of Uadi er-Rsaf Catania, MR 1a form 2 (=Ostia III, 464) represents 16% of the amphorae attested.[1145]

By the mid-3rd century AD, Sicilian imports to Lepcis were increasing and included amphorae from other production areas on the island (i.e. Naxos and NE coastal region) as shown by the pottery assemblages of the Thermes du Levant where Sicilian wine containers appear constantly in all the four phases identified. Around the mid-3rd century (Context 1: AD 250‑260), Sicilian amphorae are more numerous (24 MNI, 38% of total amphorae; types attested: Catania flat-bottomed form 1 and 2 (residual); Catania MR 1a form 1 and 1, and NE type 1) than the local Tripolitanian containers (30% total amphorae). The percentage of Sicilian amphorae is even higher in the following phase AD 290‑310 (context 2), when they reach their peak (167 NMI, 38% of total amphorae), again being more numerous than the local Tripolitanian vessels (24% of total amphorae). At this time, the most common type is the Catania MR 1a type, Form 2, followed by the

[1143] Bonifay, Capelli *et al.* 2013. See in particular III.A.1: Sicilian amphorae.
[1144] Di Vita 1968, 58–61.
[1145] Pentiricci *et al.* 1998.

NE Sicilian type 1 and the rarer Naxos flat-bottomed type, Form 2. Figures show a decrease in the number of Sicilian amphorae by the mid-4th century (context 3: AD 350–360; 19 NMI, 19%). This drop parallels a rise in amphorae of hypothetical Cretan origin (Agora M235/M327/Vila-Roma 8.198, 10% of total amphorae). Interestingly, this phase coincides with an evolution in the morphology of the Sicilian containers: the Catanian wine container changes from Form 2 to Form 3 and Naxos flat-bottomed amphorae change from Form 2 to Form 3 (see Chapter 5 in the relevant sections). The relative quantities of Sicilian amphorae remain stable during the following period until the very beginning of the 5th century (AD 400, context 3: 19% of total amphorae). Beyond the habitual imports of Catania MR 1a form 3, Naxos form 3 and NE type 1, this phase sees the first appearance of Keay 52, with 4 specimens.

Regrettably, the ceramics from the city after the beginning of the 5th century and in the Vandal period have never been extensively published. This data would have been useful to compare the supply of Sicilian amphorae to Lepcis Magna with that to Rome, where the relative percentages of Catania MR 1a do not drop through the 4th and during the early decades of the 5th century AD (see the Magna Mater context, above).

To sum up, the quantity of imports of Sicilian wine containers to Lepcis Magna remained relatively high throughout the Roman period. The share of amphorae from the region of Catania rose further from the mid-3rd to the first half of the 4th century, corresponding to the rise of Catanian wine imports in other areas of the Mediterranean (Rome and Arles) and northern Europe (cf. the trade from Arles to settlements on the main Rhine river route). The abundance of the amphorae from Catania suggest that they were picked up in Catania port and loaded onto ships returning from Rome (see below).

7.4.4.2. Egypt (Cat. II, Tab. 7.29)

Recent evidence for a direct or indirect trade in Catanian wine is available for Egypt. Interestingly, both Cyrenaican and Catania MR 1a have been identified in Alexandria. The fact that Cyrenaican wine was distributed in Alexandria can in itself explain the production of Cyrenaican flat-bottomed containers for wine in Latrun and other Cyrenaican workshops. Catania MR 1a amphorae find-spots come mainly from surveys and therefore do not provide reliable information on relative quantities of imports and the chronology of distribution. Nevertheless, these finds are of great importance since they are material evidence of long-lasting contacts between Sicily and Egypt in antiquity. [1146]

[1146] For Roman Sicily and its contacts with Egypt see Manganaro 2002. See also the presence of Egyptian Jews in Sicily attested by inscriptions (*ibid*.). Egyptian amphorae are more abundant along the central eastern coast of Sicily, pers. observation. For the Hellenistic period see De Sensi Sestito 1975–1976, 206 on the evidence of the administrative and tax system of Hiero II (265–215 BC) of Syracuse followed by Ptolemy II Philadelphus.

7.4.5. THE DISTRIBUTION AND TRADE OF SICILIAN FLAT-BOTTOMED AMPHORAE IN THE EASTERN MEDITERRANEAN (CAT. II, TAB. 7.30)

The published data show that the Sicilian MR 1a amphora market was mainly in the western and central Mediterranean, with the largest percentages being imported to coastal cities and well-connected inland urban sites. The most common western Mediterranean wine amphorae in Late Roman contexts in Greece are the 'Forlimpopoli amphora class' from northern Italy. Amphorae of this type are attested in Athens[1147], Corinth[1148] and Knossos.[1149] They were the return cargoes of the ships carrying eastern Mediterranean amphorae to the markets of Adriatic Italy.[1150] With the exception of Athens, Sicilian wine amphorae exports in the Late Roman period present a different distribution pattern, apparently favouring export to settlements along the coast of Lebanon and northern Palestine. It is possible that Sicilian imports were re-distributed to these areas and to Cyprus from western Egypt.

A single MR 1a Form 3 in the late 4th-century Yassi Ada wreck, which sank along the Turkish coast, was found in the ship's galley with an early Keay 52 with an elongated neck and tapering body.[1151] Their position raises the question of whether the amphorae were cargo or intended for the crew; the containers may have been intended for use on board. Evidence for the export of (Catania) MR 1a to Turkey comes from the recent identification of an intact specimen found during an underwater survey along the south western Turkish coast, near Bodrum.[1152]

The more recent data show that wine from the region of Catania was exported to the opposite side of the Mediterranean basin packed in MR 1a forms 1, 2 and 3. Considering the published findings, the highest presence of Catania MR 1a in the eastern Mediterranean is attested between the mid-3rd century and the mid/late 4th century AD (mainly on the basis of typology). Nevertheless, the Ashkelon evidence of the MR 1a early variant 1 might indicate the early import of Catanian wine towards the

[1147] Robinson 1959, K 114.
[1148] Slane 2004.
[1149] Hayes 1983, Type 7, figs. 21.33–35.
[1150] This idea was reinforced by my participation in the Per Terram, Per Marem Conference. Production and Transport of Roman Amphorae in the eastern Mediterranean, held in Cyprus, given the frequent presence of Forlimpopoli amphorae in eastern Mediterranean contexts and of oriental amphorae in northern Italy (both inland and along the Adriatic coastline).
[1151] Bass and Doorninck 1971, pl. 3, Fig. 28.
[1152] Royal 2008, 94.

beginning of the 3rd century AD. Although we cannot currently argue for a large-scale trade in Sicilian wine in the East, we can nevertheless draw attention to the long duration of the export of these products (see above, Figs. 7.6–7.9). Sicilian wine amphorae may equally plausibly have reached eastern ports by direct or indirect routes via different ports of call (see routes, below). Catania containers have mainly been found in important harbour areas connected to major towns, such as Athens and Corinth in Greece, and coastal Palestinian port cities, such as Cesarea Maritime and Ashkelon. A single whole amphora comes from a funerary Late Roman context in Jerusalem, in present-day Israel. In the tomb the container was found intact on the floor, suggesting its use for funerary purposes (such as the consumption of the wine for the annual commemorative meal for the deads i.e. *refrigerium*)

In Nikopolis, P. Reynolds has identified a 'large number 'of imports originating in Sicily and Calabria, which he linked to the supply of Rome.[1153] Keay 52 is attested with the two main types (long-necked and short-necked), which may differ in chronology. He ascribed a 'Sicilian origin' to amphorae that he considers a sort of variant on the Mid Roman Amphora 1 published by Riley.[1154] One of these has a domed base section (Fig. 7.11) and a complete specimen was also found in Beirut (Fig. 7.10) in a context dating to just after AD 410. Reynolds kindly showed me the amphorae, which I believe do not belong to the MR 1a class from Catania. The amphorae from Beirut differ significantly from the Catanian type in both morphology and the macroscopic appearance of the fabric. An amphora similar to those recovered in Nikopolis and Beirut comes from the coastal village of Verdura, near Sciacca, on the south eastern coast of Sicily. The village was inhabited between the mid-4th and the first half of the 5th century.[1155] The amphora, (Fig. 7.12), analysed in thin-section, presents a fabric compatible with both a western Sicilian and an African origin[1156] (but does not match the Catania MR 1a volcanic fabric).

[1153] Cf. Panella *et al.* 2010; Reynolds. and Pavlidis in press.
[1154] Riley 1979, 177–180.
[1155] Parello, Amico and D'Angelo 2010, Fig. 6, nos. 20 and 21 (for the amphorae).
[1156] Rizzo *et al.* 2014, 219, sample VE–A3.



Fig. 7.10 Amphora from Beirut (Reynolds and Pavlidis in press).

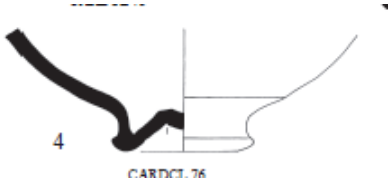


Fig. 7.11 Amphora base from Nikopolis (Reynolds and Pavlidis in press).

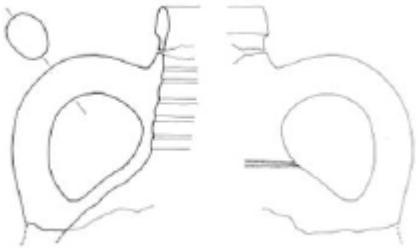


Fig. 7.12 Amphora of Sicilian or African origin. from the coastal settlement of Verdura on the south western coast of Sicily (Rizzo *et al.* 2014, pl. 2, no. 3).

Another two amphorae found in Nikopolis present formal similarities[1157] with the amphorae belonging to the group of western/north western containers (Termini Imerese 151–354 class) and may be of generic Sicilian origin.

[1157] Given their sloping round-sectioned handles, the cylindrical neck and small, everted rim with lid seat and oval body.

As pointed out by P. Reynolds, the Sicilian/Calabrian Keay 52s found in eastern Mediterranean contexts, may have be picked up in the Messina harbour/Strait area and carried on eastern Mediterranean ships returning from Ostia/Rome.[1158]

7.5. ROUTES

The combined data and information gleaned from shipwrecks and terrestrial excavations have illustrated the long-distance trade and broad geographical distribution of Sicilian amphorae and how they were supplied via a series of sea[1159] and major river routes (the Rhone valley in Gallia and the Rhine Valley in northern Europe).

The evidence of shipwrecks demonstrates the presence of Sicilian amphorae in both homogenous (Sant'Alessio wreck) and mixed cargoes.[1160] The existence of cargoes composed of amphorae made in several Sicilian production areas — therefore trading wines of different origins —, travelling with non-homogenous African loads (Trypiti and Levanzo wrecks) and with amphorae from different parts of the Mediterranean (Levanzo and Marausa wrecks), such as Spanish and eastern Mediterranean amphorae, suggest that different shipping models and redistribution modes were in operation.

The relatively low numbers of Catania, Naxos and NE Sicilian amphorae type find-spots in Sicily (see above, and distribution maps Figs. 7.3–7.5), especially compared to the quantity of imports in Lepcis Magna, Rome and Arles, indicate that these were amphorae made essentially for export. I would suggest that ships with goods from the ports of Termini Imerese, Caronia Marina, Messina and Catania, probably involved in the export of the locally-produced amphorae — respectively the NE Sicilian types, the Messina/Naxos containers and the Catania flat-bottomed types — travelled mainly to Rome or North Africa, bypassing other areas of Sicily.

Overall, possible shipping models for Sicilian amphorae in the Mediterranean may have included:

[1158] Reynolds 1995, 131–134.
[1159] For ancient sailing routes from Sicily, see Arnaud 2008, 23–25. Useful recent discussions on routes and navigation are in Robinson and Wilson 2011, Boetto 2012 and Wilson, Schörle and Rice 2012.
[1160] I have not considered here the wrecks in which Sicilian amphorae were found as crew items.

1) Direct routes to the market of Rome or other ports. This might have been the case for the 1st-century Sant'Alessio wreck which sank off Naxos and was carrying a homogenous cargo of Naxian wine. Despite the lack of archaeological evidence, it is possible that some of the Sicilian wine stored in containers was loaded on ships carrying Sicilian grain, as part of the *annona*, on their way to Rome (see Chapter 8, section 8.3).

2) Ships on an indirect route to Rome or other ports most probably had a heterogeneous cargo. Examples include the mid-3rd-century Levanzo and the mid-4th-century Trypiti wrecks. In the case of the Trypiti wreck, the ship may have been en route to an eastern Mediterranean destination from the harbour of Catania (see above). The different North-African containers may have been collected from a port of redistribution somewhere on the African coast (Carthage is a possibility).

A route from Sicily (Catania, Termini Imerese or Messina ports) to Ostia/Portus and then to Corsica, Sardinia and southern France is probable. Evidence for this are the quantities of amphorae from the same sources in Corsica, partially in Porto Torres in Sardinia, and in Arles between the 1st to the central decades of the 5th century, which appear to reflect the same pattern of distribution/proportion of Sicilian containers as the Ostia/Rome market. These figures correlate with the expansion of Naxian wine exports from the early decades of the 1st century AD and with the continuous and long-lasting prevalence of the supply of Catania region amphorae to these territories especially between the mid-3rd and the beginning of the 5th century AD paralleling the pattern of distribution in Ostia. As noted above, from the mid-5th century AD on there is a strong shift to Calabrian and NE Sicilian Keay 52 type, especially in the market of Marseille, but this does not necessarily imply a change of route.

Evidence for an indirect route from a Sicilian port to the eastern Mediterranean can now be found in the mixed cargo of the Trypiti shipwreck found on a reef in the strait between the island of Makronessos and the east coast of Attica (see above). Most of the cargo, dating to AD 330–350, consists of Africana I, II and III. A group of at least 5 Sicilian small flat-bottomed containers were part of this cargo. The bottom layer of the cargo contained North-African amphorae, manufactured at several Tunisian production centres, overlaid by the Sicilian containers. The concentration of the 'Sicilian cluster' in a separate place on top of the African cargo may help us to reconstruct the ship's route, indicating two different ports: first a North-African redistribution centre for African amphorae and later a port of call in Sicily, where the Sicilian amphorae were loaded as a supplementary cargo. Considering the eastern Sicilian origin of the containers, a stop at

Catania harbour before turning East is likely. As argued by P. Arnaud for similar wrecks with cargoes loaded at several places on the way, the stops would have to have been planned in advance to better organize the ship's load.[1161] This form of maritime trade was therefore not the same as tramping.[1162]

The port of the Roman colony of *Catina*/Catania strategically managed the entry of eastern foodstuffs and vessels to Sicily throughout the Roman Period. Trade between Catania and the eastern Mediterranean is attested from the mid-Empire and flourished into the Late Roman period as is clear from the evidence of imported eastern pottery and transport containers.[1163] A sailing route from an African port in the direction of Catania is also reasonable on the basis of a combination of sources, such as the volume of North-African products uncovered by excavations in the colony and its geographical vicinity.

Recently, P. Reynolds has suggested that Cretan exports to Benghazi during the transition from the late Antonine to the late Severan period may have arrived directly, or possibly via Sicily, given the contemporary imports of Sicilian wine bottled in MR 1a and Cretan amphorae on a similar scale in Berenice in Cyrenaica.[1164] Unfortunately, the lack of published quantified ceramic assemblages from the urban contexts and ports of Catania and Syracuse, which may have been the re-distribution harbours for Cretan amphorae in Sicily, cannot confirm or disprove this hypothesis. The penetration of Cretan 2 and 4 mainly to the NE region of Sicily, the Aeolian islands and the Region of Messina may suggest that the main flow of Cretan wine from Sicily was re-directed to the Tyrrhenian coast.[1165]

3) Return cargoes from Ostia/Rome with a stopover at major ports on the East coast of Sicily, such as Catania, and a final destination at other ports. In particular, the route Rome-Catania-Lepcis Magna is suggested by the pattern of amphora distribution:

a) the numerous find-spots of Tripolitanian olive oil containers at Ostia and Rome;[1166]

b) the appearance of Tripolitanian oil in the Sicilian market from the second half of 2nd/early 3rd onwards,[1167] precisely when Sicilian containers start to appear with frequency in the excavated assemblages of Lepcis Magna;

[1161] Arnaud 2011, 73 (Plage d'Arles 4 wreck).
[1162] See Robinson and Wilson 2011 and Arnaud 2011.
[1163] Malfitana and Franco 2012.
[1164] Riley 1979, MR 1; Reynolds 2010b, 91.
[1165] Personal observation based on the review of Cretan amphorae find-spots in Sicily.
[1166] Amphorae belonging to Tripolitana I and III, Bonifay, Capelli *et al.* 2013, 132.

c) the concentration of Sicilian containers in Lepcis Magna and its territory (see above and Cat. II, Tab. 7.27).

The far larger numbers of Catania region containers among the Sicilian amphorae found in Lepcis is a further suggestion of possible stops at the major port of Catania where the new cargoes of different Sicilian wines could be re-assembled by merchants.

This Lepcis Magna-Rome-Catania-Lepcis route with a final stop at Lepcis Magna is to be connected to the *annona* system (i.e. North-African olive oil directed at the market of Rome), but in my opinion also correlates well with the vibrancy of private trade, exploiting return cargoes.

Furthermore, trade to Egypt following the grain route from Alexandria to Rome with a stop at the port of Catania (passing through the Strait of Messina) is also possible.

4) Direct trade from port to port. For example, from Lepcis Magna to Catania and from Catania or Syracuse to Malta and vice versa. Direct trade from Lepcis to Catania cannot be ruled out given Sicily's vicinity to the North-African coast. This model of trade may explain the prevalence of Catanian wine containers in Malta (and the absence of wine containers from other areas of Sicily) as well as the presence of eastern Mediterranean amphorae. The Catania amphorae may have come directly from the area of the production sites and the eastern containers could have been loaded in the same port. As shown by the published data, eastern Mediterranean containers of different origins are more numerous in eastern Sicily and were distributed inland from the port of Catania, suggesting the existence of a different Sicilian market controlling or dictating access to and imports of eastern wine.[1168] A trade in Sicilian amphorae from the port of Syracuse could also be supported, as shown by S. Paul's journey on a grain-ship from Alexandria to Puteoli, with several stops along the way. Having stopped at Malta, the ship sailed to Syracuse, then Rhegium, before entering the Tyrrhenian sea.

5) The vicinity of Sicily to the surrounding smaller islands[1169] and the North-African coast supports the existence of local trade and redistribution from different entrepôts in the form of smaller-scale commercialisation.

[1167] Malfitana and Franco 2012.
[1168] Malfitana, Franco and Di Mauro 2013.
[1169] In the West (present-day province of Trapani), the three Egadi islands: Favignana, Levanzo, Marettimo; and Pantelleria; Ustica, 36 miles north of the Palermo coast; in the south-west (in present-day province of Agrigento) the Pelagie Islands of Lampedusa, Linosa and Lampione; and the Aeolian archipelago of seven island north east of the Sicilian coast (in present-day province of Messina).

This might be attested by the Scauri wreck off Pantelleria, a small ship with a mixed load of amphorae, including Sicilian/Calabrian Keay 52, and local cooking ware (Pantellerian ware).[1170] It appears that the different amphorae were assembled at previous ports of call.

This form of trade can be demonstrated in the Aeolian Islands where there is a recorded concentration of amphorae produced in the region of Messina, Naxos and along the north eastern coast of Sicily, while there is an absence of MR 1a from Catania (see above, Figs. 7.4 and 7.5). This suggests that this small-scale form of trade ran from the areas of amphora production in Sicily to the islands opposite.

The existence of a small-scale trade in goods on the route between Africa and Sicily is attested by Tacitus who, describing the period of Tiberius, refers to this trade as the selling of '*sordidas merces*'/second quality items which just allow the people that were involved in this form of trade to 'eke out a living'.[1171] This type of local trade or redistribution from the North-African coast to Sicily and vice versa may explain the greater presence around the island of ACW and amphorae produced at minor production sites in Africa whose products were less widely exported.[1172]

6) Cabotage. The term 'cabotage' is used to describe the phenomenon of tramping in the Anglophone literature. In particular, it means 'sailing along a coast and stopping at one port after another selling whatever the local market would buy and buying whatever was on sale'.[1173] The term is used with a slightly different meaning in the French, Italian and Spanish literature, indicating the seaborne transportation of bulk goods from port to port more generally.[1174] Despite the argument that this system would have been too expensive for small-scale traders selling only part loads,[1175] the speculative and 'more casual' tramping of goods from port to port was no doubt a system for distributing goods and foodstuffs in Sicily.

[1170] Tusa, Zangara and La Rocca 2009.
[1171] Tacitus, *Ann* 4.13.2 '*Per Africam ac Sicilian mutando sordidas merces sustentabarum'*.
[1172] CASR project, data unpublished.
[1173] Robinson and Wilson 2011, 4.
[1174] See for example Arnaud 2011 in Robinson and Wilson 2011.
[1175] Robinson and Wilson 2011, 4.

7.6. CONCLUDING REMARKS

This distribution study on Sicilian amphorae has provided tangible evidence of the role played by Sicily in the exchange of foodstuffs in the Mediterranean throughout the Roman and Early Byzantine periods. The majority of amphorae from find-spots in western Mediterranean consumption sites and almost all those from northern Europe and eastern consumption sites were produced in the region of Catania, where the simultaneous activity of several workshops can be hypothesized, indicating a prosperous amphora and wine production industry.

The scanty evidence of Sicilian amphora cargoes suggests that the trade in Sicilian amphorae was based on organised commerce mainly connected to African amphorae and was the result of 'segmented routes'.[1176] This is especially evident for the eastern Mediterranean route (Trypiti wreck). Overall, the scant evidence for Sicilian amphorae in the eastern Mediterranean may have been conditioned by the less significant trade in African amphora-borne goods to this area.

[1176] Arnaud 2007, 327, 335.

CHAPTER 8

TRADE AND ECONOMY IN SICILY THROUGH THE ANALYSIS OF THE SICILIAN AMPHORAE: MOBILITY OF GOODS AND PEOPLE

8.1. INTRODUCTION

The new archaeological evidence for amphora production in Sicily presented in this study should be fully integrated into our broader understanding of the cultural, social and economic dynamics of the first province of the Empire. In this final part I will address three main themes.

Firstly, I will use prosopographic and other archaeological data to show that Sicilian flat-bottomed amphora production and wine export fit into the Roman Augustan reorganization of the island.

Secondly, the following discussion will concentrate on one of Sicily's most important agricultural products, which was essential in antiquity: grain. Strabo's *Geographica*,[1177] Cicero's *Verrines*,[1178] Livy's History of Rome and Pliny's *Naturalis Historia* — one of the most important sources for Roman Sicily — all stress the island's economic importance for the Romans and its role as agricultural territory especially for wheat production for Rome. Nevertheless, focusing exclusively on what survives of ancient historiography or literary evidence would not give us a balanced understanding of the island's economic history. Sicily's role in the Roman economy was in fact not solely as a grain supplier. A series of archaeological data — including the amphorae which are the object of this study — make it clear that the island produced several other products, such as wine and *salsamenta*, and that they were widely traded in the western and eastern Mediterranean for over six centuries.

In the third and final section I will outline the birth, development and decline of Sicilian flat-bottomed amphoraproduction and trade, providing a chronological framework for a discussion on the economic fortunes of Sicilian wine.

[1177] 'As for the fertility of the country, why should I speak of it, since it is on the lips of all men, who declare that it is no whit inferior to that of Italy? And in the matter of grain, honey, saffron, and certain other products, one might call it even superior', Strabo, *Geog*., 6.2.4. (Loeb Classical Library edition, 1924).
[1178] '*Opportunitatem provincia Siciliae* [...] *consistere in refrumentaria maxime'*, Cic., *Verr*, 3, 11.

The aim of the conclusions of this study is to provide a less partial view of the Sicilian economy in the Roman period, interpreting the data on amphorae in light of all the epigraphic, historical and archaeological information available.

8.2. A Historical Perspective on Material Culture: the 'Roman' Nature of Flat-bottomed Containers

The generalized adoption from the late 1st century BC onwards in some Italian regions, including Campania,[1179] from the Flavian period in the upper Tiber valley,[1180] and probably from Augustan-Tiberian period in Sicily, of a small wine amphora with a flat bottom shows the desire to adhere to a recognizable model which was firstly produced to be traded on extra-regional markets. The same need was addressed with reference to the capacity of both Italian[1181] and Sicilian smaller transport containers which ranged between 15[1182] and 21 litres.[1183] The amphora capacity (for liquid and semi-liquid commodities) of the various amphora types were not decided by the individual potters, but were established on the basis of units of measurements which had to adhere to strict rules.[1184]

The changes in shape and the adoption of these smaller and flat-bottomed vessels from the Early Roman Period both in continental Italy and Sicily may have responded to specific cultural choices which were shared among these territories, such as increased manoeuverability of the containers, a need for a greater metrological accuracy and greater standardization of the capacity of containers used for the transportation of wine. The capacity of wine amphorae produced outside Italy/Sicily, and in a greater measure olive oil amphorae, tended to fall within a rather broad range of sizes (wine amphorae: 16–54 *sextarii*; olive oil amphorae: 48–144 *sextarii*).[1185]

[1179] Flat-bottomed Dressel 2–4.
[1180] Spello and Forlimpopoli amphorae types.
[1181] These Italian amphorae range between 15 and 20 litres, Vidal 2009, 227.
[1182] Naxos Early Roman amphora type maximum capacity of 15.5 litres is established on the basis of filling a preserved container of the same type found in the S. Alessio wreck with water until the edge of the rim see Muscolino 2009, 114, no. 8.
[1183] MR1 (see also Bonifay, Capelli *et al.* 2013, 132, no. 247).
[1184] For a discussion on Roman volumetric and weight measurements see Viedebantt 1917 and Tchernia 1986, 309–320. On the studies on amphora capacity with specific regards to the market of Rome, see Peña 1999, 191–198 (data from the Palatine East excavations); Rizzo 2003, 203–228 (Rome) and De Sena 2005 (Rome and its immediate hinterland).
[1185] Data from De Sena 2005, Tables 1a and 1b with the indication of amphora capacity (AD 100–150) of wine and olive oil amphorae of different origin.

This suggested process of morphological experimentation attested from the Early Imperial Period in several kilns of central/northern Italy and North and central eastern Sicily may have affected in a different way individual amphorae producing areas with kilns more prone to experimentation (in regards to Sicily, Catania and Naxos region pottery production areas). As argued in Chapter 1, I think that specific historical, socio-economic and cultural circumstances can clarify the 'Italian Roman idea' underlying the earliest Sicilian flat-bottomed amphora productions. An important amphora production is that discovered at Naxos[1186] (Fig. 1.1), which functioned as the commercial harbour and outlet of *Tauromenium*. Taormina was situated in a strong position on a promontory on the eastern coast of the island overlooking the Ionian Sea and commanding the coast road between Messene and Catania. The city had been a stronghold of Sextus Pompey during the civil war (*Bellum Siculum* 42–36 BC) and refused to admit Octavian's army in 36 BC.[1187] Octavian followed a policy of depopulation as a precautionary measure and expelled the former inhabitants. The city was, then, set up as a Roman colony and repopulated by Roman citizens.[1188] The Sicilian ruling class of Taormina, Greek-speaking and of Greek origin, was thus replaced by a Roman elite which certainly played a prominent role in the exploitation of the prosperous rural and agricultural areas in its hinterland. These were known for valuable wine production according to the ancient sources[1189] and from the Greek archaic period had fed a significant trade in wines transported in amphorae.[1190] The vitality of the urban upper class and the desire to adapt to a fully Roman urban form is attested by the construction of several public monuments dating from the 1st century AD, such as a theatre, a forum, an aqueduct, public *thermae*[1191] and the recently found urban *domus*.[1192]

I believe that this new Roman or Romanized ruling class was directly involved in the production of Roman-style flat-bottomed amphorae. Evidence in support of this theory is the attestation of the few stamps known on the Early Imperial amphorae manufactured at Naxos from the early 1st century AD (according to my terminology Naxos Early Roman Type) which no longer use the Greek letters of the late Hellenistic manufacturing phase of the kiln.[1193] The

[1186] Lentini 2001.
[1187] App., *Bell. Civ*., 129
[1188] Diod., 16.7.1.
[1189] Plin., *Nat. Hist*., XIV, 66. On the *Tauromenitanum* wine, see Wilson 1990, 191.
[1190] Lentini 2001.
[1191] Belvedere 1998, 374.
[1192] Rizzo and Bacci 1993–1994.
[1193] See the stamp ΝΑΞΙΟΣ attested on several MGS amphora fragments, one of which from Giardini Naxos (4th/3rd century BC), Garozzo 2011, 429–435 with previous bibliography.

stamps, in Latin letters, refer to Roman personal names such as CAPITO[1194] and VAL(*erius*?).[1195] Despite being fairly common personal names,[1196] their use in Naxian locally produced amphorae is particularly significant because it suggests a Latin ethnic component of the individuals involved (at different levels) in amphora production. There are not yet attestations of name of free individuals expressed by the *tria nomina*. The names CAPITO and VAL(*erius*?) may have referred to *servi* or *liberti* whose names was expressed in nominative, or may have alluded to a family business involved in the product (wine) ownership or in the ceramic production. It is worth noting that both these families' names are epigraphically attested elsewhere in Sicily. The name CAPITO[1197] has been linked to the *Statio Capitoniana* cited in the *Itinerarium Antonini* on the road *Catina-Agrigentum.*[1198] Because the majority of the names of *stationes* took their origin from the *praedia* owners one can infer the existence of a *massa capitoniana* whose location has been widely discussed by several scholars with different opinions but all suggested within the southwest plain of Catania, in the area of present day Ramacca and Mineo.[1199] The suggested geographic location of the *massa*/*statio capitoniana* is in both cases distant from the town of Naxos. Furthermore the original edition of the *Itinerarium Antonini* was prepared at the beginning of the 3rd century (under Caracalla) or the end of the 3rd century AD (under Diocletian),[1200] i.e. at least two centuries after the production of the amphora type on which the stamps have been attested (early 1st century AD). Given these elements it is would be arbitrary to establish a connection between the CAPITO stamps and the suggested *massa* in the Catania area.

Concerning the stamp VAL(*erius*), it is worth noting that the family of the *Valerii* was widely involved in the production of amphorae of the MGS types[1201] which were also made at Naxos.[1202] The presence of the *gens Valeria*, originating from the Sabina, is also attested in Sicily in the literary and epigraphic sources at Catania, Palermo and Tindari.[1203] Finally, a *Valerius Seponiamus q(uaestor) Siciliae* is commemorated in an inscription found at Marsala

[1194] The stamp CAPITO is expressed in the nominative case and found impressed on 5 handles from a ship shed of the port of Naxos (Muscolino 2009, 116–117, figs. 22–31).
[1195] The monogram VAL is likely the abbreviation of *Valerius* (nominative case). It is only found in one handle found in a ship shed of the port of Naxos (Muscolino 2009, 117, figs. 32–33).
[1196] Kajanto 1965, 235.
[1197] CIL X, 7438 and 8056, no. 79.
[1198] *Itin. Anton.* 88.44.
[1199] Andronico 1983 (Torricella quarter near present day Ramacca town); Wilson 1990, 12, 215; Bonacini 2010 (Favarotta quarter site of a Roman villa in the present-day area of Mineo) with previous bibliography cited.
[1200] See on this point La Torre 1994, 133 ff. with bibliography.
[1201] Manacorda 1989, 444.
[1202] Variant MGS III types, see Ollà 2001, 47. See also the aforementioned stamp ΝΑΞΙΟΣ.
[1203] Garozzo 2011, 499 with bibliography.

dating between late AD 169 and 170–172.[1204] The chronology seems too late compared to the chronological horizon of the amphorae in question, which falls into the 1st century.

In both cases the known Naxian stamps found on the Naxos Early Roman amphora type may demonstrate that a Latin component of the citizen body in Naxos/*Tauromenium* was involved in amphora manufacturing. The attestation in Giardini Naxos of two stamps, BAR and TE, on two rims of Dressel 1 amphorae, ascribed by the excavator N. Ollà to the Naxos production on the basis of similarities of their fabric with certain kiln wasters of Dressel 1[1205] (wasters not published); and one stamp in Latin letters A,P,L or A,P,E,L on a fragment of Dressel 2–4, which has been hypothetically attributed to the local production of Naxos solely given the similarity of the clay to that of local productions,[1206] can be added to the small *corpus* of stamps in Latin characters from the production area of Naxos.

Another important Roman period amphora production centre must have existed in the broad hinterland controlled by Catina. This study has established its existence for the first time on the basis of evidence, including the petrographic characterization of some specific amphora types, discussed in detail in the thesis. The colony of *Catina*/Catania, like Taormina, underwent a series of profound social, political and administrative changes in the Augustan period. It was set up as a Roman colony and repopulated by war veterans. The Greek-speaking local population was only partially granted Roman citizenship.[1207] Its new *status* as a colony and adherence to the Roman cultural system is evident from the construction of the theatre/*odeum*,[1208] the amphitheatre,[1209] the circus, the aqueduct and the many public and private *thermae*.[1210] The city and its port[1211] played a crucial role in the economy of Roman Sicily. Furthermore, Catania was also particularly important because of the management and exploitation of agriculture in its extensive and fertile hinterland, which included Mount Etna, the present-day Plain of Catania and the lands once belonging to the Greek settlement of *Leontinoi*/Lentini and known in the Roman period as *Campus Leontinus*.[1212] We know from the sources that much of this territory was part of an estate belonging to Agrippa by the last

[1204] Barbieri 1961, 16.
[1205] Ollà 2001, 47. On the stamps BAR and TE, Garozzo 2001, 42, nos. 3–4. Recently Garozzo has suggested reading one stamp as BAR(naeus) a personal name connected with an anthroponym of Punic origin, Garozzo 2011, 513.
[1206] Ollà 2001, 48. The stamp, whose interpretation is uncertain, refers to a broad range of personal names, Garozzo 2011, 558–559.
[1207] Strabo, *Geog*., 6, 2, 1 C 266; Molè 1999, 432.
[1208] Branciforti and Pagnano 2008.
[1209] Beste, Becker and Spigo 2007.
[1210] Branciforti and Guastella 2008.
[1211] Tortorici 2002.
[1212] Manganaro 1996, 53–57.

quarter of the 1st century BC.[1213] Further confiscation of this hinterland can be deduced after the creation of the colony.[1214] This information from the sources is supported by the important evidence from two cult buildings showing the precocious adaptation of the Catania area to 'Augustan ideology', two of the very few examples in Sicily of 'Roman-style' buildings. One is the Italic temple with a podium built in the early 1st century AD near the coastal area of the cabotage port of Capo Mulini which belonged to the larger harbour of *Catina.*[1215] The other is in the archaeological area of S. Venera al Pozzo,[1216] 14 kilometres north of Catania and 4 kilometres northwest of the port of Capo Mulini.

Overall, this area of long-standing Greek tradition sees the emergence of an evident phenomenon of ostentatious *romanitas*, which I believe arises, in part ,from ethnic changes to its elite component. If we combine the set of archaeological and historical evidence with the new data on an important production of flat-bottomed amphorae in this area from the early 1st century AD as evident from this study, it is plausible that after an initial phase of stagnation, or crisis, in the countryside following Augustus' punitive actions, there was a renewed engagement of members of Catania's ruling class — be they fully Romanized Greeks who embraced Augustan values or of Italic origin — in manufacturing activities linked to agriculture.

Concluding Remarks

The rebirth of Sicilian wine amphora exports in the late 1st century BC after the phase of production and distribution of the Greco-Italic/MGS amphorae[1217] which was concluded towards the last years of the 3rd century BC,[1218] began and developed immediately after the sea-fight of Naulochus and the subsequent Augustan reorganization of the province.

Amphorae represent *concrete* evidence of a renewed *two-way* relationship between Rome and the province of Sicily: Rome in effect opened up large markets to the foodstuff stored in flat-bottomed amphorae and these were identified on the other side of the Strait of Sicily as being 'of a Sicilian origin', and packed in 'Roman-style' amphorae.

The adaptation of forms and the capacity/volume of containers to the contemporary Italic models allowed the small Sicilian amphorae to integrate fully into the larger network of

[1213] Hor. *Epist*. 1.12.
[1214] See also Stone 2002, 139.
[1215] Tortorici 2002, 318 ff. and no. 71 for proposed identifications in the antiquarian literature.
[1216] Portale 2005, 71.
[1217] Van der Mersch 1994; 2001.
[1218] Panella 2011.

ports and destinations in the Mediterranean Basin. The very little information available on stamps from the Naxos amphorae in Latin letters and the evidence of the precocious subordination of the Greek-speaking elite to Augustan ideology in the Catania area allow us hypothetically to establish the participation of the Latin/Roman component in amphora production and/or the exploitation of local agricultural resources. Overall, we see on the part of Augustus and his adherents a will to exploit the vast former Greek territories which had the advantage of important harbours as at Taormina, Catania, and also Syracuse.

8.3. Grain and Wine Amphora Production in Sicily

'ut esset non incolarum modo alimentis frugifera insula, sed urbis Romae atque Italiae (id quod multis saepe tempestatibus fecerat) annonam levaret'.[1219]

Livy, *Ab Urbe Condita*, 26, 40, 16

8.3.1. Introduction

The aim of this discussion of references to grain and amphorae is to determine whether there was an interaction between grain export and amphora production as evident from amphora pattern of distribution. In the discussion, major historical events will be briefly considered throughout, to contextualize the evidence and help demonstrate the importance of agriculture in Sicily and its wider involvement within the Roman economy.

The ancient sources[1220] and the modern archaeological literature[1221] agree in seeing the economic role of Sicily as primarily connected to Rome's grain supply, probably even before the Roman offensive of 264 BC.[1222] As also summarized by R.J.A. Wilson: 'undoubtedly the most important commodity which Sicily produced during the Roman Empire was grain and this formed the basis of her prosperity'.[1223]

After the reorganization of the province by the praetor *Marcus Valerius Levinus* (210 BC) and the implementation of the *Lex Rupilia* (131 BC), passed by *Publius Rupilius* and

[1219] '[Sicily] not only produces food enough for the inhabitants, but might relieve the grain market of the city of Rome and of Italy, as it had often done on many occasions' [Loeb translation].
[1220] Such as Livy, 26, 40, 16; Cic, *Verr*., 2, 3, 5, 11 '*re frumentaria maxime'*; Verr. 2, 2, 2, 5 '*Quando illa frumentum quod deberet non ad diem dedit?*'.
[1221] On *Sicilia frumentaria* see now Soraci 2011. See also Rickman 1980, 263-264, 269 with specific reference on Sicilian grain and its export to the market of Rome. On the Roman grain market and the economic, social and political forces behing its supply, see Erdkamp 2005.
[1222] As noted by J. Prag 'there is little reason to doubt that the Romans were aware of Sicily as a potential source of grain (and other things) from well before 264', Prag 2012, 54.
[1223] Wilson 1988, 210.

regulating the organization of arable land, Sicily experienced renewed economic wealth and increased the flow of grain to Italy.[1224] The island effectively continued to maintain its role as 'breadbasket' even when its role as a supplier to the *annona* was taken over by other areas such as Egypt and Africa from the Augustan period.

After the foundation of Constantinople in AD 330, which took over Egyptian wheat supplies, Sicily again came to play an important role in Rome's food supply.[1225] The Island attracted the economic interests of the Empire as a transit point for wheat from Africa, and, in certain cases, such as famine or natural disaster, provided Rome with emergency grain supplies.[1226] In contrast to the late Republican period, the supply of grain in Late Antiquity[1227] must have occurred outside obligatory supplies to the *annona* and through *negotiatores* or *mercatores frumentarii*,[1228] in other words private traders. The role of Sicily as the granary of the western Mediterranean did not end after the fall of the Roman Empire and continues, albeit with significant fluctuations and changes, until the 17th century as indicated by a series of written documents.[1229]

For the Roman period one of the aspects not yet investigated in the literature which I will introduce here concerns the possible existence of a link between the trade in Sicilian grain and that in other products certainly exported in amphorae such as *salsamenta* and wine. In particular, I will suggest that the export of grain represented a stimulus for the distribution of agricultural surpluses of specialized productions such as wine and fish products in transport amphorae.

8.3.2. Did Grain Pave the Way for the Sicilian Trade in Salted-Fish Amphorae and Vessels? An Hypothesis Based on a Passage of Polybius

Less evident, but potentially probable, is a link between the export of Sicilian fish and the grain trade in the middle Republican period. My hypothesis is based on the very recent identification by E. Botte of an amphora production in western Sicily of the so-called *Tubular amphora* type.[1230] Botte establishes that this type was manufactured from the first half of the

[1224] On the *lex Rupilia*, see now: Fournier 2010.
[1225] *Cod. Iust.* XI 2–4 (ed. Krueger, Berlin 1877, 428 ff.). For further information on this issue, see Cracco Ruggini 1982–1983, esp. 482–483, no. 9.
[1226] Vera 1989, 166–167.
[1227] On the revived importance of Sicily and Sardinia for the grain supply to Rome in the Late Roman Period, see Tengström 1974.
[1228] On the seaborne transport of grain, see Sirks 1991.
[1229] Braudel 1995, 603.

2nd century BC to the early decades of the 1st century BC. Further, noting that the distribution of these containers is mainly concentrated in the eastern Mediterranean, Botte sought the causes of this in the establishment of the free port of Delos.[1231] As is known, from 167/166 BC Rome made Delos a free port under Athenian control and this stimulated the trade of Italian goods towards eastern routes.[1232]

To Botte's theory, which is certainly plausible, I believe I can add a specific historical event mentioned by Polybius.[1233] The Greek historian, referring to a period about the time of the war for control of Egypt between Antiochus IV Epiphanes and Ptolemy V Philometor[1234] i.e. the period around 170 BC, relates that ambassadors from Rhodes wanted to renew their friendship with Rome and ask for a license to import corn from Sicily. The Roman senate granted them a license to purchase one hundred thousand bushels (*medimnes*) of corn from the island.

This passage leads us to at least two important conclusions of an economic nature: the first is that in the middle Republican period the export of Sicilian grain was reserved exclusively for Rome and that diverting part of the grain produced on the island was fairly exceptional. The second, of greater interest to our discussion, is that the export to the east of Sicilian grain from 170 BC may have opened up opportunities for the later commercial trade in regional fish products, as suggested by the discoveries of Sicilian *Tubular amphorae* in the Aegean and eastern Mediterranean area. In other words, we can suggest that the sale of fish products in some way '*exploited*' the new privileged distribution channel between Sicily and Rhodes. One does not yet know who its protagonists and commercial operators were, although a role for Rhodians and Sicilian traders seems possible. Shipping agents (Rhodian? Sicilian? of different origins?) were certainly involved in the Eastern Mediterranean export of Sicilian Campana C black glaze pottery on Delos and Kerkyra.[1235]

The intense trade in Sicilian grain on Rhodes is also attested by the abundant discoveries of Rhodian amphorae — alongside those from Knidos and Kos — in Sicilian contexts from the 2nd century BC to the late Republican period. Between the 2nd and 1st century BC Rhodian wine amphorae seem to have been sold throughout Sicily: they are

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[1230] The Sicilian origin is based essentially on the petrographical properties, Capelli in Botte 2012.
[1231] '*Le fait que la majorité des exemplaires de Tubular amphora soit recensée en Orient est sans aucun doute à mettre en relation avec l'important trafic mis en place entre l'Italie et Délos aux IIe et Ier siècles avant notre ère'*, Botte 2012, 602.
[1232] Morel 2007, 503, 507.
[1233] Polyb., *Historiae*, 28, 2, 5.
[1234] Polyb., *Historiae* 28,1.
[1235] Bernabò Brea and Cavalier 1965, 249, no. 4.

known on the western side of the island (especially at Cefalù, Palermo,[1236] Erice, [1237], Segesta; Solunto; Terrasini and Lilibeo); on the south coast (Eraclea Minoa; Agrigento; Licata; Gela; Comiso), in inland towns (Montallegro[1238] and Centuripe) [1239] and on the eastern side (Messina; Catania; Paternò; Acre; Eloro; Lentini and Siracusa).[1240] Aegean wine amphorae may thus have been the cargo with which the ships laden with Sicilian grain and — perhaps — salted fish and Sicilian black glaze pottery returned. The inland distribution of these eastern goods will mainly have been mediated through the ports of eastern Sicily.

8.3.3. Grain and Wine in the 'Ciceronian' and Augustan Periods: Production Centres, Harbours and Overseas Destinations

As concerns the dynamics of grain production known from Cicero's *Verrinae*, in his account of Verres' governorship of Sicily in 73–71 BC we see a concentration of grain production centres along the north coast of the island (for example *Thermae*, *Halaesa*, *Caleacte*, *Haluntium*, *Tyndaris*); along the east coast (*Messana*, *Tauromenium*, *Catina*, *Syracusae*) and in inland Sicily on the east side (*Murgentia*, *Henna*, *Centuripae* etc.). Production centres on the south coast are less numerous.[1241]

We know from Cicero that during the first half of the 1st century BC the tax-collectors of the late Republic were responsible for transporting the grain they had collected as far as the sea, but he does not say how. The grain destined for overseas export must have along mule-tracks or rivers from the large inland *praedia* where it was grown to the nearest ports, with the final step being the large coastal harbours in accordance with a practice described by Cicero: *Ut…omnes decumas ad aquam deportatas haberent*.[1242] This expression (*deportatio ad aquam*) suggests placing the harvest of grain on board ship on the sea coast or some navigable rivers in Sicily. The first journey would be the transportation of the corn by carriages to the nearest harbour or river. The second journey would be by sea to main Sicilian ports with final destination of Rome. This elaborate procedure implied that the Sicilian harbours/ports were chosen in accordance with specific regulations '*si trattava di luoghi adibiti in base a valutazioni pratico-funzionali e stabilizzatisi per tradizione*'.[1243] Also

[1236] Sarà 2003, 205, no. 57.
[1237] Pellegrini 1887.
[1238] Wilson 1985, 26, no. 37, Fig. 19, 5, no. 6.
[1239] Patané 2002a, 158-160, Fig. 10, 6, 11; 162-167.
[1240] Gentili 1958.
[1241] Soraci 2011.
[1242] Cic. *Verr*., II.3.14.36.
[1243] Genovese 1999, 58–59.

according to Soraci the *deportatio ad aquam* took place '*non ad una sponda o costa qualsiasi*'.[1244]

I believe that, at least in the initial phase of production of the Sicilian flat-bottomed amphorae with which this thesis deals specifically, wine producers near the main ports of exports benefited from the practice of *deportatio ad aquam*. It is my opinion that the grain trade towards Rome created favourable economic conditions and specific commercial outlets which encouraged the birth and increase of the trade in Sicilian wine in the capital. This led to a need to produce amphora containers made specifically for overseas transportation and initially linked to the needs of Rome.

It may be no accident that Cicero lists among the centres for *deportatio ad aquam* the port cities of *Catina* and *Halaesa*, both located in wine-producing areas. In the 1st century AD the containers (hitherto unidentified) which transported the sweet wine of *Haluntium* mentioned by Pliny[1245] may have been traded from the port of *Halaesa*, located on the north coast of the island, near Calacte (present-day Caronia) and *Haluntium*[1246] (present-day S. Marco d'Aluntio). The wine produced in the fertile territory of Etna mentioned by Strabo certainly left from the port of Catania.[1247] The results of this study have identified the 1st-century AD containers in which this wine from Mt Etna was exported (see Chapter 4, section 4.9.2; here called 'Catania flat-bottomed types').

Other large ports, such as *Messana* and *Tauromenium*/Naxos, are not mentioned by Cicero in the context of the harvest delivery from where the grain could be conveyed to Rome (*deportatio*), but this does not rule out that in a later phase, between the 1st century BC and the 1st century AD, these represented the maritime outlet for grain[1248] and the contemporary wine amphorae which contained at least two types of wine produced in the hinterland of Sicily's north eastern tip. These are the *vinum Mamertinum*, from the neighbourhood of Messana,[1249] and of *Tauromenitanum* wine,[1250] whose containers were probably made at Naxos, in other words directly at the port of *Tauromenium*.

To sum up, the wine trade offers new perspectives on the interactions between Sicily and Rome which complements the island's known role as a grain supplier. Through the amphora productions of the early 1st century Sicily redefines its economic role with respect to

[1244] Soraci 2011, 51.
[1245] Plin., *Nat. Hist*., XIV, 80.
[1246] *Haluntium* was also subject to grain levies, Cic., *Verr*., II.3.43.103.
[1247] Strabo, *Geog*., VI, 2, 3.
[1248] *Messana, civitas foederata, supplied the frumentum imperatum*. Cic., *Verr*., II.4.9.20.
[1249] Plin., *Nat. Hist*., XIV, 66; Mart., XIII, 117.
[1250] Plin., *Nat. Hist*., XIV, 66.

the central power at a time when the island, though continuing to export grain to Rome, was no longer the sole grain supplier. Following the rise of Egypt and Africa as the privileged areas for grain production for the city, we should imagine a possible fall in grain exports. It is possible that in this delicate phase, rich landowners turned to more specialized and remunerative forms of agriculture such as vines — which led to the amphora production — and fruit trees.

I have tried to identify in the available publications where the large-scale cultivation of vines is attested in the 1st century AD alongside that of grain. It is interesting to note that both agricultural products are concentrated in the areas where amphorae were produced in the 1st century AD and which are also mentioned in the sources which discuss prized Sicilian wines, particularly popular on the Roman market.

In the suburban area of Roman *Messana*, where the popular Mamertine wine[1251] was produced, we can reconstruct for the Early Imperial period a *hinterland* with small and medium-sized settlements mainly dependent on the production of oil, wine and grain. The settlements excavated such as those in Pistunina[1252] and Gazzi[1253] are to be regarded as *partes rusticae* of the *villae* located to the north and south of the present town of Messina. In the 1st-century layers of the rural settlement of Gazzi structures for grain storage and for oil and wine production were found.[1254]

A similar situation is attested in the hinterland of the colony of Catina in the present-day Plain of Catania, known in the Roman period as the *Campus Leontinus*. Albeit vaguely, literary sources suggest the eastern slope of Mount Etna as the northern boundary and the Hyblaean hinterland as the southern boundary.[1255] A variety of archaeological, literary[1256] and epigraphic data[1257] and the results of this study indicate an area characterized by extensive wine production for overseas export, and by the production of grain and other agricultural produce. In the small district of Casalotto in present-day Acireale, a few miles from Catania, we have evidence of large Early Imperial period (?) facilities for the storage of grain with a calculated capacity of 11,000 *medimni*.[1258] The evidence of a fertile hinterland with more than one crop is also attested by the fruit and vegetable cultivations mentioned in an inscription

[1251] Plin., *Nat. Hist.,* XIV, 66, 97; Wilson 1989, 211–212; Van der Mersch 1994, 31–32, 50–51.
[1252] Bacci 2001, 217.
[1253] Inland rural settlement in the present-day Via Catania, Bonanno 2001, 195–205.
[1254] Wine press, *trapetum*, grindstones for grain, Portale 2006, 49.
[1255] Valenti 1997–1998, 234.
[1256] Strabo, *Geog*. VI, 2–3; *Expos*. LXV, GGM 126, 8–9.
[1257] CIL X, 2, 7040 mentions the production of wooden wine casks in Catania.
[1258] Libertini 1922, 492–493, 499.

found in Casalotto.[1259] Another alleged grain warehouse is attested in Aciplatani, and was probably still active until the late Empire.[1260]

In the southern part of the Plain of Catania — between Lentini and the Valle dei Margi — grain agriculture, probably rotated with legumes, alongside other monocultures such as olive and wine production were practised.[1261]

The published data on the central and western parts of the island suggest a different picture. These areas were devoted to monocultures (grain?) in the *latifundia*, while the northern and eastern parts were naturally suited to high-value crops such as vines, at small and medium-sized farms and *partes rusticae* of *villae* at least from the beginning of the 1st century.

In conclusion, it seems that there is good evidence for significant growth in the production of wine, oil, vegetables and grain in specific areas of Sicily during the 1st century AD. The flourishing manufacture of flat-bottomed amphorae is linked to the specialized and profitable cultivation of vines that reached Rome and other Mediterranean destination (Chapter 7) to a geographical extent potentially comparable to the export of Sicilian grain. Scholars have adopted different stances as to which were the *annona* ports at which Sicilian grain mainly arrived. Soraci does not rule out that the Sicilian *naves frumentariae* arrived directly at Ostia;[1262] the same is true of Meiggs[1263] and Lo Cascio.[1264] Musti believes that at least in the Republican period Puteoli was the port destined to receive grain supplies from Egypt, whilst Sicilian grain arrived at Ostia.[1265] Tchernia is of a different opinion, believing that in the Republican period Sicilian grain arrived at Pozzuoli.[1266]

On the basis of the distribution of Sicilian amphora types I believe that cargoes of Sicilian wine from the north eastern region (Naxos, Messina, Taormina) and the Catania area arrived at both ports, as demonstrated by the distribution of the Sicilian containers of the early and mid-1st century AD at Pompeii, Naples, Ostia and Rome.[1267]

It seems plausible that cargoes of wine did not travel with the grain paid as taxation (*annona*), but with the Sicilian grain exported by the *frumentarii*, in other words those private

[1259] SEG IV, 59. Portale 2006, 48.
[1260] La Rosa 1972. On the hypothesis that the structure was a grain warehouse, see Wilson 1990, 190.
[1261] Valenti 1997–1998.
[1262] Soraci 2011, 80.
[1263] 'We should assume that the corn from Sicily came to Rome through Ostia', Meiggs 1973, 26.
[1264] Lo Cascio 1993, 53.
[1265] Musti 1980, 206–207.
[1266] Tchernia 1997, 128.
[1267] Bibliography on amphora distribution cited in the tables of Catalogue II.

merchants who met the needs of Rome and who are recorded in inscriptions and by the literary sources,[1268] and who arrived at both Puteoli and Ostia.

In conclusion, the Republican and Early Imperial period is crucial in defining economic and commercial relations with the centre of power, Rome; the initial proliferation of the amphora productions discussed in this thesis must be seen within this context. During this initial phase there appears to be a link between the grain and wine trades which becomes less important in the following period, when Sicilian wine exports are consolidated in a much larger area, which effectively comprises the whole Mediterranean and part of northern Europe. In this sense I suggest a different interpretation of the iconographic evidence of the black and white mosaic found below Via dei Vigili in Ostia. The mosaic (Fig. 8.1) is dated to around AD 50. Traditionally it has been interpreted as the representation of the four grain-producing provinces:[1269] Sicily, Spain (Fig. 8.2), Africa and Egypt (Fig. 8.3). The *provincia* of Sicily is represented with the distinctively Sicilian symbol of the *Triskeles.* The image lacks the classic symbols related to grain production. It could be therefore related to other meanings, and, stretching this hypothesis, even to Sicilian wine-production. Furthermore, Spain was a major oil-exporting province (cf. the wreath of olive) and this further suggest that the mosaic was most probably related to the importance of the four *Provinciae* for the food supply of Rome, not necessarily grain supply.

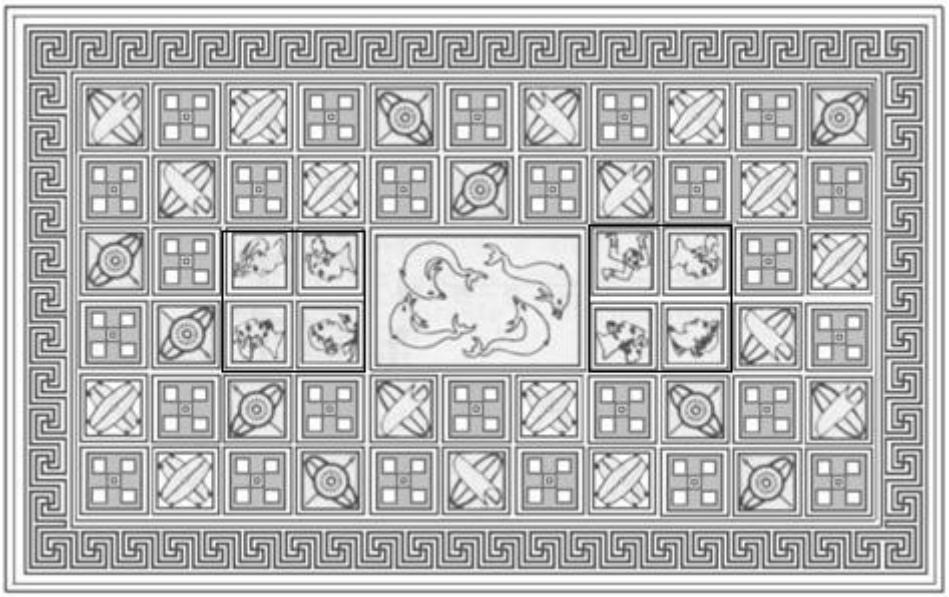


Fig. 8. 1 Drawing of the mosaic found below Via dei Vigili in Ostia (NSc 1912, 207). In the squares on the left and right of the dolphins, there are the panels with the personifications of the Provinces and two winged heads of males, one bearded and one unbearded, which have been interpreted as 'winds'.

[1268] Meiggs 1973, 277; Pavis 1976, 254.
[1269] De Salvo 1979, 57, note 2.



Fig. 8.2 Detail of the mosaic found below Via dei Vigili in Ostia. Heads of the Winds. A female head with a wreath of olive is the personification of Spain. The *triskeles* represents the province of Sicily (NSc 1912, 207).



Fig. 8.3 Detail of the mosaic found below Via dei Vigili in Ostia. Heads of the Winds. A female head with a crocodile-head is the personification of Egypt. A female head with an elephant's head and tusks refers to Africa (NSc 1912, 207).

8.3.4. Concluding Remarks

In light of these data, we can go beyond the conception of Roman Sicily as a uniform economic force dedicated to the production and sale of grain. The material, epigraphic and literary data of the ancient sources and their references to other agricultural products, provide a clear picture of a variegated provincial economy, contrasting with the island's traditional image as solely a grain producer. There was a productive base consisting of grain, oil and wine and also fish, the latter indicated by the amphora containers and fish-salting production centres known around the island.

As shown above, on the island the various sub-regions welcomed and reshaped the new economic opportunities created by Rome in different ways depending on the agricultural and productive resources available locally. Rome was the crucial element in the opening of these specific areas of Sicily to commercial trade since it created that broad system of material, infrastructural and legislative conditions within which a long-range grain trade, and we can now say for certain, a trade in wine and fish products, developed.

8.4. SICILIAN WINE EXPORT

The numerous data collected from this study show that a surplus of Sicilian wine production was widely traded in Roman period. Despite this evidence caution is needed in basing economic conclusions and identifications on wine export and destinations only on amphorae finds. Barrels, poorly preserved archaeologically, were adopted and spread increasingly commonly by the 1st and 2nd century.[1270] Moreover, local wines exported over short-distances and by overland transportation were also transported in wineskins such as *utres* (small wineskins) and *cullei* (large wineskins).[1271]

Detailed figures for Sicilian wine export come from a series of calculations based upon the identified specimens of Sicilian wine containers found in the the Thermes du Levant assemblages in Lepcis Magna.[1272] Using this estimate of the capacity of MR1 amphora (21 l) as a basis for the average capacity of a Sicilian flat-bottomed container, the import of Sicilian wine in the building of Thermes du Levant around the end of the 3rd-early 4th century AD (context 2) has been calculated as roughly 3,500 litres of wine (167 MR1 NMI x 21 l = 3,507 l), which were exported over *c.* 20 years (= 175 l each year, *c.* nine MR1 amphorae each year). The maximum estimated local Tripolitanian wine conveyed in ceramic containers (Tripolitanian II amphorae) from the same site was at that time considerably less in volume reaching *c.* just more than 1,000 litres (15 Tripolitanian II x 80 l = 1,200). Obviously this calculation does not take into account the 'archaeologically invisible' local wine that was not transported in ceramic amphorae. Another interesting comparison can be established with Cretan wine export in the Thermes du Levant carried in small-medium containers[1273] which were always less attested in the ceramic aseemblages.[1274] This attempt should not be seen as a way of calculating how much wine might have been imported from Sicily, but as an analysis that provides significant data on the relative proportions of Sicilian wine compared to other wine amphorae (Tripolitanian and Cretan) based on the accurate calculation of all the amphora sherds found in a specific context. The aforementioned information is that the wine from Sicily (which is mainly the wine from the region of Catania as pinpointed by the origin

[1270] For a bibliography on barrels, see Tchernia 1997, 121–29; Marlière 2002; Marlière and Torres Costa 2007, 85–106.
[1271] The cullei which held twenty-five amphorae and were more suitable for land transport than rigid, clay containers. De Sena 2009, 1–15. Skin are more expensive than clay amphorae, Peña 1999, 36–37; 2007a, 49.
[1272] Bonifay, Capelli *et al.* 2013, 132, note 247.
[1273] AC 2 (Bonifay, Capelli *et al.* 2013, cat. 1.15), AC 4 (Bonifay, Capelli *et al.* 2013, cat. 2.21), Zemer 57 (Bonifay, Capelli *et al.* 2013, cat. 1.16), Agora M235/M327 (Bonifay, Capelli *et al.* 2013, cat. 3.8–12; 4.8–14).
[1274] Bonifay, Capelli *et al.* 2013, Fig. 43; Cretan *vs* Sicilian amphorae: Context 1 *c.* AD 250–260 (4% *vs* 38%); Context 2 *c.* AD 290–310 (4% *vs* 38%); Context 3 *c.* AD 350–360 (10% *vs* 19%) Context 4 *c.* AD 400 (8% *vs* 19%).

of the containers from the Lepcitanian context) is particularly high in relative proportion from the excavated assemblages of one building. The information on capacity shows that the quantity of wine exported was indeed not particularly high especially when compared to the figures associated to the massive production and trade of Italian wine in the Late Republic.[1275]

It seems to be reasonable to suggest that the level and the extent of wine production in Roman Sicily (and to a greater extent for the Vandal and Early Byzantine periods), cannot be estimated through the amphorae finds alone. The evidence available (ancient representations of skins and barrels,[1276] study of *ostraca* from Carthage,[1277] location of the amphora kilns etc.) suggest that wine and fish sauce could have been transferred into skins in order to reach the inland cities more easily. The alternative use of barrels[1278] or *dolia*,[1279] for the export of Sicilian wine is possible and should be taken into account when dealing with distribution. The Sicilian wine arriving in containers could have been transferred in other non-Sicilian containers, in skins or barrels (see Chapter 6, section 6.5 on Sicilian wine export to Germany). The productive potential of tanks and press facilities known from the available archaeological evidence and their attribution to olive oil or wine is a better tool for evaluating the scale of wine output.

The movements of Sicilian flat-bottomed amphorae carrying Sicilian wine, as regionally and broadly recorded in this study, mainly show the commercial mobilisation of surplus production and that wine from the island was in high demand in many Mediterranean ports and centres. In any case, the proportion of Sicilian wine export as evident from the containers is certainly larger and more complex than previously recognised and advances our knowledge about this aspect of economic activity on the island.

[1275] The Albenga wreck, estimated at 450–500 tonnes, carried some 10,000 Dressel 1 wine amphorae (*c.* 26 litres of wine each), giving a total figure of 260,000 litres of wine, Bowman and Wilson 2009, 227.
[1276] Marlière and Torres Costa 2007.
[1277] Peña 1998.
[1278] Barrels were produced in the area of Catania (see Chapter 6).
[1279] Twelve *dolia*, the majority of which dated within the 4th century AD, were found in the hinterland of Taormina and were repossessed from the Soprintendenza of Messina. The fabric composition suggests that they were produced in the vicinity of Naxos, Lentini 2001, 139–141. Wine dolia, almost certainly of local production, were also found in the horrea in the port of Naxos, Lentini 2001, 25.

8.5. Origin, Developments and Decline of the Amphora Industry in Sicily Through the Centuries

8.5.1. Early Imperial Period

The early forms of flat-bottomed containers were produced from the Augustan-Tiberian age in the region of Catania and in the production centre of Naxos. Early evidence for the trade of Naxos and Catania region amphorae is heavily focused along the Tyrrhenian coast, in Rome, Arles and in selected coastal settlements in North Africa (see Chapter 7 and selected Tables in Catalogue II). The export of these early forms to Italy indicates the existence of previous links between Sicily and the Tyrrhenian area of the peninsula in the Late Republican period (see Chapter 1). This first phase of production of proper 'Roman' shape amphorae is coeval with the trade of Campanian and Tyrrhenian Italian wine amphorae to Sicily, which continued throughout the 1st century AD.[1280] This is confirmed by the association of the Italian Dressel 2–4 and Dressel 6A/Lamboglia 2 types with the Naxos Early Roman type, the Naxos flat-bottomed type (Form 1) and the Catania flat-bottomed type (Form 1) in some excavated consumption centres[1281] in north eastern Sicily, such as Tyndaris[1282] and Caronia Marina,[1283] and in western/central Sicily, such as Monte Jato[1284] and in Piazza Armerina.[1285] Interestingly, there is no evidence of trade in the Spello amphora type (and the subsequent Forlimpopoli type) in Sicily, while few Sicilian samples are attested in the Tiber Valley where they were possibly traded from Rome. The evidence suggests a commercial tie between Sicily and Campania/Ostia/Rome, while a direct contact between Sicily with the Upper Tiber region did not take place.

8.5.2. Middle Imperial Period and Early Phase of Late Roman Period

The general peak of the Sicilian wine trade can be dated from the third quarter of the 2nd century (Severan Period) until the first half of the 4th century AD. At this time the wine was mainly exported in the amphorae manufactured in the region of Catania, and, to a lesser extent, in the workshop of Naxos and in the amphorae produced in Caronia Marina. Perhaps

[1280] On Italian wine amphorae trade in Sicily see now Franco 2014.
[1281] This evidence is still scanty and could be due to the lack of excavation (and publication of pottery assemblages) from the main *civitates* and *coloniae* in Roman Sicily.
[1282] *Tyndaris* I.
[1283] Bonanno and Sudano 2007, 439.
[1284] Marek Palaczyk pers. comment.
[1285] From the Early Roman villa underneath the Late Roman period villa (Villa del Casale), CASR project, pers. observation.

the best indicators for the peak of Sicilian amphorae trade are the imitation of 'Catania region' flat-bottomed containers[1286] (Chapter 6) and the introduction of certain degree of standardisation in morphological details (especially for the Catania and Naxos region containers). As I have already mentioned (Chapter 2, section 2.8.2; Middle Imperial period), I believe that the production of Sicilian wines associated with a wider production of amphorae[1287] for their transport and their impact on wine consumption both in Rome, southern France and Lepcis Magna at that time, is to be connected to the land reform that took place in Sicily during the Severan period, when the expansion of Roman senatorial property on the island took place (*c.* AD 250 and 300). During this period of peak production, Sicilian amphorae (produced at more locations) reached northern Europe and both the western and the eastern Mediterranean, suggesting the vibrant economic networks of Sicilian wine across several regions.

8.5.3. Final Phase of Late Roman Period

The peak production of Sicilian wine continued until the final phase of the Late Roman period. From the second half of the 4th century AD/early 5th century AD there is an increase of amphora production centres along the north eastern coast and in the western area (region of Agrigento). This is attested both by the new fabric analyses, which suggest more numerous sources of production, and by the evidence of more numerous amphorae variants, in contrast with the standardised amphora production of the previous phase.

By the beginning of the 5th century AD the wine of the region of *Tauromenium* (Naxos flat-bottomed containers) was in sharp decline, and was only packaged in Keay 52 forms and only directed to the market of Rome. The export of Naxian Keay 52 to southern France (primarily Marseille, see the new analyses) was most probably exported as return cargoes out of Ostia/Portus.

The wine from the environs of Catania (Etna wine-producing zone), which was bottled in the Catania region containers, was also in decline, but to a much lesser extent than the wine from Taormina. Catania amphorae were still exported in moderate amount in the first half of the 5th century AD in Rome and southern France (mainly Arles). After the end of the 4th/beginning of the 5th century AD Sicilian flat-bottomed amphorae are found more rarely in North Africa (see the evidence of Lepcis Magna).

[1286] Imitations in Cyrenaica between the end of the 3rd and the beginning of the 5th century AD, and in Germany by the first half of the 4th century AD (Chapter 6).
[1287] From the mid-3rd century onwards also from the north eastern coast (NE Sicilian type 1 and 2).

The Catanian wine amphorae trade in the Mediterranean seems to stop completely by the second half of the 5th century AD, just before or just after the Vandal incursions in Sicily. The excavated consumption contexts of pre-Vandal phases (which ended by the mid-5th AD) — Verdura[1288] and Campanaio — [1289] and the Vandal period (in use after the mid-5th AD) — Carabollace – [1290] do not show any Catania amphorae imports. The lack of published ceramic assemblages of the same period in the Eastern Sicily do not allow us to examine possible changing patterns in production and supply of Catanian wine in its area of production during pre-Vandal and Vandal periods. The end of the only known amphora production centre in the region of Catania (S. Venera al Pozzo) has been related to the Vandal raids of Sicily.[1291]

To sum up, it is clearly attested that the production of Naxos flat-bottomed containers came to an end prior to the Vandal period. By contrast, the end of production of the containers produced in the region of Catania seems to correlate with the Vandal raids on Sicily. Nevertheless, a certain decline in the production and trade of Catanian wine can be suggested already from the first three decades of the 5th century AD (see the ceramic assemblages of this period in Rome, Chapter 7, section 7.4.1.1.1).

8.5.4. Vandal Period

From the mid-5th century AD onwards the identification of new forms and the distribution data collected in this study suggests that the axis of Sicilian wine production and export moved towards the north eastern coast of the island and in the region of Messina (Keay 52 type).

The trends of distribution of Sicilian/Calabrian wine containers Keay 52 in Rome and Marseille (see Cat. II, Tabs. 7.11 and 7.16) point to a general increase in exports from the pre-Vandal and early Vandal periods.

The available data indicate that several workshop sites located in a relatively small geographical area along the Tyrrhenic coast — Capo d'Orlando, Caronia Marina and other unknown minor production areas —, were operating at the same time producing several amphora forms (NE amphora types 4, 5 and 6) which were exported mainly to Rome, and in much less extent to Marseille and Tarragona.

[1288] Parello, Amico and D'Angelo 2010.
[1289] Wilson 1982; 1996; 2000b.
[1290] Caminneci, Franco and Galioto 2010.
[1291] Branciforti 2006.

This period of major typological changes marked the end of the 'classic' carinated and ovoid-body Sicilian amphora type (see the Catania and Naxos types). In my opinion this is also suggestive of a different organisation of the workshops, which were now more decentralised than those of the previous four centuries. The workshops of Catania and Naxos produced, in fact, more uniform amphora models with the same capacity, which could be identified clearly in an inter-regional long-distance trade.

The peak of the northern Sicilian wine trade is attested around the mid-5th century AD and in the following decades. The context of La Bourse in Marseille dated between the mid-5th-century and the beginning 6th century AD is particularly indicative for the contemporaneous attestation of Sicilian and Calabrian Keay 52 in association with North Eastern Sicilian amphorae.

Sicilian (region of Messina) Keay 52 type production came to an end around the beginning of the 6th century AD. The petrographic analyses carried out on several Keay 52 specimens found in the 6th-century context in Rome have shown a Calabrian origin. One should therefore think that the bulk of the 6th-century AD Keay 52 export in Rome is represented only by the Calabrian production,[1292] rather than Sicilian.

8.5.5. Early Byzantine Period

The only wine Sicilian amphora type exported in the course of the Early Byzantine period is the Crypta Balbi 2 type, produced in a still unknown workshop/s in the north eastern region of Sicily. The container was mainly directed to the supply of Rome and Naples,[1293] and was exported regionally especially in the north eastern and eastern coast of Sicily. The 7th-century Keay 52 types attested in Rome were produced in Calabria.[1294]

The local amphora production attested in the Early Byzantine ceramic assemblages of the village of Cignana in the Agrigento area,[1295] seems to suggest that amphora production sites intended for a local market moved inland, a process which may have begun in the western area of the island already during the final phase of the Late Roman Period. This might also indicate the existence of a less complex market where the amphora production was mainly linked to smaller workshops and household industry for the village communities (see also Chapter 2, section 2.8.5).

[1292] Caelian Hill, 6th century AD phase: Keay 52: 24.5% on the total amphorae imports, Pacetti 1998, 199, pl. 4.
[1293] See on distribution Saguì 1998, 321, note 20.
[1294] See the petrographic analyses in Sagui 1998.
[1295] Rizzo and Zambito 2010, 293–295.

By the Early Byzantine period all the previous Late Roman and Vandal period NE Sicilian amphora types (types 1–6) and Sicilian Keay 52 fully disappeared from the market. A possible reason for the end of the wide-spread wine amphora production in Sicily can be correlated with the internal political reorganization of the island in the mid-6th century AD when Sicily became the property of the Emperor of Byzantium. The initial year is AD 535, when Belisarius landed in Sicily, and in the first campaign of the Gothic war he subdued the island.[1296] Agricultural production in Sicily seems now to be mainly oriented to grain production[1297] and this might have had a consequence for the end of wine production and its export in amphorae.

The apparent collapse of the Sicilian amphora industry by the 7th century AD is undoubtedly indicative of a substantial reduction of movements of goods within the Mediterranean.[1298] We are moving towards a subsistence and redistribution economy in which the Church plays a key role by maintaining the continuity of production of certain foodstuffs, such as wine. The export of the late version of Calabrian Keay 52 and NE Sicilian Crypta Balbi 2 to Rome until the 7th century AD may document the presence of the Church behind the trade.[1299] The long-established exchange networks in function for more than six centuries had ceased. The amphorae evidence from Rome indicates a shift towards the wine produced in Campania and Latium and intended for the supply of the *Church* in Rome.[1300] Sicily still remains important for other basic food, such as grain which was exported towards Constantinople, Rome and Naples.

[1296] Proc., Bel. Goth. I, 5.
[1297] Cracco Ruggini 1979.
[1298] This is witnessefor example from the material culture of several Calabria and Puglia sites which records a significant decline in imports such as ARS and commercial amphorae.
[1299] See on this point the evidence of Keay 52 bearing a menorah — Jewish longstand — on the handles, which have led to the suggestion that they were made from Jewish communities, Arthur 1989, 138–139; Reynolds 2005, 416–417. Other samples carried a Chrism stamp on the handle, see the specimen found in Rome (Schola Praeconum contex), Keay 1984, 267 (with figure of the stamp).
[1300] Romei 2004, 284, note 20.

8.6. The Contribution of Amphorae Studies to Understanding the Sicilian Economy

This study examined the production, typology, distribution and trade of Sicilian flat-bottomed wine amphorae from the Early Roman period to the Early Byzantine. It has also taken into account regional fish-sauce containers in order to better understand the Sicilian economic system into which their production was incorporated. Sicilian wine containers were distributed by merchants in inter-provincial, regional and sub-local networks without breaks from the Early Roman to the Early Byzantine period. This investigation of Sicilian amphorae has shown the considerable impact of Sicilian foodstuffs other than grain in the overseas markets. These data provide meaningful evidence that challenges the previous existing stereotype that Sicily only role was as a grain supplier to Rome.

The results have allowed a better understanding of one of the main problems of the study of Sicilian transport containers connected to the uncertainty over the location of the production centres (Chapter 3). A new typology has been created and a series of data have demonstrated that the so-called Benghazi Mid Roman 1[1301] was firstly and mainly produced in the region of Catania (Chapter 4).

The chronology of distribution is significant for suggesting that the wine amphorae were first distributed both in the Tyrrhenian coast of Italy and in North Africa, indicating the coexistence of a state-driven trade (mainly directed to the market of Rome and possibly exploing the Sicilian grain trading networks) and a free private type of commerce which possibly continued and took advantage of previous contacts and patterns of trade, for which specific goods were shipped for sale in particular destinations.[1302]

The increased productivity of vine cultivation in Sicilian countryside, driven initially by Augustan policy (Chapter 1) and later developed in the Severan period and increased by the needs of the *annona*, led to the development of manufacturing activities (Chapter 3) in urban areas and *stationes* (*Tauromenium*/Naxos, Catania/*Catina*, Caronia Marina/*Statio Calacte*; S. Venera al Pozzo/*Statio Acium* and Capo d'Orlando/*Statio Agathyrnum*) and rural areas on the island (Campanaio, Cignana etc.) which increased the opportunities for foodstuff trade in particular on a Mediterranean scale. It appeared from the distribution study of Sicilian flat-bottomed amphorae in Sicily that the main port cities, such as Catania and

[1301] Riley 1979, 177–179.
[1302] Such as in the case of the Agrigento oil traded only to Carthage (Diod., XIII, 81, 4–5), and the export of Syracusian thin-walled wares to specific North-African destinations (Wilson 1990, 251, note 74).

Messina, may have played the role of distributor mainly of the products (wine amphorae) manufactured in the closest production centres (i.e. local figlinae). The regional amphorae exported from these two ports were shipped for sale in numerous main destinations (Rome, Istrian peninsula, Lepcis Magna and the Eastern Mediterranean). The ports of Caronia Marina and Termini Imerese show a somewhat different trading pattern, reflecting the export of the wine amphorae produced at more locations along the Tyrrhenian coast and directed mainly towards the market of Rome.

The widespread distribution of Sicilian flat-bottomed amphorae until the early decades of the 6th century AD (Chapter 7 and *supra*) and the imitation in specific geographical areas (Chapter 6) indicate that the wine produced in Sicily was well integrated into the markets of the Roman Empire. The small quantities of Catania amphorae exported to Switzerland, Germany and the far eastern Mediterranean, although not particularly significant in terms of actual quantity of wine exported, are to be seen as 'exotic' or prestige commodities probably aimed at a more exclusive sector of the market.

The decline of the distribution of Sicilian amphorae from the very beginning of the Early Byzantine period can be connected to the wider process of a gradual disappearance of the well-organised and structured nature trading system, which was typical of the exchange mechanisms throughout the Roman Empire.

This study has collected meaningful new material evidence to reject common traditional theories on the economy of Roman Sicily. Ideas such as the decadence of the rural economy in Early Roman period, the island's economic decline at the time of the Vandal raids, and the role of grain as the only mass-produced foodstuff of significant value, can be overcome by a more fluid and realistic view of Sicily's economy in which we can identify different sub-regional patterns and variations. Without doubt it is the production of wine, rather than amphorae, which is of greater importance for gaining a greater understanding of economic activity in Sicily during Roman period. Nonethess, the results of this study support the concept of the significant role of material culture production for tracing the economic fortune of a given territory. The production of amphorae for export, in kilns linked to both civic and rural centres, stimulated the island's economy and supported a multitude of other jobs and activities related to wine production, transport and shipping, such as the movement of goods from the production centre to the ports and the loading of the ships.

PART II

CATALOGUES AND BIBLIOGRAPHY

CATALOGUE I:
SICILIAN AMPHORA TYPES AND SAMPLES

Introduction

Catalogue I describes the amphora types included in the new 'Sicilian flat-bottomed amphorae typology', and illustrates the amphora samples which have been analysed within this study.

The new flat-bottomed amphora typology aims to create a wide, expandable model that can overcome previous erroneous typological identification and a confusing system of nomenclature. It is based both on petrographic data (Chapter 3) and morphology (Chapter 4). The amphora types cover four main periods: Early Roman Period (BC 30–AD 100); Middle Roman Period (AD 100–300); Late Roman Period (AD 300–440) and Vandal Period (AD 440–535).[1303] The amphora types follow this order: amphorae produced in the Area 2 (Fig. I, Naxos production centre and the region of Messina), amphorae of Area 3 (Fig. I, region of Catania), amphorae produced in Area 1 (Fig. I, north east coastal Sicily). Each main amphora type within a given area is ordered chronologically with the earliest variant first.

Within the same amphora type the forms have been distinguished principally on the basis of the 'diagnostic' sherds, such as rims. In some cases there is a clear chronological development of the rim which is corroborated by stratigraphic data.[1304] In other instances, the variations in form should be regarded as coeval and may reflect different workshops in the same areas which used different production techniques, trying to produce or even imitate the same form.[1305]

The types and forms are presented with a concordance with the previous denomination, following by a detailed description of the form and variants. Then follow the description of surface treatments, fabric[1306] and petrographic information. Evidence of stamps and *tituli picti* is given. The indication of size is expressed in cm and the volume/capacity in

[1303] The amphora production of the Early Byzantine Period (AD 536–600), attested for the NE Crypta Balbi 2 class, is not encompassed in the catalogue. Fragments of this type have not been identified from the overseas contexts analysed.
[1304] Such as in the case of the Catania MR 1 and Naxos flat-bottomed amphorae types.
[1305] Such as in the case of the north coastal amphora production (NE Sicilian types) and for the Calabrian Keay 52 amphora type.
[1306] Description of fabric colours are given, whenever possible, following the classification of Munsell soil colour chart, Munsell 1973. *Munsell Soil Color Chart*, Baltimore MD, 1973.

litres. Finally, type range of production and area of manufacture or possible workshop/s are provided.[1307] Illustration (drawing and photograph) of the best preserved amphora attributed to the type is provided.

The **amphora samples** included in the catalogue are all the amphorae analysed for this study which comprised of 180 specimens, both from consumption (172) and production sites (six fragments from S. Venera al Pozzo production centre, one from the Furnari dump and one from Caronia/Pantano production centre) They also comprise non-Sicilian and unidentified forms. The specimens are described within the type they belong to, and are listed, whenever possible, in chronological sequence. Both morphological changes and context dates, when available, were considered in determining their order. Where no context dates were available, their sequence has been determined by the author through morphological comparison with amphorae datable from external evidence. Each catalogue entry is presented with its inventory number, followed, whenever the case, by the indication of SA[1308] and the number of thin-section analysis.[1309] The measurements were taken or confirmed by the writer and are given in cm (preserved height or length and estimated diameter). The context information for each entry specifies the place where the amphora was first found and the date of the context (whenever possible). Bibliographic references are given for the samples that have been already published. Unless otherwise indicated, a drawing scaled at 1:3 when a small/medium size part is preserved and at 1:10 for the whole amphorae is provided (see Plates I–XXXIV). The majority of the drawings was made by the writer during study visits. A few were made by the first publishers, while others still unpublished have been kindly provided by the first excavators. In case of the context of the Thermes du Levant the profile were redrawn in Adobe Illustrator from M. Bonifay's hand drawings. Pictures of the amphorae were included when they could add information on amphora form and technique or for the forms not identified.

[1307] Listed in this order: Amphora Type definition; Other denominations; Formal description; Subtypes/Variants; Fabric; Petrology; Stamps; *Tituli Picti*; Volume; Primary Content; Production site; Chronology.
[1308] Acronym for 'Sicilian Amphora' indicates the entry of each amphora selected for thin-section analyses.
[1309] The number follows Claudio Capelli system.

THE FLAT-BOTTOMED AMPHORA TYPES OF THE NAXOS PRODUCTION AREA (AREA 2)

NAXOS EARLY ROMAN AMPHORA TYPE (Fig. I.1-2)

Amphora Type definition: Naxos Early Roman amphora type.
Other denominations: Ostia II, Fig. 523 (=Ostia III, 632, Fig. 43); S. Alessio Type; S. Alessio Type *similis*.
Formal description: Small amphora (Height: The average height ranges between 54 and 58 cm) with a small ring base; with flat, hollow bottom (Diameter between 9.5 and 12.2 cm, height between 1.5 and 2,6 cm). Ovoid body tapering downwards (maximum diameter between 26 and 30 cm); High shoulder; High narrowed cylindrical neck (height between 14 and 16 cm; diameter below the rim 7 cm); Neat rolled long handles with deep longitudinal grooves between upper handle joints. The handles join the shoulder at a sharp 90-degree angle below the rim.[1310] Heavy and slightly projecting band rim (Diameter between 7.5 and 8.5 cm; height of the rim between 1 and 1.5 cm).
Subtypes/Variants:
The amphorae found in the Naxos port, defined in the literature as 'Sant'Alessio Type *similis*',[1311] have an oval body, slightly projecting band rim, grooved handles, and a high and narrow neck. Two or three horizontal grooves occur with regularity on the neck, at the same height as the handles. Their body is ovoid in shape with a maximum diameter between 26 and 30 cm. The amphorae are relatively small, with a height between 54 and 58 cm and a maximum capacity of 15 litres. Variations within the same production can be noticed in the type. They include the external profile of the base and the bottom. In particular the profile can be plain;[1312] with a bulge at the bottom;[1313] with a separated rounded or straight ring.[1314] The external profile of the rim can be rounded and less frequently straight. The number of the grooves between the handles may vary (2 or 3 grooves).
Macroscopic description of Fabric: Colour: Can vary between a pinkish (M. 5 YR 7/3; 7/4), slightly brown (M. 7.5 YR 8/3; 8/4) or slightly red colour (M. 2.5 YR 4/6); Hardness: Hard fabric, granular.
Exterior surface: Very small brown, white and dark brown/black inclusions are sometimes visible in the exterior surface.
Petrology: Fabric Group 2 (Chapter 3). Thin section analyses: sub angular quartz grain, well rounded pieces of cryptocrystalline limestone of small size, small pieces of quartz-mica-schist, flecks of mica, grains of plagioclase, potash feldspare.
Stamps: The stamp CAPITO is impressed on 5 handles found in a ship shed of the port of Naxos, date: within the 1st century.[1315]
The monogram VAL is impressed on one handle found in a ship shed of the port of Naxos, within the 1st century AD.[1316]
Two holes/punches are impressed in two handles found in a ship shed of the port of Naxos, within the 1st century AD.[1317]

[1310] 'The so-called Anse a gomito' in the Italian literature.
[1311] Ollà 1997, Fig. 2 and Fig. 5 (from the wreck); Fig. 7 (from the harbour deposit). See also Ollà 2001, 118, Fig. 3.
[1312] Muscolino 2009, Fig. 13.
[1313] Muscolino 2009, Fig. 14 and 15.
[1314] Muscolino 2009, Fig. 16 and 17.
[1315] From the US 4/S, Muscolino 2009, 116–117, figs. 22–31.
[1316] From the US 2/ST, Muscolino 2009, 117, figs. 32–33.

The stamp CORIN is impressed in one handle found in Ostia, no chronology available.[1318]
Tituli Picti: A non-translatable *titulus pictus* from a sporadic find from the Gulf of Fos.[1319]
Volume: capacity between 15 and 17 l (see Fig. I.2). The maximum capacities of this amphorae type have been established within the project of pottery analyses carried out by T. Peña and his equipe. Víctor Martínez has kindly provided the following calculation:
A, S. Alessio type, 17.71 litres, Ollà 1997, 226, Fig. 2A (Inv. No. 2559)[1320];
B, S. Alessio type, 14.77 litres, Ollà 1997, 226, Fig. 2B (Inv. No. 2560);
C. S. Alessio type, 15.75litres, Ollà 1997, 226, Fig. 2C (Inv. No. 2561);
D. S. Alessio type, 15.85 litres, Ollà 1997, 226, Fig. 2D (Inv. No. 2562).
Primary Content: probable wine. Traces of pitch or resin are often found in the interior.
Production site: Kilns of Naxos.
Chronology: Early Roman Period.

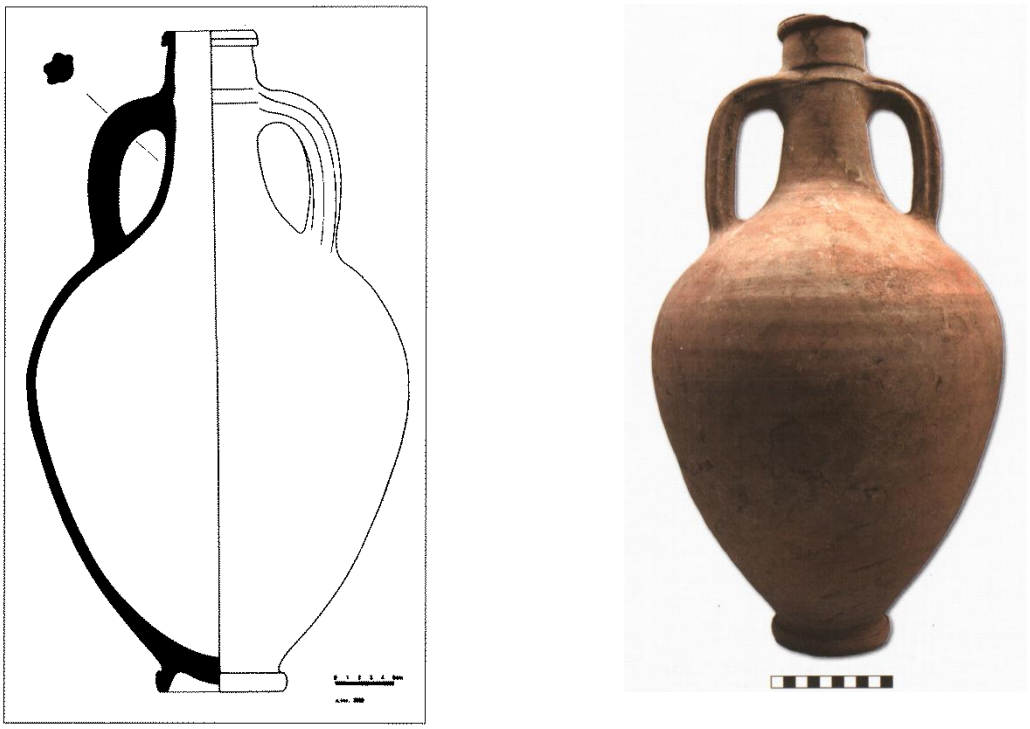


Fig. I.1 Naxos Early Roman Type.

[1317] From the US 4/S, Muscolino 2009, 117.
[1318] Pohl 1970, 94, inv. 14862.
[1319] Liou and Marichal 1978, 169, no. 73, Fig. 28.
[1320] A slightly lesser capacity of 15.5 l. for the same amphora type was calculated filling the amphora with water almost up to the rim, Muscolino 2005–2006, 106, note 10.

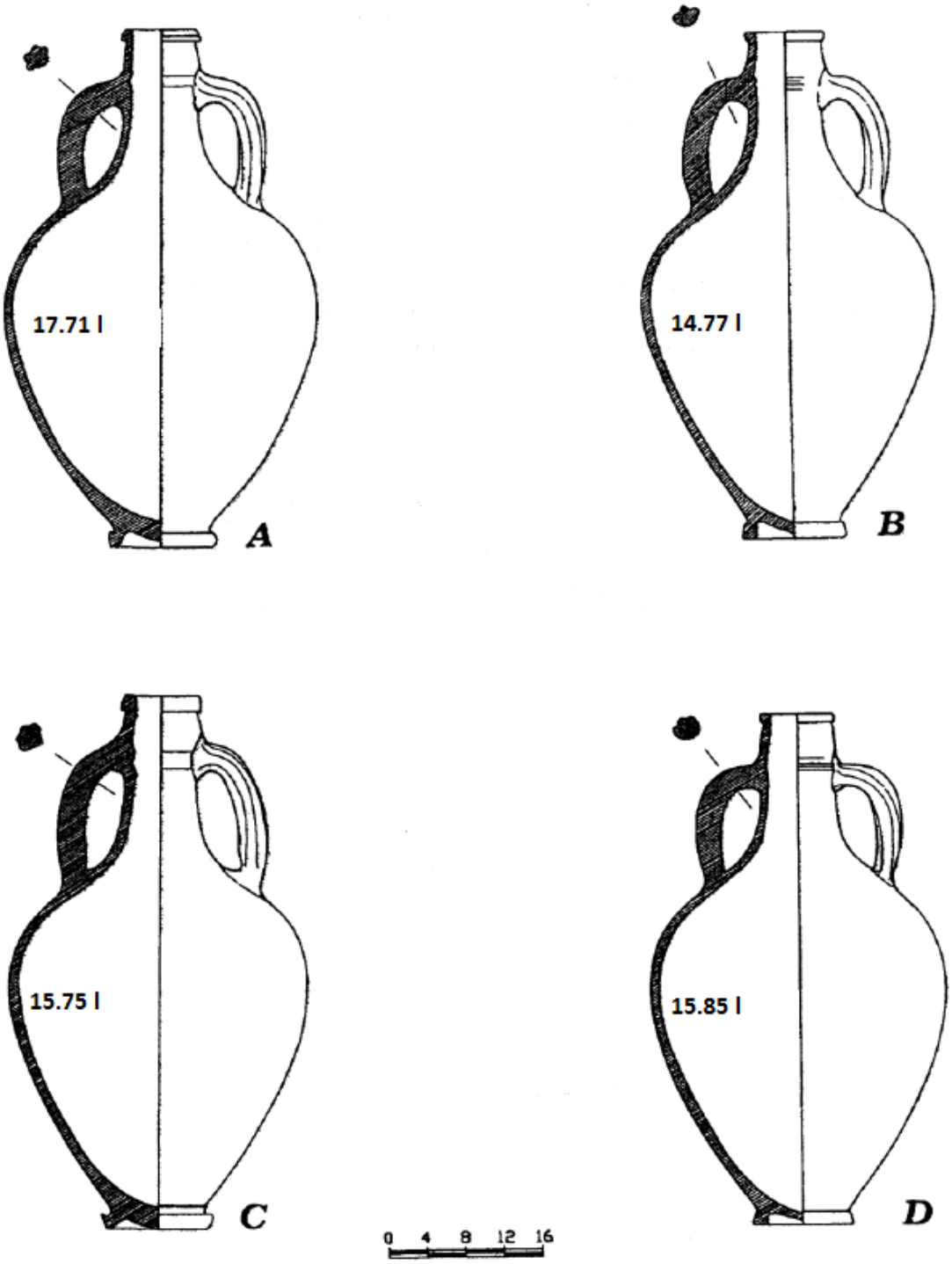


Fig. I.2 Drawings of five complete Naxos Early Roman amphorae type from the cargo of the shipwreck sunk off Capo Sant'Alessio. The amphorae capacities have been established with the project led by T. Peña (see *infra*).

CATALOGUE OF SAMPLES

NAXOS EARLY ROMAN AMPHORA TYPE

SA 53 (Pl. I, no. 1)
Arles, Rhône wreck 3, Underwater find (Inv. No. AR3. 2018.49)
Upper half of an amphora.
Naxos Early Roman type, variant S. Alessio type.
Narrow, elongated neck, round handles with a deep central groove. Two small grooves in the neck between the handles. Profile handle less rigid than SA 1.
Fabric: Fine micaceous, buff-coloured fabric (7.5YR 6/6–6/4); small paste voids; contains gold mica, quartz (0.5 mm) and white lime (>0.5 mm) inclusions.
Suggested origin: Naxos production, Fabric Group 2, Coarse-grained subgroup (no. analysis: 9740/9969).
Context date: AD 60–120.
Author drawing: D. David.
Unpublished.
Comparison: Ollà 1997, Fig. 2 (Naxos); Ostia II, 105–106, pl. 29, Fig. 523 (Ostia); McCann 2001, 259, Fig. 8 (Skerki Wreck F).

SA 55 (Pl. I, no. 2)
Arles, Rhône wreck 3, Underwater find (Inv. No. AR3.3001.185).
Upper half of an amphora. H. 26; D. rim ext. 7 cm; D. rim int. 5.9 cm; H. rim 1.8 cm; D. neck 14 cm; H. Neck 10 cm; D. shoulder 25.5 cm; D. handle 3 cm.
Naxos Early Roman type, variant S. Alessio type.
Fabric: as above.
Suggested origin: Naxos production probable (no. analysis: 9766).
Context date: AD 60–120.
Author drawing: D. David.
Unpublished

SA 21 (Pl. I, no. 3)
Corsica, Suala (Inv. No. 30. 1036).
Rim and handle. H. 6.5; D. rim ext. 5.5; D. rim int. 5; H. Rim 2.5; D. handle 2.8.
Naxos Early Roman type
Fabric: Fine, pale brown fabric (7.5YR 7/6–6/6); contains rare mica, brown and lime inclusions with very few paste voids.
Suggested origin: Naxos production, Fabric Group 2, Coarse-grained subgroup. (analysis no.: 9652). Comparable to SA 1.
Context date: first half of the 2nd century AD.
Author drawing: S. Lang-Desvignes.
Unpublished

SA 1 (Pl. I, no. 4)
Marseille, DRASSM, Underwater find, sporadic (Inv. No. 9637)
Rim, neck and handles H. 19; D. rim ext. 8; D. rim int. 6.5; H. Rim 2.3; D. neck. 8.5; D. handle 2.8.
Naxos Early Roman type, variant Ostia II, 523**.** The handles join the shoulder at a sharp 90-degree angle below the rim. The handles profile is more rigid tha SA 1.

Fabric: Well fired fine/depurated buff-coloured fabric surface. Pale red fabric in the core. Fine quartz dots. Gold mica flakes.
Suggested origin: Naxos production, Fabric Group 2, Coarse-grained subgroup (analysis no: 9632). The inclusions, mainly quartz, have coarser and larger grains with generally sub-rounded crystals. Comparable to SA 21.
Context date: No context.
Unpublished

NAXOS FLAT-BOTTOMED AMPHORA CLASS (FIG. I.3)

Fabric Group 2, fabric 2.2
Petrology Relatively coarse and abundant sandy inclusions; clay matrix relatively rich in carbonate component. Moderately abundant quartz, acid metamorphic rocks and rare volcanities.
Stamps/*Tituli picti*: Very little evidence, only known for the earliest form (Middle Roman period).
Volume: 16.90 litres for the specimen Fig. I.3(V. Martínez)
Primary Content: probably wine. Traces of pitch or resin are often found in the interior.
Production site: Kilns of Naxos.
Chronology From the 1st to the end of the 4th century AD.



Fig. I.3 Naxos flat-bottomed amphora type

Three forms have been distinguished:

1. Naxos flat-bottomed amphora, Form 1 (First three decades and the end of the 1st century AD/2nd century AD)

Other denominations: Spinella/Via Larunchi amphora type.
Formal description: Small ovoid amphora, with a slender cylindrical neck and arched profile handles. The rim is everted with a flat upper surface. The handles are round in cross section and slightly grooved. Two horizontal wavy incisions occur with regularity on the neck, at the same height as the handles. These grooves represent a constant element in the Early/Middle Roman Naxian amphora production. They will disappear in the later versions.
Stamps/*Tituli picti* Stamp CEL retrograde on the exterior of the ringed bottom.[1321] No illustration provided.Stamp MGN on a handle of a type attributed to Wilson to the amphorae

[1321] Specimen found in Naxos now in the archeological museum of Naxos, Wilson 1999, 534.

produced at the Naxos workshop and attested in the Archeological Museum of Carthage.[1322] In my opinion this attribution may be unsecure because the description of the fabric of the specimen (red fabric with numerous white and black inclusions) does not match the typical Naxian fabric. No illustration provided.

2. Naxos flat-bottomed amphora, Form 2 (Late 3rd-early 4th century AD)
Other denominations: Palatine East type.
Formal description: Morphologically, this Form 2 has a more solid neck than the Naxos Form 1 and lacks of the two or three incisions which were typical of the previous form. The ring footed base has a nipple in its centre.
Stamps/*Tituli picti*: No published evidence.

3. Naxos flat-bottomed amphora, Form 3 (around mid-4th century AD onwards**).**
Other denominations: Keay 52 type.
Formal description: It has a slightly triangular or quadrangular rim profile, everted in the exterior. The neck is slightly swollen when the handles attach and it is shorter and more cylindrical than the Form 2.
Stamps/*Tituli picti*: No published evidence.

CATALOGUE OF SAMPLES

NAXOS FLAT-BOTTOMED AMPHORA TYPE, FORM 2

SA 33 (Pl. II, no. 1)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 217.1)
Rim, neck and circular handle. H. 14.9 cm; D. rim ext 7.4 (max. 8 cm); D. rim int. 6.2 cm; H. Rim 1.4; D. neck 8.5 cm; H. Neck 11 cm; D. handle 3 cm.
Naxos flat-bottomed amphora type, Form 2.
Fabric: Compact fabric, fine and hard with quartz, feldspar, and rare volcanities and metamorphic inclusions. Orange beige in colour (analysis no.: 9664).
Suggested origin: Naxos.
Context date: AD 290–310. Probably AD 290 (associated with a Catania MR 1a Form 2).
Bibliography: Bonifay, Capelli *et al*. 2013, cat. 2.14.

SA 72 (Pl. II, no. 2)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 217.8)
Base and body. H. 10.3; D. Base cm; H. Ring footed 1.5 cm.
Naxos flat-bottomed amphora type, Form 2 (?).
Fabric: Compact fabric, metamorphic inclusions, calcareous matrix. Orange beige in colour.
Suggested origin: Naxos (analysis no: 9759) Comparison with Capelli 1998, Tab. 3, no. 459, waster from Naxos production area (waster inv. no. 4598).
Context date: *c.* AD 290
Bibliography: Bonifay, Capelli *et al*. 2013, cat. 2.15.

[1322] Wilson 1999, 534.

SA 34 (Pl. II, no. 3)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 189.54)
Rim, small portion of neck and handle
Naxos flat-bottomed amphora type, Form 2.
Suggested origin: Naxos; analysis no: 9665. Similar to SA 71 and SA 53.
Context date: AD 290–310. Probably AD 290 (associated with a Catania MR 1a Form 2)
Unpublished

SA 6 (Pl. II, no. 4)
Marseille, Pointe Pomègues, DRASSM, Underwater find (1978), sporadic (Inv. No. 6063)
Rim, neck and handles
More slender neck than Form 3.
Fabric: Hard fabric, gritty, light red. Acid metamorphic inclusions are not attested in thin-sections
Suggested origin: Naxos production not excluded. The fabric shows general few similarities with Naxos fabric (no. analysis: 9637).
Context Date: without context
Unpublished

CATALOGUE OF SAMPLES

NAXOS FLAT-BOTTOMED AMPHORA TYPE, FORM 3

SA 114 (Pl. III, no. 1)
Trypiti reef shipwreck, Underwater Find, Excavation (Inv. No. Γ 149)
Whole amphora.
Naxos flat-bottomed amphora type, Form 3.
Fabric: Hard, with inclusions of quartz, rare vulcanities. Similar to SA 28.
Suggested origin: Naxos production area.
Context date: Amphora cargo dating *c.* AD 330–350 (found in association with Catania MR 1a Form 3).
Author drawing: G. Koutsouflakis
Bibliography: Franco and Capelli 2014a; Koutsouflakis and Argiris in press.

SA 66 (Pl. III, no. 2)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. 010.1)
Upper half of an amphora. H. 16 cm; D. rim ext max. 8. 5 cm; D. rim int. 5.8 cm; H. Rim 1.4; D. neck 8.3 cm; H. Neck 10 cm; D. shoulder 35 cm; D. handle 3 cm.
Naxos flat-bottomed amphora type, Form 3.
Fabric: Orange fabric and pale brown exterior surface. Finely granular matrix, metamorphic inclusions (analysis no.: 9753).
Suggested origin: Naxos production area.
Context Date: *c.* AD 350–360.
Comparison: East Palatine, Late Variant.
Bibliography: Bonifay, Capelli et al. 2013, cat. 3.4.

SA 71 (Pl. III, no. 3)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 083.1)

Rim and neck. H. 11.5 cm; D. rim ext. 8 cm (max. 8.5 cm); D. rim int. 5.8 cm; H. Rim 0.8; D. neck 8.7 cm; H. Neck 10.3 cm.
Naxos flat-bottomed amphora type, Form 3.
Fabric: Orange fabric and pale brown exterior surface. Fine–finely granular matrix. Compact. Thin degreaser, metamorphic inclusions (analysis no.: 9758).
Suggested origin: Naxos production area.
Context Date: AD 350–360.
Comparison: East Palatine, Late Variant.
Bibliography: Bonifay, Capelli et al. 2013, cat. 3.5.

SA 64 (Pl. III, no. 4)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 3.28)
Shoulder and handle. H. 18 cm; D. handle 3.1 cm.
Naxos flat-bottomed amphora type, Form 3 (probable).
Fabric: pinkish/pale brown fabric. Medium size inclusions, angular well-sorted, moderately abundant quartz, acid metamorphic rocks and rare volcanities (analysis no.: 9751). Fabric comparable to SA 68 (see above).
Suggested origin: Naxos production area.
Context Date: AD 350–360.
Bibliography: Bonifay, Capelli et al. 2013, cat. 3.7.

SA 105 (Pl. III, no. 5)
Arles, Arles Archaeological Museum collection (no inventory number)
Upper half of an amphora. H. 18.5; H. Rim 1.5 cm; D. rim ext. 8.1 cm; D. rim int. 5.5 cm; D. neck 12 cm, H. Neck 11 cm; D. handle 3.5 cm.
Naxos flat-bottomed amphora type, Form 3 (4th century AD).
Fabric: As above, (analysis no.: 10158).
Suggested origin: Naxos production area.
Context date: without chronology.
Unpublished

SA 106 (Pl. III, no. 6)
Arles, Arles Archaeological Museum collection (no inventory number)
Rim and neck. H. 13.; H. Rim 1 cm; D. rim ext. 9.1 cm; D. rim int. 6.5 cm; D. neck 8.7 cm; H. Neck 11.5 cm; D. handle 3.5 cm.
Naxos flat-bottomed amphora type, Form 3 (4th century AD).
Fabric: Hard, with black and white inclusions. Brown in the exterior. As above, (analysis no.: 10159).
Suggested origin: Naxos production area.
Context date: without chronology.
Unpublished

FAN 6 (Pl. III, no. 7)
Arles, Arles Archaeological Museum collection (no. inventory number)
Neck and handles. H. 13.5; D. neck 8.6 cm; H. Neck 10 cm; D. handle 3 cm.
Naxos flat-bottomed amphora type, Form 3 (probable) (4th century AD).
Fabric: Hard, brown in colour. Coarse fabric with white and black inclusions. Quartz and and mica schist.
Suggested origin: Naxos probable.
Context date: without chronology.

Unpublished
Catalogue of samples: Naxos flat-bottomed amphora type, Forms 2 and 3

SA 68 (Pl. IV, no. 1)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 103.11)
Base and body. H. 13 cm; D. ring-foot base 10 cm; H. Ring 1.3 cm.
Naxos flat-bottomed amphora
Fabric: pinkish/pale brown in colour. Medium size inclusions, angular, well-sorted, moderately abundant quartz, acid metamorphic rocks and rare volcanities (analysis no.: 9755). Fabric comparable to SA 64.
Suggested origin: Naxos production area.
Context date: *c.* AD 250–260.
Unpublished

Lepcis 18 (Pl. IV, no. 2)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 071.1)
Base
Naxos flat-bottomed amphora.
Fabric: Medium size inclusions, well-sorted. Quartz and acid metamorphic rocks.
Suggested origin: Naxos production area.
Context Date: second half of the 3rd-first half of the 4th century AD.
Unpublished

Lepcis 13 (Pl. IV, no. 3)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 083.SN)
Base and body. H. 10 cm; D. ring-foot base 9 cm; H ring base 1.5 cm.
Naxos flat-bottomed amphora
Fabric: Medium size inclusions, angular, well-sorted, moderately abundant acid metamorphic rocks. Comparable with SA 71.
Suggested origin: Naxos production area.
Context Date: *c.* AD 350–360.
Unpublished

NAXOS KEAY 52 AMPHORA TYPE CLASS (FIG. I.4)

Amphora Type definition Naxos Keay 52
Other denominations: Keay 52 type.
Formal description The few published illustrated examples from the furnaces of Naxos show variations on the rim and neck.[1323] A few types have a long neck and triangular rim which has a horizontal flange approximately in the middle of the lip.[1324] Other examples show a flange just below the lip and a shorter neck.[1325] The handles have a downward-sloping arch and a circular section. In other cases, a flower-shaped section is attested.
Fabric Pale brown, fine grained in the core, gritty and lighter on the exterior.
Petrology Moderately abundant quartz, acid metamorphic rocks and rare volcanities. Relatively abundant sandy inclusions.
Stamps/*Tituli picti* Not known for the 'Naxos' Keay 52 types
Volume: No data on volume due to the lack of a drawing of a complete example from the kiln.
Primary Content: probable wine. Traces of pitch or resin are often found in the interior. Scientific analypses on similar types have attested wine content. A gas chromotagraphic study of a foot fragment found in the Schola Praeconum I deposit suggests that the amphora contained wine.[1326] More recently, performance of scientific analyses on the interior of a Keay 52 specimen from Trainiti (Calabria) have confirmed the presence of a waterproofing treatment of the internal surfaces, which was obtained by combustion of vegetal resins from the arboreal species of Pinaceae family (pitch from pine).[1327]
Production areas/workshops Naxos, Mastrociccio workshop.
Chronology Second half of the 4th century/mid-5th century AD.

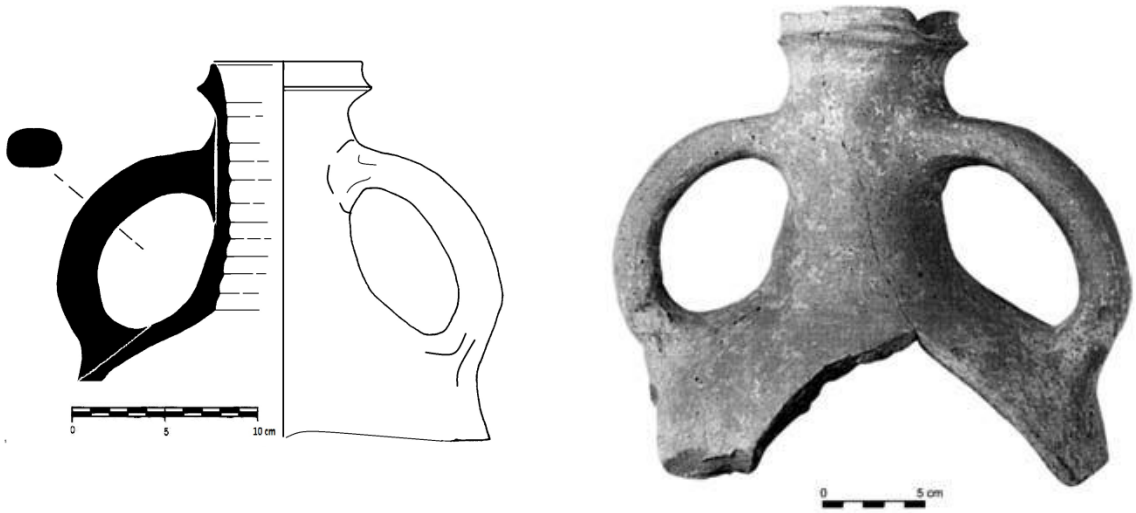


Fig. I.4 Naxos Keay 52 type

[1323] Basile 1994, 25–27.
[1324] Ollà 2001, Fig. 13, 16 and 20.
[1325] Ollà 2001, Fig. 23 and 24.
[1326] Keay 1984, 267.
[1327] Izzo *et al.* 2013.

CATALOGUE OF SAMPLES

NAXOS KEAY 52 TYPE

SA 28 (Pl. V, no. 3)
Arles, Arles Archaeological Museum collection (no inventory number)
Upper half of an amphora. Large neck, sloping handle.
Naxos Keay 52. H. 12; D. rim ext. 10 cm; D. rim int. 8 cm; D. neck 11 cm; H. Neck 10 cm; D. shoulder 26 cm; D. handle 3 cm.
Fabric: Hard fired, fine-grained fabric. Slightly irregular break. Light red in the core (3YR 5/6); which turns in pink (7.5 YR 8/4) around the margins. Lighter colour on exterior surface. Small inclusions (white calcareous material, small golden mica, small sub-round mica-schist and rare volcanic inclusions).
Suggested origin: Naxos production area (analysis no.: 9659). Fabric comparable with previous analysis published in Capelli 1998, no. 4597.
Context date: without chronology.
Comparison: For the shape: Basile 2001, Fig. 21, E (Keay 52 from the Naxos kiln site).
Author Drawing: G. Duperron
Unpublished

SA 67 (Pl. V, no. 2)
Lepcis Magna, Thermes du Levant, excavation (Inv. no. TL 164.7)
Rim and small portion of neck. H. 4.1 cm; D. rim ext. 8.7 cm (max. 10 cm); D. rim int. 7.5 cm; H. Rim 1.2 cm.
Naxos Keay 52
Fabric: Light brown fabric (7.5YR 6/4). Compact, the surfaces feel slightly grainy but not harsh. Moderate subangular and well-sorted inclusions of metamorphic rocks**,** rare but coarse sandy inclusions; occasional volcanic plagioclase (Fabric Group 3) (analysis no: 9754).
Suggested origin: Naxos production area.
Context Date: second half of the 4th century AD–AD 400.
Bibliography: Bonifay, Capelli et al. 2013, cat. 4.7.

SA 103 (Pl. V, no. 3)
Tarragona, 5th-century city dump, excavation (Inv. No. t2.2213.99.5252)
Rim and small portion of neck. H. 3.2 cm; D. rim ext. Max. 8.1 cm; D. rim int. 5.5 cm; H. Rim 1.4 cm.
Naxos Keay 52.
Fabric: Medium hard fabric, pinkish brown (7YR 7/4); unslipped. Irregular break. Abundant medium colorless, white and grey inclusions. Moderate subangular inclusions of quartz, rare volcanic inclusions (analysis no.: 10156)
Suggested origin: Naxos fabric probable.
Context Date: *c.* AD 400–450.
Unpublished

SA 14 (Pl. V, no. 4)
Marseille, La Bourse, excavation (inv. no. 2097. 32)
Body of amphora (base, body and neck).
Naxos Keay 52

Fabric: Hard, with sharp break, slightly granulose exterior. Gritty fracture break. Light brown/pinkish colour (7.5YR 6/4–7.5YR 8/4). Exterior surface is pale brown with a greenish tint. Frequent white inclusions (lime), and numerous small black inclusions (volcanic); rare golden mica (analysis no: 9645). Comparabile in thin-section with SA 28.
Suggested origin: Naxos production area.
Context date: mid-5th century AD.
Bibliography: Bonifay 1986, 282, Fig. 8, no. 32.

EXAMPLE OF SHARED INTRA-REGIONAL AMPHORA TYPE: NAXIAN IMITATION OF NE SICILIAN TYPE

Amphora Type definition*:* Naxian imitation of NE Sicilian type
Other denominations: Previously not identified amphora type
Formal description: Morphologically, the specimens have a stubbier and shorter neck than the NE Sicilian type 1 produced at Caronia Marina workshop (see North Eastern amphora production, below).
Fabric: Group 2, sub-group 2.2
The fabric is medium hard, orange with a light brown exterior surface. In thin-section shows fairly abundant inclusions of rounded quartz, metamorphic component and volcanic inclusions (basalts).
Stamps/*Tituli picti:* Not known
Volume: No preserved whole amphora available.
Content: Probably wine on the basis of morphology.
Production areas/workshops: Suggested Naxian origin on the basis of the new petrographic analyses.
Chronology Second half/end of 4th/beginning of the 5th century AD?

CATALOGUE OF SAMPLES

SA 29 (Pl. IX, no. 1)
Arles, Rhône**,** underwater find, excavation (Inv. No. RH 05.VIR. 45.1149)
Upper half of an amphora. H. 33; D. rim ext. 8 cm; D. rim int. 6 cm; D. neck 11 cm; H. Neck 10 cm; D. shoulder 28 cm; D. handle 2.8 cm.
Naxian imitation of NE Sicilian type
The amphora shows general morphological similarities with the type listened as Ostia I, 455. Similar to the prototype Ostia I, 455 are the low arched handles, the body profile, the cylindrical neck and the rillings in its exterior.
Fabric: Volcanic inclusions, well-sorted inclusions (analysis no: 9660).
Suggested origin: Naxos not excluded (fabric comparable with SA 28 and SA 61).
Context Date: unstratified context, sporadic.
Unpublished
Comments: The lack of context does not allow a precise amphora chronology. Looking at the shape a general chronology during the 4th century AD is reasonable. The neck is short and stubby and differs from the 3rd century AD version of Ostia I, 455.
Comparison: Messina 2000, Pl. II, no. 1–3.

SA 61 (Pl. IX, no. 2)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 166.15)
Rim and small portion of neck and handle. H. 7.4 cm; D. rim ext. 8.5 cm; D. rim int. 7 cm D. handle 3.3 cm.
Naxian imitation of NE Sicilian type
Fabric: Ligh red fabric in the core, light brown in the exterior. Containing medium size inclusions, well-sorted, among which quartz, metamorphic rocks and volcanic inclusions (no. analysis: 9748).
Suggested origin: Naxos not excluded (fabric comparable with SA 28 and SA 61).

Context Date: second half of the 4th century–*c.* AD 400.
Naxos not excluded (comparable with SA 28and SA 29).
Bibliography: Bonifay, Capelli *et al*. 2013, cat. 4.5.
KEAY 52 AMPHORA CLASS

NORTH EASTERN SICILIAN KEAY 52 TYPE

Amphora Type definition North Eastern Keay 52
Other denominations: Keay 52 type
Formal description Variability in terms of morphology and macroscopic appearance of fabric. The fabric varies and can be pale brown/yellowish, or pinkish in colour. May contain small/medium brown, clear and transparent sandy inclusions.
Fabric Group 3
Stamps/*Tituli picti* Not known for this Sicilian production**.**
Volume: Impossible to established due to the lack of a drawing of a complete example attributed to a NE Sicilian production.
Primary Content: probable wine (see above).
Production areas: North Eastern tip of Sicily, area of Messina probable. Workshop unknown.
Chronology: mid-4th–mid-5th century AD onwards.

CATALOGUE OF SAMPLES

NORTH EASTERN SICILIAN KEAY 52 TYPE

SA 15 (Pl. VI, no. 1)
Marseille, La Bourse, excavation (Inv. No. 2696. 63)
Upper half of an amphora. Handles with flattened rectangular section with longitudinal flutes. NE Sicilian Keay 52.
Fabric: Soft, Light brown in colour, and lighter in the exterior. Rare white, brown and sandy inclusions. Golden mica. Basalt**s** associated with pyroxenes (analysis no.: 9646).
Suggested origin: North East tip of Sicily.
Context date: mid-5th century AD context.
Bibliography: Bonifay 1986, 282, Fig. 8, no. 33.

SA 97 (Pl. VI, no. 2) Tarragona, Vila-Roma dump, excavation (Inv. No. VLR. 918.3336)
Neck and Hanldes. Rim missing. Flat handle. H. 12.8 cm; D. neck 6.4; H. Neck 10 cm; D. flat handle 3.8 cm.
NE Sicilian Keay 52
Fabric: Medium soft, relatively fine fabric. Brown/pinkish in colour, lighter in the exterior, containing moderate small white and grey inclusions and abundant mica. Basalts associated with pyroxenes (analysis no.: 10150).
Suggested origin: North East tip of Sicily.
Context Date: second quarter of the 5th century AD.
Unpublished
Comparison: Bonifay 1986, Fig. 8, no. 33.

RH.07.00.1799 (Pl. VI, no. 3)
Arles, Rhône**,** underwater find, sporadic (Inv. No. RH.07.00.1799)

Upper half of an amphora. Rim missing.
NE Sicilian Keay 52
Fabric: Medium hard fabric, light brown (7.5YR 6/4), shading to very pale brown in the exterior. Containing moderate quartz, and abundant mica. Metamorphic inclusions.
Suggested origin: North Eastern tip of Sicily.
Context Date: no chronology.
Unpublished

SA 26 (Pl. VI, no. 4)
Arles, Rhône**,** underwater find, sporadic (Inv. No. RH.10. A 48.C2)
Handle
NE Sicilian Keay 52
Fabric: Medium hard fabric, light brown (7.5YR 6/4), shading to very pale brown in the exterior. Fabric containing frequent and abundant grey inclusions, and white calcareous material. Volcanic and metamorphic inclusions (analysis no.: 9657).
Suggested origin: North Eastern tip of Sicily.
Context Date: no chronology.
Unpublished

Lepcis 44 (Pl. VI, no. 4) Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 150.4)
Base and body. H. 12 cm; D. ring-foot base 8 cm.
Keay 52
North Eastern tip of Sicily.
Fabric: Area Dello Stretto Classato Are Metamorifca Light brown fabric (7.5YR 6/4). Moderate subangular, well-sorted inclusions of metamorphic rocks.
Context Date: central decades of the 4th century AD second half of the 4th century/*c.* AD 400.
Unpublished.

KEAY 52 AMPHORA CLASS

'STRAIT OF MESSINA' SICILIAN KEAY 52 PRODUCTION (FIG. I.5)

Amphora Type definition *'Strait of Messina'* Keay 52
Other denominations: Keay 52 type
Formal description
Fabric Group 3. To this production belong samples that contained metamorphic inclusions. Their origin in NE Sicily or in SW Calabria cannot be established without the comparison with samples from known workshops, due to the similarity of the lithology of Peloritan belt of Sicily and south Calabria.
Primary Content: wine (see above).
Volume: Ranging between 6.0–7.4 l (digitised capacity measurements of four specimen found in the Palatine East context).[1328] The volume of the specimen Fig. I.5 (see below) has been establish in 6.01 litres by V. Martínez.
Production areas: Area of Messina (probable) and SW Calabria. Workshop(s) unknown.
Chronology: mid-4th–mid-5th century AD onwards.



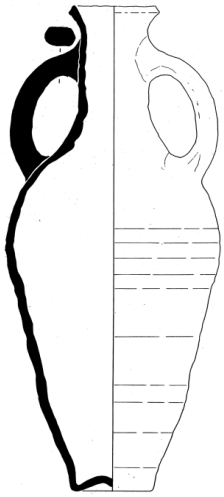


Fig. I.5 'Strait of Messina' Keay 52 type

CATALOGUE OF SAMPLES

'STRAIT OF MESSINA' KEAY 52 PRODUCTION

Lepcis 42 (Pl. VII, no. 1)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 142.1)
Rim, neck and handle
'Strait of Messina' Keay 52
Fabric: Very pale brown in colour. Metamorphic inclusions, abundant mica, white bodies (fossils probable).
Suggested origin: Southern Calabria/North eastern tip of Sicily.
Context Date: AD 400.

[1328] Peña 1999, 72.

Unpublished

RH.09.Z5.B20.86 (Pl. VII, no. 2)
Arles, from the Rhône, underwater find, excavation (Inv. No. RH.11.Z6.X26.VI.192)
Upper half of an amphora. Rim missing.
'Strait of Messina' Keay 52
Fabric Pale brown core and light pale brown surfaces. Hard medium fabric, fine grained. Metamorphic inclusions and abundant mica,
Suggested origin: South Calabria/North Eastern Tip of Sicily.
Context Date: 4th century AD
Author drawing: G. Duperron
Unpublished

KEAY 52 AMPHORA CLASS

CATALOGUE OF SAMPLES

SOUTHERN CALABRIAN KEAY 52 PRODUCTION

Lepcis 92 (Pl. VIII, no. 1)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 220.18)
Rim. H. 4 cm; D. ext. rim 7 cm.
Calabrian Keay 52
Fabric: Very pale brown (10YR 8/3). Soft fabric with scattered large quartz, schist and frequent mica flakes on the surface.
Suggested origin: South Calabria.
Context Date: intrusive in an end 1st/2nd century AD context.
Unpublished

Lepcis 91 (Pl. VIII, no. 2)
Lepcis Magna, Thermes du L7 cmevant, excavation (Inv. No. TL 167 .22)
Base
Calabrian Keay 52
Fabric: As above.
Suggested origin: South-Calabria.
Context Date: second half of the 4th century/*c.* AD 400.
Unpublished

Lepcis 54 (Pl. VIII, no. 3)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 163.7)
Rim, neck and flat handle. H. 6.9 cm; D. rim ext.8 (Max. 9.5 cm); D. rim int. 7.5 cm; H. Rim 2 cm; D.handle 3.8 cm.
Calabrian Keay 52
Fabric: Soft, pale brown, gritty, with small frequent inclusions, iincluding white bodies (fossils?) and brown/reddish bodies, some mica.
Suggested origin: South-Calabria.
Context Date: second half of the 4th century/*c.* AD 400.
Unpublished

SA 16 (Pl. VIII, no. 4)
Marseille, La Bourse, excavation (Inv. No. 2097.32)
Upper half of an amphora.
Calabrian Keay 52
Fabric: Light brown in colour, with a whitish/grey slip on the exterior surface, very gritty, numerous medium-size white inclusions, small brown/black inclusions, some mica (analysis no.: 9647).
Suggested origin: South Calabria, Tropea area of production.
Context date: mid-5th century AD context
Bibliography: Bonifay 1986, 282, Fig. 8, no. 31.

SA 95 (Pl. VIII, no. 5)
Tarragona, 5th-century city dump, excavation (Inv. No. tcs1.99.192)

Rim, neck and shoulder. H. 11 cm; D. rim ext. Max. 8.8 cm; D. rim int. 6.5 cm; H. Rim 0.9 cm; D.neck 8 cm; H. Neck 8 cm.
Calabrian Keay 52.
Fabric: Soft fabric, irregular break and gritty fracture surface. Pale brown (10YR 7). Unslipped on the surface. Abundant well-sorted, subangular colorless grains of quartz; large fragments of granite, rare metamorphic inclusions and gneiss (analysis no.: 10148).
Suggested origin: South Calabria.
Context Date: ca AD 400–450.
Unpublished

SA 102 (Pl. VIII, no. 6)
Tarragona, 5th-century city dump, excavation (Inv. No. t2.2213. 99.5253)
Rim and small portion of neck. H. 5 cm; D. rim ext. Max. 8.7 cm; D. rim int. 6 cm; H. Rim 1.5 cm.
Calabrian Keay 52.
Fabric: Medium hard fabric, very pale brown (10YR 7.5/3); unslipped. Medium round colorless and white grains. Golden mica. Abundant fossils, quartz and metamorphic inclusions (analysis no.: 10155).
Suggested origin: South Calabria.
Context Date: ca AD 400–450.
Unpublished

CRYPTA BALBI 2 CLASS

CATALOGUE OF SAMPLES

AN EARLY 5TH-CENTURY AD SICILIAN PREDECESSOR OF CRYPTA BALBI 2

SA 60 (Pl. X, no. 1)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 167.21)
Rim and neck. H. 11 cm; D. rim ext. 7 cm (max. 8 cm); D. rim int. 6.5 cm.
This type shows similarities with an Ostia IV, 166 rim (=North Eastern Sicilian amphora type 2).
Fabric: 2.2. Close petrological similarity with North Eastern Sicilian Crypta Balbi 2. Medium hard, grained. Its fabric is orange-brown in colour, while the surface is reddish brown. Grey-brown core. Coarse grained temper; abundant, well-sorted and angular. Fine mica, metamorphic rocks, quartz, a little plagioclase and Potash feldspar. Rare Volcanities (analysis no: 9747).
Suggested origin: North eastern tip of Sicily or north coastal Sicily. The region of Messina and Furnari area possible. Workshop unknown.
Context Date: second half of the 4th-AD 400.
Bibliography: Bonifay, Capelli *et al*. 2013, cat. 4.6.

FLAT-BOTTOMED AMPHORAE PRODUCED IN AREA 3

CATANIA REGION FLAT-BOTTOMED AMPHORA CLASS

Amphora Types definition Catania flat-bottomed amphora class. Three forms have been individuated (see below).
Content: Wine for all the forms on the basis of morphology and evidence of pitch.
Production areas/workshops Region of Catania. Early and Middle Roman period production: workshop unknown. Late Roman period: S. Venera al Pozzo workshop (Branciforti 2006) and other workshops still unidentified.

Fabrics and Surface Treatment
Fabric**:** Group 1, and the main subgroups 1.1 and 1.2. Under the stereomicroscope transparent grains (round quartz), ranging from medium to fine, to very fine, are distinguishable. Rare glistening mica and small voids are fairly often present in the fabric. Volcanic inclusions are rarely visible under the naked eye.
All the forms recognized within this amphorae class (Catania flat-bottomed containers and Catania MR 1a, see below) are macroscopically characterized by a similar fabric, compact and well depurated. The break varies from even and sharp to finely granular. The surface feels smooth. The fabric is pale red (2.5YR 5/4) red-orange (2.5YR 5/6) or pale brown (2.5YR 6/6) in colour, with a few visible black inclusions, and a moderate proportion of white lime.
The fragments often show a whitened/light pink surface (10YR 8/2; 2.5Y 8/2), more or less uniformly distributed all over on the exterior surface and in the interior upper part of the amphora, when preserved. The whitened surface is not attested in the Cyrenaican variants and in the other imitation of MR 1a recognized within this study. The analysis under the microscope has demonstrated that the whitish wash is not a slip. A slip in fact would be recognizable by the presence of a more or less distinct layer over the surface.[1329] It does not break as it would be expected if it was a slip, and it does not fade when a metallic point is pressed on the surface. The outer surface is sometimes characterized by whitish wiping marks visible in the exterior and in the interior upper part, due to the movements of the potter's hands on the vessel in the process of applying fine clay and (salted) water. The white surface is probably related to the probably non intentional use of salted water during the manufacture process. It might also mean that the manufacture was close to a source of salt water (i.e. coastal workshop). The whitish appearance is the result of a chemical process and it is achieved when sodium chloride (NaCl) gets in contact with a clay rich in calcium carbonate ($CaCO_3$) and iron oxide. This discoloration suggests that the fabric contained an excess of 15% calcium carbonate and that the salted water was either used during the clay preparation or present within the clay sources.[1330] The white skin is generally formed when the vessels are fired at high temperature.[1331] The salt precipitating on the surfaces of the vessels in the kiln inhibits the oxidation of iron. As a consequence, the interior of closed vessels (such as amphorae) are not bleached. They are instead typical of oxidized fabrics and appear reddish in colour as in the case of many MR 1 amphora types analysed.
This beige or pale pink colour exterior is attested in the S. Venera al Pozzo amphorae types, brick and tile production.[1332] The non-destructive PIXE analysis carried out on fragments of

[1329] On the difference between slip and whitening in pottery production see, Cuomo di Caprio 2007, 401.
[1330] Peacock in Fulford and Peacock 1984, 263.
[1331] Cuomo di Caprio 2007, 311.
[1332] Amari 2007.

the locally produced tiles has detected that this outer skin is rich in calcium, $CaCO_3$.[1333] This is what is expected in the case of the use of salt in the manufacturing process.[1334] This superficial white appearance attested in the Catania MR 1 is also a distinctive finish associated with North-African Roman pottery production[1335]. The use of the same finishing process makes the outer surfaces of Sicilian and Tunisian pottery sherds very similar in terms of macroscopic appearance.

Manufacture

The careful manufacturing technique of Catania MR 1a amphorae differs from the more rough and coarse forming of the Cyrenaican imitations[1336] (see Chapter 6 on imitation for the Cyrenaican production). The handles are positioned symmetrically and they are attached to the upper part of the neck and on the shoulder with great care using an extra strengthening of clay. The triangular rim is well formed in all the variants recognized. The surface is uniformly smooth suggesting a careful production process.

Forms description: Three forms have been identified on the basis of rim shape and body profile. Handles and bases are very similar in all the three forms. It is difficult to distinguish among the forms recognized on the basis of non diagnostic sherds only, such as the ringed-foot and the handles which are similar in shape and surface/fabric. More or less high bases are both attested in the early and later forms. The fluted handles are attested both in the Early and Middle period amphora forms (cf. Ostia II, 522 and Ostia III, 464 =MR 1b and in MR 1a Form 2). The Late Roman period MR 1a type presents a slightly fluted version of the handles, even though in this later development the handles are more often plain.

[1333] Pappalardo *et al.* 2003.
[1334] Cuomo di Caprio 2007, 314.
[1335] A rich bibliography is available about this much discussed issue. For up-to-date considerations, Bonifay 2004, 41.
[1336] For example, the handles are almost always positioned symmetrically *vs* the Cyrenaican variants.

CATANIA FLAT-BOTTOMED AMPHORA TYPE, FORM 1 (FIG. I.6)

1. Amphora definition: Catania flat-bottomed amphora type, Form 1 (Fig. I.6).
Other denominations: Ostia II, 522;[1337] Riley MR 1b.[1338]
Formal description Long, tronco-conical neck with several horizontal rills in the exterior. The neck is wider in this variant than the Form 2 (see below). The Form 1 has a short, pointed, inturned rim. The rim is slightly rounded on the exterior and variously flaring on the outside. It has a shallow internal groove under the rim. The handles are flower-shaped in section and form a broad curve from the body and neck of the amphora. They join at the mid-high shoulder halfway up the neck. The handles of Form 1 have a less sharp curved profile than Form 2 (cf. var. Ostia III, 464). When the handles are fragmentary it is impossible to distinguish whether they belong to Form 1 or Form 2. The body of Form 1 is wide, and less squat than Form 2. The shoulder displays the typical carination of the whole amphorae class. Below this ridge the ovoid body heavily shrinks and terminates in a ring-footed base. The base is circular with a foot ring and has a central button in its centre. Cream-coloured outer layer on the exterior is often attested.
Stamps/*Tituli picti* No stamps or *tituli picti* are known for this Form. *Tituli picti* T.P. IX and P.P. LS appears on two similar containers (of non Sicilian origin) found in the Flavian Hypogeum in Leptic Magna. The *tituli* refer to numerals and to the weight of the amphorae empty and filled with their (liquid) content: T(esta) P(onderis) IX and P(lena) P(onderis) LS.[1339]
Volume: from 17 to 21 l. (see Fig. I.2). Víctor Martínez has kindly provided the calculation of a capacity of 21.04 l on the whole amphora published in OSTIA II, 522[1340] = Ostia III, 632, no. 44 (See Fig. I.6).
Chronology Augustan/Tiberian Age-beginning 3rd century AD?

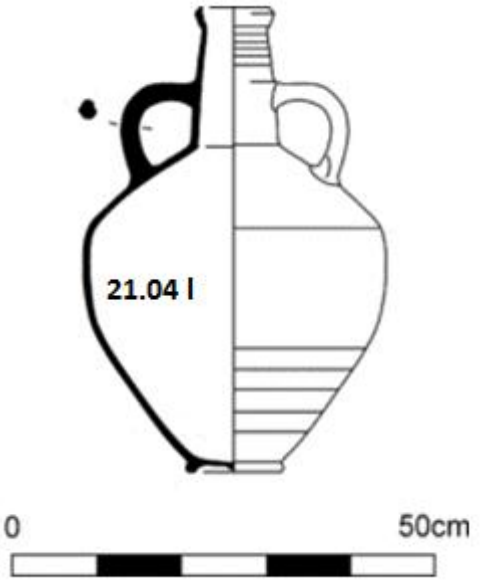


Fig. I.6 Catania flat-bottomed amphora type, Form 1

CATALOGUE OF SAMPLES

[1337] Ostia II, pl. XXIX, no. 522 = Ostia III, 632, Fig. 44.
[1338] Riley 1979, Fig. 81, no. 216.
[1339] Di Vita-Evrard *et al.* 1996, 116–117, Fig.8, note 14.
[1340] Same amphora is published in the Southampton Amphora Project website no. DR265.

CATANIA FLAT-BOTTOMED TYPE, FORM 1

SA 20 (Pl. XI, no.1)
Corsica, Suale (Inv. No. 55. 1030)
Rim and partial neck. H. 5.5 cm; H. rim 2 cm; D. rim ext. Max 10 cm; D. rim int. 8 cm.
Catania flat-bottomed type, Form 1, var. 1 (= Ostia II, 522).
Fabric: pale red core and pale brown surfaces. Traces of a whitish surface in the exterior. Very fine sandy-rough surface. Rare gold mica flakes.
Suggested origin: Region of Catania, Granular group, sandy fraction relatively fine grained (analysis no.: 9651).
Context Date: *c.* first half of the 2nd century AD.
Author drawing: S. Lang-Desvignes.
Unpublished
Comparison: Ostia II, pl. XXIX, no. 522; Riley 1979, Fig. 81, no. 216.

SA 90 (Pl. XI, no. 2)
Narbonne, Port-la-Nautique (Inv. No. OS98.II C116 128)
Upper half of an amphora. Rim not preserved.
Catania flat-bottomed type, Form 1.
Fabric: Hard fired red fabric, well depurated.
Suggested origin: Region of Catania, Granular group (no. analysis: 10007).
Context Date: AD 40/70.
Author drawing: C. Sánchez.
Bibliography: Sánchez 2009, Fig. 270, no.1.

SA 91 (Pl. XI, no. 3)
Narbonne, Port-la-Nautique (Inv. No. OS98. II A2 C17 77)
Upper half of an amphora. Rim not preserved.
Catania flat-bottomed type, Form 1.
Fabric: As above.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 40/70.
Author drawing: C. Sánchez
Bibliography: Sánchez 2009, Fig. 270, no. 2.

SA 92 (Pl. XI, no. 4)
Narbonne Nautique, Port-la-Nautique (fouilles Bouscaras) (No inv. number)
Neck, shoulder and handles
Catania flat-bottomed type, Form 1.
Fabric: Hard fired red fabric, well depurated. Buff surface.
Suggested origin: Region of Catania, Granular group (no. analysis: 10008).
Context Date: BC 30–AD 70.
Author drawing: C. Sánchez.
Unpublished

SA 54 (Pl. XI, no. 5)
Arles, Rhône wreck 3, underwater find (Inv. No. AR 3. 2001. 68)
Catania flat-bottomed type, Form 1.
Upper half of the amphora with both handles preserved. Without Rim.

Fabric: Cream-yellow coat present in the exterior surface. Hard fired orange-brown fabric with pale red-brown surfaces. Creamish wash exterior. Drips onto mid-lower part of the body.
Suggested origin: Region of Catania, Granular group (no. analysis: 9741/9970).
Context dateAD 60–120.
Unpublished

CATANIA FLAT-BOTTOMED TYPE, FORM 2 (FIG. 1.7)

2. Amphora definition Catania flat-bottomed type, Form 2 (Fig. I.7).
Other denominations: Ostia III, 464 type.
Formal description Narrow and tall cylinder-shaped neck, with several horizontal rills which may stop just where the handles join or may also be at the mid-height of the neck, between the handles. The rim is thickened and higher than the rim of Form 1. Overall, the carinated shoulder is less wide and the body profile is squatter than Form 1. The fluted rounded handles join at the shoulder and halfway up the neck. The handles are generally longer than the curved handles of Form 1, and their profile is more sharp and stiff. The base has a foot ring has Form 1.
Variants definition and formal description Two variants have been indentified on the basis of the rim profile that also varies in height.
V**ariant a** corresponds to the rim of the specimen publishes as Ostia III, 464 type[1341] (see Fig. I.7). The rim ('orlo a fascia' in the Italian literature) is slightly rounded on the exterior and has a flange at *c.* 1 cm below its pointed top. Overall, the rim is longer when compared to that one of variant b.
V**ariant b**. The rim is shorter, flat on the exterior and always with an internal groove (see here, SA 58, pl. XII, no. 5).
Stamps/*Tituli picti* No stamps or *tituli picti* are known for this Form.
Volume: *c.* 17 l. Víctor Martínez has kindly provided the calculation of a capacity of 17.6 l on the whole amphora published in Ostia III, 464 = Ostia III, 632, no. 45 (See Fig. I.7).[1342]
Chronology End 1st-beginning (?) 3rd century AD. In Ostia the amphorae are attested together with the amphora Form 1 (=Ostia II, 522) from Flavian age until the early decades of the 2nd century AD.[1343]

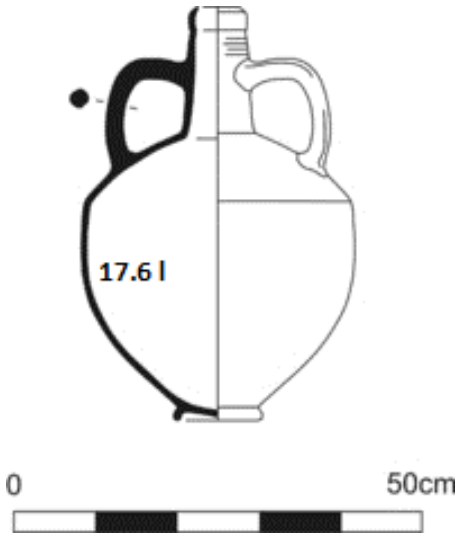


Fig. I.7 Catania flat-bottomed amphora type, Form 2

[1341] Ostia III, pl. IV, no. 464=Ostia III, 632, Fig. 45.
[1342] See also Southampton Amphora Project website no. DR307.
[1343] Ostia III, 468–469.

CATALOGUE OF SAMPLES

CATANIA FLAT-BOTTOMED TYPE, FORM 2 (VARIANTS A AND B)

SA 2 (Pl. XII, no. 1)
Lyon de Mer 1, Underwater find (1967), sporadic (Inv. No. C339)
Upper half of an amphora. H. 26; H rim 3; D. rim ext. 7; D. rim int. 5.5; D. neck. 6.8; H. Neck 13.5; D. shoulder 33; D. handle 2.5 cm.
Catania flat-bottomed type, Form 2, var. a (=Ostia III, 464).
Fabric: Hard, fine grained. Orange/red fabric. Surface colour unknown as surface is badly encrusted. Cream-buff exterior.
Suggested origin: Region of Catania, Granular group. As SA 3 (no. analysis: 9633).
Context date: sporadic find.
Unpublished
Comparison: Ostia III, pl. IV, no. 464.

Lepcis 53 (Pl. XII, no. 2)
Lepcis Magna, Thermes du Levant (Inv. No. TL 220.9)
Rim and neck
Catania flat-bottomed type, Form 2, var. a.
Fabric: As above. Containing well-sorted quartz, and white bodies (calcareous material) and rare volcanities.
Suggested origin: Region of Catania, 'purer' sub-group.
Context Date: from a Middle imperial context, with several pottery dated around the end of the 1st century AD.
Unpublished

Lepcis 31 (Pl. XII, no. 3)
Lepcis Magna, Thermes du Levant (Inv. No. TL 096.25)
Rim and neck. H. 8 cm; D. rim ext. max. 7.5 cm); D. rim int. 5 cm.
Catania flat-bottomed type, Form 2, var. a.
Fabric: Hard fired pale orange fabric with homogeneous cream-buff surface (interior and exterior). Moderate lime and black inclusions. Rare fine gold mica. Containing well-sorted quartz, and white bodies (calcareous material) and rare vulcanites.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 250–260 (residual?).
Bibliography: Bonifay and Capelli *et al*. 2014, cat. 1.6.

Lepcis 24 (Pl. XII, no. 4)
Lepcis Magna, Thermes du Levant (Inv. No. TL 075.1).
Rim
Catania flat-bottomed type, Form 2.
Fabric: Hard-fired, porous orange fabric with a non homogeneous cream-buff surface preserved. Contains moderate mica and numerous black inclusions (>0.5 mm). Containing well-sorted quartz and volcanities.
Suggested origin: Region of Catania, purer group.
Context Date: 3rd century AD.
Unpublished

SA 58 (Pl. XII, no. 5)
Lepcis Magna, Thermes du Levant (Inv. No. TL 096.26)
Catania flat-bottomed type, Form 2, var. b. H. 5.4 cm; D. rim ext. 6.2 cm (max. 8.3 cm); D. rim int. 5.5 cm; H. Rim 2.2.
Rim and small part of neck.
Fabric: Hard fired, pale red fabric, well depurated. Homogeneous cream-buff surface both in the interior and exterior. Containing well-sorted, medium size quartz, rare pyroxenes and volcanities.
Suggested origin: Region of Catania, scarce silty fraction, purer group (no. analysis: 9745).
Context Date: AD 250–260 (residual?).
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.5.

SA 3 (Pl. XII, no. 6)
Marseille, Cape Caveaux, Underwater find (1966), sporadic (Inv. No. C310).
Rim and neck. H. 15.2; H. Rim 2.5; D. rim ext. 7.1; D. rim int. 5.3; D. neck. 8.3; H. Neck. 12.5 cm.D. handle 3.1 cm.
Catania flat-bottomed type, variant of Form 2?
Fabric: Fine, pale brown fabric (7.5YR 7/6); contains fine mica and black inclusions with very few paste voids. Encrusted surface. Containing numerous inculsions, well-sorted quartz and volcanities.
Suggested origin: Region of Catania, granular group (no. analysis: 9634).
Unpublished
Context Date: without chronology.

CATANIA FLAT-BOTTOMED TYPE, FORM 3 (FIG. I.8)

1. **Amphora definition** Catania flat-bottomed type, Form 3 (Fig. I.8).

Other denominations: Included by J. Riley in his 'Benghazi MR amphora 1b' = Riley 1979, Fig. 81, no. 217.
Formal description The body profile and the handles profile of this form are more similar to Form 2 than Form 1. The neck is sensibly shorter then Form 2 and the rim is longer. The rim is high and funnel-shaped, with a flange close to the upper point (*c.* 1 cm below the top of the rim). The neck is corrugated between the handles. The evidence suggests that the horizontal rills in the neck are characteristic of the Form 1, 2 and 3, and they disappear in the following MR 1a type from the beginning of the 3rd century onwards. The handles are circular in section and can be fluted or unfluted. Overall, the shoulder of this form is less wide and the handles have a more rigid profile than Form 1. The body is ovoidal and terminates with a ring-foot base.
Fabric: Catania group
Stamps/*Tituli picti* No stamps or *tituli picti* are known for this Form.
Volume: No data on volume. The amphora capacity is probably not to be too dissimilar to that one established for Form 1 and 2, therefore around 17 l.
Chronology: beginning 2nd-beginning (?) 3rd century AD.

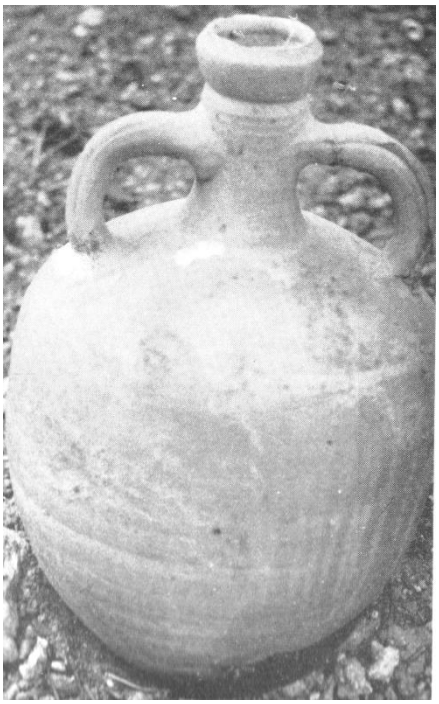


Fig. I.8 Catania flat-bottomed amphora type, Form 3

CATANIA MR 1A AMPHORA TYPE (FIG. I.9)

Amphora Type definition Catania MR 1a amphora type.
Content: Wine for all the forms and variants recognized, mainly on the basis of morphology and evidence of pitch.
Production areas/workshops: S. Venera al Pozzo workshop (in Late Roman Period) and other unknown workshops in the volcanic region of Catania from the Early Roman Period to the Vandal Period, when production stops.
Volume: Víctor Martínez has kindly provided the calculation of a capacity of 19.79 l on the whole amphora published in Ostia I, 453–454 = Ostia III, 632, no. 46 (See Fig. I.9).[1344]

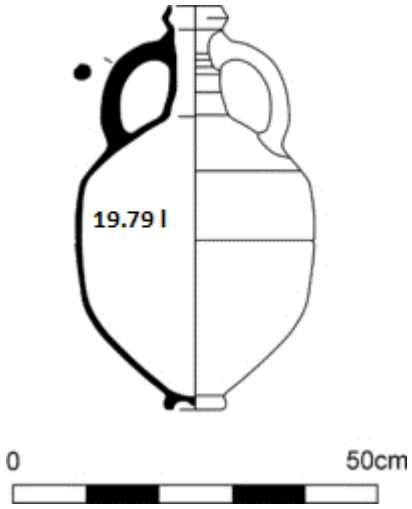


Fig. I.9 Catania MR 1a (general type).

Forms description: Three forms have been identified on the basis of rim shape.

CATANIA MR 1A TYPE, FORM 1

1. **Amphora Form definition** Catania MR 1a amphora type, Form 1.
Other denominations: Riley Benghazi Mid Roman 1a.
Formal description: The MR 1a type, Form 1 presents an asymmetrical thickened biconical rim which is sharper in profile in its upper part and slightly turned in at the top.
Fabric: Catania fabric group.
Stamps/*Tituli picti:* No stamps or *tituli picti* are known for this Form.
Volume: Not known for this form (See above for the general volume of the type).
Production areas/workshops: Unknown workshop(s) within the region of Catania.
Chronology: From the late/end of the 2nd/mid-third quarter of the 3rd century AD (residual?) (cf. Lepcis Magna).

[1344] See also Southampton Amphora Project website no. DR264.

CATALOGUE OF SAMPLES

CATANIA MR 1A AMPHORA TYPE, FORM 1

Lepcis 34 (Pl. XIII, no. 1)
Lepcis Magna, Thermes du Levant (Inv. No. TL 096.28)
Rim and very small portion of the neck. H. 4.2 cm; D. rim ext. 6.5 cm (max. 8.5 cm); D. rim int. 5.5 cm; H. Rim 2.9.
Catania MR 1a, Form 1 (early version).
Fabric: Pale orange fabric and buff surfaces, both in the interior and exterior. Occasional lime eruption. Numerous small black inclusions. Rare mica present.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 250–260.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.7.

Lepcis 25 (Pl. XIII, no. 2)
Lepcis Magna, Thermes du Levant (Inv. No. TL 094.12)
Rim and very small portion of the neck. H. 5 cm; D. rim ext. 6.9 cm (max. 8.5 cm); D. rim int. 6 cm; H. Rim 3.1.
Catania MR 1a, Form 1
Fabric: As above, but less depurated with numerous pores in break from lime and few past voids.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 250–260.
Unpublished

SA 36 (Pl. XIII, no. 3)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.48)
Upper half of an amphora. Rim partially missing. Fluted handle circula in section. H. 19.1 cm; D. rim ext max. 8. 5 cm; D. rim int. *c.* 7 cm; H. Rim >2.4 cm; D. neck 8.4 cm; H. Neck 11.2 cm; D. handle 3.4 cm.
Catania MR 1a, Form 1.
Fabric: Hard fired orange-brown fabric with whitish surfaces. Occasional lime. Numerous small black inclusions. Containing well-sorted quartz of medium size, white bodies (calcareous material) and rare volcanities.
Suggested origin: Region of Catania, Granular group (no. analysis: 9667) (comparabile to SA 58).
Context Date: *c.* AD 290.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 2.4.

Lepcis 71 (Pl. XIII, no. 4)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.66)
Rim and very small portion of the neck. H. 5.8 cm; D. rim ext. 7.5 cm (Max. 8 cm); D. rim int. 6.5 cm; H. Rim 3.4 cm.
Catania MR 1a, Form 1.
Fabric: As above. Fired-grey exterior surface (reduction fired?). Containing well-sorted quartz of medium size, white bodies (calcareous material) and rare volcanities.
Suggested origin: Region of Catania, Granular group.
Context Date: *c.* AD 290.
Bibliography: Bonifay, Capelli *et al*. 2013, cat. 2.5.

Lepcis 64 (Pl. XIII, no. 5)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.52)
Rim and very small portion of the neck. H. 4.8 cm; D. rim ext. 7.5 cm (Max. 8.5 cm); D. rim int. 6 cm; H. Rim 3.8 cm.
Catania MR 1a, Form 1.
Fabric: Pale brown fabric and buff surfaces. Black volcanic inclusions more numerous and bigger in size (>1 mm).
Suggested origin: Region of Catania, Granular group.
Context Date: *c.* AD 290.
Unpublished

Lepcis 85 (Pl. XIII, no. 6)
Lepcis Magna, Thermes du Levant (Inv. No. TL 210.9)
Rim and very small portion of the neck. H. 5 cm; D. rim ext. 7.2 cm (Max. 8.5 cm); D. rim int. 6 cm; H. Rim 3.5 cm.
Catania MR 1a, Form 1.
Fabric: As Lepcis 34.
Suggested origin: Region of Catania, Granular group.
Context Date: *c.* AD 290.
Unpublished

CATANIA MR 1A TYPE, FORM 2.

2. Amphora Form definition Catania MR 1a type, Form 2.
Other denominations: Ostia I, 453–454;[1345] Riley MR 1a[1346].
Formal description General features include the round handles with the characteristic elliptical arched profile. They handles can be plain, fluted or with a small ridge running the length of the outer face. The neck is smooth, tall, narrow and cylindrical in shape. The shoulder is wide. In the published example of this type a more or less-defined shoulder carination is always attested. The body terminates in a flat, ring base with a nipple in its centre. The amphora height can vary between 43–48 cm. The maximum diameter varies between 32–34.5 cm. The ring-base ranges from 8–10 cm in diameter and 1.5 cm height, and has a button knob in its centre.

Subtypes/Variants definition and formal description A Catania MR 1a Form 2, var. a and var. b have been distinguished on the basis of the rim profile.

1. **Variant a ('Classic variant'):** It is characterized by a symmetrical biconical rim with a flange at mid-height. The height of the triangular rim can vary between 2.5 and 4.5 cm.
   Chronology: AD 230/300?

2. **Variant b ('Late variant'):** is probably somewhat later than the 'classic variant'. The rim trends towards the lower profile characteristic of the late Form 3 (see below) without perfectly matching the latest version. The height of the rim varies between 2.5 and 4 cm.
   Chronology: AD 290/310?

Fabric Catania Catania Granular and Pure group
Production areas/workshops Unknown workshops in the volcanic region of Catania

[1345] Ostia I, 100, figs. 453 and 454.
[1346] Riley 1979, Fig. 81, no. 215.

CATALOGUE OF SAMPLES

CATANIA MR 1A TYPE, FORM 2, VAR. A

Catania MR 1a type, Form 2, variant a, Fabric Sub-group Catania Granular matrix

SA 118 (Pl. XIV, no. 1)
Krefeld-Gellep, Funerary context (Inv. no. 5508, 7)
Whole amphora. H. 43.5; H. Rim 3.3 cm; D. rim ext. 6 cm (max 8 cm) ; D. rim int. 5.5 cm; D. neck 7.9 cm;H. Neck 9.5 cm; D. handle 3 cm; D. shoulder 30 cm; D. base 9.7 cm; H. ring foot 0.8 cm. Volume: 12.26 litres (V. Martínez).
Catania MR 1a, Form 2, var. a (classic variant).
Fabric: Hard fired orange-brown fabric in the core, with pale red-brown surfaces. Non homogenous cream-yellow surface present in the upper lip and on the handles. Moderare pores in break from lime. Rare fine gold mica. Traces of pitch in its base and along the interior walls. Traces of fire in the exterior (due to the deposition of the container in the funerary context). Graffito *post cocturam* 'S' on the neck.
Suggested origin: Region of Catania (no. analysis: 10171).
Context Date: grave dated within the last quarter of 3rd century AD.
Bibliography: Pirling and Siepen 2003, 66, Grave 5508, VII, Tab. 2, no. 1.
Redrawn by the writer

SA 4 (Pl. XIV, no. 2)
Marseille, underwater find, sporadic (Inv. No. 6669)
Upper half of an amphora H. 17.2 D. Rim ext. 7; Rim. Int. 6.3; H. Rim 3; D. neck. 7.; H. Neck 10 cm max. Handle. ca. 3 cm.
Catania MR 1a, Form 2, var. a (classic variant). Handles are slightly bigger than usual. The rim is less sharp in its upper part.
Fabric: Orange red in colour, whitish in the exterior. Medium Hard fabric with a slightly irregular fracture. Containing few mica inclusions.
Suggested origin: Region of Catania, Granular group (no. analysis: 9635).
Context Date: no chronology.
Unpublished

SA 87 (Pl. XIV, no. 3)
London, Museum of London, unprovenanced (Inv. No. 93.186)
Catania MR 1a, Form 2 (late version?).
Complete rim and neck. H. 15.9; H. Rim 3.6 cm; D. rim ext. 7.2 cm (max 9 cm); D. rim int. 5.6 cm; H. Neck 9 cm; D. handle 2.8 cm.
Fabric: Orange red in colour (10R 5/8). Creamish wash exterior (5YR 8/3). Drips in the interior of the neck (cf. picture taken by the writer).
Suggested origin: Region of Catania, Granular group. Containing well-sorted quartz of medium size, white bodies (calcareous material) and volcanities (no. analysis: 10004).
Context Date: no chronology
Bibliography: Tomber 2003, Fig. 1, no. 1.

30.155 (Pl. XIV, no. 4)

Cologne, from a funeray context, now stored in the Archaeological Museum of Cologne (Inv. No. 30.155)
Whole amphora (restored). H. Rim 3 cm; D. rim ext. 7.2 cm (max 9 cm) ; D. rim int. 5.6 cm; D. neck 7 cm; H. Neck 10.8 cm; D. handle 3.2 cm; D. shoulder 31 cm; D. base 9.6 cm; H. ring foot 0.7 cm. Volume: estimated between 16.03-17.57 litres (V. Martínez).
Catania MR 1a, Form 2, var. a.
Fabric: Hard fired orange-brown fabric with pale red-brown surfaces. Non homogenous cream-buff exterior.
Context Date: no chronology.
Suggested origin: Region of Catania, Granular group.
Unpublished
Redrawn by the writer

Lepcis 11(Pl. XIV, no. 5)
Lepcis Magna, Thermes du Levant (Inv. No. TL 096.2)
Upper half of an amphora. H. 23 cm; D. rim ext. 6 cm (max. 8.5 cm); D. rim int. 5.6 cm; H. Rim 3 cm; D. neck 7.5 cm; H. Neck 10.8 cm; D. shoulder 27 cm; D. handle 2.9 cm.
Catania MR 1a, Form 2, var. a.
Fabric: Hard, pale orange-brown fabric. Homogeneous cream exterior surface. Fine dots on surface (quartz?).
Suggested origin: Region of Catania, Granular group.
Context Date: AD 250–260
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.10.

Lepcis 33 (Pl. XIV, no. 6)
Lepcis Magna, Thermes du Levant (Inv. No. TL 096.27)
Rim and small fragment of neck. H. 7.7 cm; D. rim ext. 7.5 cm (max. 9 cm); D. rim int. 6.5 cm; H. Rim 3.7.
Catania MR 1a, Form 2, var. a.
Fabric: As above. Hard fabric, well depurated. Few quartz and fossils.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 250–260.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.8.

Lepcis 27 (Pl. XIV, no. 7)
Lepcis Magna, Thermes du Levant (Inv. No. TL 094.14)
Rim H. 3.3 cm; D. rim ext. 6.3 cm (max. 8 cm); D. rim int. 5.6 cm.
Catania MR 1a, Form 2, var. a.
Fabric: brown-orange in colour. Hard, compact, well-sepurated. Whitish exterior. Containing abundant well-sorted quartz, white bodies (calcareous material) and rare volcanities.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 250–260.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.9.

Lepcis 59 (Pl. XIV, no. 8)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.47)
Rim and a small portion of neck. H. 6 cm; D. rim ext 7.9 (max. 9 cm); D. rim int. 6 cm; H. Rim 3.1 cm.
Catania MR 1a, Form 2, var. a.
Fabric: as above.

Suggested origin: Region of Catania, Granular group.
Context Date: AD 290–310.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 2.6.

Lepcis 65(Pl. XIV, no. 9)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.53)
Rim and small portion of the neck. H. 4.8 cm; D. rim ext. 7.6 cm (Max. 8.5 cm); D. rim int. 6 cm; H. Rim 3 cm.
Catania MR 1a, Form 2, var. a.
Fabric: Light brown fabric. Cream-buff exterior. Containing abundant well-sorted quartz, white bodies (calcareous material), fossils and volcanities.
Suggested origin: Region of Catania, granular group.
Context Date: AD 290.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 2.7.

Lepcis 61 (Pl. XIV, no. 10)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.49)
Rim and neck. H. 6.6 cm; D. rim ext. 7.5 (max. 8. 5 cm); D. rim int. 6.5 cm; H. Rim 3.4; D. neck 8.3 cm; H. Neck 7 cm.
Catania MR 1a, Form 2, var. a.
Fabric: Pale brown/orange. Whitish exterior. Well-sorted quartz, volcanities, lime and fossils.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 290.
Unpublished

Lepcis 78 (Pl. XIV, no. 11)
Lepcis Magna, Thermes du Levant (Inv. No. TL 197.18)
Rim and neck. H. 7 cm; D. rim ext. 7.5 cm (Max. 8.5 cm); D. rim int. 6.5 cm; H. Rim 3.5 cm.
Catania MR 1a, Form 2, var. a.
Fabric: Fired orange with a pale orange-brown surface. Fine quartz dots. Rare gold mica. Well-sorted quartz, volcanities, lime and fossils.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 290.
Unpublished

Lepcis 87 (Pl. XIV, no. 12)
Lepcis Magna, Thermes du Levant (Inv. No. TL 217.5)
Rim, neck and attachment of the handle. H. 5.6 cm; D. rim ext. 8 (max. 8. 5 cm); D. rim int. 6 cm; H. Rim 3.4.
Catania MR 1a, Form 2, var. a.
Fabric: Light brown/orange. White-greenish saline surface. Hard, compact fabric with a fine regular fracture. Well-sorted quartz, volcanities, lime and fossils.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 290.
Unpublished

Lepcis 83 (Pl. XIV, no. 13)
Lepcis Magna, Thermes du Levant (Inv. No. TL 210.7)
Rim and small fragment of neck. H. 5.2 cm; D. rim ext. 7 cm (Max. 8.5 cm); D. rim int. 6 cm; H. Rim 2.9 cm.

Catania MR 1a, Form 2, var. a.
Fabric: Light brown. Medium-hard fabric with an irregular fracture. Cream-buff exterior surface feels like fine sandpaper. Lime, rounded quartz, rare volcanic inclusions and rare little golden mica.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 290.
Unpublished

SA 41 (Pl. XIV, no. 14)
Lyon, Parc Saint-Georges, excavation, urban context (Inv. No. 1543.179)
Upper half of an amphora.
Catania MR 1a, Form 2, var. a.
Fabric: As above.
Suggested origin: Region of Catania (no. analysis 7219/9672).
Context Date: second half of the 3rd century AD.
Bibliography: Silvino 2007, Fig. 15, no. 2.

CATALOGUE OF SAMPLES

CATANIA MR 1A TYPE, FORM 2, VAR. A

Catania MR 1a type, Form 2, variant a, Fabric Sub-group Catania Pure matrix

Lepcis 26 (Pl. XV, no. 1)
Lepcis Magna, Thermes du Levant (Inv. No. TL 094.13)
Rim and small fragment of neck. H. 5.2 cm; D. rim ext. 6.2 cm (max. 7.5 cm); D. rim int. 5.6 cm; H. Rim 3.3.
Catania MR 1a, rim between Form 1 and Form 2.
Fabric: Light brown/orange, whitish exterior. Well depurated fabric. Round well-sorted quart, rare volcanic inclusions.
Suggested origin: Region of Catania, pure group.
Context Date: AD 250–260.
Unpublished

SA 35 (Pl. XV, no. 2)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.46)
Rim, neck and handle. H. 13.2 cm; D. rim ext 6.9 cm (max. 8.4 cm); D. rim int. 6.2 cm; H. Rim 2.6; D. neck 8.3 cm; H. Neck 8 cm; D. handle 2.9 cm.
Catania MR 1a, Form 2, var. a.
Fabric: Light red fabric, pinkish-white exterior. Hard, porous fabric with a fine irregular fracture. Few black inclusions visible macroscopically. Containing rare volcanities.
Suggested origin: Region of Catania, pure group (no. analysis: 9666)
Context Date: AD 290–310.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 2.8.

SA 39 (Pl. XV, no. 3)

Lepcis Magna, Thermes du Levant (Inv. No. TL 210.6)
Rim, neck and handle. H. 15.5 cm; D. rim ext. 7.3 cm (Max. 8 cm); D. rim int. 6.5 cm; H. Rim 2.7 cm; H. Neck 10 cm.
Catania MR 1a, Form 2, var. a.
Fabric: Light brown/orange. Containing rare volcanities.
Suggested origin: Region of Catania, pure group (no. analysis: 9670).
Context Date: AD 290.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 2.9.

Lepcis 8 (Pl. XV, no. 4)
Lepcis Magna, Thermes du Levant (Inv. No. TL 0040.5)
Upper half of an amphora. H. 19 cm; D. rim ext. 6.2 cm (max. 8.1 cm); D. rim int. 5.6 cm; H. Rim 2.8; D. neck 7.8 cm; H. Neck 11 cm; D. shoulder 26 cm; D. handle 2.9 cm.
Catania MR 1a, Form 2, var. a.
Fabric: Light red, pinkish white in the exterior. Hard fabric with a fine compact fracture. Containing few mica inclusions and volcanic inclusions.
Suggested origin: Region of Catania, pure group.
Context Date: AD 350–360 (Context 3: residual?).
Unpublished

SA 65 (Pl. XV, no. 5)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.45)
Rim and neck. H. 12.5 cm; D. rim ext max. 8. 5 cm; D. rim int. 6.5 cm; H. Rim 2.9 cm; D. neck 8 cm; H. Neck 9 cm.
Catania MR 1a, Form 2.
Fabric: Medium hard fabric with a fine fracture and frequent mica inclusions. Very few black and white inclusions. The fabric colour is pale brown, pinkish exterior.
Suggested origin: Region of Catania, pure group (no. analysis: 9752).
Context Date: AD 290–310.
Unpublished

CATALOGUE OF SAMPLES

CATANIA MR 1A TYPE, FORM 2, VAR. B

Catalogue of samples: Catania MR 1a, Form 2, variant b

SA 37 (Pl. XVI, no. 1)
Lepcis Magna, Thermes du Levant (Inv. No. TL 195.3)
Rim and neck.
Catania MR 1a, Form 2, var. b.
Fabric: Hard, quite porous fabric with a fine irregular fracture containing lime, black volcanic inclusions and a few mica. The fabric colour is pale red (2.5YR 6/8); exterior pale brown. Lime, rounded quartz, not well-sorted, rare volcanic inclusions.
Suggested origin: Region of Catania, Granular group (no. analysis: 9668) comparable with SA 77.
Context Date: AD 300–310.
Bibliography: Bonifay, Capelli *et al*. 2013, cat. 2.10.

SA 77 (Pl. XVI, no. 3)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.6)
Rim and small portion of neck.
Catania MR 1a, Form 2, var. b.
Fabric: Lime, rounded quartz, not well-sorted, rare volcanic inclusions.
Suggested origin: Region of Catania, granular group (no. analysis: 9764/9971). Comparable with SA 37.
Context Date: AD 300–310.
Unpublished

Lepcis 73 (Pl. XVI, no. 2)
Lepcis Magna, Thermes du Levant (Inv. No. TL 195.2)
Rim and neck. H. 14.7 cm; D. rim ext. 8 cm (Max. 9.5 cm); D. rim int. 7 cm; H. Rim 2.8 cm; H. Neck 10.2 cm.
Catania MR 1a, Form 2, var. b.
Fabric: as above.
Suggested origin: Region of Catania, Granular group
Context Date: AD 300–310.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 2.11.

Lepcis 94 (Pl. XVI, no. 4)
Lepcis Magna, Thermes du Levant (Inv. No. TL157.26)
Upper half of an amphora. H. 18.5 cm; D. rim ext. 6 cm (max. 8.4 cm); D. rim int. 5.1 cm; H. Rim 2.5; D. neck 7.8 cm; H. Neck 10.5 cm; D. shoulder 30 cm; D. handle 2.9 cm.
MR 1a, Form 2, var. b.
Fabric: sample non available.
Context Date: 3rd century context, *terminus ante quem* AD 300.
Unpublished

Lepcis 95 (Pl. XVI, no. 5)
Lepcis Magna, Thermes du Levant (Inv. No. TL189.3)
Rim and neck. H. 13.2 cm; D. rim ext. 7.5 cm (Max. 8.5 cm); D. rim int. 6 cm; H. Rim 2.7 cm; H. Neck 9.5 cm.
MR 1a, Form 2, var. b (?)
Fabric: sample non available.
Context Date: AD 300–310.
Unpublished

RH.09.Z5.AR7.284 (Pl. XVI, no. 6)
Arles, Rhône**,** underwater find, excavation (Inv. No. RH.09.Z5.AR7.284)
Upper half of an amphora.
MR 1a, Form 2, var. b (?)
Fabric: Pale orange in the core, pinkish white in the exterior (5YR 8/2). Medium hard fabric, well depurated. Few black and lime inclusions. Pitch traces in the interior walls.
Suggested origin: Region of Catania, pure group. Lime?, fossils, rounded quartz, well-sorted, rare volcanic inclusions.Comparable with RH.07.A61.1320.
Context Date: from the 2nd half-3rd century AD level, below the wreck Arles-Rhône 7.
Author drawing: G. Duperron.

Bibliography: Long and Duperron 2011a, Fig. 5, no. 3.

86.3.4403 (Pl. XVI, no. 7)
Laufen-Müschhag, Kanton Basel-Landschaft, Switzerland, excavation (Inv. No. 86.3.4403)
Whole amphora, restored. Volume: estimated at 10.59 litres (V. Martínez).
MR 1a, Form 2, var. b (?)
Fabric: Pale orange in the core. Hard fabric, well depurated.
Suggested origin: Region of Catania.
Context Date: 4th century AD.
Bibliography: Martin-Kilcher 1980, 54, Fig. 20, no. 1, pl. 50.

CATANIA MR 1A TYPE, FORM 3

3. Amphora Type definition Catania MR 1a type, Form 3.
Other denominations: Riley MR 1a
Formal description The Catania MR 1a Form 3 has an asymmetrical small biconical rim which is sharper in profile in its lower part. The vessels published have a maximum diameter between 29–31 cm and a height between 40.5–47.5 cm. The ring-bases in this variant have a smaller diameter that the previous variants, and varies between 7.5–9.5 cm (see inv. TL 166.85). The rim diameters vary between 6 and 7.5 cm. The handles of this late variant are attached just below the rim. They are normally round in cross section and unfluted. The handles can be either sharply pinched inwards at the lower and upper attachment; or they can be neatly attached. The handle profile can vary from being arched to having a reduced curvature along the mid-length of the handle. The biconic rim of the containers produced in the 5th century grew progressively smaller (see for example the samples from 5th-century urban contexts in Arles, Pl. IXI, no. 2–5.
Chronology: From the very beginning of the 4th to the first half of the 5th century AD, and probably still produced in Vandal Period (see Rome and Arles contexts).
Stamps/*Tituli picti:* Specimens with painted inscription are being analysed by specialists (two amphorae from Arles,[1347] and one findspot from Thermes du Levant in Lepcis Magna).[1348]
Subtypes/Variants definition and formal description Two main formal development of this form have been recognized mainly on the basis of rim shape. The rim changes over two century of production.

1. **4th century variant** Catania MR 1a type, Form 3
   Fabric: Granular fabric and pure fabric S. Venera al Pozzo.
   Production areas/workshops Unknown workshop(s) in the region of Catania and S. Venera al Pozzo workshop.
   Chronology: AD 310/320–400.

2. **5th century variant** Catania MR 1a type, Form 3
   Fabric: Granular fabric and pure fabric S. Venera al Pozzo.
   Production areas/workshops: Unknown workshop(s) in the region of Catania and S. Venera al Pozzo workshop.
   Chronology: *c.* AD 400–450 (onward?)

[1347] Arles, Cesaire. Pers. observation.
[1348] M. Bonifay pers. comment.

CATALOGUE OF SAMPLES

CATANIA MR 1A TYPE, FORM 3

Catalogue of samples: Catania MR 1a type, Form 3, 4th century AD variant

SA 117 (Pl. XVII, no. 1)
Krefeld-Gellep, Funerary context, excavation (Inv. No. 1215, 1)
Whole amphora (restored). H. Rim 2.2 cm; D. rim ext. 6 cm; D. rim int. 5.1 cm; D. neck 11.5 cm; D. handle 2.9 cm; D. shoulder 30 cm; D. base 8.2 cm; H. ring foot 1 cm. Volume: 11.46 litres (V. Martínez).
Catania MR 1a type, Form 3.
Fabric:Light red fabric colour, with dark brownish red in the core (5YR 5/4). Traces of creamy pink in the exterior surface.
Suggested origin: Region of Catania, granular group (no. analysis: 10170).
Context date: from a tomb dating between the 306 (*terminus post quem*) and the first half of 4th century AD.
Redrawn by the writer
Bibliography: Pirling 1966, 141–142, Gellep II, Grave 1215, I, tab. 101, 6.

5937 (Pl. XVII, no. 2)
Pampelonne wreck near S. Tropez, underwater excavation (DRASSM 5937)
Whole amphora Volume: 12.99 litres (V. Martínez)
Catania MR 1a type, Form 3
Fabric: Light red fabric colour.
Suggested origin: Region of Catania, granular group.
Bibliography: Lequément, 1976, 184–185, Fig. 8a.

SA 59 (Pl. XVII, no. 3)
Lepcis Magna, Thermes du Levant (Inv. No. TL 197.19)
Rim, and small portion of neck. H. 5 cm; D. rim ext. 7 cm (Max. 8 cm); D. rim int. 6 cm; H. Rim 3.2 cm.
Catania MR 1a type, Form 2 or 3
Fabric: as above
Suggested origin: Region of Catania, granular group, (no. analysis: 9746).
Context Date: AD 290–310.
Unpublished

SA 115 (Pl. XVII, no. 4)
Trypiti reef shipwreck, Underwater Find, Excavation (Inv. No. Γ 52)
Whole amphora. Volume 8.91 litres (V. Martínez)
Catania MR 1a type, Form 3
Fabric: as above.
Suggested origin: Region of Catania, Granular group (no. analysis: 10168).
Context date: cargo dating AD 330–350.
Bibliography: Franco and Capelli 2014a; Koutsouflakis and Argiris in press.

SA 82 (Pl. XVII, no. 5)
Kaiser Augst/*Augusta Raurica*, urban context, excavation (Inv. No. 83.11128)
Rim, neck and handles. H. 7.2; D. rim ext. 5.4 cm (max. est 8.5 cm); D. rim int. 5.9 cm; H. rim 2.4 cm; D. handle 2.9 cm.
Catania MR 1a type, Form 3.
Fabric: Light brown. Medium hard fabric with an irregular fracture numerous lime and blak inclusions.
Suggested origin: Region of Catania, granular group (no. analysis: 9975).
Context Date: *Terminus ante quem* AD 350.
Author Drawing: S. Wiss.
Unpublished

Lepcis 10 (Pl. XVII, no. 6)
Lepcis Magna, Thermes du Levant (Inv. No. LEP01 TL 082.1)
Rim and neck. H. 13.6 cm; D. rim ext 5. 6 (max. 8. 6 cm); D. rim int. 5 cm; H. Rim 2.3; D. neck 7.3 cm; H. Neck 11 cm.
Catania MR 1a type, Form 3.
Fabric: Light red in the core, pale brown/pinkish in the exterior surface. Lime, fossils, rounded quartz, well-sorted, rare volcanic inclusions.
Suggested origin: Region of Catania, granular group.
Context Date: AD 350–360.
Bibliography: Bonifay, Capelli *et al*. 2013, cat. 3.2.

SA 73 (Pl. XVII, no. 7)
Lepcis Magna, Thermes du Levant (Inv. No. TL 073.2)
Rim (Different sub-variant?)
Fabric: Red-brown fabric, with burnished surfaces. Hard fabric with a slightly irregular fracture. Abundant fine quartz dots, rough texture.
Suggested origin: Region of Catania, granular group (no. analysis: 9760)
Context Date: first half of the 4th century AD (*c.* AD 360).
Unpublished

Lepcis 17 (Pl. XVII, no. 8)
Lepcis Magna, Thermes du Levant (Inv. No. TL 069.40)
Rim, neck and handles. H. 9.8 cm; D. rim ext. 7 cm (max. 9 cm); D. rim int. 6 cm; H. Rim 2.8; D. handle 2.9 cm.
Catania MR 1a type, Form 3
Fabric: Colour as above. Hard fabric with an irregular fracture. Very fine inclusions.
Suggested origin: Region of Catania, granular group.
Context Date: second half of the 4th century AD.
Unpublished

SA 75 (Pl. XVII, no. 9)
Lepcis Magna, Thermes du Levant (Inv. No. TL 069.39)
Upper half of an amphora. H. 27 cm; D. rim ext. 5.4 cm (max. 8.2 cm); D. rim int. 5 cm; H. Rim 2.5; D. neck 6.8 cm; H. Neck 11 cm; D. shoulder 23 cm; D. handle 3 cm.
Catania MR 1a type, Form 3. The maximum diameter at the shoulders is narrower than other samples.

Fabric: Light red in the core, pale brown/pinkish in the exterior surface. Hard, porous fabric with a fine irregular fracture. Contains lime, few volcanic black inclusions and very little mica.
Suggested origin: Region of Catania, granular group (no. analysis: 9762).
Context Date: second half of the 4th century/AD 400.
Unpublished

FAN 4 (Pl. XVII, no. 10)
Arles, Arles Archaeological Museum collection (no. inventory number)
Rim, neck and small portion of handles.
Catania MR 1a type, Form 3. H. 12.7; H. Rim 2.9 cm; D. rim ext. 7.5 cm (max 9 cm); D. rim int. 5.9 cm; D. neck 8.8 cm; H. Neck 11.9 cm; D. handle 2.8 cm.
Fabric: Light red in the core, pale brown/pinkish in the exterior surface. Hard, porous fabric with a fine irregular fracture. Contains lime, few volcanic black inclusions and very little mica, rounded quartz, not well-sorted.
Suggested origin: Region of Catania, granular group.
Context date: without chronology
Unpublished.

RHO.06.Z3 (Pl. XVII, no. 11)
Arles, from the Rhône, underwater find, sporadic without context (Inv. No. RH.06.Z3)
Upper half of an amphora.
Catania MR 1a type, Form 3.
Fabric: Light red, whitish exterior. Hard medium fabric with a slightly irregular fracture, fairly compact and depurated. Containing well-sorted and rounded quartz.
Suggested origin: Region of Catania, granular group. Comparable with A61.1320.
Context Date: without chronology
Author drawing: G. Duperron
Unpublished

SA 79 (Pl. XVII, no. 12)
Kaiser Augst/*Augusta Raurica*, urban context (Region I A), excavation (Inv. No. 1920.498)
Rim and small portion of neck.
Catania MR 1a type, Form 2 or Form 3?, variant. Specimen differs both for profile rim and fabric.
Fabric: Medium hard fabric, brown pink in colour. Cream-buff exterior. Fine irregular fracture containing lime, black inclusions and rare mica. Quartz is bigger than normal.
Suggested origin: Region of Catania, granular group (no. analysis: 9972).
Context Date: first half of the 4th century AD.
Bibliography: Martin Kilcher 1994, 449, tab. 250, cat. 5649.

CATALOGUE OF SAMPLES

CATANIA MR 1A TYPE, FORM 3

Catania MR 1a type, Form 3, 5th century variant, fabric sub-group Granular matrix

Lepcis 48 (Pl. XVIII, no. 1)
Lepcis Magna, Thermes du Levant (Inv. No. TL 166.13)
Rim and neck. H. 13.6 cm; D. rim ext. 6.8 cm (max. 7.6 cm); D. rim int. 5.6 cm; H. Rim 2.4; D. neck 7.3 cm; H. neck 10 cm.
Catania MR 1a type, Form 3 (5th century variant).
Fabric: Hard pale orange fabric. Whitish exterior. Containing medium size inclusions, well-sorted, quartz, rare lime and foissils, volcanic inclusions.
Suggested origin: Region of Catania, granular group.
Context Date: circa AD 400.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 4.4.

SA 110 (Pl. XVIII, no. 2)
Arles, urban context (IRPA excavation) (Inv. No. IRP.89.608.342)
Rim
Catania MR 1a type, Form 3 (5th century variant)
Fabric: Very pale orange fabric and buff-cream homogenous surface. Medium-hard fabric with an irregular fracture and irregular surface exterior. Very rare rounded quartz and very sparse and rare volcanic inclusions.
Suggested origin: Region of Catania (no. analysis: 10163)
Context Date: circa AD 400.
Author drawing: G. Duperron
Unpublished

SA 112 (Pl. XVIII, no. 3)
Arles, urban context (IRPA excavation) (Inv. No. IRP.89.608.341)
Rim
Catania MR 1a type, Form 3 (5th century variant).
Fabric: Bright orange/red fabric and buff-cream surface. Medium-hard fabric sand-paper surface exterior. Contains small and rare inclusions, not well-sorted, among with quartz, and volcanic inclusions are attested.
Suggested origin: Region of Catania, granular group (no. analysis: 10165).
Context Date: *c.* AD 400.
Author drawing: G. Duperron
Unpublished

SA 5 (Pl. XVIII, no. 4)
Marseille, Pointe Pomègues, Underwater find, sporadic (Inv. No. 6064)
Rim, neck and handles H. 13; D. rim ex. 6.7; D. rim. int. 5; H. rim. 2 ; D. neck 7. 4; D. handle 3 cm.
MR 1a var. 3 (Late Version)
Fabric: Hard pale orange fabric. Buff-cream surface. Containing medium size inclusions, well-sorted quartz, rare fossils, lime and volcanic inclusions.

Suggested origin: Region of Catania, granular group (no. analysis: 9636).
Unpublished

SA 52 (Pl. XVIII, no. 5)
Arles, from the Rhône, underwater find, sporadic (Inv. No. RHO. 2008.00148)
Whole amphora (restored). H. 43; H. Rim 2.8 cm; D. rim ext 6.1; D. rim int. 5 cm; D. neck 7.5; H. Neck 11.5 cm; D. handle 3 cm; D. base 8.6 cm; H. ring foot 1 cm. Volume: 7.73 litres (V. Martínez).
Catania MR 1a type, Form 3 (5th century variant). Traces of pitches in the interior.
Fabric: Hard fabric, regular fracture, well depurated/very fine inclusions. Pale orange fabric, buff-cream surfaces. Contains medium size inclusions, well-sorted quartz, rare fossils, lime and volcanic inclusions.
Suggested origin: Region of Catania, granular group (no. analysis: 9739 and 9968)
Context Date: without chronology
Unpublished

CATALOGUE OF SAMPLES

CATANIA MR 1A TYPE, FORM 3

Catania MR 1a type, Form 3, 5th century variant, fabric sub-group pure matrix

SA 57 (Pl. XIX, no. 1)
Lepcis Magna, Thermes du Levant (Inv. No. TL 166.14)
Rim and small portion of neck. H. 4.3 cm; D. rim int. 6 cm.
Catania MR 1a type, Form 3 (5th century variant).
Fabric: Hard Pale orange fabric. Cream surface. Compact and well depurated fabric. Very fine inclusions, rare well-sorted quartz, volcanc inclusions.
Suggested origin: Region of Catania, pure group, similar to S. Venera al Pozzo sub-group (no. analysis: 9744).
Context Date: AD 400.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 4.2.

SA 24 (Pl. XIX, no. 2)
Arles, urban context, from the area of *cryptoportico* of the Forum (Inv. No. CRY. 87. 01.20)
Rim
Catania MR 1a type, Form 3 (5th century variant).
Fabric: Pale red core and whitish surfaces Hard fabric, slightly irregular fracture. Compact and well depurated fabric. Very fine inclusions, rare well-sorted quartz, volcanc inclusions.
Suggested origin: Region of Catania, pure group, similar to S. Venera al Pozzo sub-group (no. analysis: 9655).
Context Date: beginning of the 5th century AD.
Author drawing: G. Duperron
Unpublished

IRP.89.711.1141 (Pl. XIX, no. 3)
Arles, urban context (IRPA excavation) (Inv. No. IRP.89.711.1141)
Rim and neck
Catania MR 1a type, Form 3 (5th century variant).

Fabric: Light orange fabric. Medium hard fabric with a fine fracture, compact and depurated. Very fine inclusions, moderately abundant rounded quartz, well-sorted, volcanc inclusions.
Suggested origin: Region of Catania, pure group.
Context Date: circa AD 400.
Author drawing: G. Duperron
Unpublished

IRP.89.711.1146 (Pl. XIX, no. 4)
Arles, urban context (IRPA excavation) (Inv. No. IRP.89.711.1146)
Rim
Catania MR 1a type, Form 3 (5^{th} century variant).
Fabric: Light red, with whitish exterior. Hard hard fabric with a fine fracture, compact and depurated. Very fine inclusions, moderately abundant rounded quartz, well-sorted, volcanc inclusions.
Suggested origin: Region of Catania, pure group.
Context Date: circa AD 400.
Author drawing: G. Duperron
Unpublished

IRP.89.711.1033 (Pl. XIX, no. 5)
Arles, urban context (IRPA excavation) (Inv. No. IRP.89.711.1033)
Rim
Catania MR 1a type, Form 3 (5^{th} century variant).
Fabric: as above.
Suggested origin: Region of Catania, pure group.
Context Date: circa AD 400.
Author drawing: G. Duperron
Unpublished

CATALOGUE OF SAMPLES

MISCELLANY OF SPECIMENS OF CATANIA FLAT-BOTTOMED TYPE AND CATANIA MR 1A

SA 119 (Pl. XX, no. 1)
Krefeld-Gellep, Funerary context (Inv. No. 5393, 21)
Catania MR 1a type, Form 2 or 3?
Rim missing. H. 41.5; D. neck 7.9 cm; H. Neck 10.1 cm; D. handle 2.9 cm; D. shoulder 29 cm; D. base 9.2 cm; H. ring foot 1.4 cm. Estimated volume: at least 10.52 litres (V. Martínez).
Fabric: Well-depurated, Hard fired pale brown fabric. Black fire marks on the exterior due to the deposition of the amphora in a funerary context.
Suggested origin: Region of Catania, pure group (no. analysis: 10172) Comparable with SA 35 and SA 39.
Context Date: Late Roman period grave.
Redrawn by the writer
Bibliography: Pirling and Siepen 2003, VI, pl. 116, 1.

SA 86 (Pl. XX, no. 2)
Catania MR 1a type, Form 2 or 3?
London, Museum of London, (Inv. No. 19988)
Upper part of an amphora. Rim missing. H. 17.2; H. Neck 9 cm; D. handle 2.8 cm; D. shoulder 26 cm.
Three body sherds, one of which with an unreadable graffito *post cocturam* […]R[…], and two handles sherds joining. Flower-shaped fluted handles.
Fabric: Light red-orange in colour with a cream whitish exterior. Moderate sub-rounded inclusion of quartz, limestone, fossils and rare vulcanities.
Suggested origin: Region of Catania, granular group with less inclusions (no. analysis: 10003).
Context Date: city of London, Temple of Mithras, Walbrook, From the mid-3rd to the early 4th century AD.
Redrawn by the writer
Bibliography: Tomber 2003, 108, Fig. 1, no. 2.

RH.11.Z6.X26.VI.192 (Pl. XX, no. 3)
Arles, from the Rhône, underwater find, excavation (Inv. No. RH.11.Z6.X26.VI.192)
Upper half of an amphora. Rim missing.
Catania MR 1a type, Form 3?.
Fabric: Pale orange core and pale brown surfaces. Hard fabric, well depurated. Regular fracture. Differs from the typical Catania fabric with quartz. Quartz was not detected under the stereomicroscope. Rare medium size vulcanities.
Suggested origin: Region of Catania, variant.
Context Date: first half of the 5th century AD.
Author drawing: G. Duperron
Unpublished

RH.07.A61.1320 (Pl. XX, no. 4).

Arles, from the Rhône, underwater find, excavation (Inv. No. RH.07.A61.1320)
A piece of the handle and a small part of the shoulder.
Catania MR 1a type. Flower-shaped fluted handle, carinated shoulder.
Fabric: pale red, pinkish white in the exterior. Hard fired compact fabric with a fine fracture containing rare rounded quartz, few lime inclusions. Pitch traces in the interior walls. Containing medium size inclusions, rounded which quartz, well-sorted, mica, fossils and very rare volcanic inclusions.
Suggested origin: Catania, pure group.
Context Date: 3rd century AD context.
Author drawing: G. Duperron
Unpublished

SA 25 (Pl. XX, no. 5)
Arles, wreck Arles-Rhône 7, underwater find**,** excavation (Inv. No. RH.09.Z5.AR7.214)
Shoulder D. 40 cm.
Catania MR 1a type.
Fabric: Pale red fabric with cream-buff skin. Containing medium size inclusions, rounded quartz, well-sorted,
Suggested origin: Region of Catania, granular group (no. analysis: 9656).
Context Date: mid-4th–beginning of the 5th century AD.
Unpublished

SCS.TDM.11 US423 Pl. XX, no. 6)
Arles, Saint-Césaire excavation, urban context, excavation (no. inv**.** SCS.TDM.11 US423)
Flower-shaped, fluted handle; H. 13 cm; D. handle 3.1 cm.
Catania flat-bottomed type
Fabric: Hard fired fabric, pale red-brown in colour with a uniform cream exterior. Moderate sub-rounded inclusions of quartz, rare limestone and rare vulcanities.
Suggested origin: Region of Catania, granular group.
Context Date: second half of the 2nd century AD.

SA 81 Kaiser (Pl. XX, no. 7)
Augst/*Augusta Raurica,* urban context, excavation (Inv. No. 74.35)
Slightly Fluted handle circular in section
Catania MR 1a
Fabric: Hard, orange-brown fabric. Slightly irregular fracture. Abundant inclusions.
Suggested origin: Region of Catania, Granular group (no. analysis: 9974).
Context Date: AD 310–400 (within the 4th century AD).
Bibliography: Martin-Kilcher 1994, 449, cat. 5651.

SA 83 (Pl. XX, no. 8)
Kaiser Augst/*Augusta Raurica*, urban context, excavation (Inv. No. 85.3530).
Unfluted handle, circular in section. D. handle 2.9 cm.
Catania MR 1 (a)?
Fabric: Pale red core and whitish surfaces. Hard-medium fabric, regular fracture, very fine inclusions.
Suggested origin: Region of Catania, pure group (no. analysis: 10009).
Context Date: *Terminus ante quem* AD 350.
Author Drawing: Stephan Wiss
Unpublished

SA 84 (Pl. XX, no. 9)
Kaiser Augst/*Augusta Raurica*, urban context, excavation (Inv. No. 1975.1615).
Handle, flower-shaped. Lenght of fragment 12 cm; D. handle 3.1 cm.
Catania MR 1a.
Fabric: Light brown. Few traces of a lighter cream colour skin. Regular fracture.
Suggested origin: Region of Catania, Granular group (no. analysis: 10001).
Context Date: mid-4th century AD.
Bibliography: Martin-Kilcher 1994, cat. 5652.

SA 27 (Pl. XX, no. 10)
Arles, wreck Arles-Rhône 7, underwater find, excavation (Inv. No. RH. 09. Z5. AR7. 125)
Unfluted Handle, circular in section. H. 11; D. handle 2.9 cm.
Catania MR 1a
Fabric: Pale red fabric with cream-buff skin. Fine fracture. Compact fabric.
Suggested origin: Region of Catania, granular group (no. analysis: 9658).
Context Date: mid-4th–beginning of the 5th century AD.
Unpublished

SA 88 (Pl. XX, no. 11)
Tróia, Fish salting factory (Inv. No. 3711)
Catania MR 1a
Fluted handle.
Fabric: Light brown fabric. Few traces of a lighter cream colour skin. Numerous lime inclusions, few volcanic inclusions and quartz.
Suggested origin: Region of Catania, granular fabric (no. analysis: 10.005).
Context Date: from the surface sand level covering the fish-salting workshop 1.
Author Drawing: A. P. Magalhães.
Unpublished

TRO-EA-160 (Pl. XX, no. 12)
Tróia, Fish salting factory (TRO-EA-160)
Catania unfluted circular handle
Fabric: Light brown fabric with microfossils.
Suggested origin: Region of Catania, granular group.
Context Date: no chronologic contexts.
Unpublished

Tou – 912
Tourega, Portugal (inv. No.Tou912)
Fragment of round section handle.
Catania unfluted circular handle
Fabric: Fine brick orange fabric with microfossils. The surface has a white wash, unevenly preserved. Containing rare vulcanities, and round quartz.
Suggested origin: Region of Catania, granular group.
Context Date: no chronologic context
Not illustrated
Unpublished

SCS.TDM.12 US574 (Pl. XX, no. 13)
Arles, Saint-Césaire excavation, urban context, excavation (no. inv**.** SCS.TDM.12 US574)
Circular unfluted handle; H. 7.6 cm; D. handle 2.8 cm.
Catania MR 1 (a)
Fabric: As above.
Suggested origin: Region of Catania, granular group.
Context Date: first half of the 6th century AD (residual?).
Unpublished

GRU2165 (Pl. XX, no. 14)
Narbo Martius/Narbonne, Gruissan Saint-Martin, excavation (no. inv**.** GRU2165)
Catania MR 1 (a)
Circular Handle. Lenght fragment 16 cm; D. handle 2.8 cm.
Fabric: Light brown fabric, lighter cream colour skin. Paste voids. Numerous lime inclusions, few volcanic inclusions.
Suggested origin: Region of Catania, Granular group.
Context Date: 6th century AD (residual?).

GRU2042 (Pl. XX, no. 15)
Narbo Martius/Narbonne, Gruissan Saint-Martin, excavation (no. inv**.** GRU2042)
Circular Handle; H. 10 cm; D. handle 2.9 cm.
Catania MR 1 (a)
Fabric: Red-brown fabric, lighter cream colour skin. Paste voids. Numerous volcanic inclusions.
Suggested origin: Region of Catania, granular group.
Context Date: mid 6th century AD (residual?).

GRU4142 (Pl. XX, no. 16)
Narbo Martius/Narbonne, Gruissan Saint-Martin, excavation (no. inv**.** GRU2042)
Circular Handle; H. 8.3; D. handle 2.6 cm.
Catania MR 1 (a)
Fabric: Hard fired fabric red-brown in colour, contains gold mica, quartz, white lime inclusions.
Suggested origin: Region of Catania probable.
Context Date: 6th century AD (residual?).

GRU2109 (Pl. XX, no. 17)
Narbo Martius/Narbonne, Gruissan Saint-Martin, excavation (no. inv**.** GRU2109)
Flower shaped Handle; H. 7.8 cm; D. handle 2.8 cm.
Catania MR 1 (a)
Fabric: Hard fired fabric, regular in fracture. Red in colour with cream whitish exterior. Rare and fine inclusions, limestone and vulcanities.
Suggested origin: Region of Catania, pure group.
Context Date: 6th century AD (residual?).

SA 32 (Pl. XX, no. 18)
Lyon, Célestins quarter, urban excavation (Inv. No. US 7491.L)
Ring-footed base. D. base 9.2 cm; H. fragm 3.5 cm.
Catania flat-bottomed amphora type.

Fabric: Orange fabric with few traces of cream-buff skin. Medium-hard fabric with an irregular fracture. Finely porous surface. flake Contains abundant inclusions: abundant lime, quartz, well-sorted, and volcanic inclusions. Few traces of pitch.
Suggested origin: Region of Catania, granular group (no. analysis: 9663).
Context Date: beginning of the 3rd century AD.
Unpublished

Lepcis 28 (Pl. XX, no. 19)
Lepcis Magna, Thermes du Levant (Inv. No. TL094.15)
Ring-footed base. H. 5.6; D. ring-foot base 10 cm; H. ring 1.2 cm.
Catania flat-bottomed amphora type.
Fabric: Pale red fabric with buff skin. Fine fracture containing rare medium size quartz.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 250–260.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.2.

Lepcis 29 (Pl. XX, no. 20)
Lepcis Magna, Thermes du Levant (Inv. No. TL094.16)
Ring-footed base. H. 6 cm; D. ring base 11 cm; H. ring 1.2 cm. Traces of pitch in the interior.
Catania flat-bottomed amphora type.
Fabric: as above. Fine fracture containing rare medium size quartz.
Suggested origin: Region of Catania, Granular group.
Context Date: AD 250–260.
Unpublished

Lepcis 12 (Pl. XX, no. 21)
Lepcis Magna, Thermes du Levant (Inv. No. TL 096.3)
Ring-footed base. H. 4.3 cm; D. ring-foot base 8.4 cm; H. ring 1 cm.
Catania flat-bottomed amphora type.
Fabric: Light red, pinkish white in the exterior. Hard fabric with a fine compact fracture. Containing few mica inclusions; rounded quartz, lime and volcanic inclusions.
Suggested origin: Region of Catania, pure group.
Context Date: AD 250–260.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.11.

Lepcis 67 (Pl. XX, no. 22)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.55)
Ring-footed base and lower body. Surfaces roughly smoothed over. H. 6.2; D. base 9 cm; H. Ring-footed base 0.5 cm.
Catania MR 1a?
Fabric: Pale red fabric with buff skin. Medium-hard fired fabric with an irregular fracture containing relatively fine inclusions, medium-size quartz, well-sorted, lime and fossils, rares volcanic inclusions.
Suggested origin: Region of Catania, granular group.
Context Date: *c.* AD 290.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 2.12.

Lepcis 68 (Pl. XX, no. 23)
Lepcis Magna, Thermes du Levant (Inv. No. TL 189.56)
Ring-footed base and body. H. 10.3; D. base 8.4 cm; H. ring-foot base 0.7 cm.

Catania flat-bottomed amphora type
Pale red fabric with buff skin. Fine black inclusions as well as quartz and some mica.
Suggested origin: Region of Catania, granular group.
Context Date: *c.* AD 290.
Unpublished

Lepcis 81 (Pl. XX, no. 24)
Lepcis Magna, Thermes du Levant (Inv. No. TL 197.21)
Ring-footed base and lower body. H. 4.1; D. base 9.2 cm; H. ring 1 cm.
Catania flat-bottomed amphora type
Fabric: Pale red fabric with buff skin. Relatively fine inclusions, medium-size quartz, well-sorted, lime and fossils, rares volcanic inclusions
Suggested origin: Region of Catania, granular group.
Context Date: AD 290–310.
Unpublished

Lepcis 43 (Pl. XX, no. 25)
Lepcis Magna, Thermes du Levant (Inv. No. TL 150.3)
Ring-footed base. H. 2.9; D. ring-foot base 8 cm
Catania flat-bottomed amphora type
Fabric: as above. Less numerous volcanic inclusions.
Suggested origin: Region of Catania, granular group.
Context Date: Central decades of the 4th century AD.
Unpublished

Lepcis 6 (Pl. XX, no. 26)
Lepcis Magna, Thermes du Levant (Inv. No. LEP97 TL 004.3)
Ring-footed base. H. 6.3 cm; D. ring-foot base 10; H. ring 1 cm.
Catania flat-bottomed amphora type.
Fabric: Medium hard fabric with a fine fracture, compact and depurated. Light orange in colour. Medium-size inclusions, quartz, well-sorted, rare lime and microfossils, rare volcanic inclusions.
Suggested origin: Region of Catania, granular group.
Context Date: AD 350–360.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 3.3.

Lepcis 51 (Pl. XX, no. 27)
Lepcis Magna, Thermes du Levant (Inv. No. TL 166.85)
Ring-footed base. H. 3.4. D. ring-foot base 8 cm; H. ring 1.3 cm.
MR 1a (form 3?). The base has a smaller diameter when compared to other specimens, hinting a change toward the Late Roman version of the Catania MR 1a type.
Fabric: Hard, compact and depurated fabric. Pale orange in colour. Cream surface.
Suggested origin: Region of Catania, granular group.
Context Date: second half of the 4th century/ AD 400.
Bibliography: Bonifay, Capelli *et al*. 2013, cat. 4.3.

SA 43 Lyon, Parc Saint-Georges, excavation, urban context (Inv. No. 1760 no. 191)
Catania MR 1a
Suggested origin: Region of Catania, Granular group. (no. analysis 7219/9672)
Fabric: as above

Not illustrated
Context Date: second half of the 3rd century AD.
Unpublished

S. VENERA AL POZZO/*STATIO ACIUM*: REFERENCE FABRIC GROUP FROM THE POTTERY PRODUCTION AREA

CATALOGUE OF SAMPLES

SA 49 (Pl. XXI, no. 1)
S. Venera/*Statio Acium*, kiln, excavation (Inv. No. SV 138)
S. Venera MR 1a, Form 3.
Fabric: red in colour (5YR, 7/8), cream buff exterior.
S. Venera Production, pure group, A3a fine matrix variant (no. analysis: 9736).
Context Date: From the kiln area (300th–AD 450 ca, use of the production area).
Author drawing: G. La Scala.
Bibliography: Amari 2014, Fig. 1.2.

SA 50 (Pl. XXI, no. 1)
S. Venera/*Statio Acium*, kiln, excavation (No Inv. number)
Rim, neck and handles. 12.5 cm high, rim diameter 9.2 cm.
Amphora Waster. The type can be assimilated to an amphora globular in shape which was probably intended to carry olive oil.
High grooved rim, wide cylindrical neck and grooved shoulder. Three ledges and a wave line runs around the neck. Rounded handle attached below the rim.
Fabric: Hard fired fabric orange in colour, contains mica and black volcanic inclusions. Inclusions greater than 1 mm.
S. Venera Production, pure group, A4a, fine matrix variant (no. analysis: 9737).
Context Date: From the smaller kiln of the production workshop.
Bibliography: Amari 2008, Fig. 8.

SA 51 (Pl. XXI, no. 3)
S. Venera/*Statio Acium*, kiln, excavation (Inv. No. SV 359)
Lower part of an amphora with ovoid body and high ring foot. H 17 cm; max. diameter 22 cm; Base diameter 8 cm. Grooves on the exterior. This amphora type produced at the kiln has an ovoid ribbed body and everted lip, with ledges that run around the outside, immediately below the lip and around the cylindrical neck. The shoulder are hemispherical. The handles attached below the rim, and are sometimes fluted.
Fabric: red colour fabric, pale grey in the core, buff pinkish skin in the exterior. Golden mica flakes, rare small black volcanic inclusions (>1 mm) and lime inclusions. Complete absence of rounded quartz in the fabric.
S. Venera Production, pure group, A3b, fine matrix variant (no. analysis: 9738)
Context Date : From the kiln area (4th century - AD 450).
Bibliography: Amari 2008, Fig. 7.

COM 1 (Pl. XXI, no. 4)
S. Venera/*Statio Acium*, kiln campione di corpo di bacino ansato, excavation (Inv. No. SV 697)
Basin with handles attached.
Fabric: Hard fired fabric orange in colour, greyish in the core.
S. Venera Production, pure group, A4b, fine matrix variant (no. analysis: 9742)

Context Date: From the production workshop
Author drawing: G. La Scala
Bibliography: Amari 2014, Fig.3.4.

SIC 536
S. Venera/*Statio Acium*, kiln, sporadic (No Inv. number)
MR 1a, Circular handle. D.handle 3 cm. Lenght of handle *c.* 13 cm.
Fabric: As above.
S. Venera Production, pure group, A3b, fine matrix (as above). Quartz rounded and well-sorted, volcanic inclusions, mica.
Context Date: sporadic, from the kiln area (4th century–AD 450).
Unpublished
Not illustrated

SIC 537
S. Venera/*Statio Acium*, kiln, sporadic (No Inv. number)
MR 1a, Circular handle. D.handle 2.5 cm. Lenght of handle *c.* 7.5 cm.
Fabric: As above.
S. Venera Production, pure group, as above.
Context Date: sporadic, from the kiln area (4th century–AD 450).
Unpublished
Not illustrated

NORTH EASTERN SICILIAN FLAT-BOTTOMED AMPHORAE CLASS

NORTH EASTERN SICILIAN AMPHORA TYPE 1 (FIG. I.10)

Amphora Type definition North eastern Sicilian amphora type 1 (Fig. I. 10).
Other denominations: Ostia I, 455–456[1349]*;* Capo Orlando no. 3;[1350] Furnari Marina type.[1351]
Formal description Small (height approximately 51/53 cm) pear-shaped/ovoid body amphora, with a ring-footed base with a nipple in its centre. The rim is everted and thickened, rounded at the top and slightly angled outer face. The neck is cylindrical in shape. Its height varies over time. A bulge at the handle-join runs around the entire circumference of the neck. The handles are round to oval in cross section and are characterized by a low arched profile which differs from the Catania MR 1a handles profile. The exterior surface is always characterized by prominent rills on the neck and on the body.
Subtypes/Variants definition and formal description Two main formal development of this type can been recognized.

1. **Var. a:** The type is longer and slender in the first phase of its production during the first half of the 3rd century (see the mid-3rd century example in the Levanzo wreck[1352] and from Arles =SA 111, produced at Caronia Marina workshop, and Messina 2000, 116, pl. IV, 2).
2. **Var. b:** The type become fairly short and stubbier in the 4th century production (see Capo D'Orlando type 4).

Fabric: Hard, coarse fabric. Colour ranges from brown/brick-red/dark red to light red. Contains frequent small to medium white matt and transparent inclusions (quartz). Often presents a dark grey or brownish coat on the outside. Very little mica.
Petrology: Mica-schist and granite, quartz-sandstone fragments and rounded (aeolian) quartz grains.
Stamps/*Tituli picti* No evidence available
Capacity: 17.3 l. Peña suggests this class was manufactured to a module of 32 *sextarii*/two thirds amphora.[1353]
Content: Probably Wine
Production areas/workshops: NE Sicilian type 1 Caronia Marina production (mid 3rd/beginning 4th century); NE Sicilian type 1: unknown workshop production (mid 3rd century); NE Sicilian type 1 Capo d'Orlando production (4th/5th century AD?); NE Sicilian type 1 Furnari Tonnarella production (4th century AD?).
Chronology From the first half of the 3rd century to the 5th century AD.

[1349] Ostia I, 98, Fig. 455–456; Ostia III, 485–487; Ostia IV, 232–235.
[1350] Spigo, Ollà and Capelli 2006, Fig. 4, no. 3.
[1351] Bonanno 2007, Fig. 3, no. 3.
[1352] For a complete example of the type: Royal and Tusa 2012, 41, Fig. 9, inv. SI06AA–0023 (Keay 52 by the authors).
[1353] Peña 1999, 78.

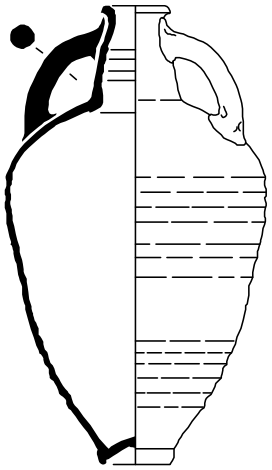


Fig. I.10 North eastern Sicilian amphora type 1

CATALOGUE OF SAMPLES

NORTH EASTERN SICILIAN AMPHORA TYPE *1*

NE Sicilian type 1 Caronia Marina production

SA 111 (Pl. XXII, no. 1)
Les Saintes, mouth of the Rhône, fluvial port, excavation (Inv. No. SM0.10.Z5.SURF.377)
Upper half of an amphora.
NE Sicilian type 1 Caronia Marina production *(*= Ostia I, 455).
Roundend rim, slightly distinct from the neck. Cylindrical neck, slightly swollen and with light rilling in the exterior surface. Handles circular in section.
Fabric: Granular red fabric (10R 4/8); numerous inclusions white matt and transparent, few brown/grey inclusions. Dark grey outer surface. Medium sized inclusions, quartz.
Suggested origin: Caronia Marina. Oxidized Fe-rich matrix, quartz-sandstone fragments and rounded (aeolian) quartz grains, feldspars and argillitis (analysis no.: 10164).
Context Date: mid-3rd century AD.
Bibliography: Long and Duperron 2011b, 103, Fig. 10, no. 3.
Comparison: De Filippo 2014.

SA 76 (Pl. XXII, no. 2)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 189.60)
Ring-footed base, with a nipple in its centre. H. 4.9 cm; D. Base 7.4; H. ring. 1.5 cm.
Fabric: brown-reddish in colour, with numerous white matt and transparent inclusions; dark grey on the outside. As above (analysis no: 9757)
Suggested origin: Caronia Marina.
Context Date: AD 290–310.
Unpublished

CATALOGUE OF SAMPLES

NORTH EASTERN SICILIAN AMPHORA TYPE *1*

NE Sicilian type 1: unknown workshop production

SA 69 (Pl. XXIII, no. 1)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 103.12)
Rim, neck and handle. D. rim ext. max 8 cm; D. handle 2.9 cm.
NE Sicilian type 1, unknown workshop.
Fabric: dark red in colour, dark grey on the outside. In general the fabric is packed with inclusions visible to the naked eye (1 mm and above). Abundant quartz, rounded, mica and metamorphic rocks (analysis no.: 9756).
Suggested origin: unknown workshop along the north eastern coast of Sicily (more similarities with Caronia Marina fabric, less with Capo d'Orlando).
Context Date: *c.* AD 250–260.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.13.

SA 70 (Pl. XXIII, no. 2)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 103.13)
Base. H. 5.2 cm; D. ring-foot base 7.8 cm.
NE Sicilian type 1 (?), unknown workshop.
Fabric: Brown/brick-red in colour, light brownish red in the exterior. Quartz-sandstone fragments, angular quartz.
Suggested origin: unknown workshop along the north eastern coast of Sicily (similar to the above) (no. analysis: 9757).
Context Date: *c.* AD 250–260.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.14.

Lepcis 20 (Pl. XXIII, no. 3)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 071.10)
Base
Fabric: Brown/brick-red in colour, quartz-sandstone fragments, angular quartz.
Suggested origin: unknown workshop along the north eastern coast of Sicily.
Context Date: second half of the 3rd-first half of the 4th century AD.
Unpublished

SMO 11.75.D4.348 (Pl. XXIII, no. 4)
Les Saintes, mouth of the Rhône, fluvial port, excavation (Inv. No. SMO 11.75.D4.348)
Handle and portion of shoulder. Lenght fragment 17 cm; D. handle 2.7 cm.
Fabric: Brown/brick-red in colour. Numerous visible inclusions Quartz-sandstone fragments, angular quartz, metamorphic rocks.
Suggested origin: unknown workshop along the north eastern coast of Sicily.
Context Date: mid-3rd century AD.
Unpublished

CATALOGUE OF SAMPLES

NORTH EASTERN SICILIAN AMPHORA TYPE *1*

NE Sicilian type 1 Furnari Tonnarella production (reference group)

SA 121 (Pl. XXIV, no. 4)
Sicily, Furnari, sporadic (no. inventory number).
Neck and small portion of handle. H. 9; D. neck 9 cm; D. handle 2.9 cm.
NE Sicilian type 1/Ostia I, 455 (?)
Fabric: Oxidized e-rich matrix, abundant inclusions, quartz-sandstone fragments, mica and acid metamorphic roks (no. analysis: 10174).
Furnari Tonnarella production.
Context Date: sporadic
Unpublished

NORTH EASTERN SICILIAN AMPHORA TYPE 2 (FIG. I.11)

Amphora Type definition *North eastern Sicilian amphora* type 2 (Fig. I. 11)
Other denominations: Ostia IV, 166 type;[1354] Termini Imerese no. 151;[1355] Capo Orlando nos. 6 and 7;[1356] Caronia amphora type.[1357]
Formal description Prominent everted rounded/thickened lip and a fairly short slightly tronco–conical neck with horizontal. The neck profile of this type differs from Ostia I, 455 type (=*North eastern Sicilian amphora* type 1) which is cylindrical rather then tronco-conic. The rim is not separated from the neck. The body is ovoid, with shoulders that tend to be quite wide. The base is flat-bottomed or ending in a small tronco-conic base. The handles are small and circular or oval in section. They are attached in the upper part of the neck or close to the rim. The handles are very similar to the handles belonging to NE type 1 (see above) and if found alone it is virtually impossible to distinguish the two amphorae types.
Fabric: NE Sicilian fabrics group.
Stamps/*Tituli picti* No evidence available.
Volume: See NE type 1, above.
Content: wine
Production areas/workshops NE Sicilian type 2 Caronia Marina production (mid-4th century AD)**;** NE Sicilian type 2 Capo d'Orlando production (4th/5th century AD?).
Chronology mid of the 4th–end of 5th century AD.

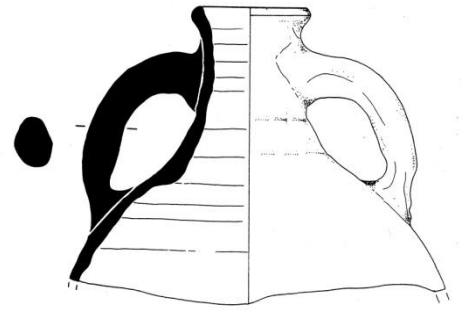


Fig. I.11 North eastern Sicilian amphora type 2

CATALOGUE OF SAMPLES

NORTH EASTERN SICILIAN AMPHORA TYPE *2*

Caronia Marina production (Pantano Quarter)

Sic 299 (Pl. XXV, no. 1)
Sicily, Termini Imerese, urban excavation (inventory number)

[1354] Ostia IV, 232–233, pl. XXV, Fig. 166.
[1355] Belvedere *et al.* 1993, 73, 164, no. 151.
[1356] Spigo, Ollà and Capelli 2006, 456, Fig. 4, nos. 6–7.
[1357] Bonanno 2007, Fig. 3, no. 1.

Rim and handle
NE Sicilian type 1 (= Termini Imerese 151).
Fabric: matrix, big-size quartz-sandstone fragments, quartz grains, not well-sorted, feldspars and argillitis (analysis no. 8799).
Suggested origin: Caronia Marina.
Context Date: end of the 4th and the first three decades of the 5th century AD.
Bibliography: Belvedere *et al.* 1993, 73, 164, no. 151.

SA 122 (Pl. XXV, no. 2)
Sicily, Caronia Pantano, sporadic (no. inventory number)
Rim and small portion of neck. H. 4.5; H. Rim 1 cm; D. rim ext. 7 cm; D. rim int. 5.5 cm; D. neck 5.6 cm.
NE Sicilian type 1 (= Termini Imerese 151).
Fabric: Oxidized Fe-rich matrix, quartz-sandstone fragments and rounded quartz grains, well-sorted. (analysis no. 10175).
Suggested origin: Caronia Marina. Compared with analysis no. 7290 from Caronia Marina (group of local amphora production, CP1.2=Cabella, Capelli, Piazza 2009, 59).
Context Date: sporadic
Unpublished
Comparison***:*** Bonanno 2007, Fig. 3, no. 1.

SA 62
Lepcis Magna, Thermes du Levant, excavation (Inv. Lep96TL001.18)
Fabric: quartz-sandstone fragments, metamorphic rocks and rare vulcanities (analysis no. 9749).
Suggested origin: nearby Caronia Marina.
Context Date: mid 4th-century AD strata.
Unpublished
Not illustrated

NORTH EASTERN SICILIAN AMPHORA TYPE 3 (FIG. I.12)

Amphora Type definition North Eastern *Sicilian amphora* type 3 (Fig. I. 12)
Other denominations: Remolà 2000 Amphora Tardia type D.[1358]
Formal description *S*mall amphora (46 cm in height) with an ovoid body and a ring-footed base with an impressed concavity in the base and central *omphalos***.** The flaring rim is not separated from the neck, and is formed by a slight outward turning of the edges. The neck is tronco-conical, very short and tapered. The body is ovoid, contracting sharply towards the base, which rests on a small foot-ring. The base has a diameter in the range of 8 cm. The body has a surface grooved with rilling outside. The handles are quite small and oval in cross-section. They are usually roughly attached just below the rim and at the shoulder. A small pad of clay is added at the upper attachment. Sometimes the attachments for handles are at different heights. The interior of the neck and the body has numerous deep wheel ridging.
Production areas/workshops NE Sicilian type 3 Caronia Marina production (mid 4th–second quarter of 5th century AD?).
Fabric: Hard, coarse, orange or reddish brown in color. Numerous white and transparent inclusions of small size (quartz and lime, the latter surfacing frequently on the exterior), black/grey inclusions and some mica.
Petrology NE Sicilian fabrics
Stamps/*Tituli picti* No evidence available
Content: wine
Volume: Not known from this type.
Chronology from the mid-4th to the second quarter of the 5th century AD.

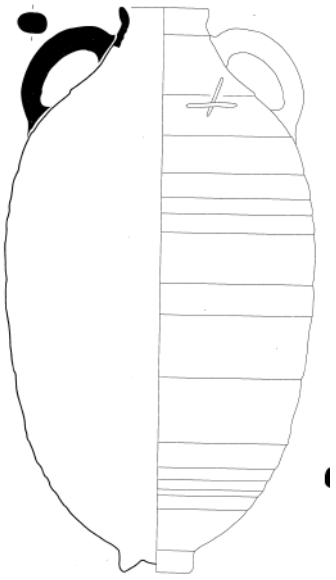


Fig. I.12 North eastern Sicilian amphora type 3

[1358] Remolà 2000, 241, figs. 71, no. 11 and 90, nos. 4–5.

CATALOGUE OF SAMPLES

NORTH EASTERN SICILIAN AMPHORA TYPE *3*

SA 38 (Pl. XXVI, no. 1)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 3.1)
Rim and small portion of neck. H. 5.9 cm; D. rim ext max. 7. 9 cm; D. rim int. 6 cm; H. Rim 0.8; D. neck 9 cm.
Fabric: orange beige fabric and light brown surface. Inclusions of quartz, quartz sandstone, and micascists (no. analysis: 9669).
Suggested origin: NE Sicilian coast, Caronia Marina not excluded (similarity with the thin-section 7289, group of amphora production, CP1.2=Cabella, Capelli, Piazza 2009, 59).
Context Date: *c.* AD 350–360.
Biography: Bonifay, Capelli *et al.* 2013, cat. 3.1.

SA 100 (Pl. XXVI, no. 2)
Tarragona/*Tarraco*, Vila-Roma dump, excavation (Inv. No. VLR 918.3224)
Upper half of an amphora. Volume: estimated between 17.68-19.16 litres (V. Martínez).
Flaring lip formed by a slight outward turning of the edges. Short and tapered neck. Surface grooved/rilling outside. Handles roughly attached just below the rim. Upper attachments for handles at different heights.
Fabric: Hard fabric, orange and reddish brown in color (5YR 4/6) with numerous small black/grey and white inclusions (quartz and lime). Lime spalls on surface. Some sparse mica, compact matrix, numerous inclusions of quartz, quartz sandstone, and micascists (analysis no.: 10153).
Suggested origin: NE Sicilian coast.
Context Date: second quarter of the 5th century AD.
Redrawn by the writer
Biography: Remolà 2000, 241, Fig. 90, no. 5 (Amphora Tardia type D).

SA 101 (Pl. XXVI, no. 3)
Tarragona/*Tarraco*, Vila-Roma dump, excavation (Inv. No. VLR 918.889)
Ring-footed base. H. 5 cm; D. ring-foot base 6.5; H. ring 1.5 cm.
Fabric: As above. Probable the base belong to the previous amphora (analysis no.: 10154).
Suggested origin: NE Sicilian coast.
Context Date: second quarter of the 5th century AD.
Unpublished

NORTH EASTERN SICILIAN AMPHORA TYPE 4 (FIG. I.13)

Amphora Type definition: North Eastern Sicilian amphora type 4 (Fig. I. 13)
Other denominations: Bonifay 1986, nos. 39–40;[1359] Termini Imerese 354 type 'con orlo ripiegato;[1360] Capo Orlando no. 4;[1361] Remolà 2000 Tipo tardío C.[1362]
Formal description Small container (approximately 45 cm height, max 60 cm) with an ovoid body and a small ring bottom. It has a short tronco-conical neck, the rim has a triangular section, which is folded outside. The handles are oval or circular in section, roughly attached near the rim, sitting squat on a slanting shoulder. The external surface is covered with horizontal rillings. Distinctive numerous uneven wheel marks on interior surface.
Production areas/workshops NE Sicilian type 4 Caronia Marina production (mid/second half of the 5th century AD?); Capo d'Orlando production (?) (4th/5th century AD).
Fabric: Hard, coarse, reddish brown, packed with numerous inclusions of quartz and white limestone.
Petrology: NE Sicilian fabrics group.
Stamps/*Tituli picti* No evidence available.
Content: wine
Volume: Not available
Chronology mid-5th century AD onw.



Fig. I.13 North eastern Sicilian amphora type 4

[1359] Bonifay 1986, 286, nos. 39–40.
[1360] Belvedere *et al.* 1993, 83, Fig. 354.
[1361] Spigo, Ollà and Capelli 2006, 456, Fig. 4, no. 4.
[1362] Remolà 2000, 238, Fig. 90, nos. 1–3.

CATALOGUE OF SAMPLES

NORTH EASTERN SICILIAN AMPHORA TYPE *4*

SA 17 (Pl. XXVII, no. 1)
Marseille, La Bourse, excavation (Inv. No. 2687.66)
Upper half of an amphora. D. rim 6.5 cm.
North Eastern Sicilian amphora type 4 (=Bonifay 1986 nos. 39–40).
Fabric: Hard fired orange fabric, compact in fracture, granular on the exterior. Fabric packed with medium and small sized inclusions, white and black in colours. White sporadic big white inclusion. Pitch in the interior of the amphora.
Suggested origin: Caronia Marina (Pantano) workshop (analysis no: 9648)
Context date: mid-5th century AD context.
Bibliography: Bonifay 1986, 286, Fig. 9, no. 39.

SA 18 (Pl. XXVII, no. 2)
Marseille, La Bourse, excavation (Inv. No. 2696.94)
Base (diameter 5.6 cm).
North Eastern Sicilian amphora type 4 (=Bonifay 1986 nos. 39–40).
Fabric: as above
Suggested origin: Caronia Marina (Pantano) workshop (analysis no.: 9650)
Context date: mid-5th century AD context.
Bibliography: Bonifay 1986, 286, Fig. 9, no. 40.

SA 19 (Pl. XXVII, no. 3)
Marseille, La Bourse, excavation (Inv. No. 2696.76)
Rim, neck and handle (Rim diameter: 6.5 cm).
North Eastern Sicilian amphora type 4 (=Bonifay 1986 nos. 39–40).
Fabric: as above.
Suggested origin: Caronia Marina (Pantano) workshop (analysis no. 9650).
Bibliography: Bonifay 1986, 286 (not illustrated).

SA 48 (Pl. XXVII, no. 4)
Arles, area of the Theatre, urban context, excavation (Inv. No. AT 22007.302)
Base. Unidentified amphora type. May belong to the type North Eastern Sicilian amphora type 4
Fabric: As SA 18.
Suggested origin: Caronia Marina (Pantano) workshop (analysis no. 9679), comparable with the analysis no. 7291, from Caronia Marina (Cabella, Capelli, Piazza 2009, 59).
Context Date: late 4th/mid-5th century AD.
Unpublished

NORTH EASTERN SICILIAN AMPHORA TYPE 5

Amphora Type definition: North Eastern *Sicilian amphora* type 5
Other denominations: Bonifay 1986, no. 41.[1363]
Formal description The handles are circular in sections, with a distinct low arched profile which is known as 'anse a maniglia' in the Italian literature. Handles are small and attached to the rim or just below. The rim is slightly triangular in shape and turned out on the exterior. There is no distinction between the neck — which is almost non-existent — and the body, which is ovoid in shape. The general shape and handle profile closely resembles the NE Sicilian type 4, but differences can be noted in the height of the neck and in the point of where the handles attach to the rim.
Fabric: Hard and compact, with a flat fracture. The colour varies between red-brown and beige in colour with a pinkish surface. Numerous white and black inclusions are visible to the naked eye on the exterior surface.
Petrology: NE Sicilian fabrics group.
Stamps/*Tituli picti* No evidence available.
Volume: No evidence available.
Content: wine (probable)
Production areas/workshops: Unknown production centre located along the north eastern Sicilian coast.
Chronology second half/last quarter of the 5th century AD.

[1363] Bonifay 1986, 286, Fig. 9, no. 41.

NORTH EASTERN SICILIAN AMPHORA TYPE 6

Amphora Type definition: North Eastern *Sicilian amphora* type 6 ?
Other denominations: Remolà 2000 Amphora type E.[1364]
Formal description Small sized amphora, with a small triangular rim and a tronconic neck. Heigh is unknown. The internal diameter of the mouth is approximately 7 cm. Handles are small and circular/oval in cross-section. The handles are attached to the rim or just below. The body profile is not preserved in the available published evidence, probably it was an ovoid body. The base is not preserved.
Fabric Hard and compact, red/brownish red in colour. The surface is quite rough. It contains very small and abundant inclusions, composed of sub-rounded quartz. Scattered scarce mica flecks are visible.
Petrology: NE Sicilian fabrics group.
Stamps/*Tituli picti* No evidence available.
Volume: No evidence available.
Content: wine (probable).
Production areas/workshops: Unknown production centre located along the north eastern Sicilian coast.
Chronology Second quarter-first half of the 5th century AD.

CATALOGUE OF SAMPLES

NORTH EASTERN SICILIAN AMPHORA TYPE *6*

SA 98 (Pl. XXVIII, no. 1)
Tarragona/*Tarraco*, Vila-Roma dump, excavation (Inv. No. VLR. 918.3314)
Rim, small portion of neck and handles. H. 5.5 cm; D. rim ext. Max. 7.1 cm; D. rim int. 5.3; H. Rim 0.9 cm; D. Neck 7 cm; D. handle 2.2 cm.
Small triangular rim and a tronconic neck. The internal diameter of the mouth is approximately 7 cm. Small handles are circular in cross-section. The handles are attached just below the rim.
Fabric: Hard and compact fabric, brownish-red in colour. Granular exterior surface. Containing very small and abundant transparent (sub-rounded quartz,) and dark incusions. Scattered scarce mica flecks are visible. Micaceous matrix, rounded eolian quartz, quartz sandstone, argillities and metamorphic material (analysis no.: 10151).
Suggested origin: NE sicilian coast, nearby Caronia Marina (Pantano) workshop.
Context Date: second quarter of the 5th century AD.
Redrawn by the writer
Bibliography: Remolà 2000, 241, Fig. 90, no. 6 (Amphora Tardia type E).

SA 99 (Pl. XXVIII, no. 2)
Tarragona/*Tarraco*, Vila-Roma dump, excavation (Inv. No. VLR.918.3239)
Rim, small portion of neck and handles.
Fabric: as above (analysis no.: 10152).
Suggested origin: NE sicilian coast, nearby Caronia Marina (Pantano) workshop.
Context Date: second quarter of the 5th century AD.

[1364] Remolà 2000, 241, Fig. 90, nos. 6–8.

Redrawn by the writer
Bibliography: Remolà 2000, 241, Fig. 90, no. 7 (Amphora Tardia type E).

UNIDENTIFIED SICILIAN AMPHORA TYPES FROM UNKNOWN WORKSHOPS IN VOLCANIC AND METAMORPHIC AREAS OF SICILY

CATALOGUE OF SAMPLES

SA 7 (Pl. XXIX, no. 1)
Marseille, Frioul, Pointe de la Luque B wreck, Underwater excavation (Inv. No. 2105)
Whole body, handles and neck. Rim missing. H. 52 cm; D. shoulder 25 cm.
North Eastern Sicilian type? (=Ostia I, 455?).
Fabric: Compact pure matrix, inclusions, well-sorted, abundant metamorphic material, pyroxene (analysis no.: 9638).
Suggested origin: North Eastern tip of Sicily. Matrix differs from Naxos fabric group.
Context Date: central decades of the 4th century AD (*Terminus post quem*: AD 333–335 based on stamp of North-African lamps).
Unpublished

SA 8 (Pl. XXIX, no. 2)
Marseille, Frioul, Pointe de la Luque B wreck, Underwater excavation (Inv. No. 2106)
Base H. 22.5; D. ring-foot base 8 cm.
Keay 52?
Fabric: Very abundant inclusions, not well-sorted, metamorphic mmaterila, argillities, volcanic inclusions, mica (analysis no.: 9639).
Suggested origin: North eastern tip of Sicily. Matrix differs from the Naxos fabric group.
Context Date: central decades of the 4th century AD (*Terminus post quem*: AD 333–335 based on stamp of North-African lamps).
Unpublished

SA 47 (Pl. XXIX, no. 3)
Arles, area of the Theatre, urban context, excavation (Inv. No. AT 22007.340)
Base
North Eastern Sicilian type? (=Ostia I, 455? or Termini 354?)
Fabric: Rare volcanic inclusions, metamorphic material.
Suggested origin: North eastern tip of Sicily.
Context Date: late 4th/mid-5th century AD
Bibliography: Richarté and Glibert 2008, Fig. 7, no. 46.

CATALOGUE OF SAMPLES

SA 63 (Pl. XXX, no. 1)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 189.67)
Rim and small portion of neck. H. 4.9 cm; D. rim ext max. 8 cm; D. rim int. 7 cm.
Unidentified amphora type, probably of Sicilian origin.
Simple rounded rim type slightly angled at the outer face.
Fabric: Light brown, granular fabric. Numerous black volcanic inclusions which one can refer to Sicily (Etna region). Rare quartz. (no. analysis: 9750).
Suggested origin: Eastern Sicily.
Context Date: *c.* AD 290–310.
Bibliography: Bonifay, Capelli *et al*. 2013, cat. 2.13.

SA 113 (Pl. XXX, no. 2)
Arles, Rhône**,** underwater find, excavation (Inv. No. RH.09.Z5.B20.106)
Upper half of an amphora.
Unidentified amphora type, probably of Sicilian origin.
The type shows general morphological similarities with one small amphora found in Termini Imerese (Belvedere *et al*. 1993, 135, cat. 1058).
Fabric: metamorphic materials in association with micascist and metagranitis that may indicate an origin in the area of Messina (analysis no.: 10166).
Context Date: 4th century context AD.
Suggested origin: region of Messina.
Comparison: Belvedere *et al*. 1993, 135, cat. 1058.
Author drawing: G. Duperron
Unpublished

UNIDENTIFIED AMPHORA TYPES OF NON SICILIAN ORIGIN

CATALOGUE OF SAMPLES

Unidentified amphora types (Calabrian?)

SA 116 (Pl. XXXI, no. 1)
Trypiti reef shipwreck, Underwater Find, Excavation (Inv. No. Γ 147)
Whole amphora
Unidentified amphora type
Fabric: inclusion of quartz and metamorphic rocks, fossil/limestone (no. analysis: 10169).
Suggested origin: Calabria.
Context date: cargo dating AD 330–350.
Bibliography: Franco and Capelli 2014a; Koutsouflakis and Argiris in press.

SA 107 (Pl. XXXI, no. 2)
Arles, Arles Archaeological Museum collection (no inventory number)
Rim, neck and small portion of handles.
Unidentified amphora type
Fabric: Hard fabric, Brik red in colour, granular in the exterior. Limestone, metamorphic inclusions (analysis no.: 10160).
Suggested origin: The petrology suggests an origin in an area with metamorphic rocks, which could indicate Calabria, but also Greece, the Aegean or Asia Minor.
Context date: without chronology.
Unpublished

Unidentified amphorae of suggested North-African origin

SA 23 (Pl. XXXI, no. 3)
Arles, Gare Maritime, excavation (Inv. No. 150–1012)
Upper half of an unidentified amphora type. D. Rim ext. 10 cm; D. int. 8 cm; D. shoulder 16 cm.
Comments: North-African imitation of the baetican olive oil Dressel 20 type?
Fabric: Depurated fabric, light red in colour, buff-cream coat in the exterior. North Africa generic fabric, eolian quartz (no. analysis 9654).
Suggested origin: North Africa not excluded, northern Tunisia?.
Context Date: AD 200–230.
Author drawing: S. Lang-Desvignes
Unpublished
Comparison: Silvino 2007, Fig. 10, no. 9 (Lyon, mid-3rd century AD context).

SA 109 (Pl. XXXI, no. 4)
Arles, from the left bank of the Rhône non stratigraphical context (inventory number JBM 09. HS-1)
Rim, neck and small portion of handles. H. 10.6; H. Rim 1.1 cm; D. rim ext. 8.4 cm; D. rim int. 6 cm; D. neck 7.2 cm; H. neck 9 cm; D. handle 3.8 cm.
Unidentified amphora type. The rim has a curved exterior face.

Fabric: Eolian quartz (analysis no.: 10162).
Suggested origin: NorthAfrica not excluded, northern Tunisia?.
Context date: without chronology.
Author drawing: G. Duperron
Unpublished

Unidentified amphora type of Spanish origin

SA 94 (Pl. XXXI, no. 5)
Valencia, Plaza de La Almoina, small production area, excavation (Inv. No. ALM 10841 0/371)
Whole amphora
Fabric: Pinkish/very light red fabric, with smooth surface light brownish in colour. It contained small moderately sorted inclusions mainly composed of quartz.
Suggested origin: The fabric characteristics are compatible with a Catalan origin (no. analysis: 10147).
Context date: mid 5th-century (level of destruction)
Bibliography: Ribera and Rosselló 2007, Fig. 1, no. 9.

SA 93 (Pl. XXXI, no. 6)
Valencia, Plaza de La Almoina, small production area, excavation (Inv. No. ALM 0/1456)
Whole amphora.
It is a small amphora (50 cm height) with a triangular rim and a small troncoconical neck. The base ends a ringed bottom. Handles are roughly attached just under the rim. The external surface is covered with horizontal rilling.
Fabric: hard fabric with a regular fracture. Pinkish/very light red fabric, with smooth surface light browinish in colour. Sub-rounded quartz inclusions and quartz sandstones (no. analysis: 10146).
Suggested origin: The fabric characteristics are compatible with a Catalan origin.
Context date: mid 5th-century AD.
Bibliography: Ribera and Rosselló 2007, Fig. 1, no. 8.

MR 1 AMPHORAE WITH DIFFERENT FABRICS

CATALOGUE OF SAMPLES

Sicily not volcanic areas?

SA 30 (Pl. XXXII, no. 1)
Lyon, Célestins quarter, urban context, excavation (Inv. No. US 7529.A)
MR 1a Form 1. H. Fragm 8.5 cm; H. rim 2.3 cm; D. handle 3 cm; D. rim 6.5 cm; D. rim int. 5.5 cm.
Fabric: Light red (2.5YR 6/8) and cream-buff coat in the exterior (5YR 7/2). Hard, quite porous fabric with a fine irregular fracture containing lime and scattered fine rounded quartz. Mica absent. Uniform and thick slip in the exterior. Surface wet smoothed. Few big paste voids in the exterior. Round quartz, well-sorted, fossils. No vulcanities detected (no. analysis: 9661).
Suggested origin: Western/central Sicily/generic Sicilian fabric variant with quartz and no volcanic inclusions. Imitation of MR 1a?
Context Date: beginning of the 3rd century AD.
Unpublished

SA 13 (Pl. XXXII, no. 2)
Marseille, Tunnel La Mayor, urban context, excavation (Inv. No. 475)
Rim. H. 5 cm; D. rim 7 cm; H. rim 3 cm.
MR 1a Form 1/2?
Fabric: Pale orange-brown fabric and buff surfaces. Very finely sandy-rough surfaces. Occasional lime eruption. Frequent black/dark grey inclusions (>0.5 mm), rare quartz (0.5 mm) and white lime (>0.5 mm) inclusions.
Suggested origin: Non volcanic area of Sicily (western/central Sicily) or Generic North-African Production (no. analysis: 9644).
Context Date: second half of the 3rd century AD.
Author drawing: S. Lang-Desvignes
Unpublished

(Inv. No. 20) (Pl. XXXII, no. 3)
Marseille, Tunnel La Mayor, urban context, excavation (Inv. No. 20)
Base D. bases 11 cm; H. ring 2 cm.
Fabric: as above.
Suggested origin: Non volcanic area of Sicily?
Context Date: mid 2nd/beginning of the 3rd century AD.
Author drawing: S. Lang-Desvignes.
Unpublished

SA 56 (Pl. XXXII, no. 4)
Lepcis Magna, Thermes du Levant, excavation (Inv. No. TL 217.20)
Flat Handle and fragment of carinated shoulder. H. 16 cm. D. handle 3.7 cm.
Fabric: Hard fabric with an irregular fracture containing lime inclusions, some of which large (>2 mm). The fabric colour is pale reddish brown (5YR 6/3). A uniform cream-buff white in

the exterior. Quartz, well-sorted, rare lime stones and fossils. Comparable with SA 13. Volcanic inclusions not detected (no. analysis 9743).
Suggested origin: Non volcanic area of Sicily (western/central Sicily) or Generic North-African Production.
Context Date: AD 290–310.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 2.41.

SA 44 (Pl. XXXII, no. 5)
Lyon, Parc Saint-Georges, excavation, urban context, excavation (Inv. No. 1744.218)
Upper half of an amphora.
MR 1a Form 3?, imitation of the Catania type form 3?
Fabric: Round quartz, well-sorted, rare lime stones and fossils. Volcanic inclusions not detected (no. analysis 9675).
Suggested origin: Generic North-African Production. Non volcanic area of Sicily (western/central Sicily) not excluded.
Context Date: mid of the 4th century AD.
Bibliography: Silvino 2007, Fig. 19, no. 12.

MR 1 Tunisian fabrics

SA 22 (Pl. XXXIII, no. 1)
Arles, Gare Maritime, excavation (Inv. No. 5–1011)
Rim and base. D. rim max. 6.2 cm; D. rim int. 5 cm; D. base 8 cm.
MR 1a, Imitation of the Catania prototype?
Fabric: Medium-hard fired, a little porous with an irregular fracture. Contains moderate quartz granules (>1 mm), inclusions of lime (>1 mm), and grey inclusions (>1 mm). The interior surface is pale red (2.5YR 6/8) with a slightly rough pale surface on exterior (salt scum) (10YR 8/2). Eolian quartz, abundant and well-sorted, fossils/limestone.
Suggested origin: Generic Tunisian origin (no. analysis 9653)
Context Date: AD 225–250.
Author drawing: S. Lang-Desvignes.
Unpublished

Salakta/Sullecthum region fabric (Byzacena)

SA 46 (Pl. XXXIII, no. 2)
Lyon, Parc Saint-Georges, excavation (no. inv. 1543.259)
Rim, neck and handle.
Salakta imitation of Catania MR 1a (probable Form 3)
Fabric: Bi-color fabric: brick-red towards the exterior and brown-grey in the middle; numerous small white inclusions. Abundant calcareous material and abundant quartz. Moderate amounts of shell/microfossil and sparse clinopyroxene (no. analysis 9677).
Suggested origin: Salakta?
Context Date: second half of the 3rd century (AD 250–275).
Bibliography: Silvino 2007, Fig. 14, no. 3.

South Tunisian/Libyan fabric (Tripolitanian fabrics)

Lepcis 93 (Pl. XXXIII, no. 3)
Lepcis Magna, Thermes du Levant (Inv. No. TL 96.9)
Tripolitanian amphora, imitation of Catania MR 1a (?)
Rim, slightly triangular rim
Fabric: Hard fabric orange/red (2.5YR 6/6) and grey in colour. Greyish surface with traces of a white outer skin (use of saline water?). Numerous small inclusions of white limestone.
Suggested origin: Tripolitanian fabric, granular sub-group (cf. A1 group in Bonifay, Capelli *et al* 2014).
Context Date: AD 250–260.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.27.

Lepcis 30 (Pl. XXXIII, no. 4)
Lepcis Magna, Thermes du Levant (Inv. No. TL 96.24)
Upper half of an amphora, rim partially missing. Fluted handle circular in section. H. 18.2 cm; D. rim ext. max. 8 cm; D. handle 3.1 cm.
Tripolitanian amphora, imitation of Catania MR 1a (Form 2?)
Triangular rim.
Fabric: Overfired, grey core, brick-red on the surface, with reduced surface. Abundant bimodal rounded medium and fine-grained quartz, well-sorted; dissociated limestone/fossils (analysis no. 8185).
Suggested origin:: Tripolitanian fabric?
Context Date: AD 250–260.
Bibliography: Bonifay, Capelli *et al.* 2013, cat. 1.28.

SA 74 (Pl. XXXIII, no. 5)
Lepcis Magna, Thermes du Levant (Inv. No. TL 196.5)
Rim and small portion of neck. H. 4 cm; D. rim ext. 8 cm (Max. 9 cm); D. rim int. 7 cm; H. Rim 2.1 cm.
South-Tunisian or Libyan interpretation of Catania MR 1a?
Triangular rim.
Fabric: Very hard fabric, granular. Uneven break. Dark grey core and reddish-brown edges. The fabric is reduced to a grey colour (in the exterior). Very abundant inclusions of eolian quartz, well-sorted, pyroxenes and one fragment of basalt. Volcanic inclusion compatible with the volcanic area of Gharyan in modern-day Libya (no. analysis 9761).
Suggested origin: Libya-Gharyan?
Context Date: AD 300–310.
Unpublished

MR1 Cyrenaican fabric

Lepcis 46 (Pl. XXXIV, no. 1)
Lepcis Magna, Thermes du Levant (Inv. No. TL 151.5)
Base and body. H. 6 cm; D. ring-foot base 8.4 cm; H. ring 0.7 cm.
Fabric: Orange in colour. Abundant fine grained inclusions: calcareous microfossils, rounded to angular micritic (fossiliferous) limestone and quartz.
Suggested origin: Cyrenaica.

Context Date: mid 4th century AD.
Unpublished

SA 89 (Pl. XXXIV, no. 2)
Tróia, Fish salting factory, excavation (Inv. No. 3711)
Circular unfluted handle, MR 1a (?)
Fabric: Medium-fine brown/dark-orange fabric with many solid white inclusions rather angular and of uneven shape and size (limestone?), many very small, others larger and some elongated; and some rare black rather rounded inclusions. The smooth surface is of a lighter orange color and shows more limestone inclusions and less reddish brown inclusions.
Suggested origin: Cyrenaica, Latrun workshop non excluded (no. analysis: 10.006).
Context Date: second quarter of the 5th-first half of the 5th century AD.
Author of drawing: A. P. Magalhães.
Unpublished

TRO-EA 159 (Pl. XXXIV, no. 3)
Tróia, Fish salting factory, excavation (Inv. No. 3711)
Circular unfluted handle, MR 1a (?)
Fabric: Fine brick-orange fabric with many small white inclusions
Suggested origin: Cyrenaica
Context Date: no chronologic context.
Author of drawing: A. P. Magalhães.
Unpublished

CATALOGUE II

FINDS OF SICILIAN AMPHORAE IN SICILY AND OVERSEAS (CHAPTER 7)

Introduction

The following tables work in conjunction with Chapter 7. The information collated in the Tables are plotted in the distribution maps in Chapter 7 (Figs. 7.1–7.5 for the Sicilian amphorae distribution in Sicily; Figs. 7.6–7.9 for amphorae distribution overseas). The find-spots of Sicilian amphorae recorded in the following tables were identified by combining the fresh evidence on the provenance of certain forms, the morphology and the data on macroscopic appearance described in the original publications. Where an origin can be suggested it is provided it in parentheses. Quantified figures are expressed whenever available for individual contexts (see the Introduction for the approach to quantification used here) to suggest relative market shares and enhance our understanding of the Sicilian amphora trade. Percentages are given when possible for well-excavated assemblages. Most sites have not been published with sufficiently accurate statistical data to record an increase or decrease in Sicilian amphora exports in specific contexts. In these cases, the find-spots are shown within parentheses or with the abbreviation 'n.s.' (not specified) when more than one specimen is present but the maximum figure is not known.

SICILIAN FLAT-BOTTOMED AMPHORAE DISTRIBUTION AND TRADE IN SICILY AD 1ST–6TH CENTURY

AREA 1

Site	Location/Type	Chronology	Amphora type	Bibliography
Castel di Tusa *Halaesa*	Funerary context, *enchytrismos*	Late Roman period–Early Byzantine Period (4th-first half of the 6th century AD)	North eastern Sicilian type 4 (7)	Scibona and Tigano 2009, 161 (grave 1bis); 166–167 (grave 44); 167 (grave 45); 168 (grave 60); 169 (grave 69); 170 (grave 95); 176 (grave 116); 178 (grave 129); 182, Fig. 18.
	Hinterland, survey, rural settlement	Late Roman period	NE Sicilian type (1)	Burgio 2008, 92, no. 3.
Caronia Marina	Urban, coastal	Early Roman	Sicilian Dressel	Lindhagen 2006, 111.

Site	Location/Type	Chronology	Amphora type	Bibliography
Calacte		period and Late Roman period	2–4 (47); Sicilian/Calabrian Keay 52 (240)	*(non vidi)*
Caronia Marina District of Pantano	Local amphora dump	Late Roman period	NE Sicily amphora Type 1; NE Type 2; NE Type 3 and NE Type 4 (n.s.)	Bonanno and Sudano 2006, 442–443; Bonanno 2008, 355–356.
S. Fratello	Sporadic finds	Late Roman period	NE Sicily amphora Type 1 (n.s.)	Bonanno and Sudano 2006.
Capo d'Orlando *Statio Agathynum* (Bagnoli-S.Gregorio)	Amphora production centre	Late Roman period and Vandal Period	Calabrian Keay 52; NE Sicily amphora Type 1; NE Type 2 and NE Type 4 (n.s.);	Ollà 2004; Spigo, Ollà and Capelli 2006.
	From the area of the kiln	Early Byzantine period	North eastern Sicilian Crypta Balbi 2 (1)	Ollà 2004.
Tindari/*Tyndaris*	Urban	Early Roman Period-Late Roman Period	Sicilian Dressel 2–4 (?) (1); Naxos Early Roman type (2); Naxos flat-bottomed type (15); NE Sicilian type (10); Sicilian/Calabrian Keay 52 (1)	*Tyndaris* I, 284, AR/5, pl. 1; 284, AR/6, pl. 2; 281 (published as MR); 285, AR/12, pl. 1; 285, AR/13, pl. 1; 283; CASR project.
Marina di Itala	Maritime *villa*	Early Roman period and Late Roman period	Naxos flat-bottomed amphora type (n.s.); Sicilian Keay 52 (n.s.)	Lentini and Ollà 2001a, 111, no. 5; Lentini and Ollà 2001a, 113, nos. 12–13.
Furnari District of Tonnarella	Local amphora dump	Late Roman period	NE Sicily amphora Type 1 (n.s.)	Bonanno and Sudano 2006, 443; Bonanno 2007, 355–356, Fig. 3
Terme Vigliatore	Roman *Villa*	Late Roman period	Sicilian/Calabrian Keay 52 (8); NE Sicilian types (9)	Tigano 2008, 77–78, pl. 58, no. 320; pl. 59, nos. 328–331; pl. 62, nos. 345–347. Tigano 2008, 77–78, pl. 58, nos. 325–326; pl. 59, no. 332; pl. 59, no. 333); pl. 59, no. 334; pl. 60, nos. 335–336; pl. 62, nos. 348–349.
Milazzo/*Mylae*	Urban, coastal and underwater finds	Late Roman period	Sicilian/Calabrian Keay 52 (>3); Sicilian amphora type (2); Richborough 527 (>3)	Tigano 1997, 14, figs. 11–12.
Lipari/*Lipara*	Portinenti	Amphora	Local Dressel 2/4	*Meligunìs* X, 371;

Site	Location/Type	Chronology	Amphora type	Bibliography
	production site, kiln	dump	(10); Richborough 527 1a (102); Richborough 527 2a (640).	*Meligunìs* X, 369–375.
	Funerary context, Contrada Diana	?	Naxos flat-bottomed containers (1) and local alum amphorae Richborough 527 (6)	Orsi 1929, 77, f. 42.
	Funerary context	Early Roman period	Local imitation of Dressel 2–4 (4); Richborough 527 (1)	*Meligunis* IX, 2, 189, inv. nos. 21198, 21199, 2233; 21199; 2234 and 21200.
	Urban context	Late Roman period	North eastern types (8)	*Meligunis* IX, 2, 353–374, no. 46/n. inv. 22454; no. 47/n. inv. 23288; no. 48/n. inv. 23289; no. 49/n. inv. 23287.
	Urban context	Late Roman period	North eastern type (1)	Messina 2000, 119, no. 8.
	Thermal Bath	Late Roman period	North eastern type 1 (3)	*Meligunis* X, 230, Fig. 10 d; Messina 2000, 120, nos. 10–12;
	Jewish *hypogeum*	Late Roman period (4^{th}-5^{th} century AD)	North eastern type 2 (3)	Messina 2000, 115–116, Pl. II, nos. 1–3; Pl. III, no. 1; Pl. IV, no. 1
	?	Late Roman period	Sicilian/Calabrian Keay 52 (1)	Pers. observation
	Sporadic find	Late Roman period	North eastern type 1 (1)	Messina 2000, 116, Pl. IV, no. 2.

Table 7.1 Sicilian flat-bottomed amphorae distribution in Sicily/Area 1

AREA 2

Site	Location/Type	Chronology	Amphora type	Bibliography
Messina/*Messana*	Coastal, town, Major port	Middle Roman period	Naxos flat-bottomed type (1)	Bonanno 2001, 201, 211, no. 32
Messina, via Catania	rural settlement	Early Roman period and Middle Roman period	Naxos Early Roman type (2); Catania MR 1 (n.s.) and 1b (1)	Bonanno 2001, 211, no. VCT/33 and 34(stamp VICI on the hanlde); 211, no. VCT/32.
Messina, Ganzirri, quarter	Rural settlement	Late Roman period	Sicilian/Calabrian Keay 52 (1)	Tigano 1997–1998
Messina, Pistunina quarter	*Villa*	Late Roman period	Local Keay 52 (6)	Bacci 2001, 238, no. PI/9.
Scifì	Rural settlement	Middle and Late Roman period	Naxos flat-bottomed amphorae type (n.s.); Sicilian/Calabrian Keay 52 (n.s.)	Lentini and Ollà 2001c, 127.
Sant'Alessio wreck	Amphorae cargo from a wreck	Early Roman period (1st century cargo on the basis of amphorae typology)	Naxos Early Roman type (7)	Ollà 1997, figs. 2, 5, 6–9 (with traces of pitch lining).
Taormina *Tauromenium*	Urban, inland, from a well (Via Di Giovanni excavation)	Early and Middle Roman period	Naxos Early Roman type (n.s.) and Naxos flat-bottomed type (n.s.)	Wilson 1990, 264; Bacci and Rizzo 1993–1994, 951 (so-called Spello type).
Giardini Naxos *Statio Naxi*	Amphora production centre	Early Roman Period-Late Roman period	Naxos Dressel 2–4; Naxos Gauloise 3; Naxos Early Roman type; Naxos flat-bottomed types and Naxos Keay 52 (n.s.)	Fallico 1976–1977; Wilson 1990, 264, note 128; Ollà 2001.
Giardini Naxos *Statio Naxi*	Capo Schisò, Coastal, urban context	Early Roman period-Late Roman period	Naxos Early Roman type (probably a waster); Naxos Keay 52 (n.s.)	Ollà 1997, 228, Fig. 4; Ollà 2001, p. 56, n. cat. 12; Lentini 2001, 39, no. 56.
Giardini Naxos Larunchi quarter	Funerary context	Middle Roman period	Naxos flat-bottomed type (3)	Lentini 1984–1985, 481–482, no. 450.
Giardini Naxos Underwater finds	Underwater recoveries, from the area of 'Relitto dei marmi'	Late Roman period	Naxos Keay 52 (n.s.)	Parker 1992, 190, no. 443.

Site	Location/Type	Chronology	Amphora type	Bibliography
	Underwater recoveries, From the area 'Punta 16' wreck',	Late Roman period	NE Sicilian type (1); Sicilian/Calabrian Keay 52 (10)	Basile 1987, 393–395.
Calatabiano	*Statio*/Thermal Bath	Late Roman period	Naxos Keay 52 (1)	Privitera 1997–1998.

Table 7.2 Sicilian flat-bottomed amphorae distribution in Sicily/Area 2

AREA 3.

Site	Location/Type	Chronology	Amphora type	Bibliography
S. Venera al Pozzo *Statio Acium*	Pottery and amphora production centre	Late Roman Period	Catania MR 1a form 3; globular amphora and local Keay 52 *similis* (n.s.)	Amari 2008; Amari 2014.
Acicastello Acitrezza Capo Mulini	Underwater finds	Late Roman Period	Sicilian/Calabrian Keay 52 (24)	Tortorici 2002, 289, no. 3 and no. 5; 298–299, nos. 25–36.
Catania/*Catina*	Underwater finds and from the port	Early Roman period and Late Roman Period	Sicilian/Calabrian Keay 52 (1); Catania flat-bottomed type 1 (1); Catania MR 1a (1); NE Sicilian type 1 (1)	Tortorici 2002, 280, no. 5; 286, no. 2; 297, no. 15.
	S. Agata al Carcere	Late Roman Period	Catania MR 1a (2);	CASR project.
		Vandal and Early Byzantine period	Sicilian/Calabrian Keay 52 (Vandal period: 8.9%);Sicilian/Calabrian Keay 52 (Early Byzantine: 3.5%).	Arcifa 2010, 22.
Valcorrente, Grammena quarter	Rural settlement	Late Roman Period	Sicilian Keay 52 (S. Venera al Pozzo production? (1)	Bonacini and Turco 2012, 9, Fig. 28, no. 1.
Mineo, Rocchicella	Rural settlement	Late Roman Period	Catania MR 1a (1)	CASR project.

Table 7.3 Sicilian flat-bottomed amphorae distribution in Sicily/Area 3

AREA 4.

Site	Location/Type	Chronology	Amphora type	Bibliography
Agnone/Brucoli	Underwater find	Late Roman period	Sicilian/Calabrian Keay 52 (2)	La Fauci 2004, 25.
Melilli, Santa Caterina	Survey, rural settlement?	Early Byzantine Period	Sicilian/Calabrian Keay 52 (1); Crypta Balbi 2 (2); Calabrian type (1)	Cacciaguerra 2008, 435–436, figs. 12, 19, 21 and 22.
Priolo Gargallo, Specchi-Aguglia quarter	Survey, rural settlement	Middle Roman period	(Catania) MR 1a Form 1 (1)	Cacciaguerra in Malfitana and Cacciaguerra, 2011, 158, Fig. 4.1.
Syracuse *Syracusae*	Unknown	No chronology	(Catania) MR 1a (1)	Orsi in NS serie VI, I, 1925, 204, Fig. 40
	Villa Maria, Funerary context	Late Roman period	NE Sicilian type 2(?) (1); Sicilian/Calabrian Keay 52 (3)	Fallico 1971, 609, Fig. 32, A180; A183–185
	S. Giovanni, Funerary context	Late Roman period	Sicilian Keay 52 (1)	Sgarlata 2003, 101, Fig. 28a.
	Vigna Cassia Funerary context	Late Roman period	Sicilian/Calabrian Keay 52 (1)	Ancona 1998, 64.
Avola, Borgellusa quarter	Roman *Villa*	Late Roman period	Sicilian/Calabrian Keay 52 (>1)	BASILE 1994, 25.
Castellazzo Della Marza*;* Punta Castellazzo-Porto Ulisse	Attestazioni da area urbana	Late Roman period	NE Sicilian type (1)	Rizzone 1997, 117, no. 37.

Table 7.4 Sicilian flat-bottomed amphorae distribution in Sicily/Area 4

AREA 5.

Site	Location/Type	Chronology	Amphora type	Bibliography
Piazza Armerina, (Villa del Casale), Enna	Roman villa	Early Roman period (*c.* last quarter of the 1st century AD)	Naxos flat-bottomed type Form 2 (2)	CASR project.
	Roman villa	Early and Middle Roman period	Catania region amphorae (>5); Catania MR 1a (1); Catania MR 1a form 1 (1)	Ampolo, C. *et al.* 1971, 203, 206; CASR project.
	Roman villa	Late Roman Period	Non Catania MR 1a (1); Sicilian Keay 52 (1)	CASR project.
	Roman villa	Context without chronology (Early Byzantine Period)	North eastern Sicilian Crypta Balbi 2 (1)	CASR project.
Enna/*Henna*, Gerace quarter	Villa, several ceramic assemblages from the 1st to the beginning of the 5th century AD	Early-Late Roman period	Naxos Early Roman type (>1); Catania Flat-bottomed form 1 and 2 ('molti frammenti'); Catania MR 1a ('molti frammenti'). Local Wasters of flat-bottomed containers (n.s.)	Bonanno 2008 and 2010, figs. 5–8; CASR project.
Sofiana/*Philosophiana*	*Statio*	Late Roman-Early Byzantine (4th-7th century AD)	NE Sicilian type (Pantano area of production) (26 fragments)	Bowes *et al.* 2011, 431, tab. 2.
Resuttano	Survey	Late Roman period	Sicilian Flat-bottomed' amphorae (type not ident.) (1)	Burgio 2002, 105, UT 50, no. 10.

Table 7.5 Sicilian flat-bottomed amphorae distribution in Sicily/Area 5

AREA 6

Site	Location/Type	Chronology	Amphora type	Bibliography
Cava d'Ispica	Museum Collection	?	(Catania) MR1 (2)	Rizzone 1997, 116, no. 119–20.
Modica/Mutyca	Rural settlement	Late Roman period	(Catania) MR1 (1)	Rizzone 1997, 115, no. 9.
	Sporadic	Late Roman period	Calabrian Keay 52 (1)	Rizzone 1997, 118, no. 46.
S. Croce Camerina, Palmento	Underwater recoveries	Early Byzantine period	Catania globular amphora (Castrum Perti type)	CASR project.

Table 7.6 Sicilian flat-bottomed amphorae distribution in Sicily/Area 6

AREA 7.

Site	Location/Type	Chronology	Type	Bibliography
Palma di Montechiaro, Cignana quarter	Village	Early Byzantine period	Local flat-bottomed types (14% of amphorae identified)	Rizzo and Zambito 2010, 293–295; Rizzo *et al* 2014.214, Pl. I, 6
Naro	Survey, rural settlement	Late Roman period	Sicilian flat-bottomed types (area not ident.) (n.s.)	Rizzo *et al* 2014.
Canicattì, Vito Soldano quarter	Village	Late Roman period	Local Sicilian flat-bottomed types (n.s.)	CASR project.
Racalmuto	Survey, rural settlement?	?	Sicilian flat-bottomed types (area not ident.) (n.s.)	Rizzo *et al* 2014.
Favara, Saraceno quarter	Rural settlement	Vandal and Early Byzantine period	Sicilian flat-bottomed types (area not ident.) (n.s.)	Castellana and McConnel 1990. Rizzo *et al*. 2014, 214, Pl. I, 3-4.
Favara, S.Stefano quarter	Rural settlement	Late Roman period	Sicilian flat-bottomed types (area not ident.) (n.s.)	Castellana 1984–1985.
Agrigento/ *Agrigentum*	Funerary context, necropolis *sub-divo*	Late Roman period	(Catania) MR 1a form 2 (1)	Lima 1995, 281–282; 280, 1, Fig. 79, no. Inv. 86.964.
		Late Roman period	Sicilian type attributed to Ostia I, 455 (NE types?) (4)	Lima 1995, 280, cat. 2–5 (not illustrated).
		Late Roman period	Sicilian amphora types (22) which I believe to have been produced within Agrigento hinterland and which show comparison with a type found in Campanaio.	Lima 1995, 281-282, cat. 6–27, Pl. XXIV, 8–9; XXV, 1 and Fig. 79 (compared by the author to the type published as Ostia I, 456/Ostia IV, 166). The published example show more stringent formal similarity with a type attested in Campanaio.
Agrigento/*Agrigentum*	Urban	Late Roman period	NE Sicilian type (1)	De Miro 2003, 157, no. 200.
	Amphora	Late Roman	Local flat-	Rizzo *et al* 2014.

Site	Location/Type	Chronology	Type	Bibliography
	production centre?	and Vandal period?	bottomed amphorae (n.s.)	
Agrigento, S. Leone	Port of Agrigento	Late Roman period ?	Sicilian flat-bottomed types (area not ident.) (n.s.)	Rizzo *et al* 2014.
Montallegro, Campanaio quarter	Villa	Middle Roman period	(Catania) Flat-bottomed type form 2 (Ostia III, 464) (1)	Wilson 1982, 15, figs. 9, 6; 10; 1990, 264, Fig. 224a; 1996, 30, figs. 5.10, 5.11.
	Village, amphora production centre	Late Roman period	Local flat-bottomed amphorae: Keay 52 *similis* and amphora for olive oil (?) (n.s.)	Wilson 2000, Fig. 20, D and E.
S. Elisabetta, Giammaritano quarter	Rural amphorae workshop	Late Roman period	Local Sicilian flat-bottomed types (n.s.)	Parello, Amico and D'Angelo 2010, 286; Rizzo and Zambito 2010, 294.
Joppolo Giancaxio, district of Realturco	Rural settlement?	Late Roma period (amphorae typology)	MR 1a tarda (rim and handle) (1)	Rizzo 2004, 89, Fig. 89, no. 8.
Cattolica Eraclea, district of Castagna	Rural settlement	Late Roman Period	Sicilian/Calabrian Keay 52 (1) and local amphora (1)	Wilson 1996, 26.
Calamonaci, district of Canalicchio	Rural settlement	Post Vandal and Early Byzantine period	Local Sicilian flat-bottomed types (area not ident.) (n.s.)	Rizzo *et al.* 2014, 215, Pl. I, 5.
Ribera, Secca Grande	Underwater find	Late Roman Period	Sicilian/Calabrian Keay 52 (n.s.)	Macaluso 1999.
Sciacca,district of Verdura	Rural settlement	Late Roman period	Calabrian Keay 52 (2); Local flat-bottomed amphorae (2)	Parello, Amico and D'Angelo 2010, 285; CASR project.
Sciacca, district of Carabollace	Coastal emporion	Late Roman period and Vandal period	MR 1a form 2 (1) (residual); Calabrian Keay 52 (1)	Caminneci, Franco and Galioto 2010, 276.
Sciacca, Carboj	Villa	Middle Roman period	Catania Flat-bottomed type form 2 (1) and form 3 (1)	CASR project.

Table 7.7 Sicilian flat-bottomed amphorae distribution in Sicily/Area 7

AREA 8.

Site	Location/Type	Chronology	Types	Bibliography
Segesta/*Segesta*, Monte Barbaro	Rural settlement	Vandal Period (AD 450–end of the 5th century)	Sicilian/Calabrian Keay 52 (>1) Sicilian MR 1a (1); MR 1a from non volcanic area (1)	Gagliardi 2009, Fig. 404, 614, no. 3. (North-African amphorae are the most attested, followed by Eastern amphorae such as LR1, LR2; LR3 and LR4); CASR project.
Marsala *Lilybaeum*, Capo Boeo	Underwater context	Late Roman period?	(Catania) MR 1a form 3? (1)	Falsone and Bound 1986, 169, Fig. 12, d.
Contessa Entellin *Entella*, Miccina quarter	Survey, rural settlement	Late Roman Period	Sicilian MR 1a (2); Sicilian/Calabrian Keay 52 (1); NE Sicilian type (1); MR 1a from non-volcanic area (1)	Facella *et al.* 2012, 166, Fig. 287,17; CASR project.
Levanzo wreck	Cargo	Middle Roman Period (AD 250 ca mid/second half of the 3rd century AD)	NE Sicilian amphora Type 1 (1); Catania MR 1a form 2 (3)	Royal and Tusa 2012. Cargo included: Africana I B and II C, Tejarillo , Ostia IV, 263 o 172 and Dressel 30
Skerki Wreck F	Wreck	Early Roman period	Naxos Early Roman type (1)	Ballard, McCann *et. al* 2000, l6l2–l6l4; McCann 2001, Fig. 8 (amph. inv. SK97.088).
Skerki Wreck G	Wreck	Early Roman period	Naxos Early Roman type (1)	Mccann and Oleson 2004, 119–120.
Skerki Bank ISIS	Wreck	Late Roman Period	Calabrian flat-bottomed container (1); Sicilian/Calabrian Keay 52 (1)	Mccann, Oleson 2004, 154–170, Fig. 11.
Sicily channel, between Sicily and the North. African coast	Underwater find, Amphora Alley II	sporadic find?	Probable MR1(b?)	Mccann and Oleson 2004, 186–187, Fig. 117.
Alcamo Marina, Foggia quarter	Amphora production centre	Early Roman period	Dressel 21–22 (fish sauce)	Giorgetti 2006.
Ponte Bagni, *Aquae Segestanae*	*Statio*	Late Roman Period	Sicilian/Calabrian Keay 52 (1)	Arcifa 2010, 42, Fig. 5.
Marsala/*Lilybaeum* (Capo Boeo)	Coastal, Urban	Late Roman period	NE Sicilian type 4 (1); (Catania) MR 1a form 3 (1)	Bisi 1967, 389, Fig. 15, a and o.

Site	Location/Type	Chronology	Types	Bibliography
Mazara del Vallo	Underwater recoveries	Late Roman period	North eastern Sicilian type 1 (2); and Catania MR 1a (1)	CASR project.
S. Vito lo Capo	Underwater recoveries	Late Roman period	North eastern Sicilian type 2 (2)	CASR project.

Table 7.8 Sicilian flat-bottomed amphorae distribution in Sicily/Area 8

AREA 9

Site	Location/Type	Chronology	Types	Bibliography
S. Flavia, promontory of Solanto	Amphora production centre	Early Roman period	Dressel 21–22 (fish sauce) (n.s.)	Lo Cascio 1990
Caccamo, Sambuchi	Survey, rural settlements?	Late Roman period	Sicilian/Calabrian Keay 52 (4)	LAURO 2009, 92, no. 20, pl. III; 99, no. 4, pl. V; 104, no. 3, pl. VII; 110, no. 2, pl. VII.
Termini Imerese *Thermae Himerenses*	Coastal town, major port, century ceramic assemblages from several excavated contexts of the city	Late Roman Period (4th-5th century AD)	North eastern types of different workshops (so-called Termini Imerese 151–354); Sicilian type of non-identified origin (>20)	Belvedere *et al*. 1993, 223–225; 68, 70, 74, 75, 79, 83, 95, 98, 100, 117, 118 (Termini Imerese no. 354); 70, 73, 85, 95, 99, 126 (Termini Imerese no. 151); CASR project.
Monte Iato/*Iaitas*	Urban, inland	Early Roman Period	Naxos Early Roman type (n.s.)	Marek Palaczyk pers. comment.
Castronovo di Sicilia, S. Luca	Roman Villa	Early Roman period	Naxos Early Roman type (1)	CASR project.
	Rural settlement	Late Roman period	NE Sicilian types (2)	CASR project.

Table 7.9 Sicilian flat-bottomed amphorae distribution in Sicily/Area 9

SICILIAN FLAT-BOTTOMED AMPHORAE DISTRIBUTION AND TRADE IN THE WESTERN MEDITERRANEAN (AD 1ST-6TH)

Italy

Site	Location/Type	Chronology	Types	Bibliography
Western side of Italy, Tyrrhenian Sea				
Genova, Liguria	Urban, several contexts	Late Roman period	Sicilian/Calabrian Keay 52 (>1)	Gambaro 1987, pl. XIV, no. 162.
Luni, Liguria	Coastal town and port, Urban contexts	Middle-Late Roman Period (between the 2nd and the 5th century AD)	Sicilian amphorae attested. No quantified information (Catania) flat-bottomed types and Catania MR 1a (n.s.)	Frova and Bertino 1973, pl. 76,2, Fig. 427.; Frova and Bertino 1977, 225, pl. 139, 5.
		Early Byzantine period	Crypta Balbi 2 (n.s.)	Lusuardi, Siena and Murialdo 1991.
Pisa, Tuscany	Piazza Dante excavations, Urban contexts (period VIII)	Early Roman period (from a second half-1st-century context)	Catania amphora type possible (Flower-shaped Handle) (1 NMI out of 111),	Massa 1993, 368, no. 34.
	Piazza Dante excavations, Urban contexts	Vandal Period (second half of the 5th century AD)	Sicilian/Calabrian Keay 52 (1)	Costantini 2014, Fig. 2.13. From this context 32% out of all amphorae come from central Italy, Etruria, *vs* 2% amphorae of a Calabrian origin (see *ibid*. Fig. 2, 14–15).
Cecina, Province of Livorno, Tuscany	Villa	5th century AD assemblages	Sicilian/Calabrian Keay 52 (4 fragments) Empoli amphorae (21 frr).	Paoletti and Genovesi 2007.

Site	Location/Type	Chronology	Types	Bibliography
Ager Volterranus, Tuscany	Inland, Vada, villa di S.Vincenzino and Volterra	Late Roman period	Sicilian/Calabrian Keay 52 (small quantities) .	Del Rio and Vallebona 1996, 121; Munzi and Terrenato 2000, 174.
Puntone di Scarlino *Portus Scabris*, Tuscany	Port and Urban context,	Late Roman period (4^{th}-5^{th} century assemblage)	(Catania) MR 1a (n.s.); Sicilian/Calabrian Keay 52 (n.s.)	Emanuele Vaccaro personal comment, Unpublished.
Roselle, Grosseto, Tuscany	Survey	Late Roman period (Early decades of the 5^{th} century AD)	Catania MR 1a form 3? (n.s.)	Emanuele Vaccaro personal comment, Unpublished.
	Urban, *Domus*, From the area of a well	Middle Roman period (in association with material of the mid-3^{rd} century AD)	Catania MR 1a Form 2 (1)	Michelucci 1985, 81, pl. XXVI, no. 780.
Settefinestre/Orbetello, *ager cosanus*, southwestern Tuscany	Coastal villa	Early Roman period	Naxos Early Roman type (1)	Carandini and Filippi 1985, 76, pl. 20,14.
Lugnano in Teverina, site on the slopes of the Tiber valley about 100 kilometres upstream from Rome, Latium	Inland, fill of the main rooms of a previous villa	Late Roman period (?)	Sicilian/Calabrian Keay 2 (n.s.)	Martin 2005, 66. Keay 52's are less than 1%. Spello and Empoli amphorae are the most attested wine containers.
Trincere,Tarquinia, Latium	From the area of a wreck,	Middle Roman period	(Catania) MR 1a form 3 (1) The chronology of the type is not consistent with the cargo chronology.	Pontacolone and Incitti 1991, Fig. 6, no. 16 (main cargo wreck is composed of African ACW dated around the early 3rd century AD).
Macchia Tonda near S. Furbara, Latium	Underwater find, shipwreck? (now in private collection)	Early Roman period (Second half of the 1^{st} century AD)	Naxos Early Roman type (1)	Gianfrotta 1982, 17, Fig. 16; Parker 1992, 248, no. 613.
Coastal zone between Anzio and Torre Astura Pontine region, Central Italy, Latium	Amphorae from collection (Liboni collection)	? Late-Early Byzantine period	Calabrian/Sicilian Keay 52 (5)	De Haas, Attema and Pape 2007–2008, 528.
Valle del Sacco, south of the town of Anagni, Latium	Survey, Inland	Late Roman period amphorae	Sicilian/Calabrian Keay 52 and (Catania) MR1 (n.s.)	Emanuele Vaccaro personal comment, Unpublished.

Site	Location/Type	Chronology	Types	Bibliography
Naples, Campania	Urban, Via. S. Sofia,	Early Roman Period (Julio-Claudian period context)	(Naxos) Early Imperial Type (1)	Ollà 1997, 228, Fig. 3.
	From the port, Metropolitana and Piazza Bovio excavations,	Late Roman period (4^{th} -5^{th} century assemblages)	Catania MR 1a Form 3(1); NE Sicilian type 2 (1); Sicilian/Calabrian Keay 52 (8).	Luana Toniolo, personal communication, Unpublished (pers. observation: Mainly North-African imports and minor imports of Eastern amphorae from the same context)
Cumae, Campania	Coastal, Urban	Early Roman period (1^{st} century AD)	Sicilian Dressel 21 type (fish)	Capelli and Piazza 2006, 171–173.
Puteoli/Pozzuoli, Campania	Major port, Urban	Middle Roman period(abandon context of the *taberna* IV, second half of the 3^{rd} century AD)	Catania MR 1a form 2 (>1); NE eastern type 1 (2)	De Filippo 2014. African imports are predominant. Presence of Iberian imports. Significantly, Sicilian imports are the only Italian wine production attested, beyond the local Mid Roman Campanian.
Pompeii, Campania	Urban, coastal, Urban context	Early Roman period (*terminus ante quem* AD 79)	Naxos Early Roman period (1) (Inv. No. 31900); (Catania) Flat-bottomed Forma 1(=Ostia II, 522) (Inv. no 30906 and 30943).	(M.Bonifay), Unpublished, personal observation
	Granai del Foro	Early Roman period (*terminus ante quem* AD 79)	Naxos Early Roman type (cf. Ostia III, 632, Fig. 43) and Catania flat-bottomed type, Form 1 (=Ostia I, 522)	Panella 1973, 468; 472.
	Urban contexts, *Insula* V	As above	(Catania) flat-bottomed type Form 1	Bonghi Jovino and Arena 1984, Pl. 106, nos. 14–15**.**
	'Garum Shop' in Pompeii (I, XII, 8)	As above	Sicilian Dressel 21 (less attested than Dressel 21 of Calabrian production)	Bernal Casasola *et al*. 2012 in press.

Site	Location/Type	Chronology	Types	Bibliography
	Urban contexts	As above	Sicilian Dressel 21	Capelli and Piazza 2006, 171–173
Punta Tresino, Agropoli, Campania	Coastal	Early Imperial Period (1st century AD context)	Naxos Early Roman type (1)	Lafon *et al*. 1985, Fig. 44, no. 28.

Eastern side of Italy, Adriatic Sea				
Aquileia, Adriatic Coast, Friuli-Venezia Giulia.	Inland (10 kilometres from the sea), Urban context and major port			
	Disused Well filled with pottery and amphorae	Middle Roman period (end of the 2nd century-4th century AD)	Catania MR 1a Form 2 (3).Frgaments were found in strata P1-P2-P3 and P4(=within the first half of the 3rd century strata: strata P4).	Buora and Maselli Scotti 1991, 28; See also De Grassi and Maggi 2011, 268, Fig. 3.5 (Catania MR 1a Form 2 from the well).
	Forum, Well	Late Roman period	Naxos flat-bottomed form 3 (1) (4th century AD)	Elena Braidotti personal communication; Unpublished, observation.
		Late Roman period	MR 1a (Form 3) (Catania?)	Villa 1994, pl 65, AA5.
Aquileia, Adriatic Coast, Friuli-Venezia Giulia.	Urban, 'domus delle bestie ferite'	Late Roman period (US 266)	MR 1a and Keay 52 (19 fragments)	Valentina Mantovani personal communication
	Urban, Thermal Bath, US 509	Late Roman period (context mid-4th –and 5th century AD)	Keay 52 (1)	Rubinich and Braidotti 2007–2008, 214 and 215, Fig. 9, no. 3.
	Urban contexts	Sporadic finds without chronology	MR 1a (3)	Verzár-Bass 1991, pl. 38, AA36.
	Urban contexts	Late Roman period (Beginning of the 4th-first half of the 4th century AD)	MR1 (n.s.); Keay 52 (2); Naxos amphora type (1)	Verzár-Bass 1994, 374, MR 1a=2.2% out of the amphorae from the same context; Keay 52=0.68%; see ibid. 456–457, pl. 71 (Keay 52); *ibid*., pl. 65, AA5 (MR 1a); pl. 72, AIA 22 (Naxos).
Verona, Veneto	Urban, inland, *Capitolium*	Late Roman period	MR 1a form 3 (5th century type)	Bruno 2008, 374–375 Pl. 39, no. 4

Site	Location/Type	Chronology	Types	Bibliography
			(1); Sicilian/Calabrian Keay 52 (>2)	(MR 1a form 3?); 5 (Keay 52); Cavalieri Manasse and Arzone 2008.
Altino, Venice, Veneto	Inland with good access to port	Late Roman period	Sicilian/Calabrian Keay 52 (1)	Cipriano 2010.
Trieste, high Adriatic Sea, northeast Italy, Friuli-Venezia Giulia	Urban contexts (Curia Vescovile, Crosada, P.zza Barbacan)	Middle Roman period 3rd-beginning of the 4th century AD	MR 1a	Auriemma, Degrassi and Quiri 2012, Fig. 9.
	Coastal Urban contexts	Late Roman period (beginning of the 4th century AD)	Sicilian/Calabrian Keay 52 (4)	Auriemma and Quiri 2007
Ariano nel Polesine, Rovigo, Veneto	Villa, inland	Late Roman period	Catania MR 1a form 3	Unpublished, now in the museusm of S. Basilio[1365]
Comacchio, Ferrara, Adriatic coast, Emilia Romagna	Coastal	Vandal?	Calabrian Keay 52 and Crypta Balbi 2	Gelichi 2006, 35.
Ravenna, major port, Adriatic coast, Emilia Romagna	Classe harbour	Late Roman Period and (first half of the 5th century)	Calabrian Keay 52 (n.s.)	Cirelli 2007(4% out of all the amphora from the port);
		Early Byzantine period (first half of the 6th century AD)	(Calabrian?) Keay 52 (n.s.)	Augenti *et al.* 2007 (*c.* 3% out of all the amphorae).
		Early Byzantine period (7th century AD)	(Calabrian)? Keay 52 (n.s.)	Augenti *et al.* 2007 (*c.* 8% out of all the amphorae).
Brindisi, Adriatic coast, Apulia	Coastal, port; Context: Curia Vescovile, via S. Chiara, and S. Foca	3rd-beginning of the 4th century AD	MR 1a form 2	Auriemma, De Grassi and Quiri 2012.
Lecce, Giurdiniano Salent, Adriatic coast, Apulia	Survey from the area of Centoporte	? (Middle Roman period) (amphora typology)	Catania MR 1a form 2[1366]	Arthur and Bruno 2010, Fig. 142, no. 6 (In this area there are more African Red Slip than Late Roman C wares, in contrast with other

[1365] For the amphorae: http://www.smppolesine.it/sbasilio/pagine/collezioni_img.php?img=2 .

[1366] Macroscopic description indicates a Sicilian production: 149, no. 6: 'Argilla rossa, dura. Ingubbiatura crema'.

Site	Location/Type	Chronology	Types	Bibliography
				contexts of Salento)
Hydrus/Otranto, Apulia	Coastal, port, Urban, 'Cantiere 1 and Cantiere 2'	Middle Roman Period (?) (amphora typology)	MR 1b (1) and MR 1a (2)	De Mitri 2004. MR 1b (residual in a Late Roman/Vandal period context)
Adriatic coast	Several contexts	?	Keay 52 (n.s.)	Auriemma and Quiri 2007.

Bruttium, Calabria				
Several contexts	Amphora production centres	Late Roman-Early Byzantine period	Regional Keay 52 in several contexts	For an update review on Calabrian Keay 52 produced and distributed in Calabria see Cuteri *et al*. 2007 and Cuteri and Salamida 2010, Fig. 2 (distribution map) with previous bibliography cited.

Table 7.10 Sicilian flat-bottomed amphorae distribution in Italy

Rome, Latium

Site	Location/Type	Chronology	Types	Bibliography
Rome, major urban context				
Caelian Hill	Urban	Vandal Period (Late 5th-6th century AD)	Catania MR 1a (2)	Pacetti and Sfrecola 1989, 502, group III, volcanic components detected.
Caelian Hill	Urban, *Basilica Hilariana*	Vandal Period period (first half of the 6th century AD)	Calabrian Keay 52 (n.s.)	Pacetti 1998, 200, Fig. 9; Pacetti 2004, 440.
Aventin Hill	Urba, 'via Marmorata excavations'	Middle Roman period (3rd century deposit)	(Catania) MR 1a (n.s.)	Bertoldi 2011, 147.
		Late Roman period (Mid-4th-mid-5th century AD deposit)	Sicilian/Calabrian Keay 52 (n.s.); and MR 1a (n.s.); probable NE Sicilian type (1)	Bertoldi 2011, 147, pl. 8.13–14: Keay 52's are the amphorae more attested in the deposit (19.5% out of all the amphorae); MR 1a (2.8%); Ostia IV, 166 (MNI 1). Empoli Amphorae are far less from this deposit.
S. Prisca	Urban, *Mithraeum*, Room X	Late Roman period (3rd-4th century AD assemblage)	Naxos Early Roman type (residual); (Catania) MR 1a Form 3; Sicilia/Calabrian Keay 52; North eastern Sicilian types (?)	Vermaseren, pl. 83, nos. 2, 6 and 8. pl. 84, no. 1 (Sicilian amphorae?); no. 2 (North eastern Sicilian type 1?).
Veiove Temple	Urban	?	(Catania) MR 1a (1)	Panella 1973, 471.
Isola Sacra Necropolis	Funerary context	?	(Catania) MR 1a (1)	Panella 1973, 471.
Sisto Vecchio	Urban	?	Catania MR 1a form 2	Schuring 1984, 168–171, Fig. 9.
	Urban			Quilici 1986–1987, 314, Fig. 91, no. 46
Meta Sudans	Urban, Late Neronian age-	Middle Roman period (central decades of the 2nd century AD)	Naxos Early Roman type (8) and Catania flat-bottomed Form 1 (2) and Form 2.	Rizzo 2003, 15–158 (Sicilian amphorae represents 5% out of all the amphorae attested).
Palatine East	Urban	Middle-Roman	Naxos flat-bottomed	Peña 1999.

Site	Location/Type	Chronology	Types	Bibliography
Rome, major urban context				
		period	type Form 2 and 3; Catania MR 1a; Calabrian and Sicilian Keay 52; North eastern amphora types 1 and 2.	
Northwest sector of the Palatine Hill	Urban	Early Byzantine Period (Beginning of the 7th century AD)	Late form of Keay 52 (Calabrian production probable)	Munzi *et al*. 2004, 115.
North–eastern slopes of the Palatine Hill	*'Vigna Barberini'*, terrace, urban	Early Byzantine Period (Second half of the 6th century AD)	Sicilian/Calabrian Keay 52 (n.s.)	Rizzo *et al.*, 77, no. 20.
North–eastern slopes of the Palatine Hill	Urban	Vandal Period (*c.* AD 450–475)	North eastern Sicilian types of different production (such as NE type 4 and 5), and Sicilian Crypta Balbi 2.	Panella *et al*. 2010, 58; Casalini and Crespi 2010. In the deposit Sicilian/Calabrian containers are the most attested among the Italian imports.
Janiculum hill, Via Sacchi assemblages	Urban, Late Augustan age-Nerva-Antonine period	Early and Middle Roman period (first years of the 1st-third quarter 2nd century AD)	Early Naxos type (7), Catania flat-bottomed form 1 and 2 (31); Catania flat-bottomed 3 (1); Sicilian Dressel 21–22 (1).	Ferrandes 2008.
Chapel of S. Primus and S. Felicianus in the church of S. Stefano Rotondo	Urban	Late Roman period (4th-5th century AD)	Clabrian/Sicilian Keay 52 (7)	Martin 2005, 65.
Lungotevere Testaccio	Urban, *Porticus Aemilia*	Late Roman Period and Early Vandal period (from two main layers: around the end of the 4th century and the mid-5th century AD)	Different Sicilian types, such as North eastern Sicilian type 1, 3, 4 and 5.	Incitti 1986.
Temple of	Urban,	Late Roman	North eastern Sicilian	Panella *et al*. 2010,

Site	Location/Type	Chronology	Types	Bibliography
Rome, major urban context				
Magna Mater		period	types of different production	58.
	Urban	Late Roman period (Second half of the 4th century AD)	Calabrian/Sicilian Keay 52 (7.38%), (Catania) MR 1a (4.54%).	Carignani and Pacetti 1989, 611.
	Urban	Late Roman period (Last decade of the 4th-early decades of 5th century)	(Catania) MR 1a (percentages similar to the previous phase)	Carignani and Pacetti 1989, 611.
	Urban	Late Roman period (AD 420–440)	Calabrian/Sicilian Keay 52 (16.51%)	Carignani and Pacetti 1989, 613.
Temple of Cybele	Urban	Vandal period (mid-5th century AD)	Calabrian/Sicilian Keay 52 (n.s.)	Pacetti 1998, 194.
Crypta Balbi	Urban	Early Byzantine period (End of 5th-7th century AD)	North Eastern Crypta Balbi 2; Sicilian and Calabrian Keay 52 in the end 5th-6th century; Calabrian Keay 52 from the 7th century strata.	Saguì 2001, 293 ff.

Table 7.11 Sicilian flat-bottomed amphorae distribution in Rome

Ostia, Latium

Site	Chronology	Types	Bibliography
***Ostia, Latium*; Coastal town, major port**			
Bath of the Swimmer's (Terme del Nuotatore) 'ambiente I, 'layer V '	Early Roman period (AD 80–90)	Naxos Early Roman type (26 NMI, 17% out of all the fragments attributed to the small flat-bottomed containers)	Ostia II, 105–106, pl. 29, Fig. 523; Ostia II 122; Panella 1973, 632, no. 43.
Bath of the Swimmer's, area SO, 'layer V A'	Early Roman period (around AD 90[1367])	Naxos Early Roman type (only 1 fragment of rim out of 70 sherds rim attributed to small flat-bottomed containers)	Ostia III, 486.
Bath of the Swimmer's, Different layers in the area SO	Middle Roman period (From around AD 90 and Trajan-Hadrian strata)	C. 36 sherds of handles which belong both to Naxos Early Roman type as well as Catania flat-bottomed type Form 1 (out of a total of 211 fragments of handles belonging to small containers of different production)	Ostia II, 121 and Ostia III, 486, tab. 2.
Bath of the Swimmer's Area NE	Middle Roman period (From the second half of the 2nd century AD)	(Catania) flat-bottom type Form 3 (n.s.)	Panella 1973, 470.
Area SO, Area IV (*Ostia I*) and from the Bath of the Swimmer's area XVI (strata II)	Middle and Late Roman Period (AD 230–250 until 4th century AD)	(Catania) MR 1a form 2 (=Ostia I, 453–454) (n.s.) associated with North eastern Sicilian type 1 (=Ostia I, 455); North eastern type 2 (Ostia IV, 166).	Panella 1973, 470 and 487.
Bath of the Swimmer's, Area XVI (strata I and II)	Late Roman Period (4th-5th century AD)	(Catania) MR 1a form 3 (n.s.); North eastern type 2 (Ostia IV, 166)	Panella 1973, 470; Ostia IV, 232–233.

[1367] Ostia III, 654, 'La maggioranza dei manufatti sembra databile fra i principati di Nerone e Vespasiano, mentre la costituzione dello strato è da porsi poco prima o poco dopo il 90 d.C.',

Site	Chronology	Types	Bibliography
***Ostia, Latium*; Coastal town, major port**			
Casa delle Pareti Gialle, sector III, layer C2	Early Roman period (Around the end of the Tiberian age)[1368]	Naxos Early Roman type (4 handles)	Zevi and Pohl 1970, 77, 93–94, no. 139, Fig. 92.
Casa delle Pareti Gialle, sector I, layer B3	Early Roman period (Before the middle of the 1st century AD)	Naxos Early Roman type (2)	Zevi and Pohl 1970, 101–103, 112, no. 116; 128, no. 329.
Horrea Epagathiana	Collection without chronology	Catania MR 1a (at least 2); North Eastern type 1 (=Ostia I, 455).	Panella 1973, 470; 487.
	Early-Late Roman period (From the Tiberian age to the early 4th century AD)	Fragments of handles of Sicilian flat-bottomed types. Handle of a (Catania) flat-bottomed types or MR 1a (?) with stamp ABVCC retrograde in *planta pledis.* No certain typological identification	Zevi and Pohl 1970, 93–94, no. 139, Fig. 92; 3.
	Early Roman period, Sector I, layer B3 (before the middle of the 1st century AD)	Naxos Early Roman type (Fragments of handles)	Zevi and Pohl 1970, 101–103, 112, no. 116.
Sunken-Floor Structure on the south Side of the Constantinian Basilica	Vandal and Early Byzantine period (5th-beginning of the 7th century AD)	Calabrian? Keay 52 (>1); Sicilian Crypta Balbi 2 (1)	Martin and De Sena 2003, 48.
Excavations under the floor of the 'Casone del Sale'.	Fill layer of dolia, pottery from 3rd/4th century until the 5th century AD	Sicilian and Calabrian imports (29)	Martin 2005, 63: 1043 amphorae MNI, Sicilian/calabrian imports= 2.78%); minimal presence of containers from central Italy.

Table 7.12Sicilian flat-bottomed amphorae distribution in Ostia

[1368] Zevi and Pohl 1970, 77, 93, 'Verso la fine dell'et**à** tiberiana e in ogni caso non più tardi dei primissimi anni del quarto decennio dell'era volgare'.

Istrian peninsula

Site	Location/Type	Chronology	Type	Bibliography
Istrian peninsula, Croatia and Albania, Adriatic Sea				
Gustinja, Rovinj, Croatia	Wreck (amphora stored in the archaeological museum)	Middle Roman period (amphora type)	Catania MR 1a type Form 2 (1)	Unpublished, observation (M. Bonifay pers. comment)
Brijuni Island, Western coast of Croatia	Villa	Late Roman period (amphora type)	Catania MR 1a form 3 (1)	Unpublished, pers. observation (in association with Late Roman North-African amphorae) (Tamás Bezeczky personal communication)
Zadar, Croatia	Underwater find from the port of Zaton	Late Roman period	Catania MR 1a form 3 (1)	Unpublished, observation (M. Bonifay pers. comment)
Spalato/Split, Croatia		?	(Catania) MR1 (1)	Bebko 1971, 43.
	Archaeological Museum of Spalato	Middle Roman period (amphora type)	(Catania) MR 1a Form 2 (1)	Rapanić 1973, no. 63
Durrës, Albania/Illyria	?	Late Roman period	Sicilian/Calabrian Keay 52 (n.s.)	Unpublished (Brikena Shkodra Personal communication)
Elbasan, *Castrum Scampis*, central Albania	Urban context, on the Via Egnatia	Late Roman period	Similar to Keay 52 (1)	Cerova 2005, 157–158, tab. I, 9, 10.
Apollonia, Albania/Illyria	Town and fluvial port, from the area of the theatre	Without chronology	(Catania) MR 1a form 1 (1)	Lahi, Shkodra and Shehi 2011, Fig. 96, no. 20.
Saranda, Albania/Illyria	Church of the ***Forty Martyrs***	Early Byzantine (6th century AD context)	Keay 52 (1)	S. Mucaj personal communication
Butrint/*Buthrotum*, Southern Albania/Illyria	Major port, Urban, several contexts	Late Roman period	Catania MR 1a and Cyrenaican MR 1a; Sicilian Calabrian Keay 52 (more numerous than MR 1a)	Reynolds 2004, 229; and Reynolds pers. comment.
	Urban	C. AD 500	Keay 52 (n.s.)	Reynolds pers. comment.

Table 7.13 Sicilian flat-bottomed amphorae distribution in the Istrian Peninsula

Iberian Peninsula and Spanish islands

Site and chronology	Location/Type	Chronology	Types	Bibliography
Iberian peninsula, Portugal and Spain				
Empúries *Ampurias*, Spain, *Tarraconensis*		Residual in a 6th-century context	(Catania) MR 1a Form 2 (1)	MR 1a: Keay 1984, 375–376, Fig. 170, no. 10 (type 81).
Catalan contexts		Early Byzantine (Later 6th century AD)	Sicilian/Calabrian Keay 52 (4)	Keay 52: Ibid. 1984, 267–268, Fig. 114 (type LII).
Tarragona/*Tarraco*, Spain, *Tarraconensis*	Capital of *Tarraconensis*, Coastal town and port			
	?	Late Roman period (?)	Sicilian/Calabrian Keay 52 (3)	Keay 1984, 267.
	Urban dump, Vila-roma dump	Late Roman period/Pre-Vandal period context (second-quarter/Mid 5th century AD)	North eastern type 3 (1) ; NE type 4 (3); NE type 6 (2)	Remolà 2000, Fig. 90; D.Phil.
Vila dels Munts, *ager Tarraconensis*, Spain	Villa Inland, with good access to port	Vandal period mid-late 5th century AD	North eastern type 3 (1) and type 4 (3)	Remolà 2000, Fig. 90, no. 4; D.Phil.
Valencia/*Valentia*, Spain, *Tarraconensis*	Coastal town and port			
	Urban contexts, Sabatares context (4th century AD) and Les Corts dump (5th/6th century AD)	Late Roman and Vandal period	Catania flat-bottomed Form 3 (1); Catania MR 1a form 3 (1) and Calabrian/Sicilian Keay 52 (>3)	Pascual *et al.* 1997.
	Urban, La Almoina	Early Byzantine (6th-/7th-century AD)	Sicilian Crypta Balbi 2 (1) and Calabrian/Sicilian Keay 52 (1)	Pascual, Ribera and Rosselló 2003.
	Macellum, well	Late Roman period (early decades of the 5th century AD)	Calabrian/Sicilian Keay 52 (1)	Ribera and Rosselló 2007.

Site and chronology	Location/Type	Chronology	Types	Bibliography
Iberian peninsula, Portugal and Spain				
Benalúa/Alicante, Vinalopó Valley, Spain, *Tarraconensis*	Urban, Rubbish dump	Early Byzantine (middle decades of the 6th century AD)	North eastern type 3 ? (1)	Reynolds 1993, plate 95, no. 232.
Cártama, Málaga/*Malaca*, Spain, *Hispania Baetica*	Coastal town and port	?	(Catania) MR 1a (1)	Keay 1984, 663.
Algeciras, Cádiz, Spain, *Hispania Baetica*	Coastal, from the Fish salting factory	Late Roman period	Sicilian Keay 52 (1)	Bernal 2011 and pers. observation.
Seville/*Hispalis*, Spain, *Hispania Baetica*	Inland town in the plain of the River Guadalquivir (present day Andalusia)			
	Urban context, 'Mercado de la Encarnación' context dated between the late 4th and the early 6th centuries.	Middle Roman period (amphora type)	(Catania) MR 1a form 1 (1)	Amores Carredano**,** García Vargas and**,** González Acuña 2007, 134, Fig. 2.3 (residual in a end 4th-begining 5th century AD).
	Urban context, 'Mercado de la Encarnación' first quarter of the 6th century AD	Late Roman period (amphora type)	Calabrian/Sicilian Keay 52 (>1)	Amores Carredano**,** García Vargas and**,** González Acuña 2007, 136, Fig. 4.23 (possibly residual in this Early Byzantine context).
	Urban context, 'Mercado de la Encarnación', end of the 5th-first quarter of the 6th century AD	Vanda period (amphora type)	Calabrian/Sicilian Keay 52 (>2)	Amores Carredano**,** García Vargas and**,** González Acuña 2007, 136, Fig. 5.38 and 5.39 (amphorae in context; from the same context 'Empoli amhora' type)
	Inland, urban Plaza de la Pescadería, pit filling, central decades of the 6th century AD	Early Byzantine (AD 530–560)	Calabrian/Sicilian Keay 52 (n.s.) (in context); (Catania) MR 1a form 3 (1) (residual)	Maestre Borge *et al.* 2010, 184, Fig. 4.6. (MR 1a is residual in this Early Byzantine context); For Keay 52 finds see Vázquez Paz and García Vargas 2011, 95.
Italica, north of modern day Santiponce, Spain, *Hispania Baetica*	Urban	Vandal period (Late 5th/early 6th century AD)	Sicilian/Calabrian Keay 52 (1)	Abad Casal 1982, 160, Fig. 15.1.

Site and chronology	Location/Type	Chronology	Types	Bibliography
Iberian peninsula, Portugal and Spain				
Tróia, Portugal, *Lusitania*	Costal Fish salting factory	? surface sand level, 1st-beginning of 6th century AD	Catania-region and Cyrenaican handles	Unpublished (D.Phil.).
Tourega, Portugal, *Lusitania*	Inland, *villa*, from the Bath complex	? Tiberian period-end of the 4th/5th century AD.	Catania-region handles	Unpublished (D.Phil.).
Merida*/Emerita Augusta*, Portugal, *Lusitania*	Capital, Inland	Late Roman period	(Catania) MR 1a form 3	Beltrán Lloris 1970, 574, Fig. 237,4 (type 76); Lequement, 1976, Fig. 8b.
Lanzarote, Canary Islands	El Bebedero, urban	?	MR 1b (2), probably not form Catania	Mederos and Escribano 1997. Alfredo Mederos pers comment and Pers. observation.

Table 7.14 Sicilian flat-bottomed amphorae distribution in the Iberian Peninsula and Spanish islands.

Gaul

Provence and the Rhone Valley

Site	Location/Type	Chronology	Types	Bibliography
Arles/*Arelate* Coastal town and major fluvial port				
Archaeological Museum collection	Without contexts?	Late Roman period (amphorae typology)	4th-century AD Naxos flat-bottomed amphora type 3 (3); Catania MR 1a Form 3 (1); unidentified Sicilian type (1); Naxos Keay 52 (1); Calabrian Keay 52 (1).	Unpublished , D.Phil.
Underwater contexts from the Rhône	From the Rhône	Late Roman period (3rd-5th century AD and contexts without chronology)	Catania flat-bottomed types (10); Catania MR 1a Form 3 (3) and Naxos amphorae (2); Strait of Messina Keay 52 (1); and unidentified type from NE Sicily (1).	Unpublished , D.Phil.
Rhône, Riverboat wrecks	Wreck Arles-Rhône 7	Late Roman period (4th/beginning of the 5th century AD)	Catania MR 1a (4)	Unpublished, D.Phil.
	Wreck Arles-Rhône 3	Early/Middle Roman period (cargo, AD 60–120)	Naxos Early Roman type (3)	Unpublished, D.Phil.
Urban	Saint-Césaire	Middle Roman period (Urban, second half of the 2nd century)	Catania flat-bottomed type (1) and MR 1a form 2 (1)	Long and Duperron 2011a.
	?	? (Late Roman period for	Catania MR 1a form 3 (2)	Published in the catalogue César, pers. observation.

Site	Location/Type	Chronology	Types	Bibliography
Arles/*Arelate* Coastal town and major fluvial port				
		amphorae typology)		
	District of Esplanade	Late Roman period (mid-4th-first half of the 5th century)	Catania MR 1a form 3 (8.20% out of 125 NMI amphorae); Calabrian/Sicilian Keay 52 (*c.* 30 NMI out of 134 amphorae).	Congès and Leguilloux 1991, 222; Piton 2007.
	Area of Roman circus	Late Roman period (4th century/beginning of the 5th century AD)	Catania MR 1a Form 3 (12) and Sicilian/Calabrian Keay 52 (14). Overall, *c.* 5 % out of all the amphorae.	Piton and Djaoui 2008.
	IRPA excavations	Late Roman period (end of 4th and the beginning of 5th century AD)	Calabrian/Sicilian Keay 52 (13 NMI, 5.62% out of all the amphorae); Catania MR 1a Form 3 (late variant) (12 NMI, 5, 19%)	Piton 1998, Fig. 6, nos. 36–41. D.Phil.
	Cryptoportico of the forum	Late Roman period (beginning of the 5th century AD)	Catania MR 1a Form 3 (1)	Unpublished, D. Phil.
	Roman Theatre	Late Roman period and Vandal period (From the late 4th/mid-5th century AD)	Catania region type (1); NE type from Caronia Marina (1) and from unknown North eastern region of Sicily (1).	Richarté and Glibert 2008. Sicilian amphorae are *c.* 0.44% out of the total amphorae imported.
	Gare maritime	Middle Roman period (AD 200–250)	Imitation of MR 1a? Tunisian production (1)	Unpublished, D. Phil.
Funerary context	Necropolis of Alyscamps	Late Roman and Vandal Period	(Catania) MR 1a form 3 (1);	Heijmans *et al.* 2012, Fig. 11, no. 2 (Catania

Site	Location/Type	Chronology	Types	Bibliography
Arles/*Arelate* Coastal town and major fluvial port				
		(from the end of the 4th to the beginning of the 6th century AD)	Sicilian/Calabrian Keay 52 (2)	MR 1a form 3, 5th century variant). Keay 52 are attested from the end of the 4th century AD
Outer Ports	Les Saintes, Coastal, minor Port of Arles	Middle-Late Roman period (amphora typology)	NE Sicilian Type (1); region of Messina type (1); Catania (1); Calabrian Keay 52 (1)	Unpublished, D.Phil.
	Fos-sur-Mer, Arles Coastal, Arles outer harbour	Early and Middle Roman period (1st to the beginning of the 3rd centuryAD)	(Catania) MR1 types (2).	Marty and Zaaraoui 2009.
	Fos-sur-Mer, Arles Underwater find	Early Roman period (amphora typology)	Naxos Early Roman type (1)	Liou and Marichal 1978, Fig. 28.

Table 7.15 Sicilian flat-bottomed amphorae distribution in Arles

Marseille and other southern French contexts

Site	Location/Type	Chronology	Types	Bibliography
Marseille Coastal town and major Port				
Urban	Alcazar	Middle Roman period (mid-2nd-beginning of the 3rd century AD)	Catania flat-bottomed type (flower-shaped handles) (1)	Unpublished, D.Phil.
	Tunnel La Mayor	Middle-Late Roman period (from mid-2nd until the second half of the 3rd /4th century)	Non Sicilian? MR 1a form 2 (1); Catania flat-bottomed type (1).	Unpublished, D.Phil.

Site	Location/Type	Chronology	Types	Bibliography
Marseille Coastal town and major Port				
	La Bourse context	Vandal period (mid-5th-beginning 6th century AD)	NE Sicilian type 4 and 5 (2); Calabrian and Messina area Keay 52 types (>10)	Bonifay 1986; Bonifay and Pieri 1995, Fig. 12 (attested in context 1 and context 4).
	Alcazar excavations	from third quarter 7th century strata	Calabrian Keay 52 late variant (1)	Bien 2007, Fig. 5, no. 78.
Underwater contexts	DRASSM/Department for underwater archaeological research	No chronology (Early and Middle Roman on the basis of amphora types)	Naxos Early Roman Type , (1) Catania flat-bottomed type Form 2 (2)	Unpublished, D.Phil.
	Cap Caveaux	?	Catania MR 1a (1)	Panella 1973, 471.
Wrecks	Marseille, Pointe de la Luque B Wreck, cargo?	Late Roman Period (central decades of the 4th century AD)	North Eastern Sicilian type? (1); Keay 52? (1) and Naxos type form 2 or 3 (1)	Dovis-Vicente 2001; D.Phil.
Istres	Port, Museum collection	Without chronology	(Catania) type form 2 (1); Catania MR 1a (1)	Panella 1973, 468, 471.
S. Tropez.	Pampelonne wreck	Late Roman period (Wreck, Sunk between the beginning and the first half of the 4th century AD)	Catania MR 1a Form 3 (1)	Lequement 1976, 184–185, Fig. 8a. (The Pampelonne wreck carried Keay 23, 25B and Keay 6)
Nimes, La Ramiére, Roquemaure	Hinterland. Inland, Rural settlements	(1st-6th century AD)	(Catania) MR 1a Form 2? (1); Sicilian/Calabrian Keay 52 (*c.* 10). One example of MR 1a is a residual in a AD 375–500 context.	Barberan 1998, Fig. 14, no. 37; Fig. 10, nos. 4–5. Sicilian/Calabrian wine containers are attested in minimal quantity in the Late Antique strata.

Table 7.16 Sicilian flat-bottomed amphorae distribution in Marseille and other southern French contexts

Narbo Martius/Narbonne

Site	Location/Type	Chronology	Types	Bibliography
Narbonne	Town, port			
Port-la-Nautique	Underwater excavations,	Early Roman period (AD 40–70)	Catania flat-bottomed type 1 (3)	Sánchez 2009, Fig. 270, no. 1 and 2; D.Phil.
Rue de l'Hôtel Dieu	Urban, funerary context (phase 1)	Late Roman and Vandal period (4th-6th century AD)	Calabrian/Sicilian Keay 52 (2)	Ginouvez *et al.* 1996–1997.
Ilot Saint-Eutrop	Urban	Late Roman Period (5th century AD)	Calabrian/Sicilian Keay 52 (1)	Alessandri, Pierri and Sánchez 1998, 121.
Gruissan, site of Saint-Martin	Ancient harbour	Vandal/Early Byzantine period (Residual in 6th century AD context)	Catania flat-bottomed types (11)	Unpublished, D.Phil.

Table 7.17 Sicilian flat-bottomed amphorae distribution in Narbonne

Central and North Western Gaul

Site	Location/Type	Chronology	Types	Bibliography
Bourges *Avaricum* (Central France)	Archaeological Museum From a funerary context (tombe 'mérovingienne')	Late Roman period?	Catania MR 1a probably 3 (pers. observation)	Unpublished, pers. observation.
Rennes (NW France)	Funerary context	Middle Roman period (late 3rd-century AD)	(Catania) MR 1a form 2 (1)	Galliou 1990, Fig. 1.
Lugdunum/Lyon	Inland, on river route			
Urban	Place des Célestins	Middle Roman period (beginning of the 3rd century AD)	MR 1a with quartz (non Sicilian?); Catania MR 1a (1).	Unpublished, D.Phil.
	Parc Saint-Georges,	Middle and Roman period (several phases from the mid-3rd to the beginning of the 5th century AD)	Non-Sicilian/North-African MR1 (3); Catania MR 1a (9); NE Sicilian type 1 (1) Calabrian flat-bottomed type	Silvino 2007; D.Phil.

Site	Location/Type	Chronology	Types	Bibliography
			(1); Calabrian/Sicilian Keay 52 (>2).	
	Hôtel de Gadagne	Late Roman period amphorae (four phases recognized: AD 20-beginning 5th century AD).	Calabrian/Sicilian Keay 52 (1 MNI, out of 41 amphorae)	Batigne-Vallet and Lemaître 2008, 251, Fig. 51, 84/41 (phase 4).
	Urban, Hôtel de Gadagne	Late Roman period (several phases from the mid-4th to the first half of the 5th century AD)	Catania MR 1a (6); Sicilian/Calabrian Keay 52 (2).	Ayala 2000.
	Urban, context A. Max	Late Roman period	Catania MR 1a Form 3 (1); Catania MR 1a form 3 (1); Calabrian Keay 52 (2)	Unpublished, D.Phil.

Table 7.18 Sicilian flat-bottomed amphorae distribution in Central and North Western Gaul

Main western Mediterranean Islands

Tyrrhenian Sea Islands

Corsica/Corsica

Site	Location/Type	Chronology	Types	Bibliography
Mariana, *colonia*	Urban, coastal	Several contexts from the Early imperial period until the 7th century AD.	NE type 2 (cf. Ostia IV, 166) (1); Naxos Early Roman type (1); flower-shaped handles of Catania flat-bottomed types (13 NMI); Catania MR 1a (1); NE Sicilian Calabrian/Sicilian Keay 52 (9); North eastern Sicilian Crypta Balbi 2 (2).	Menchelli *et al.* 2007.

Site	Location/Type	Chronology	Types	Bibliography
Lucciana	Urban, inland with good access to port	Middle Roman Period (2nd-end of 2nd-century context)	(Catania) flat-bottomed type Form 3	Lang-Desvignes 2011, Fig. 7, no. 73.
Impasse Quatrina	Urban, coastal	Middle Roman period	Catania flat-bottomed type 1 var. 1 (1); Catania MR 1a form 2 (1);	Unpublished, D.Phil.
Campiani	Urban, inland	Middle Roman period (second half of the 2nd century AD)	Catania flat-bottomed type (1)	Unpublished, D.Phil.
Suale	Urban, inland with good access to port	Middle Roman period (First half of the 2nd century AD)	Naxos Early Roman type (1); Catania flat-bottomed type 1 var. 1 (1)	Unpublished, D.Phil.
Calvi, harbour	Underwater recoveries	without contexts (Early and Middle Roman period amphorae)	Naxos Early Roman type (1); Catania flat-bottomed Form 3 (1); Catania flat-bottomed Form n.i. (2); Catania MR 1a form 2? (1)	F. Allegrini excavation
Grosseto-Prugna	Wreck	Middle Roman period (*terminus post quem* second half of the 3rd century)	(Catania) MR 1a (1).	Massy 2013, 110–114 (in the cargo: Dressel 20; Gauloise 4; Almagro 50 e 51C ; Forlimpopoli; Beltrán 72. Primary cargo: glass).
Lavezzi VI	Wreck	Late Roman period (Mid-4th century AD)	(Catania) MR 1a form 3 (1) and Naxos type or NE Sicilian type? (1)	Bebko 1971, 43, pl. 37, no. 249 and no. 251 (Sicilian containers in association with Africana III and a Keay 1B of Algerian production).
Bonifacio	Wreck(s),	No certain chronology	MR 1a (1)	Massy 2013, 131–132.

Table 7.19 Sicilian flat-bottomed amphorae distribution in Corsica

Sardinia/Sardinia

Site	Location/Type	Chronology	Types	Bibliography
Porto Torres *Turris Libisonis*	Coastal, port	Middle-Vandal period (Phase III: 3rd to 6th century AD)	(Catania) MR 1a (total of 32 NMI) and 29 fragments of handles	Villedieu 1984, 178, 180, Fig. 239 and 240.

Table 7.20 Sicilian flat-bottomed amphorae distribution in Sardinia

Cossyra/Pantelleria

Site	Location/Type	Chronology	Types	Bibliography
Survey (University of Bologna/Trapani soprintendenza)	Inland	?	56 fragments of (Catania) MR1(a?)	Baldassari and Fontana 2002, 985, tab. 2.
Scauri wreck	Small-sized merchant ship heading somewhere to the facing African coast	Late Roman period (sunk at the beginning/first half of the 5th century AD)	Sicilian/Calabrian Keay 52 (4).	Tusa, Zangara and La Rocca 2009. Heterogeneous amphorae cargo produced in North Africa(Africa Proconsolare, Zeugitana and Bizacena, Eastern Mediterranean and Spain. Cargo of local Pantelleria ware.

Table 7.21 Sicilian flat-bottomed amphorae distribution in Pantelleria

Melita/Malta

Site	Location/Type	Chronology	Types	Bibliography
Several Maltese contexts	Rural and urban sites such as the villa site of San Pawl Milqi, as well as the Tas-Silġ sanctuary, Roman villa, Gozo-Palm Street). Possibly also from Funerary contexts.	Early Imperial Period	Naxos Early Roman type; (Catania) flat-bottomed Form 1 (>2); Sicilian (?) Dressel 21 for fish sauce (n.s.).	Bruno 2009, 176, Fig. 38, nos. 1–2; 9–10;[1369] 14.
Tarxien	Funerary context (no. 683)	Early Imperial Period (amphora type)	Naxos Early Roman type (1)	Sagona 2002, 1112, no. 15, Fig. 242.1.
Żejtun villa	*Villa*	Early Roman period	Naxos Early Roman type (1)	Anastasi 2012, Fig. 2, no. 11.
	Villa	Late Roman period	Catania MR 1a Form 3 (5th century variant)	Anastasi 2010, no. 339.
Tag-Silg and Roman villa	Urban context	Middle Roman period	Naxos flat-bottomed type form 1 (>1)	Bruno 2009, 181, note 49.
Urban sites (Tag-Silg) and rural sites (San Pawl Milqi and Żejtun)	Urban and rural contexts	Late Roman and Vandal period? (5th-6th century)	Sicilian/Calabrian Keay 52	Bruno 2009, 181, Fig. 39, nos. 9–11.
Bulebel sites		Early and Middle Roman period (mid-1st-early 3rd century AD)	(Catania) flat-bottomed type Form 1 (>1)	Maxine Anastasi pers. comment.
Gozo, Ghar ix-Xih, Mgarr ix-Xini Valley		Punic Early Roman rural context	(Catania) flat-bottomed type Form 1	Maxine Anastasi pers. comment.
Melita	Urban	Middle Roman period	Catania MR 1a Form 2 and Form 3	Maxine Anastasi pers. comment.
Rabat	*Villa*	?	Catania MR1(a?)	Riley 1979, 177 (no. 208); Wilson 1990, 264; Bruno 2009, 179.

Table 7.22 Sicilian flat-bottomed amphorae distribution in Malta

[1369] In Bruno 2009, 179, note 39 the specimens are considered of Tripolitanian or Tunisian origin.

Northern Europe (England, Germany and Switzerland)

Site and chronology	Location/Type	Chronology	Types	Bibliography
London *Londinium*, England	Unprovenanced	Middle Roman period (amphora typology, mid/second half of the 3rd century AD)	Catania MR 1a Form 2(1)	Tomber 2003, 108, Fig. 1, no. 1 and 2; D.Phil.
	Temple of Mithras, Walbrook	Middle/Late Roman period (From the mid-3rd to the early 4th century AD	Catania MR 1a (Form n.i.) (1)	Tomber 2003,108, Fig. 1, no. 2; D.Phil.
Krefeld-Gellep *Gelduba* northern Germany	Funerary context	Middle/Late Roman Period (around the second half of the 3rd to the first half of the 4th century AD)	Catania MR 1a Form 2 (1) and Form 3 (1); Catania MR 1a (Form n.i.) (1)	Pirling 1966, 141–142, pl. 101, grave 1215, no. 6 (MR 1a form 3); Pirling and Siepen 2003, 66, Grave 5508; D. Phil.
Düsseldorf, Germany	From the Germanic settlement (general chronology 1-4th century AD)	Unknown	Catania MR 1a (Form n.i.) (1)	Katarzyna Kus comments, Unpublished, Pers. observation.
Cologne *Colonia*, Germany	Funerary context of S. Severin (amphora used as cinerary urn)	Late Roman Period (end of the 3rd-beginning 4th century AD)	Catania MR 1a Form 2 (1)	Fremersdorf 1933, 23–24, Abb. 1; Fremersdorf 1959, pl. 42, B13; D. Phil.
Trier/*Augusta Treverorum*, Germany	Urban, Imperial Baths-*Kaiserthermen*	Late Roman Period (4th century context AD)	Catania MR 1a (1)	Hussong and Cüprers 1972, 22, pl. 4, 52.
Breisach, *castrum* Germany	Military context, unknown context	Late Roman Period	Calabrian/Sicilian Keay 52 (4)	Zagermann 2011,142, no. 2168, pl. 87, inv. no. 2988 (photo of the fabric pl 4,2988).
Mainz, *castrum Mogontiacum* Germany	Military context, unknown context	Middle/Late Roman Period (contexts dated from the 3rd to the 4th century AD)	(Catania) MR 1a (4)	Ehmig 2003, 29, note 70, cat. 0748, pl.26; Cat. 1535, pl. 25; Cat. 1621, pl. 26; cat. 2422 pl. 26
Kaiser Augst/*colonia Augusta Raurica*, northern Switzerland	Urban	Late Roman Period (contexts dated from the end of the 3rd to the mid-4th century AD)	Catania MR 1a (6)	Martin-Kilcher 1994, 449–450, pl. tab. 250, inventory numbers 5649; 5650; 5651; and other fragmenst Unpublihed, D. Phil.

Site and chronology	Location/Type	Chronology	Types	Bibliography
Laufen-Müschhag Switzerland, 25 kilometres south-west of *Castrum Rauracense* (Kaiseraugst), Switzerland	*Villa* (amphora used as a container for jewellery)	Late Roman Period (*terminus ante quem* AD 350)	Catania MR 1a form 2 late variant(1)	Martin-Kilcher 1980, 53–54, Fig. 20, no. 1, pl. 50–1; Martin-Kilcher 1994, note 341. D. Phil.
Sion *Sedunum*, Switzerland	Urban	Late Roman period (second half of the 4th/5th century AD)	Sicilian Calabrian Keay 52 (2)	Dubuis, Haldimann and Martin-Kilcher 1987, 165, nos. 22 and 23.

Table 7.23 Sicilian flat-bottomed amphorae distribution in Northern Europe

SICILIAN FLAT-BOTTOMED AMPHORAE DISTRIBUTION AND TRADE IN NORTH AFRICA

Numidia

Site and chronology	Location/Type	Chronology	Types	Bibliography
Lambaesis, capital of the province *Numidia*, Algeria	Urban, 'Tigress House'	Middle/Late Roman period (by the end of 3rd century context)	Sicilian amphorae (5)	Amraoui and Bonifay in Press. Catania origin has been established by thin-section analyses. In total 17 MNI (Catania flat-bottomed type form 3 and possibly MR 1a).
	Urban, 'Phrixus and Hele House'	Late Roman period (4th century context)	Catania MR 1a (a few fragments of handles and bases)	Amraoui and Bonifay in Press.

Table 7.24 Sicilian flat-bottomed amphorae distribution in Algeria/Tunisia

Zeugitana

Site and chronology	Location/Type	Chronology	Types	Bibliography
Carthage/Tunis, coastal Tunisia	Coastal, main port			
Museum collection	?	Without chronology	(Catania) flat-bottom type Form 3 (1)	Panella 1973, 471.
Urban	Urban context	Early Roman period	(Catania) flat-bottom type Form 1	Vegas 1994, tab. 7, no. 93.
	Urban context	Late Roman period	Catania MR 1a form 3 and form 1	Tomber 1988, Fig. 19.367–368 (end 4th century-beginning 5th century AD context); Freed 2009, 121 and Fig. 3.4, no. 53 (early variant residual in a late Roman context)
	Phase 2 (AD 30–70)	Early Roman period	(Catania) flat-bottom type Form 1 (1) and 2 (2)	Martin-Kilcher 1998, D.Phil.
	Phase 3 (2nd century AD)	Middle Roman period	Naxos flat-bottomed type Form 2 (1)	Martin-Kilcher 1998, Fig. 6, no. 6, D.Phil.
	German excavations	Early and Middle Roman period	Total (Catania) flat-bottomed type amphorae MNI 9: 3 NMI from AD 30–70 (10%); 3 MNI from 70–170 (13%) and 3 MNI from excavation 1976 (9%). Percentages of the imported amphorae	Martin-Kilcher 2005, Fig. 4 and Fig. 5
		Vandal period (from mid-5th to 6th century AD)	Calabrian/Sicilian Keay 52 (>4)	Neuru 1980, pl. VII.51–53 (second half of the 5th century

Site and chronology	Location/Type	Chronology	Types	Bibliography
				context); Neuru 1990, 39, no. 45 (6th century assembalge); Hayes 1978, Fig. 2bis.101 (Michigan deposit VII, 6th century); Tomber 1988, Fig. 22.434? (mid-late 5th century AD context).

Table 7.25 Sicilian flat-bottomed amphorae distribution in *Zeugitana*

Byzacena

Site and chronology	Location/Type	Chronology	Types	Bibliography
Nabeul *Neapolis*, northeastern coastal Tunisia	Coastal town	?	Calabrian/Sicilian Keay 52 (n.s.)	Michel Bonifay pers. communication.
Kelibia *Clupea*, (close to Nabeul), northeastern coastal Tunisia	Coastal town	?	(Catania) MR 1a (n.s.)	Panella 1973, 471; Riley 1979, 177, no. 134.
Souk el Abiod*/Pupput*, northeastern coastal Tunisia	Coastal urban site, Funerary context	Middle Roman period (3rd century AD)	NE type 1 (1)	Bonifay *et al*. 2004, 22, Fig. 8, no. 3
Sidi Jdidi *Aradi*, 15kilometres from the seashore, Tunisia	Small urban site, Inland	Middle Roman period	Catania flat-bottomed types (n.s.)	Unpublished, Tomoo Mukai pers. comment.
El Djem *Thysdrus*, Tunisia	*Colonia*, urban, inland with easy access to nearby port	Middle Roman period	Catania MR 1a Form 2 (1)	Panella 1973, 471, 632, Fig. 46; Riley 1979, 177, no. 82.
Sidi Khalifa *Pheradi Maius*, Northern Gulf of Hammamet, Tunisia	Coastal, urban	?	(Catania) MR 1a (n.s.)	Panella 1973, 471; Riley 1979, 177, no. 198.
Thyna *Thaenae*, on the east Central coast of Tunisia	Around the area of a production kiln	?	Catania flat-bottomed type (or MR 1a) (2)	Ben Lazreg *et al*. 1995, 131 (cf. new analyses D.Phil.), see also Bonifay *et al.* 2002–2003 Fig. 17.236.

Table 7.26 Sicilian flat-bottomed amphorae distribution in *Byzacena*

Tripolitana

Site	Location/Type	Chronology	Types	Bibliography
Meninx, island of Djerba, Tunisia	Coastal/urban, major port in Roman period	?	Catania flat-bottomed containers (>4)	Unpublished, D.Phil.
	Survey, suburban area of Meninx.	Late Roman/Vandal period (amphora typology)	Sicilian/Calabrian Keay 52 (a few examples) >1	Cirelli and Fontana 2009, 98. Fontana, Ben Tahar and Capelli 2009 Fig. 16.23, no. 4.
Sabratha, northwestern corner of Libya	Coastal town and port			
Museum collection	?	Without chronology	(Catania) MR 1a Form 2 (1); North eastern type 1 (1)	Panella 1973, 471; 487.
Funerary context	Mausoleum A and B,	Middle Roman period	(Catania) MR 1a Form 2 (n.s.)	Panella 1973, 471.
Oea/Tripoli, northwestern coast of Libya	Coastal, urban			
	From Tripoli, now in the Museum Collection in Leiden	?	(Catania) flat-bottomed form 2 (1)	Holwerda 1936, pl. XII, no. 1117.
	Museum collection	?	(Catania) MR 1a Form 2 (1)	Panella 1973, 471.
	Gargaresh, western suburbs of Tripoli	?	Handle with fine-grained quartz-rich fabric	Capelli and Bonifay 2007, 565, Fig. 10c.
Urban contexts	Several urban contexts, such as the Forum and East Forum Temple, *insulae* of Regio II.	Late Roman period Sicilian amphorae found in strata AD 300–*c.* AD 450	Naxos form 3 and North eastern Sicilian type 2 (>3)	Dore and Keay 1989, Fig. 13, nos. 231–233.
	As above, 3rd-4th century AD context	Late Roman period (amphora type)	(Catania) MR 1a (7)	Dore and Keay 1989, 50 (type 29) Fig. 14, no. 241 (MR 1a Form 3, 4th century variant)
Lepcis	Coastal, urban centre and port			

Site	Location/Type	Chronology	Types	Bibliography
Magna, northwestern coast of Libya				
Museum collection	?	Without chronology	Catania flat-bottomed type Form 2 (1) and Form 3 (1)	Panella 1973, 468, 471; Pers. observation.
Urban contexts	*Domus* near the theatre	Early Roman period (1st century AD)	(Catania) flat-bottomed Form 1 or 2 (2)	Urban, Pentiricci *et al.*, 1998, 84, note 202 (bibliography cited).
	From the excavation of the Forum	Middle Roman period (amphora typology)	Catania MR1 (3rd century variant)	Polito 2005, pl 70, FV 148/91.
		Late Roman period (amphora typology)	Calabrian/Sicilian Keay 52 (>1)	Polito 2005 292 and Pl. 72.
	From the excavation of the Arch of Marco Aurelio	Early Roman period (amphora typology)	(Catania) flat-bottomed form 1 or 2 (1)	Urban, Pentiricci *et al.*, 1998, 84, note 203 (bibliography cited).
	Thermes du Levant/'Eastern Bath'	Middle and Late Roman Period (from mid-3rd century until the/beginning 5th century AD)	Catania flat-bottomed type Form 1; Catania MR1 (Form 1, 2 and 3); Naxos flat-bottomed Form 2 and 3; NE Sicilian type 1 and 2; Calabrian and Sicilian Keay 52.	Bonifay, Capelli *et al.* 2013.
Funerary context	Gasr Gelda (Ipogeo de Flavi)	Early Roman period (Augustan-Tiberian age)	(Catania) flat-bottomed form 1(=Ostia II, 522) (3)	Di Vita 1968, 58–61; Panella 1973, 468.
	Gasr Gelda (Ipogeo de Flavi)	Middle Roman period (from mid 1st century to *c.* AD 240)	(Catania) flat-bottomed form 2 (2); Local imitation of MR1? (2)	Di Vita-Evrard, G. *et al*. 1996, 116, pl. 53, c
Suburban *Villa*	Uadi er-Rsaf	Middle Roman Period (Antonine context, AD 150–180)	Catania flat-bottomed type Form 2 (>1)	Pentiricci *et al.* 1998, 83, Fig. 13, 46–47 and 48 (=Ostia III, 464, 7 NMI, 16% out of 43 amphorae).
	Uadi er-Rsaf	Late Roman period (4th-5th century fill of a disused well)	Catania MR 1a (=Ostia I, 453–454) (n.s.)	Pentiricci *et al.* 1998, 83, note 182.
Misurata,	Coastal site A	Middle Roman	Catania MR 1a	Arthur 1983, Fig. 8,

Site	Location/Type	Chronology	Types	Bibliography
Eastern coastal Tripolitania, Libya		Period (amphora typology)	Form 1 (1)	no. 76.
Gheriat el-Garbia, Roman fort at in the Tripolitanian pre-desert	Inland, Military context	Middle/Late Roman period	Catania MR 1a Form 1 (>1)	Schimmer 2012, Fig. 4, no. 13

Table 7.27 Sicilian flat-bottomed amphorae distribution in *Tripolitana*

Cyrenaica

Site	Location/Type	Chronology	Types	Bibliography
Apollonia, coastal town, Libya	Fill of a silo south-west of the excavation of the rock of Kallikrateia	?	Catania and Cyrenaican MR 1a (>1)	Franco, Mazou and Capelli in press.
	Archaeological Museum	?	Cyrenaican MR 1a (1)	Franco, Mazou and Capelli in press.
Benghazi *Berenice*, Sidi-Khrebish, Libya	Coastal, port	Middle and Late Roman period	(Catania) flat-bottomed Form 2 and 3; Catania MR 1a; Cyrenaican MR 1a.	Riley 1979, 177–179.
Boreum, Cyrenaica	Town and Road-station	?	Catania MR 1a (n.s.)	Riley 1979, 179, no. 43
Tocra/*Taucheira*, northeastern Libya	Coastal town, Survey	?	Regional Cyrenaican MR 1a; Catania Region MR 1a	Franco, Mazou and Capelli in press.
Tolmeita, northeastern Libya	Coastal town, Survey	?	Regional Cyrenaican MR 1a; Catania Region MR 1a	Franco, Mazou and Capelli in press.

Table 7.28 Sicilian flat-bottomed amphorae distribution in *Cyrenaica*

Egypt

Site	Location/Type	Chronology	Types	Bibliography
Alexandria	major administrative capital and trade centre			
	Ptolemaic sanctuary of Bastet	Late Roman period (amphora typology)	Catania MR 1a form 3 (2); Cyrenaican MR 1a (1)	Kaan Senol and M. Bonifay pers. comment.
	Tell El-Balamun colonnade foundation in Temple A	Middle Roman Period (end 3rd century assemblage)	MR 1a (Cyrenaican?)	Spencer 1999, Fig. C, no. 2 (in association with a ARS 50A/B)
	Lake Mareotis, Survey, from site no. 100	? Roman period	Catania MR1 (1) (handle); Two flower-shaped amphorae handles might be Sicilian in origin (2)	Blue and Khalil 2011, 61, no. 173; See also fif. 4.14, nos. 173–174.
Bouto/Tell el Fara', Interior of the Egyptian delta	Survey	Late Roman period	Catania MR 1a (3); Cyrenaican MR 1a (1)	Franco, Mazou and Capelli in press.
Coptos, East Bank of the Nile in Upper Egypt	Trade centre, amphora from a pit fill	Late Roman period/Vandal Period (pitt dated in period R3 = 4^{th}-6^{th} century AD)	(Catania) MR 1a form 3 (1)	Lawall in Herbert and Berlin 2003, Fig. 109, no. 85

Table 7.29 Sicilian flat-bottomed amphorae distribution in Egypt

SICILIAN FLAT-BOTTOMED AMPHORAE DISTRIBUTION AND TRADE IN THE EASTERN MEDITERRANEAN

Site	Location/Type	Chronology	Types	Bibliography
Nikopolis Actium, Greece	Urban, dump in the central drain of the *cardo* that fronts Basilica A	Late Roman Period (early 5th century AD)	Calabrian/Sicilian Keay 52, NE Crypta Balbi 2 (1)	Reynolds. and Pavlidis,in press.
Attica, Trypiti reef	Wreck cargo	Late Roman period (AD 330–350)	Naxos flat-bottomed Form 3 (1); Catania MR 1a form 3 (1), unidentified Sicilian amphora type (1)	Franco and Capelli 2014a; Koutsouflakis and Argiris in press. At least 5 Sicilian amphorae; majority of cargo Africana I, II and III.
Athens, Roman layers of the Agora	Urban	Late Roman period-Vandal Period (Attested from the early/mid-4th century layer to the early 6th century AD)	Keay 52 amphora types different production (>6)	Robinson 1959, Pl. 28, no. M234; Pl. 31, no. M302; Pl. 32, no. M323 and pl. 16, L31 and L32.
	Urban	Late Roman period (Early/middle 4th century AD)	'Catania MR 1a' form 3, var. a (4)	Robinson 1959, 108, pl. 28–M254.
	Urban	Late Roman period (4th century AD context)	(Western) Sicilian flat-bottom type (>1)	Robinson 1959, Pl. 18, M230.
Corinth, Peloponnese, Greece.	From the excavation of the harbour	(Late Roman period) (4th century AD for typology)	Sicilian/Calabrian Keay 52 (1)	Adamsheck 1976, 114, Pl. 26, RC12, Graffito on the shoulder (X) *ibid*, Fig. 3.
Thessaloniki, Greece	Important trade-hub located on the *Via Egnatia*	?	The possible imports of Catanian wine in the city is suggested by the evidence of the wall painting depicting MR 1a amphorae in a cellar from a 4th century AD tomb in the East Cemetery (see Chapter 5).	On the wall-painting: Papanikola-Bakirtzi 2010, 274–275, Fig. 4; Pelekanidou 2005, 197–198, figs. 3–5.

Site	Location/Type	Chronology	Types	Bibliography
Yassi Ada wreck , Turkish coast	Wreck, 4th-century AD	Late Roman period	Catania MR 1a form 3 (1); Sicilian/Calabrian Keay 52 (1)	Bass, van Doorninck 1971, pl. 3, Fig. 26.[1370]
Ephesus, Turkey	Coastal, Urban, context unknown	Unknown ?	Sicilian (Catania?) MR 1a (n.s.)	Bezeczky 2010, 353.[1371]
Bodrum, south western Turkish coast	Underwater find along the coast near Bodrum	? Intrusive intact example in the area of an ottoman wreck (Site TK06-AD)	MR 1a?	Royal 2008, 94, named as Agora M254.No picture of the amphora is provided.
Beritus/Beirut, north Levantine coast within Roman *Phoenicia*	Major portual city, urban contexts	Late Roman period (late 4th century AD)	Sicilian/Calabrian Keay 52 (1)	Reynolds 2010b, 94 (Keay 52 appear for the first time, they are rare, representing a 0.25% of the total amphorae, *ibid*. tab.2b).
	As above	Late Roman period (early 5th century/*c.* AD 410)	Sicilian/Calabrian Keay 52 (17)	2.27% out of total amphorae (Reynolds 2010b, tab. 3).
	?	Middle Roman and Late Roman period	Catania MR 1a form 2 (>5)	P. Reynolds personal comment
	?	Late Roman period	Cyrenaican MR 1a (>10)	P. Reynolds personal comment
Caesarea Maritima, coastal Palestine	Urban, (Vault 1) (Vault 1 Mithraeum/warehouse	No chronology	MR1 (Catania possible for morphology and fabric description[1372]).	Jeffrey 1988, 42, Fig. 9,6.
Ashkelon/*Ascalon*, southern coastal plain of Palestine	Urban, coastal	Middle Roman period (amphora type)	(Catania) MR 1a form 1 (1)	Johnson 2008, 160, no. 455.
	Urban, coastal	Middle Roman period (amphora type)	(Catania) MR 1a form 2 (1)	Johnson 2008, 160, no. 454.

[1370] Their position raises the question whether the amphorae were cargo or for the crew, possibly suggesting that the containers were for use on board.
[1371] The 'small quantity' of MR 1 is considered of a Sicilian origin by the author.
[1372] Jeffrey 1988, Fig. 9.6, base, inventory number C.8.8136, 187:4, fabric light red (10R6/6); exterior white slip (5Y8/1); interior pale red (10R6/4).

Site	Location/Type	Chronology	Types	Bibliography
Jerusalem, Mount of Olives, Israel	Urban, inland. From a funerary context, 'sepolcreto dei mattoni', tombs with an arcosolium	Late Roman Period (tombs typology dated between the 3rd and 4th centuries AD)	(Catania) MR 1a form 3 (1) (Catania possible for morphology and fabric description[1373]).	Bagatti and Milik 1958, 124–125, Fig. 28, 4; pl. 39.

Table 7.30 Sicilian flat-bottomed amphorae distribution in the Eastern Mediterranean

Main Eastern Mediterranean islands

Site	Location/Type	Chronology	Types	Bibliography
Gortina, Crete	Great Baths complex in the south of the *Praetorium*	Late Roman/Vandal period	Sicilian/Calabrian Keay 52 (>1)	De Aloe 2009, 41.
		Late Roman period	MR 1a and Keay 52	Portale and Romeo 2001; Romeo and Portale 2004
Cyprus	?	?	Catania MR 1a (n.s.)	Anthi Kaldeli personal comments

Table 7.31 Sicilian flat-bottomed amphorae distribution in main Eastern Mediterranean Islands

[1373] Milik 1958, 124 'impasto marrone con patina giallina all'esterno'.

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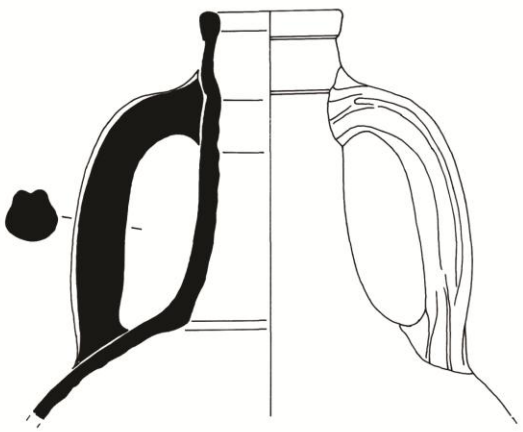
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PLATES

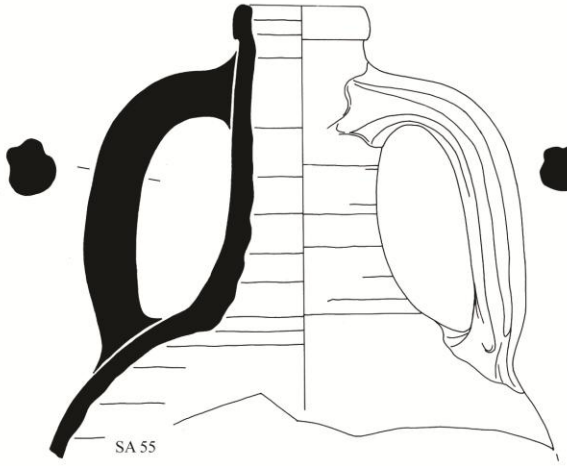
Plate I

NAXOS EARLY ROMAN AMPHORA TYPE

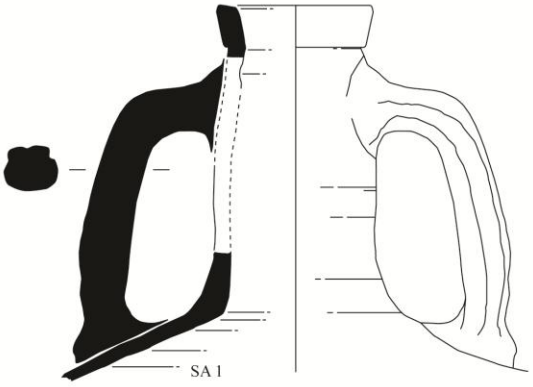


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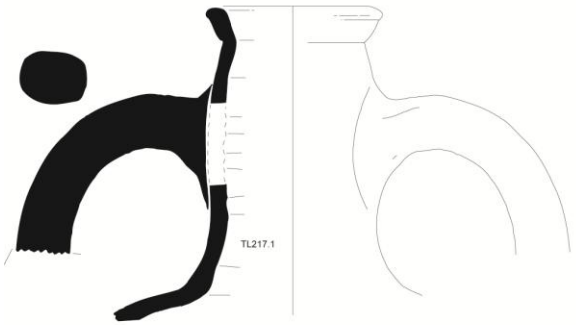


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Plate II

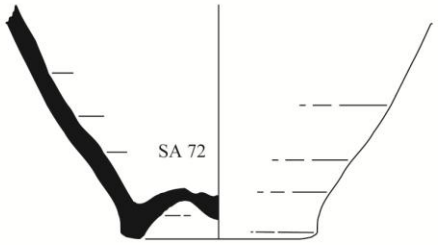
NAXOS FLAT-BOTTOMED AMPHORA TYPE, FORM 2





SA 33

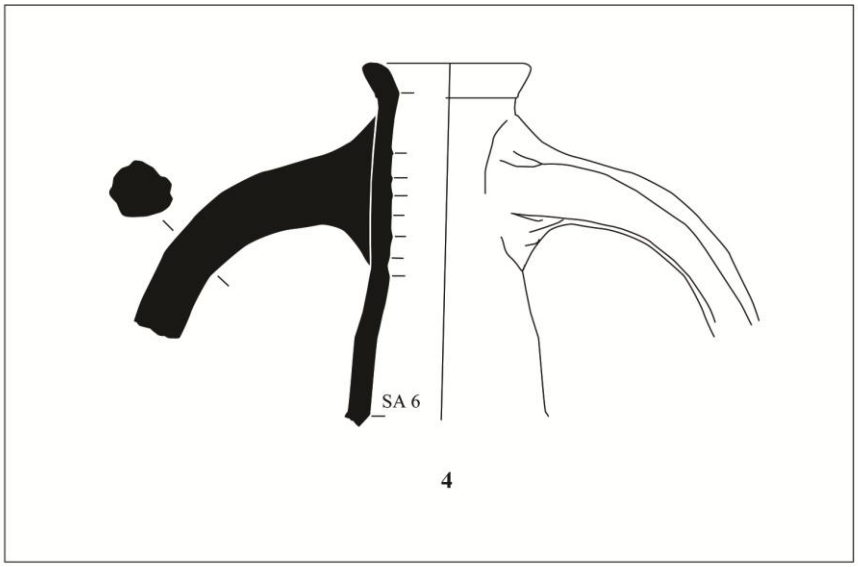
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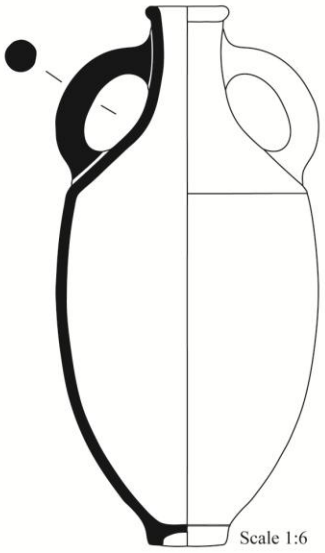
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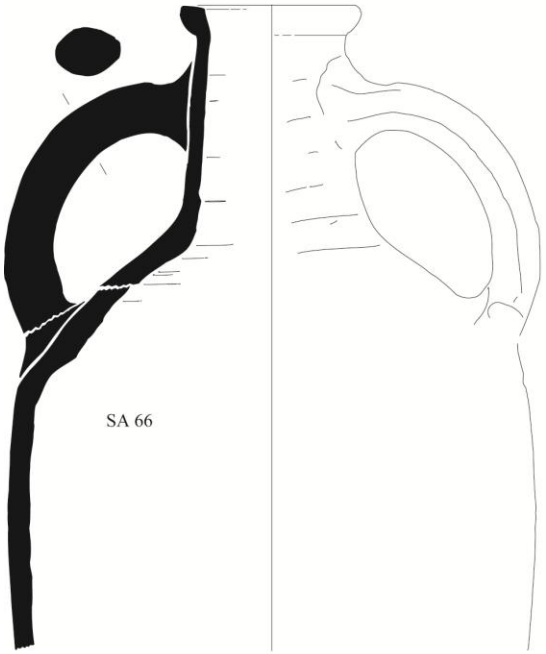
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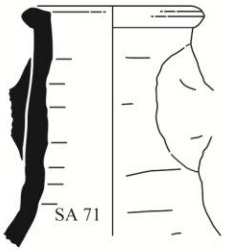
SA 114

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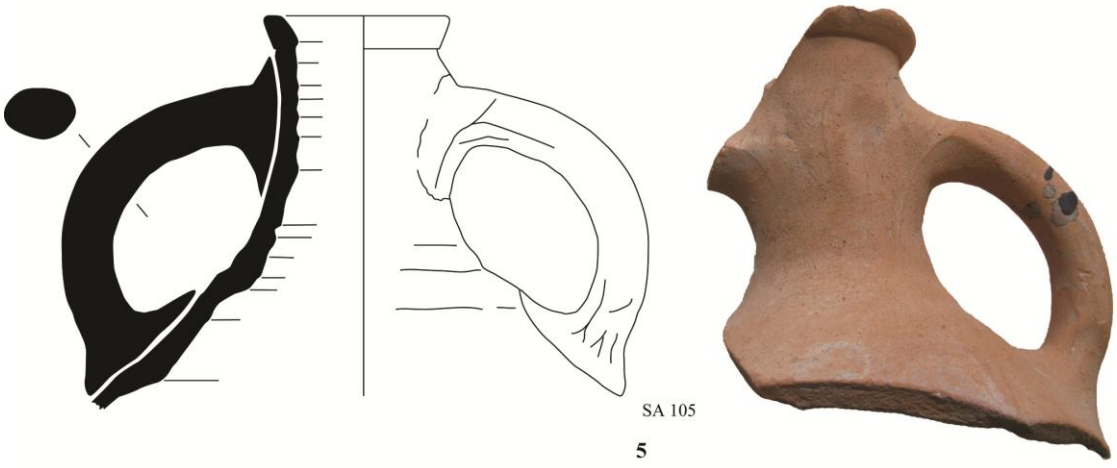


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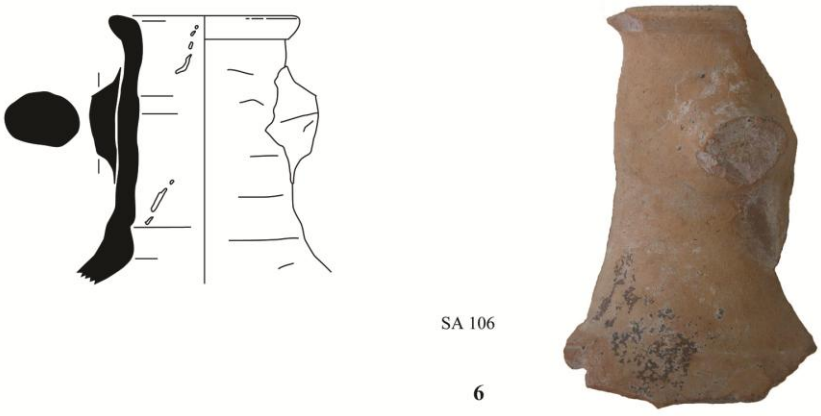
Plate III

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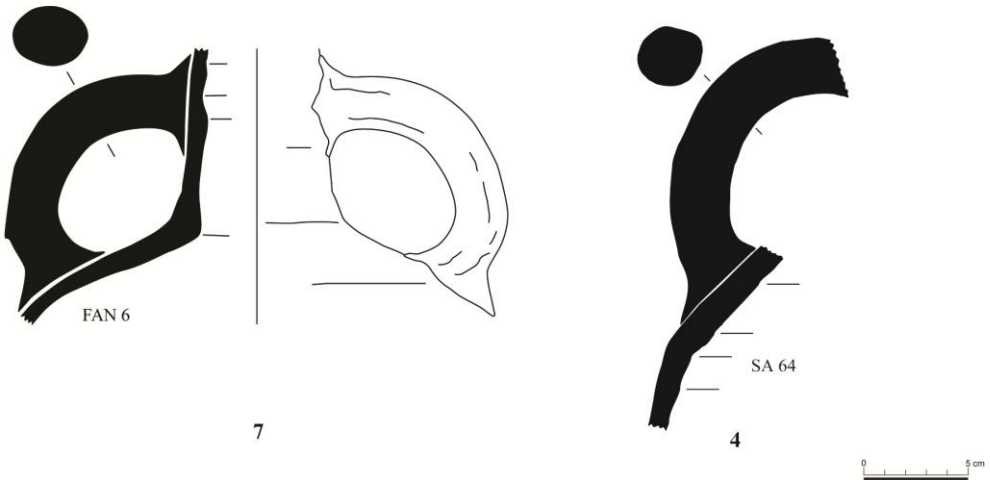
SA 105

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SA 106

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FAN 6

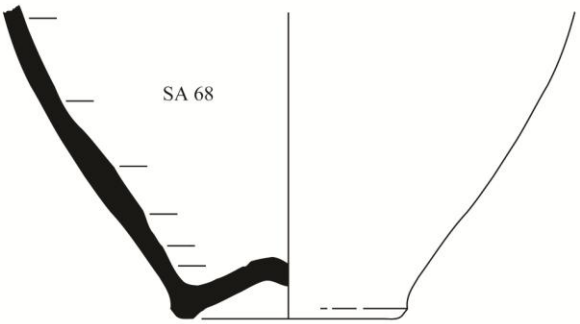
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SA 64

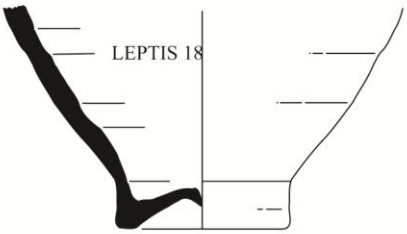
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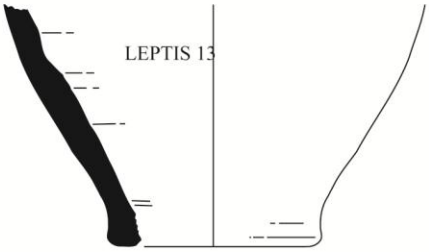
NAXOS FLAT-BOTTOMED AMPHORA TYPE, FORM 2 AND 3



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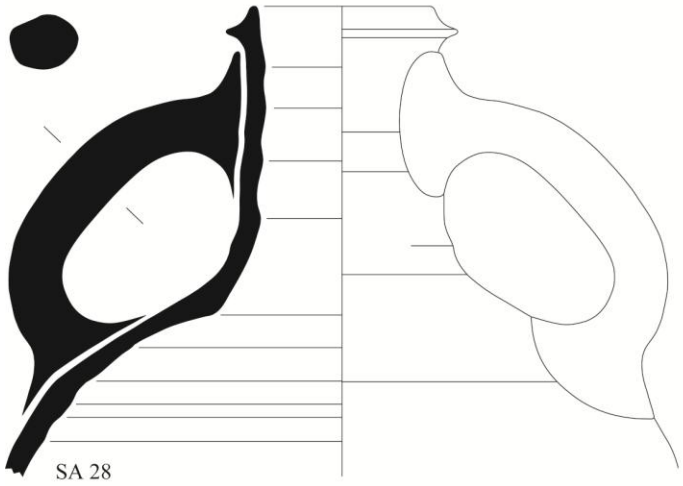


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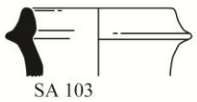
NAXOS KEAY 52 TYPE



1

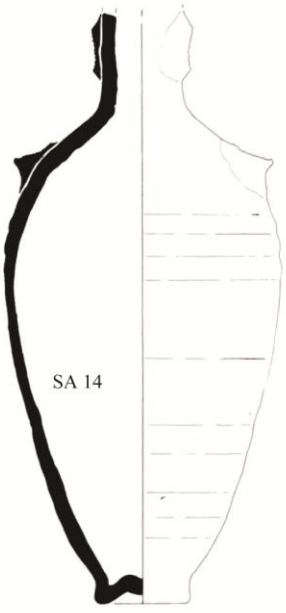


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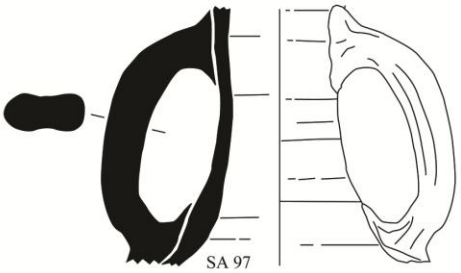


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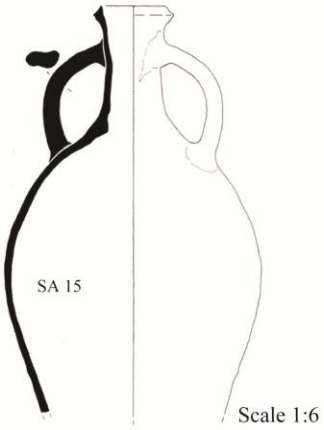
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Plate VI

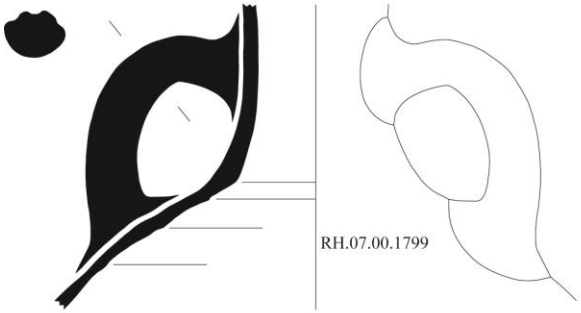
NORTH EASTERN SICILIAN KEAY 52



2



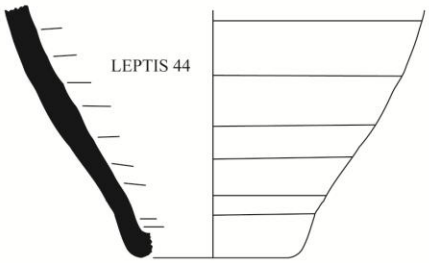
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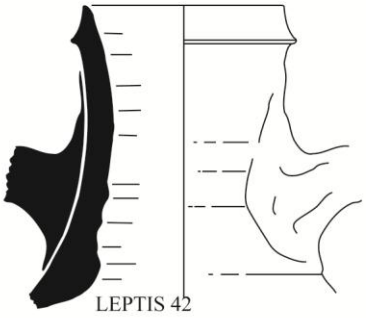
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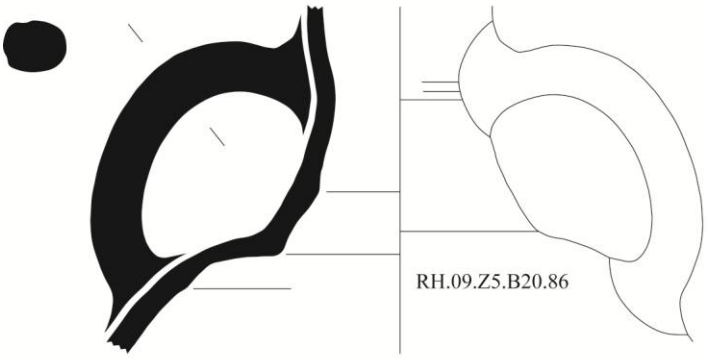
Plate VII

‘STRAIT OF MESSINA’ KEAY 52

NE Sicilian or Calabrian production



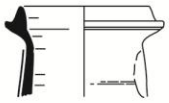
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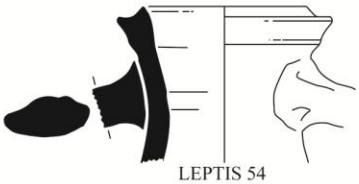


SOUTHERN CALABRIAN KEAY 52



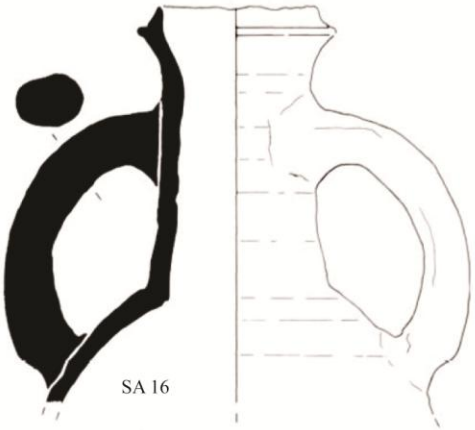
LEPTIS 92

1



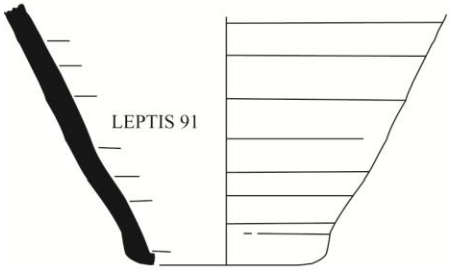
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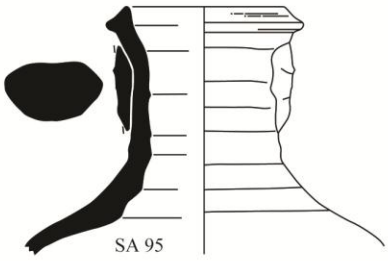
SA 16

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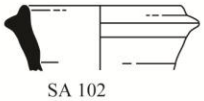
LEPTIS 91

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SA 95

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SA 102

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Plate IX

NE SICILIAN AMPHORA TYPE 1
Naxos Region Variant



1

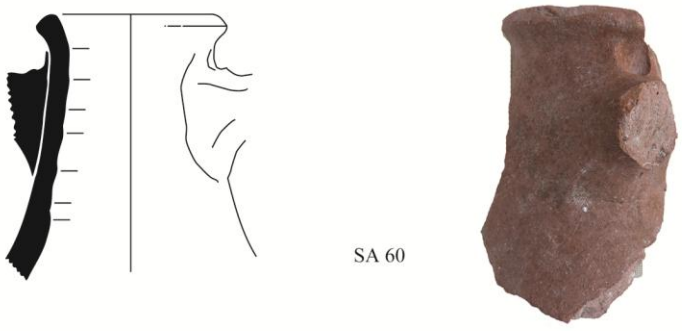


2



Plate X

AN EARLY 5th-CENTURY AD SICILIAN PREDECESSOR OF CRYPTA BALBI 2?

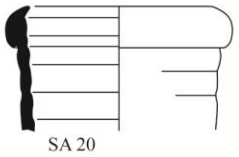


SA 60

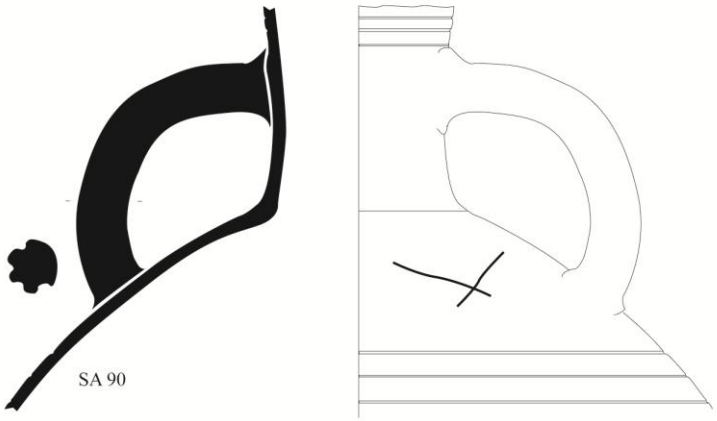
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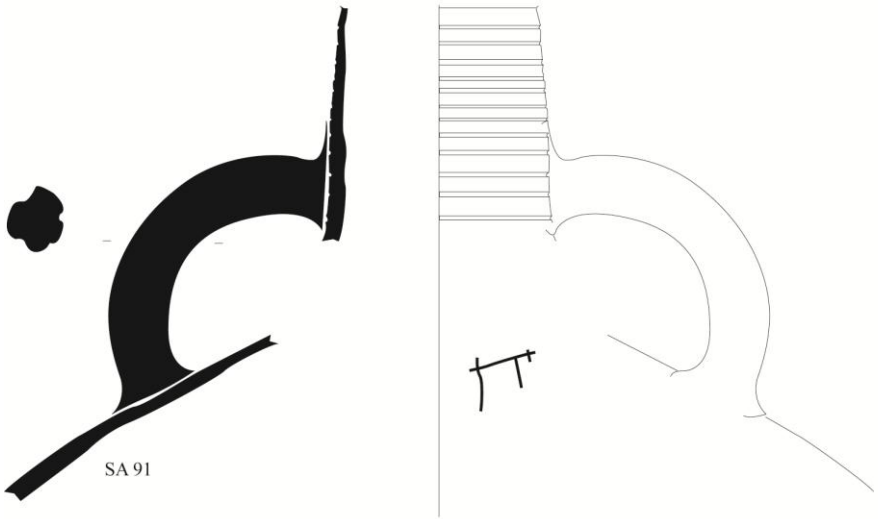
CATANIA FLAT-BOTTOMED TYPE, FORM 1



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Plate XI

CATANIA FLAT-BOTTOMED TYPE, FORM 1



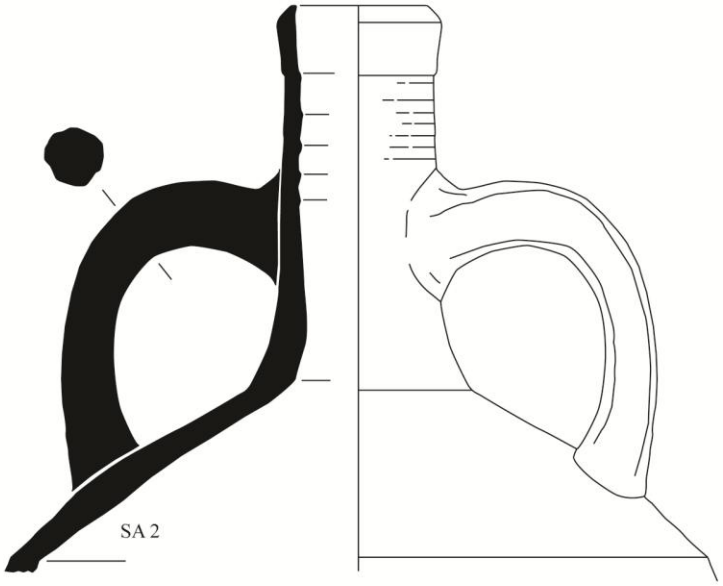
4



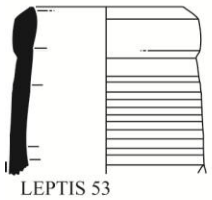
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Plate XII

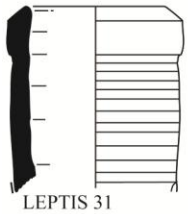
CATANIA FLAT-BOTTOMED TYPE, FORM 2



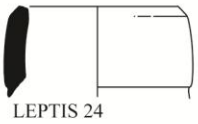
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2



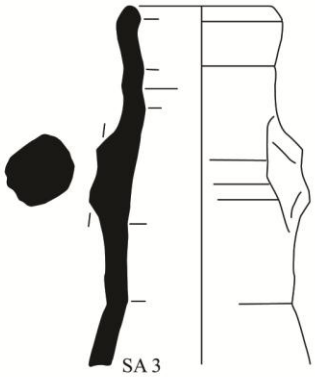
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4



5



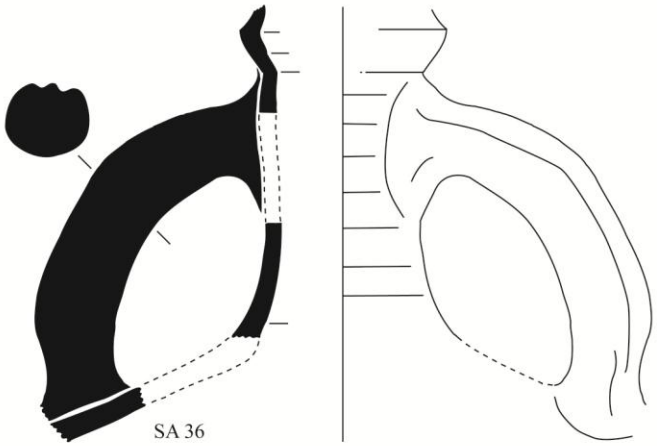
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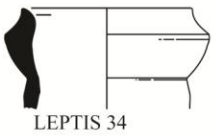
Plate XIII

CATANIA MR 1a TYPE, FORM 1

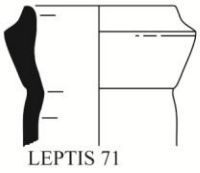
Variant A - Granular Matrix



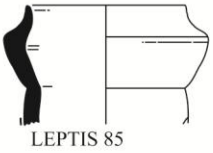
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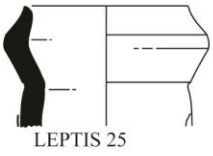
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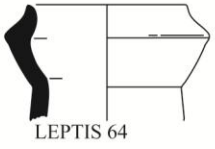
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6



2

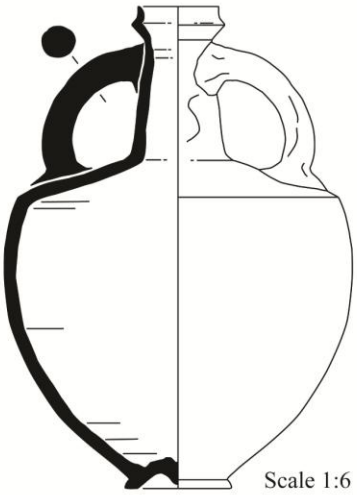


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CATANIA MR 1a TYPE, FORM 2

Variant A - Granular Matrix

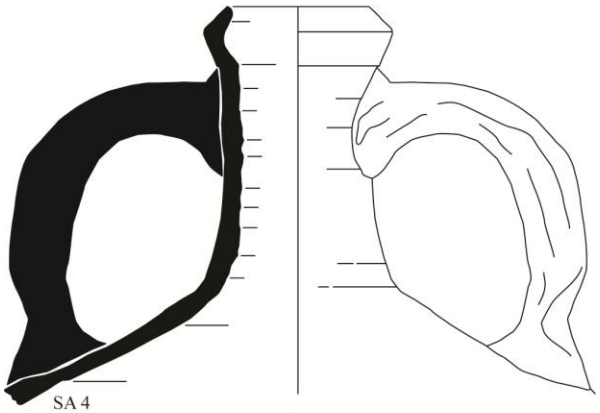


Scale 1:6

SA 118

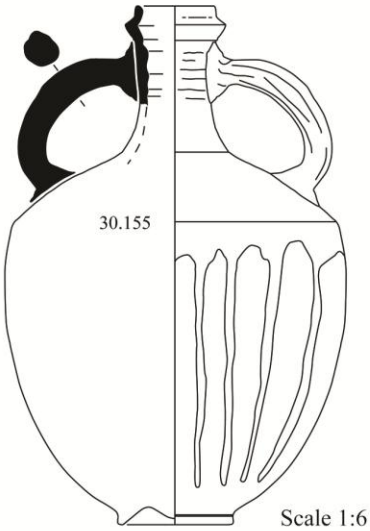
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SA 4

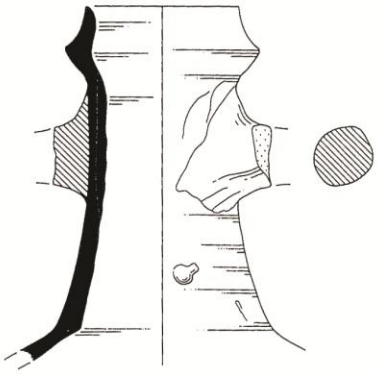
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30.155

Scale 1:6

4



SA 87

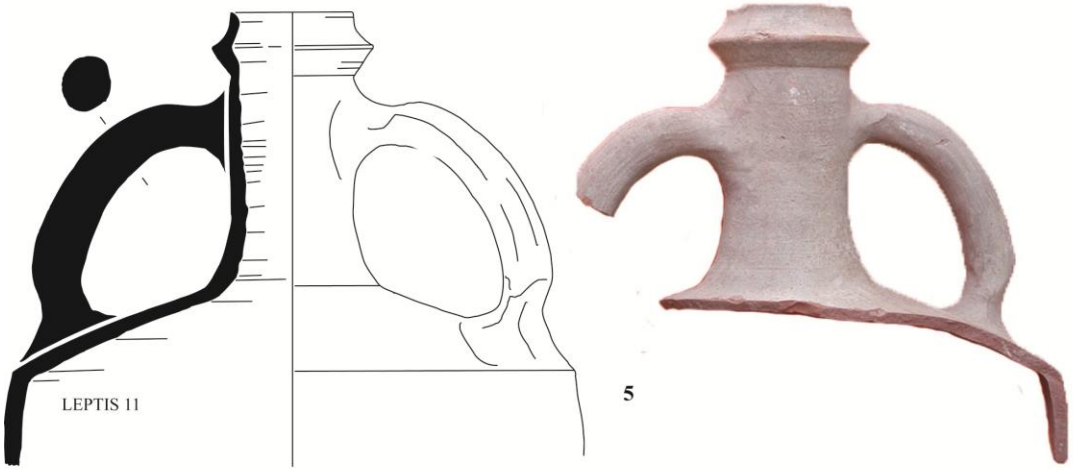
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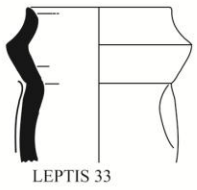


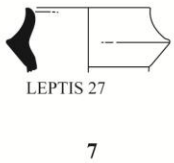


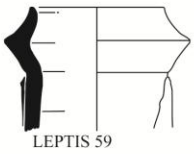
Plate XIV

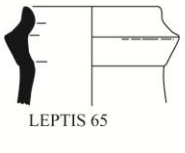
CATANIA MR 1a TYPE, FORM 2
Variant A - Granular Matrix

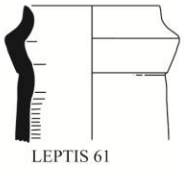


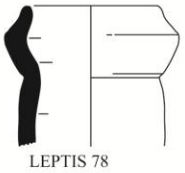


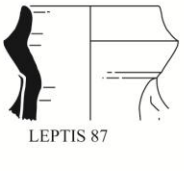


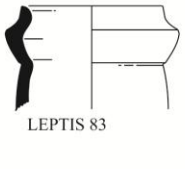












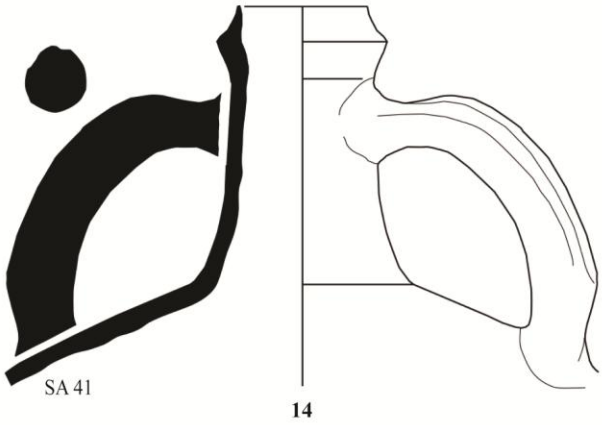
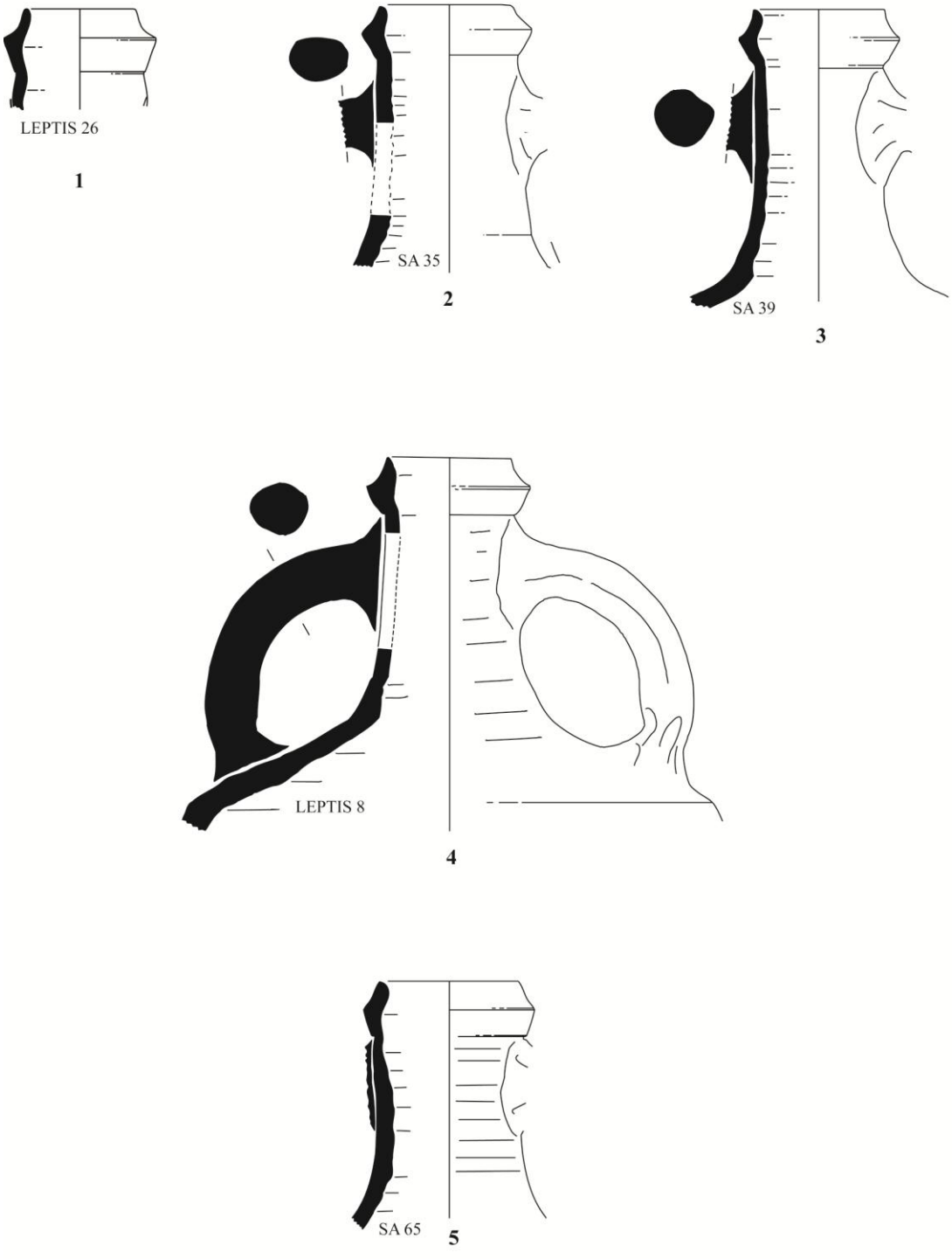


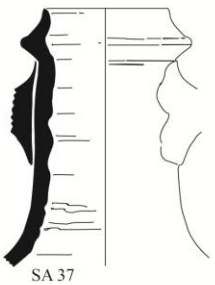
Plate XV

CATANIA MR 1a TYPE, FORM 2

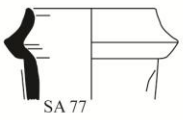
Variant A - Granular Matrix



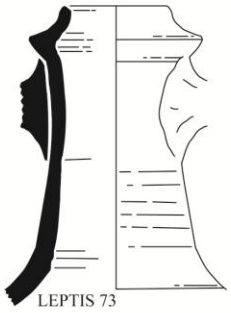
CATANIA MR 1a TYPE, FORM 2
Variant B



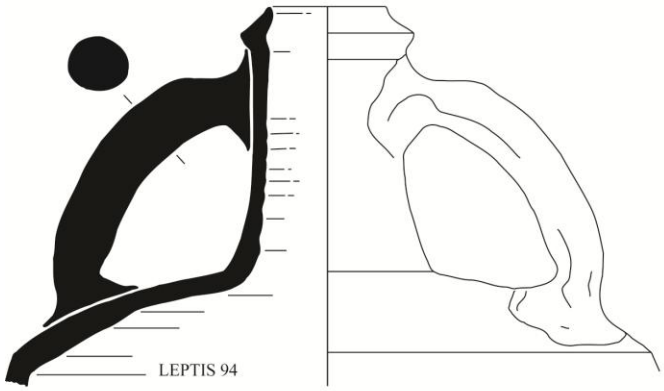
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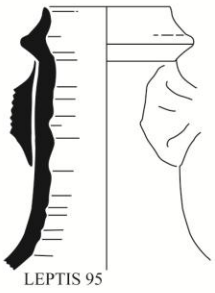
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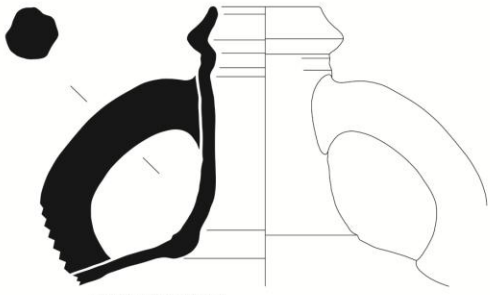
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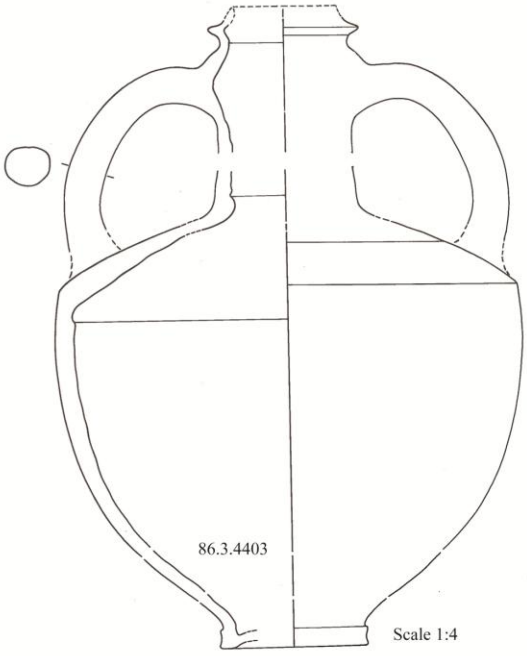
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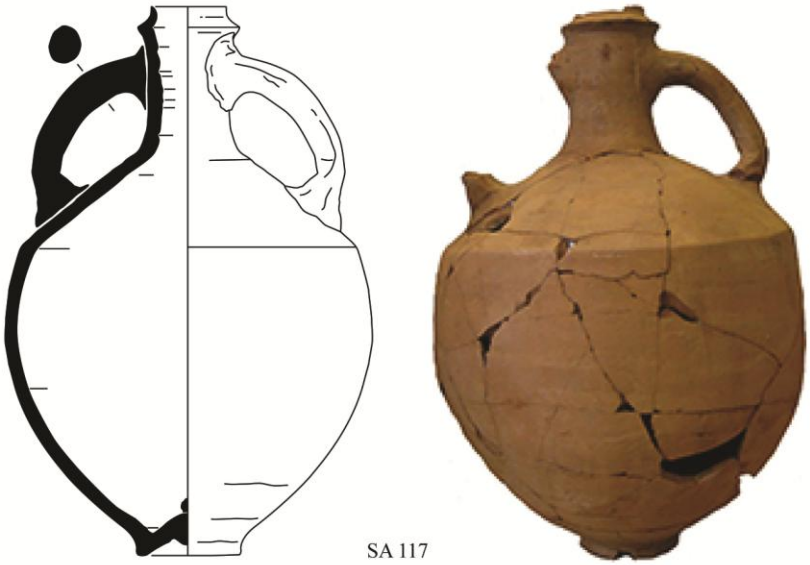


6



7

CATANIA MR 1a TYPE, FORM 3
4th-century AD variant

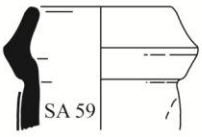


SA 117
1



2

Scale 1:6



SA 59
3

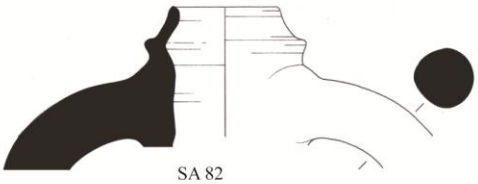
0 5 cm

Plate XVII

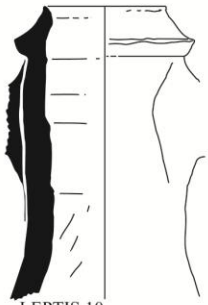
CATANIA MR 1A TYPE, FORM 3
4th-century AD variant



4



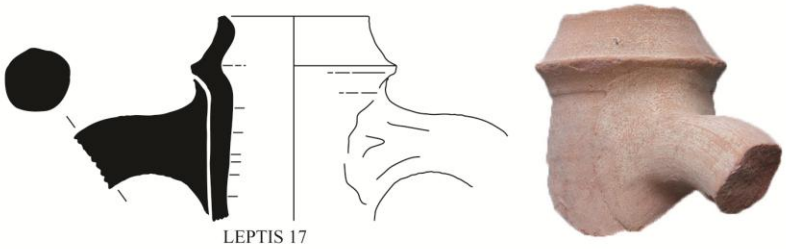
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6



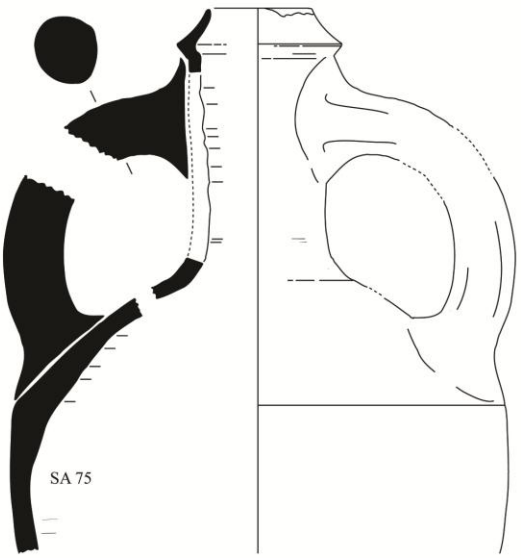
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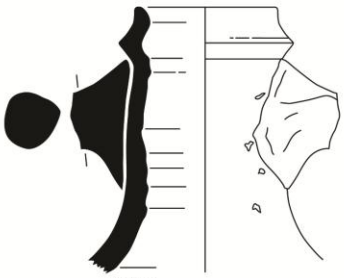
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Plate XVII

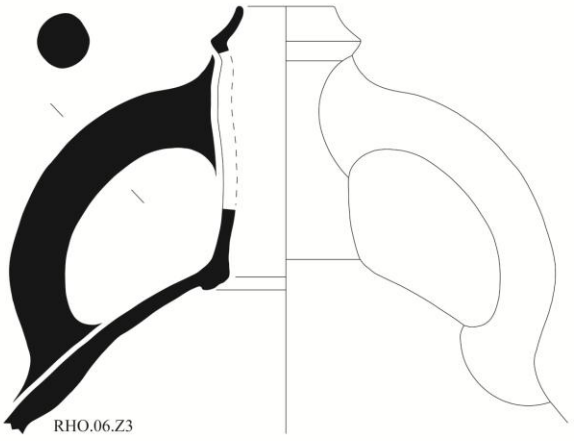
CATANIA MR 1A TYPE, FORM 3
4th-century AD variant



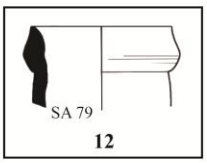
9



10



11

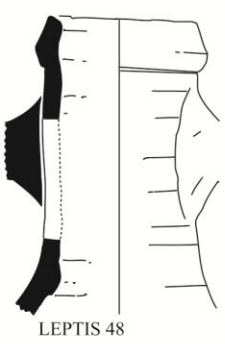


12



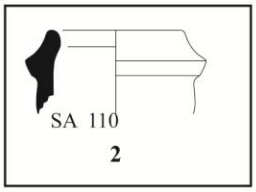
Plate XVIII

CATANIA MR 1a TYPE, FORM 3
5th-century AD variant - granular matrix

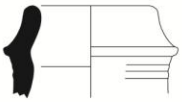


1

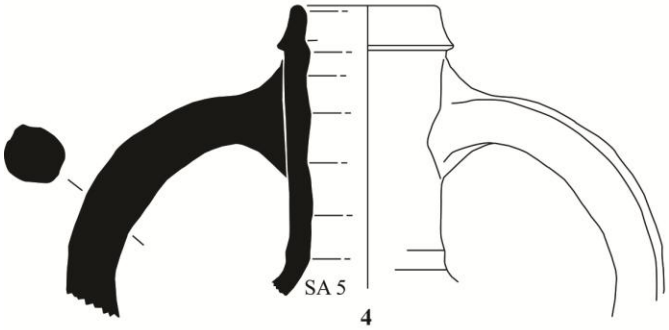




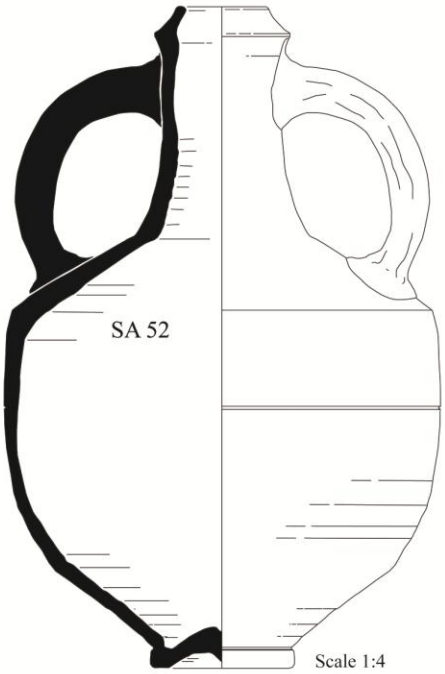
2



3



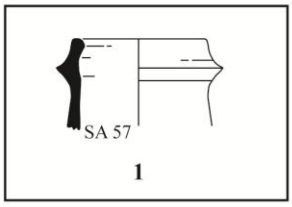
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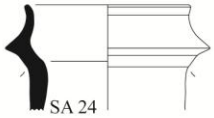
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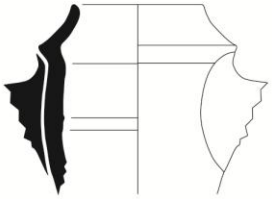
CATANIA MR 1a TYPE, FORM 3
5th-century AD variant - ‘pure matrix’



1

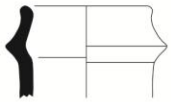


2



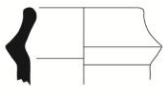
IRP.89.711.1141

3



IRP.89.711.1146

4



IRP.89.711.1033

5



Plate XX

MISCELLANY OF SPECIMENS OF CATANIA FLAT BOTTOMED TYPE AND CATANIA MR 1a

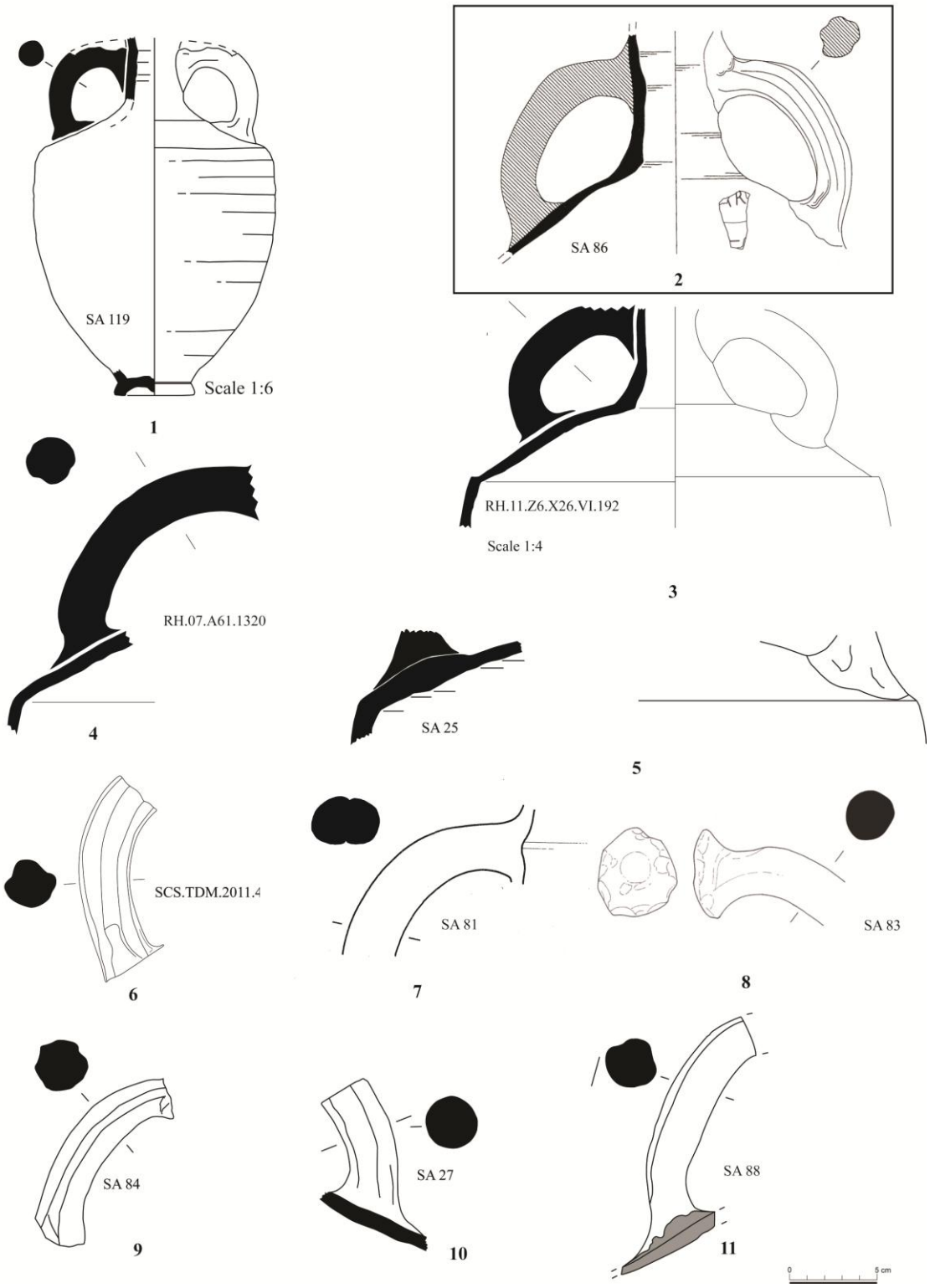


Plate XX

MISCELLANY OF SPECIMENS OF CATANIA FLAT BOTTOMED TYPE AND CATANIA MR 1a

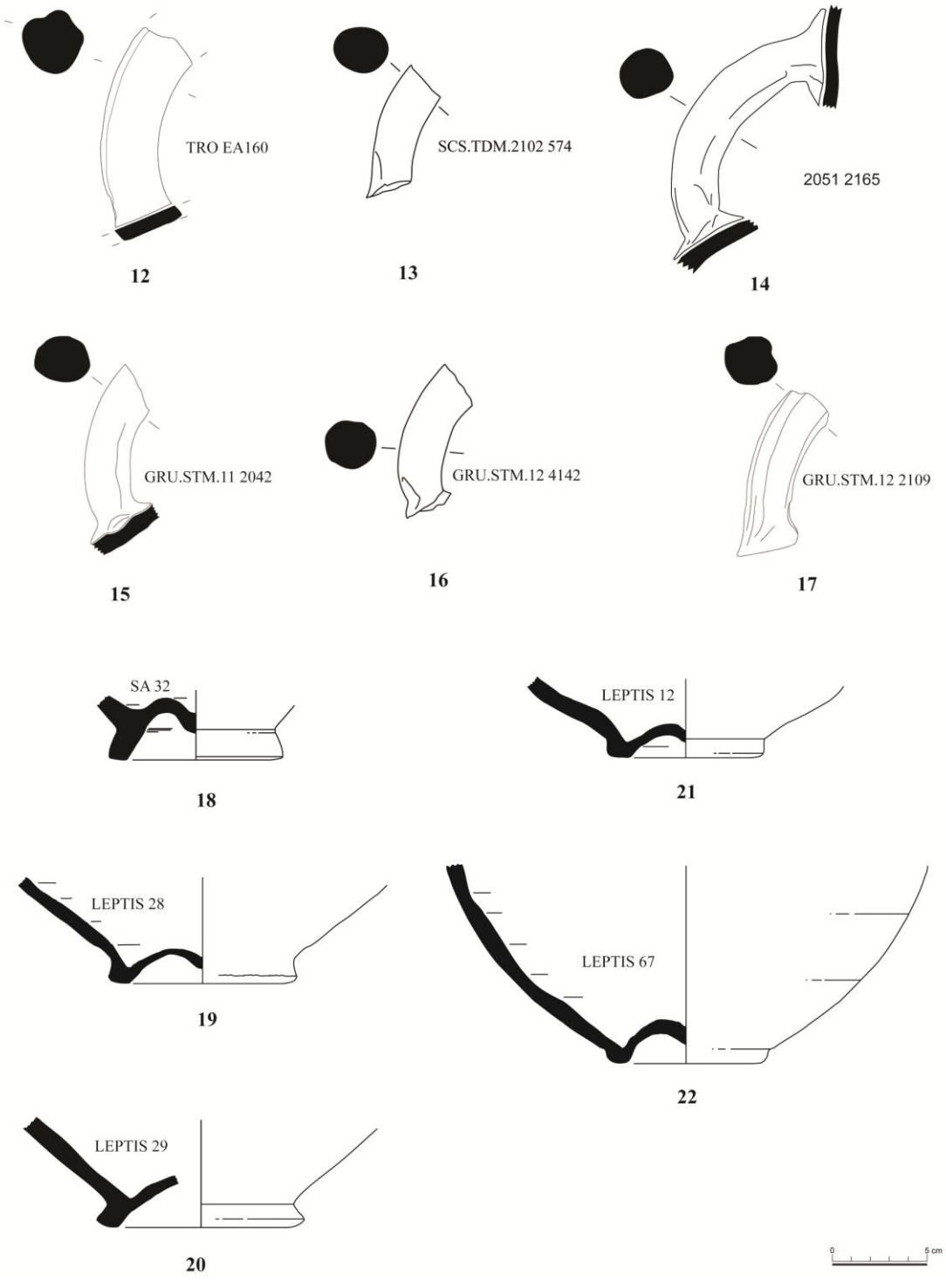
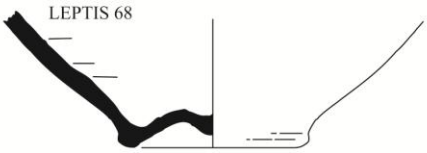


Plate XX

MISCELLANY OF SPECIMENS OF CATANIA FLAT BOTTOMED TYPE AND CATANIA MR 1a



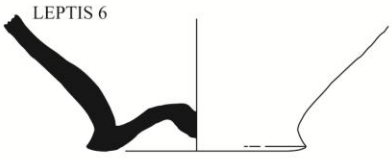
23



24



25



26



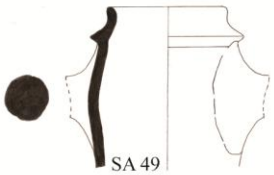
27



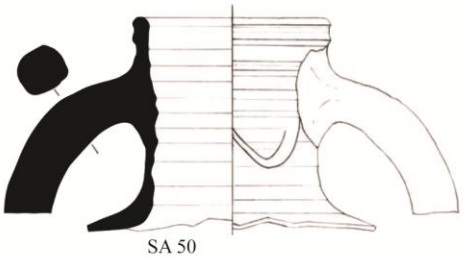
Plate XXI

S.VENERA AL POZZO/*STATIO ACIUM*:
REFERENCE FABRIC GROUP FROM THE POTTERY PRODUCTION AREA

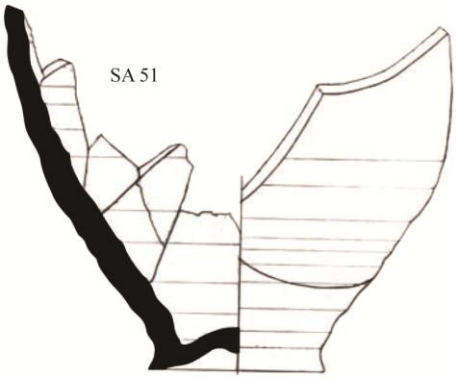
AMPHORAE AND COMMON WARE



1



2



3

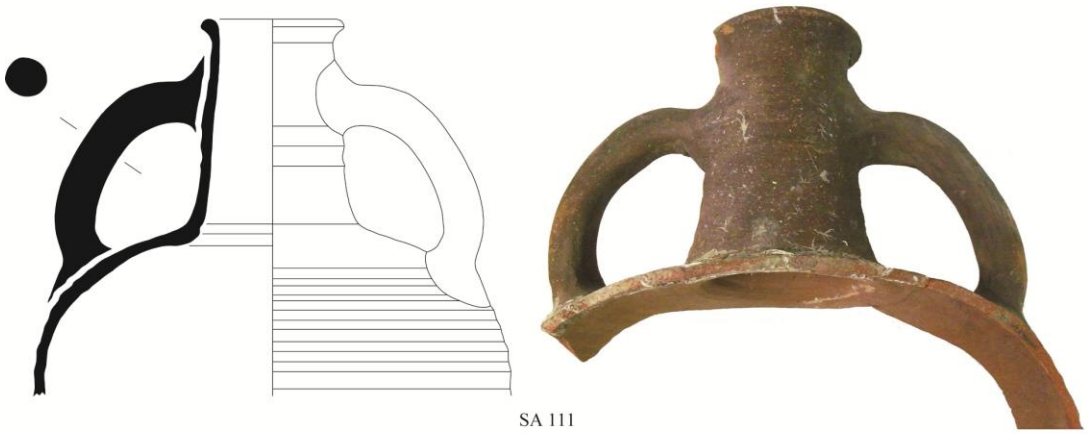


4



NORTH EASTERN SICILIAN AMPHORA TYPE 1

CARONIA MARINA PRODUCTION



SA 111

1

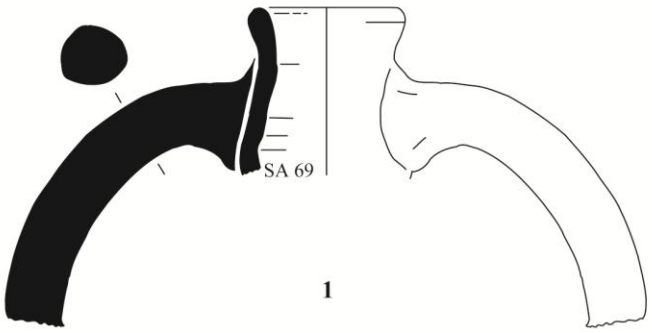


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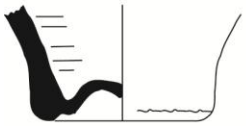


NORTH EASTERN SICILIAN AMPHORA TYPE 1

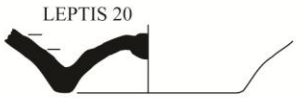
UNKNOW WORKSHOP PRODUCTION



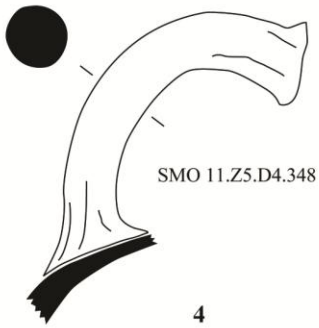
1



2



3



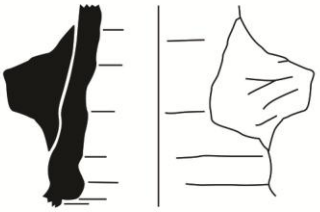
4



Plate XXIV

NORTH EASTERN SICILIAN AMPHORA TYPE 1

FURNARI TONNARELLA PRODUCTION



SA 121

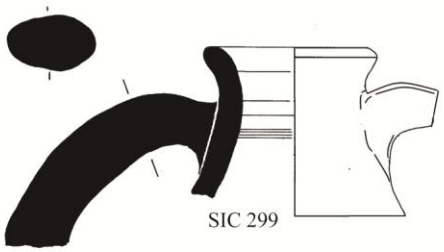
1



Plate XXV

NORTH EASTERN SICILIAN AMPHORA TYPE 2

CARONIA MARINA PRODUCTION



1



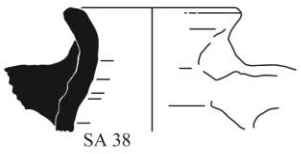
2



Plate XXVI

NORTH EASTERN SICILIAN AMPHORA TYPE 3

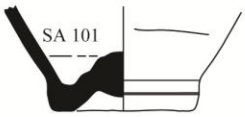
CARONIA MARINA PRODUCTION



1



2



3



Plate XXVII

NORTH EASTERN SICILIAN AMPHORA TYPE 4

CARONIA MARINA PRODUCTION





SA 17

Scale 1:4

1

SA 18



2



SA 19

Scale 1:4

3



SA 48

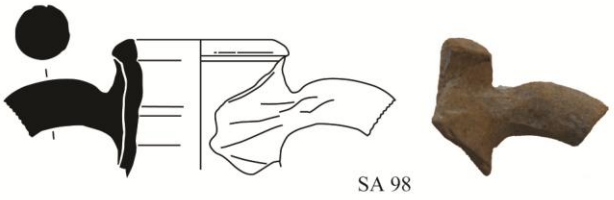
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Plate XXVIII

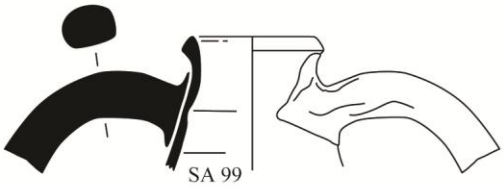
NORTH EASTERN SICILIAN AMPHORA TYPE 6

CARONIA MARINA PRODUCTION



SA 98

1



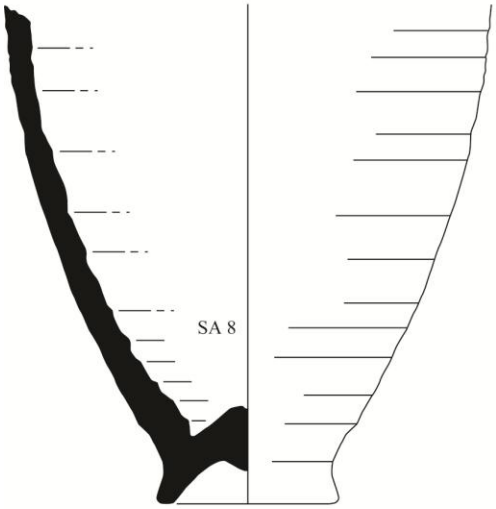
SA 99

2

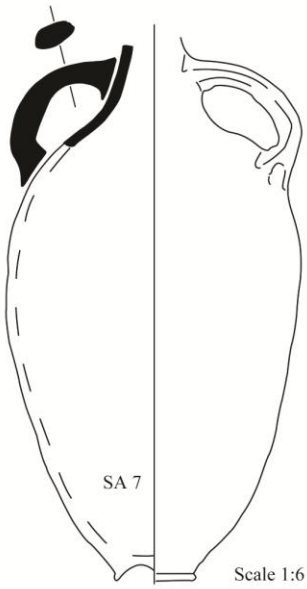


FLAT-BOTTOMED AMPHORAE OF UNCERTAIN ORIGIN

FROM A METAMORPHIC AND VOLCANIC AREA OF SICILY



2



1



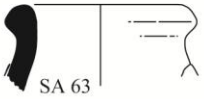
3



Plate XXX

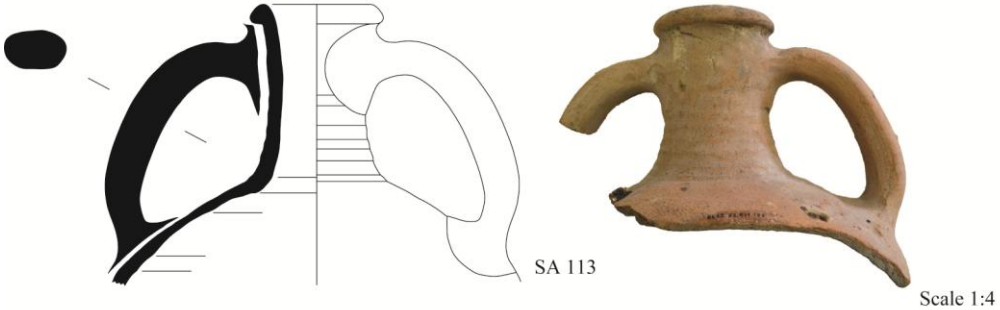
UNIDENTIFIED SICILIAN AMPHORAE TYPES

UNKNOWN PRODUCTION CENTRE



1





Scale 1:4

2

Plate XXXI

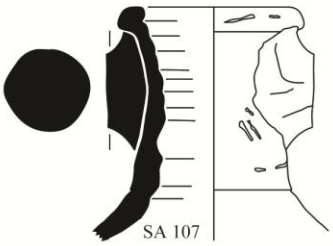
UNIDENTIFIED AMPHORAE TYPE OF NON SICILIAN ORIGIN

Unidentified calabrian amphorae type



SA 116 Scale 1:6

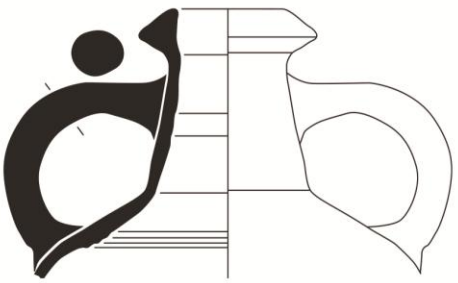
1



SA 107

2

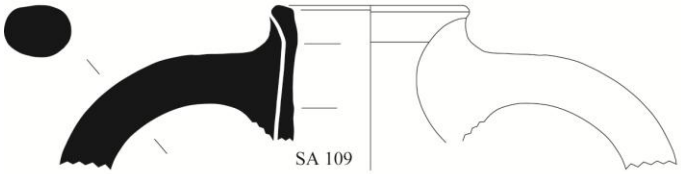
Unidentified amphorae of suggested North African origin



SA 23

3



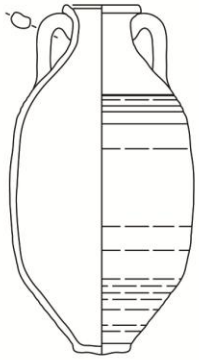


SA 109

4



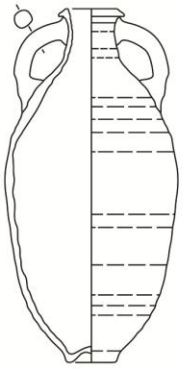
Unidentified spanish amphorae types



SA 94

5





SA 93

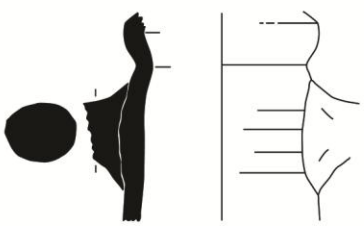
6



Scale 1:6

MR 1 AMPHORAE WITH DIFFERENT FABRICS

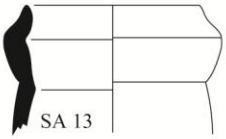
Sicily not volcanic area?



SA 30

1





SA 13

2



SA 56

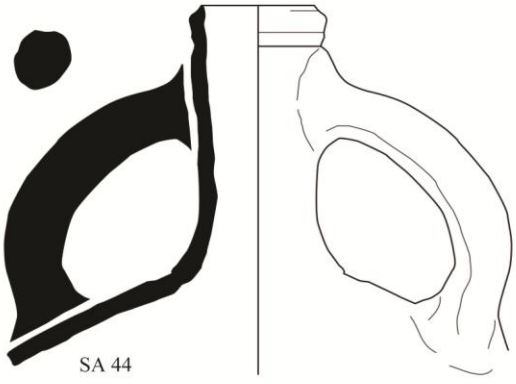
4



20

3

0 5 cm



SA 44

Scale 1:4

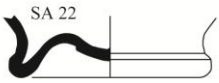
5

Plate XXXIII

MR 1 AMPHORA TYPES OF NORTH AFRICAN ORIGIN

MR 1 Tunisian fabrics



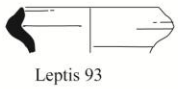


1



2

MR1 Tripolitanian fabrics



3



5



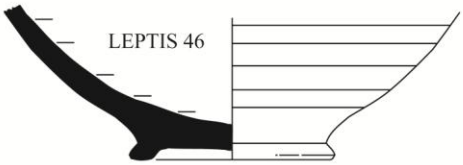
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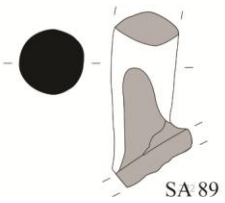
Plate XXXIV

AMPHORAE OF CYRENAICAN ORIGIN

Cyrenaican fabrics



1



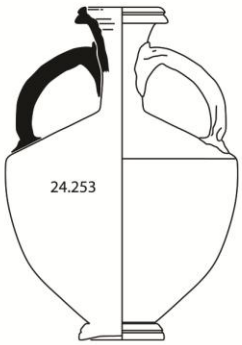
2



3

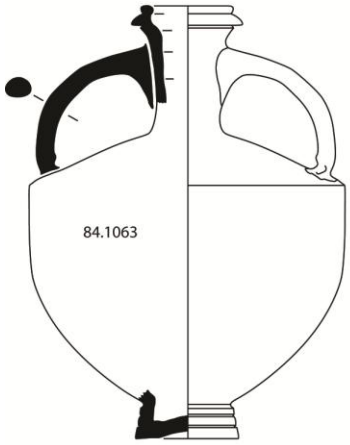


GELLEP 85: GERMAN FRACTIONAL IMITATION OF MR 1a



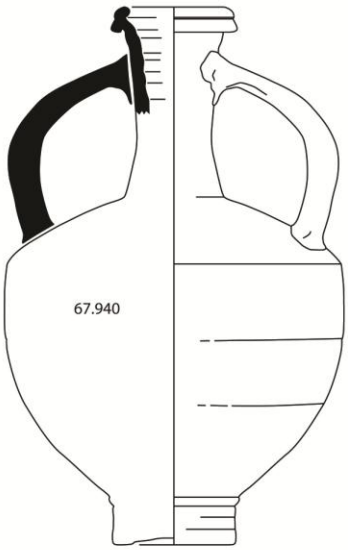


1





3





2



Plate XXXVI

GELLEP 85: GERMAN FRACTIONAL IMITATION OF MR 1a

Comparison between the smaller German copies and the original full-size Catania MR1a



Jugs Gellep 52 from the Main Workshop

Catania MR1a Form 2

Containers to scale

PLATES