

Simonetta Menchelli

MARKETING ROMAN POTTERY ALONG THE TYRRHENIAN COAST: THE CASE STUDIES OF *VADA VOLATERRANA*, *PISAE* AND *LUNA*

This paper deals with the productive and commercial trends of pottery in North Coastal Etruria from the period of Romanization (3rd century BC) up to the late 7th-early 8th century AD. Local and imported ceramics (vessels, amphorae, brick and tiles) have been analyzed in a diachronic perspective and their relationship has been found to be continuous: they do not appear to have been in competition, but on the contrary were complementary in the markets of this district. Local and imported goods appear to have been mutually integrated at least from the 2nd century BC until the 2nd century AD, being part of the Roman Globalizing Economy.

Etruria – Romanization – Amphorae – Globalizing Economy

I will be presenting the productive and commercial trends of pottery in North Coastal Etruria (**fig. 1**), a district which had a great strategic importance because it linked Rome with the North-Western Mediterranean regions. The main coastal centres *Vada Volaterrana*, *Pisae* – with its harbour system – and *Luna* were the hubs of very productive valleys (those of the Cecina, Arno, Serchio, Magra Rivers, and their tributaries) for agricultural, manufacturing, wood exploitation and sheep-rearing activities, and therefore both imported and local wares travelled in these economic dynamics.

Vada Volaterrana was the port system of *Volaterrae* in Etruscan and Roman times and in this site we are bringing to light a quarter dated from the early 1st century AD to the 7th century (Pasquinucci 2007; Sangriso 2017). Amphorae and vessels found in the local *horrea* are particularly significant in the context of this paper.

Pisae was an Etruscan city, allied with Rome at least from the 3rd century BC. Its harbour system was based on the main port *Portus Pisanus* in the northern periphery of Livorno, in small coastal ports of call and in urban river ports (Pasquinucci and Menchelli 2010), such as the San Rossore area where about 20 shipwrecks have been identified (Camilli, De Laurenzi and Setari 2006).

Luna was a Roman colony founded in 177 BC and its port system – which underwent significant changes – was important for military and commercial purposes (*Luni II*) in particular for exporting the white marble from the close Apuanian quarries which enjoyed a great commercial success in the 1st century BC- early 3rd century AD (see in general Paribeni and Segenni 2015).

Judging by the natural elements which conditioned the ancient navigation (winds, currents and breezes), from the North-Etruscan harbours ships could sail along the coast both southwards to Ostia and Rome and northwards to Gaul

and the Iberian coasts (Arnaud 2005: 14-26 and 56-57). This last-mentioned navigation which followed the coastline, at a certain distance, took a few days: in particular, according to Polybius (*Istoriai* 3.41.4), the journey from *Pisae* to ‘Massilia’ required 4-5 days. Moreover, the proximity of the Tuscan Archipelago to Corsica favoured navigation in the open sea routes towards the Western Mediterranean. In particular, Pliny refers to a direct sea route, of 62 miles, from *Vada Volaterrana* to Corsica (Pliny, NH. 3. 12. 80) and in fact, there were very close historical and economic links between the two regions, above all in Roman times, which persisted for many centuries.

This district had already been included in the Mediterranean routes in Etruscan times, but the trade activities increased from the 4th-3rd centuries BC onwards, with the arrival of products through the Roman economic circuits which, as is well known, were becoming more and more market-oriented. An example of this intense trade is provided by the numerous vases of the *Atelier des petites estampilles* (**fig. 2**) found in the Necropolis of Castiglione (Cibecchini 1999: 40) a coastal site on the border between the territories of *Pisae* and *Volaterrae*.

The Arno Valley played a fundamental strategic role during the victorious Roman expansion along the northern Tyrrhenian and Ligurian coasts (238-155 BC). In this period, the presence of Rome supported the development of the allied cities *Volaterrae* and *Pisae* by exploiting the local potentialities: natural resources (cereals, wine, timber, salt) and a long-established technical know-how, for example in ceramic production and metallurgy (Pasquinucci and Menchelli 2017: 327). After the victory over the Ligurians the foundation of the colony of *Luna* (in 177 BC) concluded the Romanization of the district (De Marinis and Spadea 2004).

The Graeco-Italic, and subsequently the Dressel 1 wine-amphorae, and the Black Glazed Wares (BGW) (in particular

drinking cups and jugs) are important in illustrating the trade activities deriving from the Romanization process. As authoritatively stated by C. Panella (2010: 14) the Graeco-Italic amphorae, the symbol of the original phase of this commercial expansion, represented a wine container which was universally recognizable and was accepted as a part of the standardized measurement system introduced by Rome.

At the beginning of the Roman conquest, a high number of Latial-Campanian amphorae and Black Glazed vases (BGW) reached the North Etruscan Coasts (Pasquinucci and Menchelli 2017: 328-329). These massive imports denote the adoption of the Roman lifestyle in wine consumption and the practices of the symposium, and the participation of this district in the Roman trading activities which sent enormous quantities of wine (see Tchernia 2016: 42-53) and BGW vessels towards the Western Mediterranean, with the Harbours of Massalia and Ampurias as the main destinations.

On the basis of the distribution of the shipwrecks known to date, along the busiest route, the ships from the Campanian-Latial harbours sailed along the Tyrrhenian coasts and, above all those of the greatest tonnage, went towards Corsica passing through the Tuscan Archipelago or directly from the area of *Vada Volaterrana* following the above-mentioned route. From Cap Corse the ships could then reach Provence near the Nice-Antibes area and from there could go, alternatively, towards Massalia or Ampurias (Cibecchini 2011).

In these commercial activities, the ships leaving from the North-Etruscan harbours and those which stopped there and soon afterwards resumed their journey, do not seem to have been used for direct long-distance navigation (from harbour to harbour), but instead for long coastal navigation with technical (for foodstuff and drinking water) and commercial stop-overs. During the latter, some of the wares could be unloaded and others taken on board, being careful not to put at risk the stability of the cargoes.

Ships of various types and of minor dimensions redistributed goods in the smaller ports of call and along lagoons and rivers, as documented for example by the so-called 'Nave Ellenistica' in the urban river port of Pisa near the San Rossore Railway Station, (Camilli 2005; Cibecchini 2008: 490-491). In the Southern Tyrrhenian harbours, obviously run as part of the Roman economic system, goods from Eastern regions and North Africa were stowed, together with Campanian-Latial amphorae and vessels, and all these products were taken north-westwards, also reaching the North Etruscan coasts (for *Luna* see Lavizzari Pedrazzini 1986: 252).

The high imports of Graeco-Italic amphorae were very soon matched by local productions, evidently due to the great demand of the expanding civilian and military markets and favoured by the agricultural potentialities, (Menchelli et al. 2007). Workshops producing 3rd century Graeco-Italic amphorae in the area from *Vada Volaterrana* to the Northern Pisan territory have been identified thanks to minero-petrographic analysis, but it is above all starting from the mid-2nd century BC, with the later models, that the findings become more numerous. The productive phenomenon appears to involve the whole of Etruria, with very important productions at Albinia – which would find a large market in Gallia (Benquet and Mancino 2007) – inland at Marcianella near

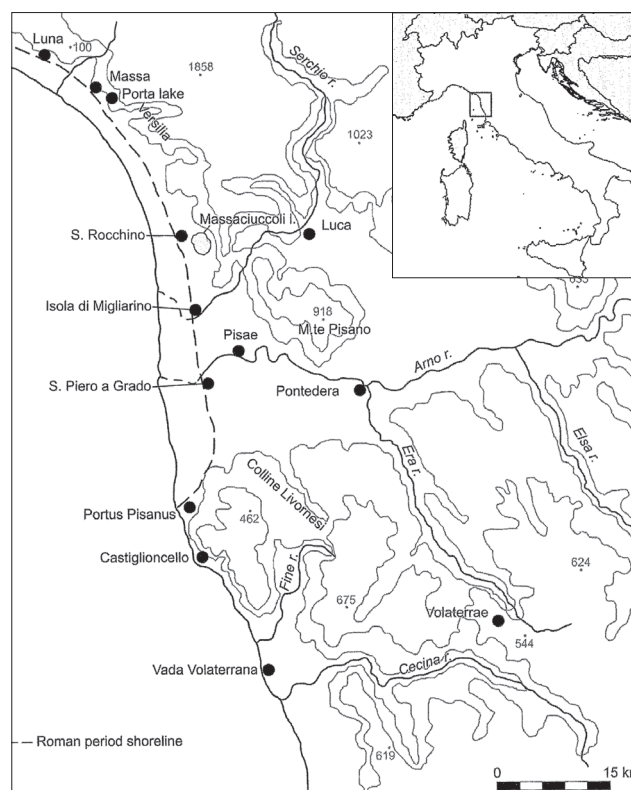


Fig. 1. The study area.

Chiusi, in the *Vada Volaterrana* area (Menchelli 2016: 91-95) and in the *ager Lunensis*, in a site corresponding with the present-day city of Massa (Piazza Mercurio) not far from the ancient coast (Genovesi 2016: 67-68) (fig. 3).

Obviously the Roman colony of *Luna*, founded a few decades earlier, constituted an important consumption centre of foodstuffs and in fact many Pisan Graeco-Italic amphorae were identified there some years ago by means of minero-petrographic analyses (Rossignani, Bruno and Locatelli 2002): therefore it is even more probable that at least part of the amphorae manufactured in the Massa kilns, located in the *ager Lunensis*, were destined for the *Luna* market.

In the last quarter of the 2nd century BC, due to the continuous arrivals of Dressel 1 amphorae from the Latial-Campanian area, also in this district, as in the rest of Etruria, there was a great increase in the production of these amphorae, in the A, B, C variants: the identified workshops were situated in the hinterland of *Vada Volaterrana*, *Portus Pisanus* (Menchelli et al. 2013) (fig. 4) and in the site of Massa-Piazza Mercurio (Genovesi 2016: 68-75). These were mainly multi-production centres (besides amphorae, brick and tiles, *dolia* and cooking and coarse pottery were manufactured) and must have been run by the protagonists of the Romanization process and by their *clientes* members of the local ruling class (Pasquinucci and Menchelli 2017: 333-334).

There is widespread evidence in the whole of the district of interregional trade, technological know-how derived from Rome and the subsequent standardization of the models: for example in the hinterland of *Portus Pisanus* (at the Ca lo Spelli site: Picchi et al. 2010) tronconical vaulting tubes used to build lightweight, self-supporting vaults were produced,

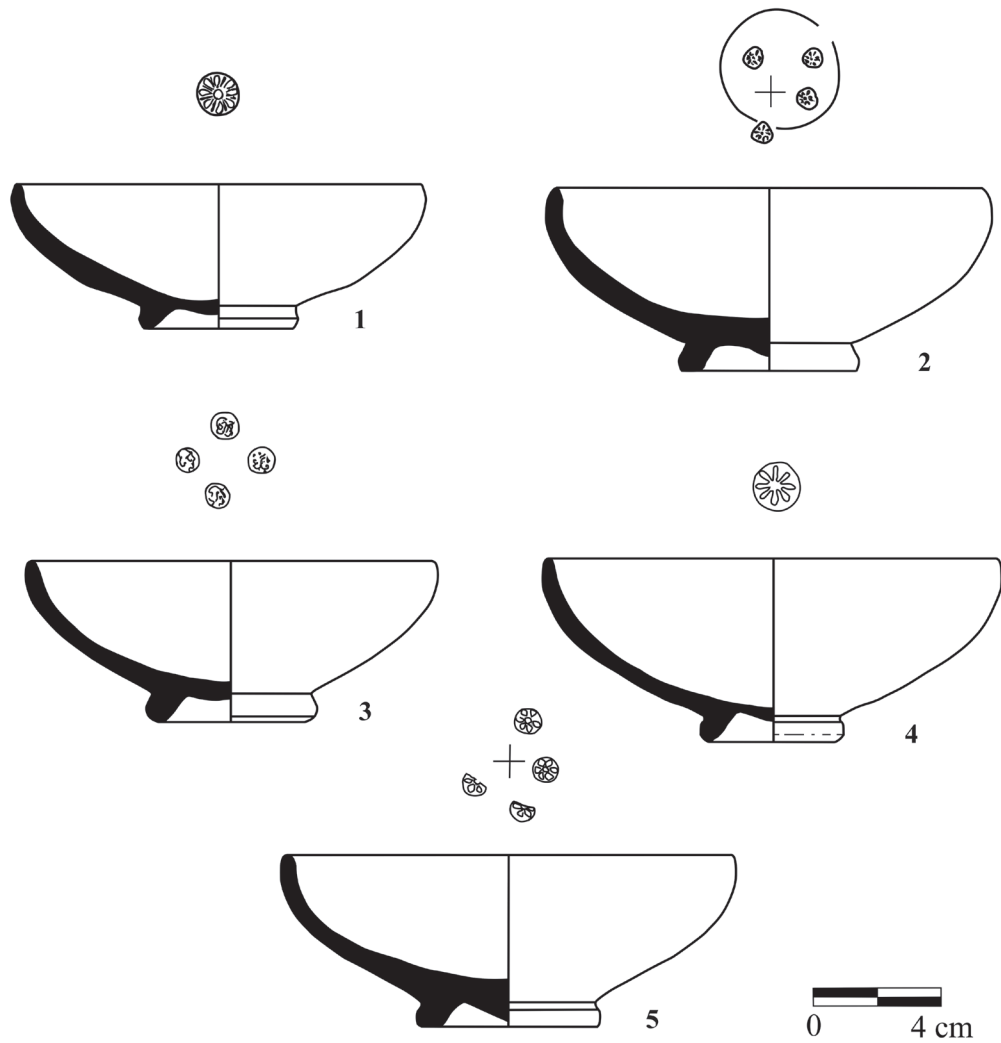


Fig. 2. 'Petites estampilles' vessels from Castiglioncello (after Cibecchini 1999).

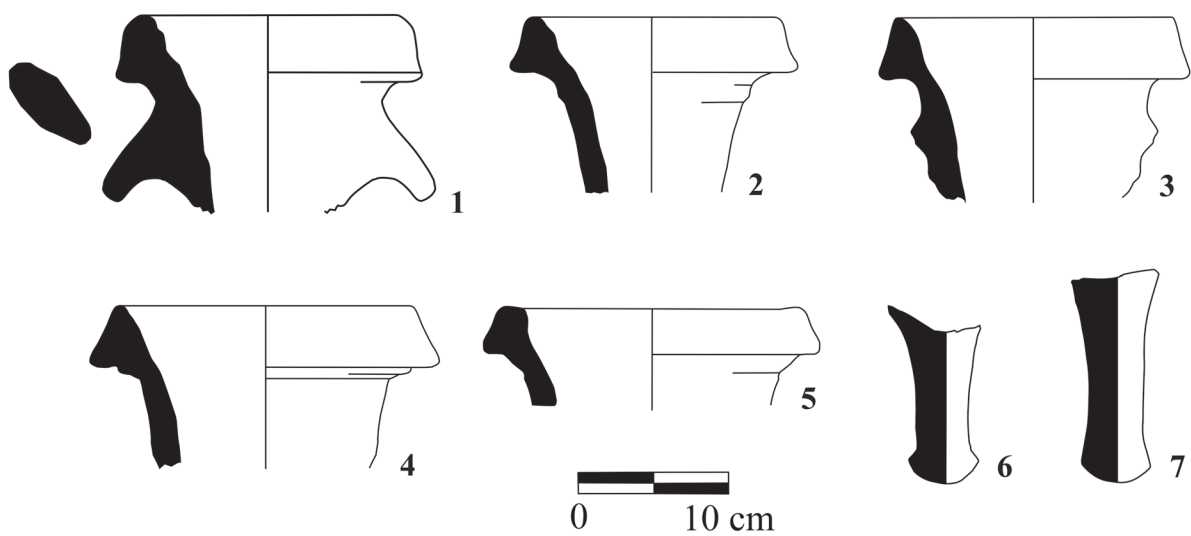


Fig. 3. Graeco-Italic amphorae from Massa workshop (after Genovesi 2016).

very similar to those from Massa-Piazza Mercurio (fig. 5) (Fabiani 2016: 45-47) and the Sellia Marina (Catanzaro) workshop which, like the two above-mentioned North-Etruscan ones, produced Dressel 1A amphorae in a *Bruttium* district equally characterized by the intense economic activities of numerous Latial-Campanian *gentes* (Corrado 2009).

At Luna the *Capitolium* and the temple of the Goddess Luna have Central-Italian terracotta decorative motifs. They are particularly very similar to those of the Latin colony of *Fregellae* (Paribeni 2016: 100) and perhaps it is not by chance that in the baths of this city terracotta armchair voussoirs were used to build vaulting ribs, of the same kind as those produced in the Massa kilns (Shepherd 2016: 82).

In the Late Republican and early Imperial times, in this district slaves were exploited in the ceramic workshops as well as in the agricultural activities in *villae* and farmsteads, and in the marble quarries: therefore they were among the wares in the holds of the ships which were unloaded in the North Etruscan harbours in large numbers. The slaves mainly came from Gallia and various Eastern regions (the Aegean area, Asia Minor), judging by the names attested by the epigraphic evidence (stamps on *terra sigillata* vases and brick and tiles: Menchelli 2003; Genovesi 2016; Pasquinucci and Menchelli 2017: 334-337), archaeological documentation (for example the spread of Eastern cults: Ciampoltrini 2015: 65-66) and literary sources: young slaves from Gallia to be sold (*pueri venales*) are mentioned at *Vada Volaterrana* by Cicero (Cic., *pro Quintio* 6.2.). In fact there is a well-known passage from Diodorus according to whom in Gallia the Italian merchants acquired a slave in exchange for a wine-amphora (Diodorus, *Bibliotheca Historica* 5. 26. 3, regarding it see Tchernia 2016: 88-89).

In coastal Etruria Dressel 1C workshops have been found at Albinia, in the hinterland of *Portus Pisanus*, in the Vallimbuio and Ca lo Spelli sites (Menchelli forthcoming a) and at Massa-Piazza Mercurio (Genovesi 2016: 77-78). As is well known, F. Laubenheimer (2007: 75-78) identified, among the Albinia amphorae, a production of the Dressel 1C which was characterized by 3-letter stamps on the lip and distributed differently from the wine-amphora Dressel 1. She hypothesized that these amphorae might have transported fish products, and her theory could be supported by archaeological evidence: the Albinian Dressel 1 found at Populonia was filled with tuna (Costantini 2007), and the one found in the Vallimbuio workshop contained small fish of the *Centrocanthus cirrus* and *Spicara smaris* species (Bulzomi 2013).

Literary and archaeological sources document fish production along the Tuscan coasts and in the inland lagoon areas; in the absence of specific amphorae for fish, other amphorae, like the Dressel 1C, usually associated with wine, could be used for Etruscan alieutic products, as were other kinds of containers: wooden barrels and ceramic pots and urcei (Picchi and Menchelli 2018).

North-Etruscan Dressel 1 amphorae, brick and tiles have been found in redistribution contexts (*horrea*; excavations in the sea-bed in harbours and ports of call) and therefore presumably they were also traded beyond the region. In fact, archaeometric analyses have documented in a rural site at Aethumes in Gallia the presence of a Dressel 1 amphora having

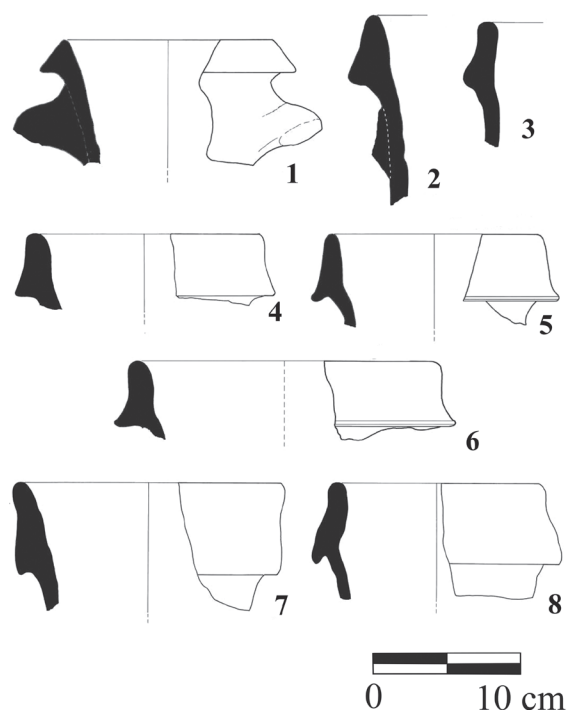


Fig. 4. Dressel 1 amphorae from the Ca Lo Spelli Workshop (after Menchelli et al. 2013).

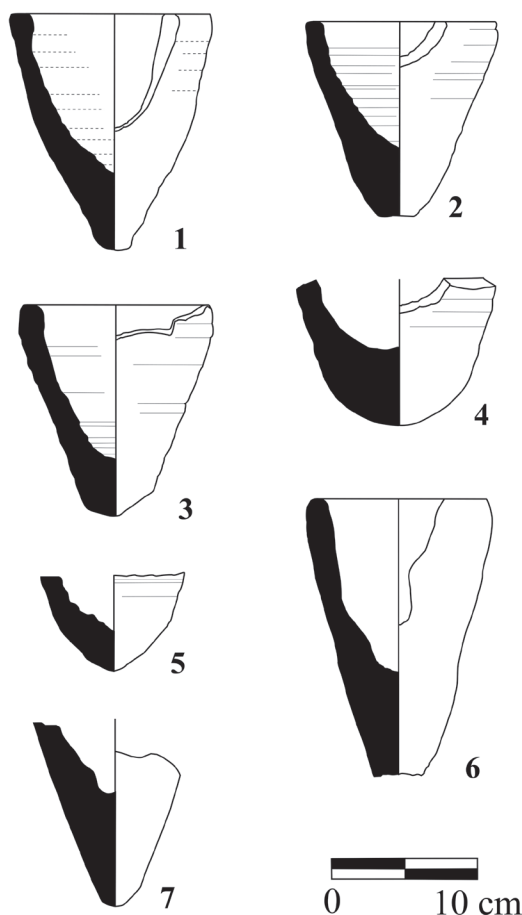


Fig. 5. Tronconical vaulting tubes produced in Massa (1-5) and Ca Lo Spelli workshops (6-7) (after Fabiani 2016 and Menchelli et al. 2013).

minero-petrographic peculiarities typical of the Vallimbuio workshops (Thierrin-Michael et al. 2004).

Regarding Pisan-Volaterran brick and tiles, their stamps document that they were not only used locally, but also had an interregional circulation as far as *Luna*, and were part of the maritime trade in the North-Tyrrhenian commercial flows in Sardinia, Corsica and in the Archipelago islands, up to Rome (Menchelli 2003; Dallai, Ponta and Shepherd 2006: 179-181; Genovesi 2009-2014: 62-67).

With regard to the production of cooking wares, gabbroic clays were used in the Pisan-Volaterran territories, while the *Luna* fabrics generally were characterized by quartz and feldspar; table and storage vessels were manufactured using finer clays from the mouths of the local rivers. Globular and ovoid pots (*aulae*) were the commonest cooking wares; they were produced from the Protohistorical Age up to Late-Roman times for cooking *pultes* (mush, *polenta* or soups), and pulses, more seldom boiled meat (Menchelli et al. 2012: 96-98, fig. 2).

In the late Republican period, due to the Romanization process, in this district, as well as in the other markets in the North-Western Mediterranean, Latial-Campanian pots, saucepans (*caccabi*), pans (*patellae*) and their lids became more and more widespread (for example see Lavizzari Pedrazzini 1986 for *Luna*) (fig. 6). The *patellae* were used for preparing stewed and braised meat, pulses or fish, particularly with sauces (*ex iure*), therefore being evidence of the most exquisite Roman cuisine, which utilized *iussculenta*. The *caccabi* browned food, in particular meat, ensuring slow, highly controlled cooking, very different from the 'barbarian' tradition of the spit. Moreover, also the Latial-Campanian *mortaria* used for preparing food were traded along the Mediterranean sea-routes and in Britannia (about these productions see Olcese 2003).

Up to the Late Roman period, pots continued to be the prevalent forms utilized in this district, but the spread of the *caccabi* and *patellae* in the Late Republican Age was a significant indication of the ongoing acculturation: the local ruling classes recognized the superiority of the 'Roman' lifestyle also as regards the preparation of food.

The imported vessels were imitated in the North-Etruscan workshops and it is noteworthy that while the local forms were produced in coarse fabrics and were thick-walled – characteristics which nevertheless ensured better results for cooking food (for this topic see Santoro 2007) – for the foreign models more select clays were used to imitate not only their morphology, but also their technical peculiarities (precise wheel working, with thin walls).

From the 3rd-2nd century BC among the table vessels, thin-walled drinking pots (cups and beakers) were at first abundantly imported and soon afterwards locally imitated with a good production level (for *Luna* see Lavizzari Pedrazzini 1986: 253-254; for *Vada* Menchelli and Pasquinucci 2006).

Most probably, starting from the Augustan Age, the North-Etruscan goods were traded through the commercial flows which transported the two most successful North-Etruscan products, the *sigillata* vases and the *Luna* white marble, from the present-day Carrara quarries. The Pisan *sigillata* was produced in the district located in the city's

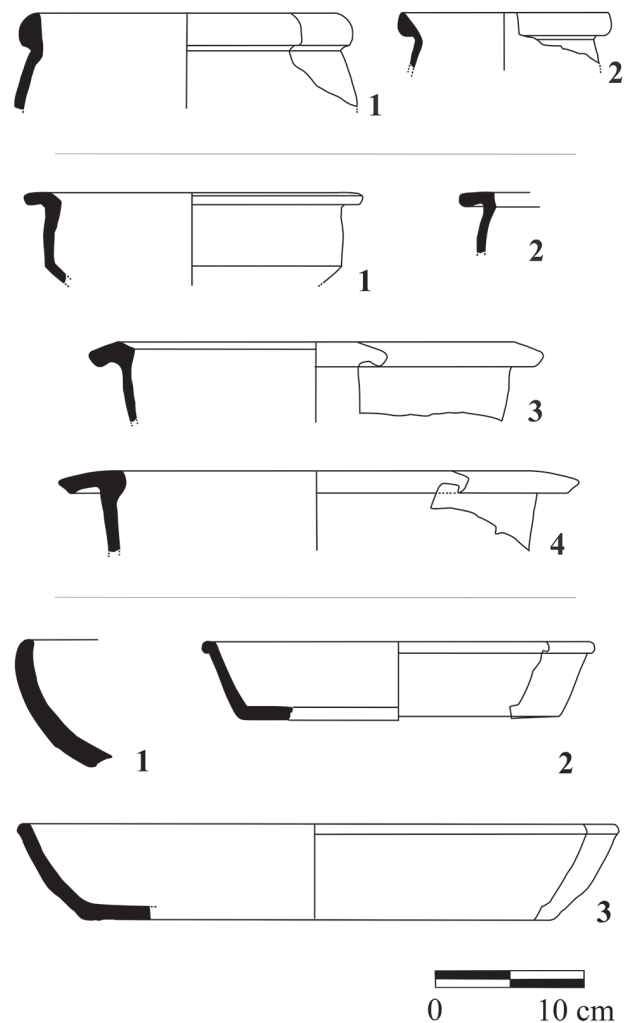


Fig. 6. Latial-Campanian cooking vessels (after Lavizzari Pedrazzini 1986).

northern suburb as far as the port of Isola di Migliarino, near the mouth of the River *Auserculus*. Together with the local *sigillata*, part of the Arretine *sigillata* which reached the coast via the River Arno was exported from the Pisan harbour system; while another part of the *sigillata* vases from Arezzo could arrive in Rome through the *Arnus/Clanis/Tiber* river system or reach the Northern markets through trans-Appennine routes (Pasquinucci and Menchelli 2003: 240).

As is well known, the Arno Valley (Arretine and Pisan) *sigillata* constitutes one of the most important productive and commercial phenomena of the ancient economy, being traded throughout the Romanized world and beyond, in particular with notable quantities in the *castra* of the Rhine *limes* (Menchelli and Sangriso 2017).

Most probably these exports to the army were not directly planned through state intervention, but were instead determined by independent historical and economic processes (regarding the army supply dynamics see Lo Cascio 2007). In fact, numerous factors contributed to the success of the Pisan *sigillata*: undoubtedly the most important were Augustus's conquests and political expansionism which had opened up new markets, both military and civilian, in Central Europe

and in many other areas of the Empire. The marketing strategies of the Pisan potters were also particularly effective: for example they opened a workshop branch in Lyon in order to be nearer to the *limes* markets. Moreover, as the Pisan production of decorated vases would never exceed 3% of their total output, they specialized in the production of plain vessels, which could be piled up and were therefore more convenient to be traded (Menchelli and Sangriso 2017). In conclusion, the Pisan potters manufactured low-priced but high-quality products having a brand, which could be easily recognized as being Roman, a kind of status symbol for the middle class throughout the Empire. (For the social aspects of the use of the *terra sigillata* vases see Poblome, Brulet and Bounegru 2000).

A ship which sank in the early 2nd century near Punta Ala (fig. 7, 2) constitutes a piece of evidence, unfortunately at the moment the only one, of the maritime trade of Pisan *terra sigillata*. It had a heterogeneous cargo formed of amphorae from Baetica (Dressel 20 form), Gallia (Gaulish 4 and Gaulish 5 forms), Northern Etruria (Spello and Forlimpopoli forms), cooking and coarse wares, some glass objects and Late Italian *terra sigillata* vessels. 50 vases were rescued and some of these bear the stamps of potters working in the Pisan district (*Lucius Rasinius Pisanus*; *C.P () P ()*; *Sex. Murrius Pisanus*; *Sex. Murrius Festus*; *L. Nonius Florus*). Judging by the fragment of its hull, the ship must have been a *navis oneraria* of medium dimensions (about 20 m long) not a small vessel for the coastal redistribution trade (Cibecchini 2011: 18).

Most probably the whole cargo was prepared in the Pisan harbour system, but we cannot exclude that this stop-over was the last of many in the Western Mediterranean from Baetica to Gallia, Liguria and so on. In any case, it is certain that this ship sank while it was transporting Pisan *terra sigillata* southwards, very possibly to Ostia. In my opinion, it was this form of shipping that is relatively small quantities of vases in heterogeneous cargoes, which determined the scant visibility of *terra sigillata* in maritime trade.

In the 1st-2nd century AD, the *Luna* marble was also abundantly traded in Rome and in the Western Mediterranean, mainly in Gallia and the Iberian Peninsula, but also with a significant presence in the Eastern regions (for example in the Temple of Trajan at Pergamum). The marble was transported by specially reinforced solid vessels (*naves lapidariae* or *naves marmorum*) (Russell 2013: 130) and on the basis of its distribution in land sites and shipwrecks, it travelled northwards following coastal navigation along the Ligurian, Gaulish and Iberian coasts and southwards towards Rome. Moreover, these ships also followed the open sea routes throughout the Archipelago and the Bonifacio Strait as documented by the Porto Nuovo and Punta del Francese Shipwrecks (Russell 2013: 123-124) (fig. 7, 9-10).

Probably, specially reinforced ships were also used to transport the timber from the Pisan Mountains, which was in demand as construction material in Rome (Strabo, 5, 2, 5).

From the last decades of the 1st century BC this district therefore enjoyed a period of high economic growth, symbolized by the Pisan *sigillata* and the *Luna* marble, and there were also improvements in the countryside, due to the

Triumviral-Augustan centuriation carried out in large parts of Northern Etruria. This raised the level of agricultural production, in particular as regards wine, as documented by the increased number of workshops producing Dressel 2-4 amphorae (Pasquinucci and Menchelli 2017).

Pliny refers to *Pisae* regarding the *Pariana uva* (NH 18, 109) and considered the *Luna* wine the best in Etruria: (*Etruriae Luna habet palmam*: Pliny NH 14, 68), therefore these wines must have been traded fairly widely, but as the local amphorae were not frequently stamped, we have scant evidence with which to reconstruct their distribution. In any case, archaeometric analyses and epigraphic sources have identified the presence of North-Etruscan Dressel 2-4 amphorae in the Tyrrhenian, Ligurian and Gallic coasts and the Rhone-Rhine river system.

Thanks to the minero-petrographic and chemical data, Dressel 2-4 Pisan-Volaterran amphorae have been identified in *Augusta Raurica* (Augst) in *Raetia* on the Rhine and in *Aventicum* (Avenches) in *Helvetia*, where other amphorae have been found which could be attributed to workshops located between the *Portus Pisanus* hinterland and the Fine Valley, in the Southern Pisan territory (Thierrin-Michael et al. 2004).

It is also interesting that the stamp '*Felix*' documented on the Dressel 2-4 amphorae manufactured in the *Vada Volaterrana* hinterland (La Mazzanta site), was found in Genoa, in the Grand Rimbaud D shipwreck (near Tolone) and at Sainte Colombe near the Rhone. Its presence in these various sites might be a clue about the routes along the Ligurian and Gaulish coasts, and northwards up the Rhone (Cherubini and Del Rio 1997: 136-139; Genovesi 2012: 554-555). Moreover, amphorae bearing the *tituli picti Lun Vet* have been found in Pompei by Fiorelli (1861, 26, nr 1-3) who took the inscriptions to mean *Lunense Vetus*, that is aged wine from *Luna* (see also CIL IV: 2599-2601). Furthermore, in Colonia in a late 1st-early 2nd century AD context an amphora, which might be classified as a Dressel 2-4 form, has been found bearing a very similar *titulus pictus* which was interpreted in the same way by U. Ehlig (2009: 394-396).

There was a turning-point in the marketing dynamics starting from the Imperial Age: as a result of the *cura annonae* introduced by Augustus, in the Mediterranean, and especially in the Tyrrhenian Sea a *gravitational pull* developed which attracted, to Rome, the foodstuffs necessary to satisfy the needs of the urban population (Rickman 1980: 261-275).

Actually, for the early Imperial period, a Mediterranean inter-port connectivity has been outlined (Keay 2012a; 2012b). It aimed at providing the Capital's food supply and included the activities of the Northern Tyrrhenian ports especially *Vada Volaterrana*. In this system the Gaulish coasts were linked with *Centumcellae*, Rome's hub for goods from the North and the West (particularly from the Iberian Peninsula, above all through the Bonifacio Strait).

In the 1st-2nd century AD, in fact, Baetican foodstuffs (fish sauces, wine and olive oil) inundated the North-Etruscan markets; there were also imports of wine from *Tarraconensis* and fish products from *Lusitania*. The foodstuffs most in demand (more than 60% of the total) were fish products in amphorae of various types (Dressel 7-11; Dressel 14; Beltrán IIA were the commonest forms), mainly from the Bay of Cadiz, but

also from other areas in the low Guadalquivir Valley and in the Mediterranean coastal strip, for example the Malaga district (Menchelli et al. forthcoming).

The main sea route from South Spain to North Etruria must have been from the Cadiz Strait area to the South of the Balearics and then through the Bonifacio Strait from where the winds drove the ships northwards to the Etruscan Archipelago and Etruria. Evidence of this sea-route could be provided by two shipwrecks near the Island of Elba (Chiessi and Elba Sud: fig. 7, 3-4) and one south of 'Livorno' (Ardenza shipwreck: fig. 7, 1), all having homogeneous Baetican cargoes. The first two belong to medium-large vessels which could carry 5.000-7.000 amphorae; on the contrary regarding the Ardenza shipwreck, as it is not well preserved, we can only infer that it must have been a ship of at least medium size (about 20 m long) (Cibecchini 2011; Rice 2016 for the Chiessi shipwreck).

The excavations of a Roman building in the centre of Pisa, in Via Galluppi, have provided a remarkable quantity of Early Imperial amphorae and the percentages of their different origins are in line with the results from this district and in general with the whole of Northern Etruria. Here the percentages of Iberian amphorae reach 50%, about the same percentage documented on a sample of 300 amphorae from *villae* and farmsteads surveyed in the coastal *ager Volaterranus*, and even higher percentages are documented in the *horrea* in *Vada* and in a few cities in inland Etruria (*Faesulae*, *Pistorium*), with fish products being the foodstuffs most in demand (Menchelli et al. forthcoming).

By means of the Northern sea-routes, Gaulish wine amphorae reached the Northern-Etruscan markets, but in small quantities, especially the Gaulish 4 and the rarer Gaulish 5 forms (about 3% in the *horrea* in *Vada* and in the *Pisae*, Via Galluppi site).

The ship which sank near Punta Ala, as we have seen, with its cargo including Iberian, Gaulish, North-Etruscan amphorae and Pisan *terra sigillata*, provides interesting documentation of how the Gaulish amphorae were redistributed along the Tyrrhenian coast.

The South-Gaulish *sigillata* vases were much rarer in the North-Etruscan markets. They were virtually all from the La Graufesenque workshops and were in particular of the marbled type, which was the most different from the Italian *sigillata* vases, in line with what has been found along the entire Tyrrhenian coast (Martin 2001). On the basis of the Rome and Ostia findings, starting from the mid-1st century AD the South-Gaulish *sigillata* began to be distributed, in greater numbers in the Flavian period, and later underwent a progressive decline until its complete disappearance in the early decades of the 2nd century AD (Martin 1992; Rizzo 2003: 103).

In Pisa some of these vessels have been documented in the San Rossore shipwrecks (Paoletti 2000) and in various contexts whose data have not been published; in the Via Galluppi site they account for 1,4% of the total *sigillata* vessels. Similar percentages have been recorded in a *Luna* context (less than 1,5%: Luni II: 139-140) and in the *Vada horrea*. Evidently, in the Tyrrhenian markets the demand for *sigillata* vases was mainly satisfied by the Italian productions.

Imports from Northern Italy consisted of lamps, the *Firmalampen* type (regarding *Vada*: Marini 2012; for *Luna*:

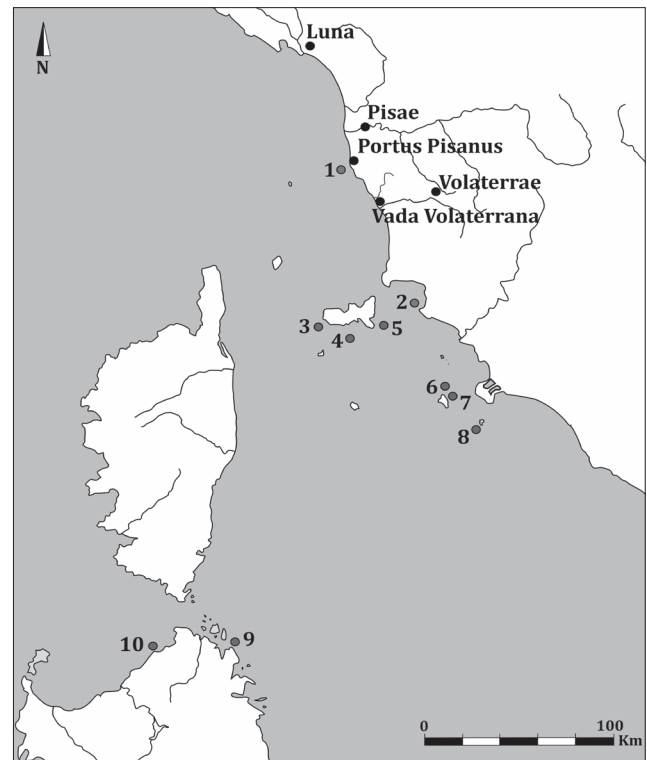


Fig. 7. The shipwrecks mentioned in the text. Drawing of Tatiana Baronti, Pisa.

Gandolfi 1986: 271) and glass vessels (Stiaffini 2005: 11), wine amphorae from various Eastern regions (Crete, the Aegean Islands, Asia Minor) and Tunisian and Tripolitanian amphorae containing mainly olive oil reached the North Etruscan markets by means of ships sailing northwards through the Tyrrhenian Sea.

In Pisa, in the Via Galluppi site, the Eastern containers are about 8% (especially the Cretesi 4, the Camulodunum 184 and the Knossos 19 forms), and the same amphorae are present at *Luna* (Lavizzari Pedrazzini 1986) and *Vada Volaterrana*. On the contrary the presence of the Eastern *sigillata* vases (ESA and ESB) is sporadic and the situation was the same in Rome (Rizzo 2003: 71-72): like the South-Gaulish *sigillata* the Eastern vases also did not find a market along the Tyrrhenian Coast because of the predominance of the Italian *sigillata* vessels and later of the African ones. In this district in the 1st-2nd century AD contexts, the commonest forms are the Tunisian Ostia LIX and Ostia XXIII forms, used for trading olive oil and olives.

It is significant that in the Via Galluppi stratigraphies, dated 1st-2nd century AD, African amphorae are 16% of the total and the Iberian ones 50%, while in the *Vada horrea*, in the contexts dated 1st-3rd century AD, African amphorae already reached 24,21% of the total, while the Iberian ones decreased to 26,65% (Menchelli et al. forthcoming): evidently, in the North-Etruscan markets, as well as in the whole Mediterranean region, African products were increasing their percentages thus paving the way for their Late Roman commercial boom.

Cooking vessels from Tunisia were also traded in the North-Etruscan markets: in the Via Galluppi site they were

already documented at 15% in the late 1st-early 2nd century while in this context, at *Luna* (Gandolfi 1986: 263) and *Vada* the arrival of the African *terra sigillata* was undoubtedly slower, only starting from the mid-2nd century AD. This date is highly significant because just around the Antonine period the Pisan workshops ceased production of the Late Italian *sigillata* and therefore the African *sigillata* was able to prevail also in this district.

In any case, the Pisan, and in general North-Etruscan workshops did not completely stop their production and responded to the late 2nd century crisis. They replaced the red sintered *sigillata* products with vases covered by a red, thin and matt slip which in many cases imitated the earlier forms of the African Red Slip vessels. The production of the thin slip pottery and the imitation of African models, as is well known, was widespread throughout Italy, both in the Tyrrhenian and Adriatic areas (in Rome from the mid-4th century: Coletti 2016) and not only for table and storage wares but also for vessels for various purposes, in particular the 'flanged' bowls'. Moreover, the imitation of the African forms was also widespread as regards the uncovered vessels (Menchelli 2017).

The production of the Dressel 2-4 amphorae also ceased in the first half of the 2nd century AD and other amphorae of reduced capacity (the Spello, Forlimpopoli and Empoli types: about 8-10 litres) started to be manufactured for the North-Etruscan wines (Cherubini, Del Rio and Menchelli 2006).

A few 3rd century shipwrecks found in the North Tyrrhenian Sea near the islands of Giannutri (fig. 7, 8), Giglio (the Porto site: fig. 7, 6) and Elba (Punta della Cera sites fig. 7, 5 and the Punta del Fenaio) provide indications about the sea-routes of the ships bringing cargoes from North-Africa (Cibecchini 2011: 19-20).

They were small vessels, about 15 m long, but the homogeneous African cargoes document a direct route from Tunisia to the Northern Tyrrhenian coasts passing near to Sardinia and Corsica, reaching the Tuscan or Latial harbours through the islands of the Tuscan Archipelago, where there was in addition the Late Roman Giglio Scole shipwreck, also coming from Africa.

If, regarding the Giannutri and Giglio shipwrecks, we cannot exclude that the ships could sail southwards towards Ostia, the vessels which sank near the Island of Elba, on the contrary, must have been heading for one of the North-Etruscan harbours.

Throughout this district, starting from the late 3rd-early 4th century AD, it has been found that there were massive imports of African products: amphorae (for olive oil, wine and fish products), cooking and *sigillata* wares, lamps. For example in the *Vada horrea* in the 3rd-mid 5th century AD, African amphorae constituted 69% of the total, the commonest forms being the Africana I, Africana II, and Africana III. Imports from Gallia were rare, but continued until the late 4th century AD, as is confirmed by the Ostia data: in the stratigraphies of this period the Gaulish amphorae were 4,6% (Reynolds 2010: table 2c; for *Luna*, Gandolfi 1986: 273-274). The Baetican and Lusitanian fish products remained at a higher level (9%), with Almagro 50 and Almagro 51 A/B and C forms, while the Eastern wine amphorae were still rare (at 3%). Similar data have been recorded at *Luna* (Gandolfi 1986: 272).

In the *Vada horrea*, the Italian amphorae (16%) were mainly of the Empoli type, produced locally along the coast or inland. Empoli, the eponymous centre, is in fact in the mid-Arno Valley (Cantini, Boschian and Gabriele 2014) and these amphorae were manufactured throughout Central-North Etruria/Tuscia until the early 6th century (Menchelli 2017).

Thanks to river transport they could easily arrive at the coast for maritime trade. Actually, these amphorae reached the Rome markets, perhaps in connection with an Imperial intervention (about this topic see Pasquinucci and Menchelli 2013), even if in small quantities. In fact among the Roman contexts, it was only in the Crypta Balbi that the Empoli amphorae exceeded 5% (Martin 2016). They were found in small, but widespread, quantities along the Western Mediterranean coasts, with an abundant presence at Porto Torres (13,7%), Miseno 9,8% and Tarragona (7 %) (Menchelli forthcoming b).

At *Vada Volaterrana*, as in *Pisae* and *Luna*, and in inland Tuscia, Keay 52 amphorae, from the Sicilian-Calabrian areas have been found. The relevant workshops have recently been identified and the commercial flows in the North-Western Mediterranean (Franco and Capelli 2014) had high percentages, for example 10-16% in Marseille (Bonifay and Pieri 1995: 114-116). Moving to the local production of coarse and cooking wares, in this period there were very frequently recurring forms, above all evidence of a productive *koinè*, even if interregional trade is documented for example at *Luna* (table ware from Arno Valley: Menchelli forthcoming b).

Side by side with the local pots, there were frequent imitations of the successful Mediterranean vases, like the African ones (in particular Hayes 61 forms) and the Pantellerian wares. It is significant that the North Etruscan vases, both imported and locally produced, were very similar to those found in the areas between Rome and Provence, confirming their very close commercial and cultural links (Menchelli 2017). In fact, as is well known, P. Reynolds (2010: 150-153) focussed on two different trade routes in the Western Mediterranean from the mid-5th century: one, which was more southern, involved Apulia, Calabria, Sicily and Southern Spain and the other formed an arc from Naples to Tarragona. Undoubtedly the North-Etruscan district, on the basis of the data presented here, was an integral part of this arc.

Between the second half of the 5th century and the 7th century in the whole district there was a marked decrease in imported wares compared to the previous centuries. The African products maintained the highest percentages, as has been documented in the main Western Mediterranean centres (Bernal Casasola and Bonifay 2010: 105).

In the *Vada horrea*, the African amphorae still account for 70% of the total (509 items), with the Keay 62 form being the commonest (218 items). The other containers, apart from the rare presence (1,5%), of the later Baetican-Lusitanian fish amphorae, were from the Eastern regions (16,5%, mainly the LRA 1 forms), as well as from Italy (12%), prevalently local-regional Empoli types plus some Sicilian small amphorae, the later variants of the Keay 52 group.

About the same trends as in *Vada* have been found in *Pisae* (Costantini 2014), *Portus Pisanus* (Genovesi 2014), *Luna* (Gandolfi 1986: 272-274; Reynolds 1995) and also in the inner Arno Valley (Cantini 2010).

Besides the local and African productions, there were also small quantities of vases from many different regions (Pantellerian Ware, *Dérivées-des-Sigillées Paléochrétiennes*, Phocaean *sigillata* and glass vessels). These ceramics and the coins from a multitude of mints through the centuries (Facella 2004 for *Vada*; Rovelli 2000 for *Luna*) highlight this district's commercial importance even in the Gothic and Byzantine periods.

From the main harbours, wares continued to reach the minor ports of call and the consumption centres: for example as in the Southern *ager Lunensis*, the above-cited Massa-Piazza Mercurio site was equally involved in the Mediterranean trade (Dadà et al. 2017) as documented by African Red Slip vessels, African amphorae (Keay 36, Keay 62 and Spatheia 1, 2 and 3 forms), *Dérivées-des-Sigillées Paléochrétiennes* cups from Southern Gallia (Rigoir 3a forms), and an Eastern wine amphora from the Gaza district (LRA 4).

The production of vases deriving from Roman traditions persisted in this district for the whole of the 7th century even if they were of an increasingly inferior quality. Weak commercial activity continued, as documented by the arrival of the Miseno amphorae from Campania and of globular amphorae, having an umbilicate bottom, of unspecifiable origin, even during the long transitional phases up to the Middle Ages (Menchelli 2017 forthcoming b).

In conclusion, in North coastal Etruria the relationship between local and imported ceramics was continuous and they do not appear to have been in competition, but on the contrary were complementary and closely intertwined. This district, given its intensive agricultural and manufacturing productions, had a surplus to be exported and could therefore import ceramics and foodstuffs from the entire romanized world.

Moreover, imports were not limited to the sphere of consumption: *Pisae* and *Volaterrae*, having age-old ceramic traditions, could easily absorb the most successful foreign models (Latial-Campanian amphorae and vessels in the Late-Republican-early Imperial periods; afterwards African products and, more rarely, the Pantellerian wares), thus developing their economic activities even more.

Furthermore, the Arretine and Pisan *sigillata* vases, derived from the Northern Etruscan Black Gloss Wares, reached the markets of the whole Romanized world and beyond, and would have been imitated in many *sigillata* workshops, in the Eastern and Western Provinces (Rizzo 2003: 68-69 for the Eastern *sigillata* B and 98 for the South-Gaulish *sigillata*).

Therefore, local and imported goods were mutually integrated, being part of the Globalizing Market Economy (see De Haas and Tol 2017) and this district remained in the Mediterranean productive and commercial circuits up to the late 7th-early 8th century, that is until the Roman economic system ceased to function.

Simonetta Menchelli

Dipartimento Civiltà e Forme del Sapere, University of Pisa

simonetta.menchelli@unipi.

Bibliography

- Arnaud, P. 2005. *Les routes de la navigation antique. Itinéraires en Méditerranée*. Paris, Errance.
- Benquet, L. and Mancino, C. 2007. Le anfore di Albinia: primo saggio di classificazione. In D. Vitali (ed.), *Le fornaci e le anfore di Albinia*, 55-66. Bologna, Università di Bologna.
- Bernal Casasola, D. and Bonifay, M. 2010. Importaciones y consumo alimenticio en las ciudades tardorromanas del mediterráneo nor-occidental (ss. VI-VIII d.C.): la aportación de las ánforas. In A. García (ed.), *Espacios urbanos en el occidente Mediterráneo (s. VI-VIII)*, 45-64. Toledo, Toletum Visogodo.
- Bonifay, M. and Pieri, D. 1995. Amphores du Ve au VIIe s. à Marseille: nouvelles données sur la typologie e le contenu. *Journal Roman Archaeology* 8, 94-120.
- Bulzomi, F. 2013. Vallin Buio. In M. Pasquinucci (ed.), *Guida archeologica delle coste Livornesi*, 101. Firenze, Nardini.
- Camilli, A. 2005. Il contesto delle navi antiche di Pisa. Un breve punto della situazione. <www.fastionline.org/docs/FOLDER-it-2005-31.pdf>.
- Camilli, A., De Laurenzi, A. and Setari, E. 2006. Alkedo. *Navi e commerci nella Pisa romana*. Pontedera, Bandecchi e Vivaldi.
- Cantini, F. 2010. Circolazione, produzione e consumo di vasellame ceamico e anfore nel medio Valdarno tra IV e VII secolo: nuovi dati da San Genesio (San Miniato, Pisa) e Firenze. In S. Menchelli, S. Santoro, M. Pasquinucci, G. Guiducci (eds.), *LRCW 3. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and archaeometry; comparison between western and eastern Mediterranean* (BAR International series 2185): 353-362. Oxford, Archaeopress.
- Cantini, F., Boschian G. and Gabriele, M. 2014. Empoli, a late Antique pottery production centre in the Arno Valley (Florence, Tuscany, Italy). In N. Poulou-Papadimitriou, E. Nodarou and V. Kilikoglou (eds.), *LRCW4. Late Roman Coarse Ware, Cooking Ware and Amphorae in the Mediterranean: Archaeology and Archaeometry. The Mediterranean: a market without frontiers* (BAR International series 2616): 203-212. Oxford, Archaeopress.
- Cherubini, L. and Del Rio, A. 1997. Officine ceramiche di età romana nell'Etruria settentrionale costiera. In *Rei Cretariae Romanae Fautorum Acta* 35, 133-141. Abingdon, Rei Cretariae Romanae Fautores.
- Cherubini, L., Del Rio, A. and Menchelli, S. 2006. Paesaggi della produzione: attività agricole e manifatturiere nel territorio pisano-volterano in età romana. In S. Menchelli, M. Pasquinucci (eds), *Territorio e produzioni ceramiche. Paesaggi, economia e società in età romana. Atti del Convegno Internazionale* (Pisa, ottobre 2005), 69-76. Pisa, Edizioni Plus.

- Ciampoltrini, G. 2015. Gente di Cava. Immagini epigrafiche. In E. Paribeni and S. Segenni (eds.), *Notae Lapidinarum dalle cave di Carrara*, 63-67. Pisa, University Press.
- Cibecchini, F. 1999. Economia e società. In P. Gambogi and S. Palladino (eds.), *Castiglioncello. La Necropoli ritrovata*, 38-49. Rosignano Marittimo, Comune.
- Cibecchini, F. 2008. Tonnellaggi e rotte in età repubblicana : il contributo dei relitti del mediterraneo occidentale. In J. Perez and G. Berlanga (eds.), *Comercio, redistribución y fondeaderos: la navegación a vela en el mediterráneo. Actas de las V Jornadas Internacionales de Arqueología Subacuática*, 483-500. Valencia, Universitat de Valencia.
- Cibecchini, F. 2011. Rotte e commerci marittimi in età romana. In G. Petralia (ed.), *I sistemi portuali della Toscana mediterranea*, 11-19. Pisa, Pacini.
- Coletti, F. 2016. Ceramiche da mensa a vernice rossa da contesti Romani e Ostiensi: IV- VI secolo. In R. Járrega Domínguez and P. Berni Millet (eds.), *Amphorae ex Hispania: paisajes de producción y consumo*, 976-994. Tarragona, Sociedad de Estudios de la Cerámica Antigua en Hispania; Institut Català d'Arqueologia Clàssica.
- Corrado, M. 2009. Nuovi dati di scavo ed epigrafici sulle manifatture tardo-repubblicane di anfore commerciali del versante ionico calabrese gravitanti sul Golfo di Squillace (CZ)", <www.fastionline.org/docs/FOLDER-it-2009-138.pdf>, viewed 05.10.2011.
- Costantini, A. 2007. Dressel 1 a Populonia: esportazioni di tonno dalla foce dell'Albegna. In D. Vitali (eds.), *Le fornaci e le anfore di Albinia*, 151-156. Bologna, Università di Bologna.
- Costantini, A. 2014. Pisa : importazioni fra tarda antichità e altomedioevo da Piazza Duomo. In N. Poulou-Papadimitriou, E. Nodarou and V. Kilikoglou (eds.), *LRCW4. Late Roman Coarse Ware, Cooking Ware and Amphorae in the Mediterranean: Archaeology and Archaeometry. The Mediterranean: a market without frontiers* (BAR International series 2616): 985-992. Oxford, Archaeopress.
- Dadà, M., Fabiani, F., Fornaciari, A., Mileti, M. C., Paribeni, E. and Rizzitelli, C. 2017. Un insediamento tardo-antico e alto-medievale nell'ager Lunensis. Gli scavi di Piazza Mercurio a Massa. In D. Dixneuf (ed.), *LRCW5. Late Roman coarse wares, cooking wares and amphorae in the Mediterranean. Archaeology and archaeometry*, 273-286. Alexandrie, Centre d'Etudes Alexandrines.
- Dallai, L., Ponta, E. and Shepherd, E. J. 2006. Aurelii e Valerii sulle strade d'Etruria. In S. Menchelli and M. Pasquinucci (eds.), *Territorio e produzioni ceramiche. Paesaggi, economia e società in età romana. Atti del Convegno Internazionale* (Pisa, ottobre 2005), 179-190. Pisa, Edizioni Plus.
- De Haas, T. C. A and Tol, G. W. (eds.) 2017. *The Economic Integration of Roman Italy. Rural Communities in a Globalizing World*. Leiden-Boston, Brill.
- De Marinis, R. C. and Spadea, G. (eds.) 2004. *I Liguri. Un antico popolo europeo tra Alpi e Mediterraneo*. Milano, Electa.
- Dixneuf, D. (ed.) 2017. *LRCW5. Late Roman coarse wares, cooking wares and amphorae in the Mediterranean. Archaeology and archaeometry*. Alexandrie, Centres d'Études Alexandrines.
- Ehmig, U. 2009. Tituli Picti auf Amphoren in Köln II. *Kölner Jahrbuch* 42, 393-445.
- Fabiani, F. and Paribeni, E. (eds.) 2016. *Archeologia a Massa. Scavi all'ombra del Mercurio*. Roma, Nuova Cultura.
- Fabiani, F. 2016. Copertura delle fornaci. In F. Fabiani and E. Paribeni (eds.), *Archeologia a Massa. Scavi all'ombra del Mercurio*, 45-47. Roma, Nuova Cultura.
- Facella, A. 2004. *Vada Volterrana. I rinvenimenti monetali dagli Horrea*. Pisa, Edizioni Plus.
- Fiorelli, G. 1861. *Giornale degli Scavi di Pompei*. Napoli, Stamperia dell'Università.
- Franco, C. and Capelli, C. 2014. New archaeological and archaeometric data on Sicilian wine amphorae in Roman period (1st to 6th century AD). In *Rei Cretariae Romanae Fautorum Acta* 43, 547-555. Bonn, Rei Cretariae Romanae Fautores.
- Frova, A. (ed.) 1977. *Scavi di Luni, II. Relazione delle campagne di scavo 1972-1973-1974*. Roma, G. Bretschneider.
- Gandolfi, D. 1986. Ceramica e scambi commerciali a Luni: materiali della media e tarda età imperiale. *Quaderni centro Studi Lunensi* 11, 261-288.
- Genovesi, S. 2009-2014. Nuovi bolli laterizi da Portus Pisanus. *Rassegna di Archeologia* 24b, 45-84.
- Genovesi, S. 2012. Materiali anforacei. In F. Donati (ed.), *La villa romana dei Cecina a San Vincenzino (Livorno)*, 541-588. Pisa, Felici Editore.
- Genovesi, S. 2014. Contenitori da trasporto dall'area di Portus Pisanus e rotte commerciali tirreniche fra IV e VI sec. d.C. In N. Poulou-Papadimitriou, E. Nodarou and V. Kilikoglou (eds.), *LRCW4. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and Archaeometry: the Mediterranean, a Market without Frontiers* (BAR International Series 2616): 993-1004. Oxford, Archaeopress.
- Genovesi, S. 2016. I prodotti delle fornaci. In F. Fabiani and E. Paribeni (eds.), *Archeologia a Massa. Scavi all'ombra del Mercurio*, 67-79. Roma, Nuova Cultura.
- Keay, S. (ed.) 2012a. *Rome, Portus and the Mediterranean*. Oxford, Oxbow.
- Keay, S. 2012b. The Port System of Imperial Rome. In S. Keay (ed.), *Rome, Portus and the Mediterranean*, 33-60. Oxford, Oxbow.
- Laubenheimer, F. 2007. A propos de timbres d'amphores de l'Atelier d'Albinia (prov. di Grosseto, Italie). Vin et poisson. In D. Vitali (ed.), *Le fornaci e le anfore di Albinia*, 67-80. Bologna, Università di Bologna.
- Lavizzari Pedrazzini, M. P. 1986. Ceramica e scambi commerciali a Luni: materiali della tarda età repubblicana e della prima età imperiale. *Quaderni centro Studi Lunensi* 11, 251-260.
- Lo Cascio, E. 2007. L'approvvigionamento dell'esercito romano: mercato libero o commercio amministrato?. In L. de Blois and E. Lo Cascio (eds.), *The impact of the Roman Army*, 195-206. Leiden-Boston, Brill.
- Marini, S. 2012. Sigillata italica, sigillata africana e lucerne dal Museo di Rosignano Marittimo <<http://www.fastionline.org/docs/FOLDER-it-2012-258.pdf>> viewed 08.01.2013.

- Martin, A. 1992. Ceramica fine a Roma e Ostia tra la seconda metà del I ed il II sec. In *Rei Cretariae Romanae Fautorum Acta* 31-32, 91-103. Como, New Press.
- Martin, A. 2001. A Preliminary Note on South Gaulish Sigillata at Cosa. In *Rei Cretariae Romanae Fautorum Acta* 37, 241-242. Abingdon, Rei Cretariae Romanae Fautores.
- Martin, A. 2016. L'anfora di Empoli nell'area romano-ostiene. In A. F. Ferrandes and G. Pardini (eds.), *Le Regole del gioco. Tracce, archeologi raccontano. Studi in onore di Clementina Panella*, 579-589. Roma, Quasar.
- Menchelli, S. 2003. Il commercio marittimo dei laterizi: alcune considerazioni per le rotte alto-tirreniche. In A. Benini and M. Giacobelli (eds.), *Atti II Convegno Nazionale di Archeologia Subacquea*, 167-174. Bari, Edilpuglia.
- Menchelli, S. 2016. L'Etruria, i Romani e le produzioni ceramiche tra II e I sec. a.C. In F. Fabiani and E. Paribeni (eds.), *Archeologia a Massa. Scavi all'ombra del Mercurio*, 91-95. Roma, Nuova Cultura.
- Menchelli, S. 2017. Late Roman coarse wares, cooking wares and amphorae. A survey of current research in Italy. In D. Dixneuf (ed.), *LRCW5. Late Roman coarse wares, cooking wares and amphorae in the Mediterranean. Archaeology and archaeometry*, 203-221. Alexandrie, Centre d'Etudes Alexandrines.
- Menchelli, S. forthcoming a. Italian and Sicilian Amphorae and their contents: a general overview. In D. Bernal Casasola, M. Bonifay and A. Pecci (eds.), *Roman Amphorae Contents* (Cadiz Conference 2015).
- Menchelli, S. forthcoming b. Western Regional Contexts and their Interconnectivity in the Late Roman Mediterranean: Some Case Studies. In *LRCW 6. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean* (Agrigento Conference).
- Menchelli, S., Cabella, R., Capelli, C., Pasquinucci, M. and Picchi, G., 2007. Anfore dell'Etruria settentrionale costiera in età romana: nuovi dati alla luce delle recenti indagini archeologiche ed archeometriche. In D. Vitali (ed.), *Le fornaci e le anfore di Albinia*, 141-150. Bologna, Università di Bologna.
- Menchelli, S., Capelli C., Baronti T., Cherubini L., Del Rio A., Genovesi S., forthcoming. Anfore iberiche nell'Etruria settentrionale costiera. *Ex Baetica Amphorae II, Congreso Internacional* (Sevilla 2018).
- Menchelli, S., Capelli, C., Pasquinucci, M., Picchi, G., Cabella, R., and Piazza, M. 2013. Nuove scoperte d'ateliers di anfore repubblicane nell'Etruria settentrionale costiera. In F. Olmer, (ed.), *Itinéraires des vins romains en Gaule, IIIe-Ier siècles avant J.-C.*, 471-478. Lattes, CNRS.
- Menchelli, S. and Pasquinucci, M. 2006. Archeologia della redistribuzione. Il caso di Vada Volaterrana. In D. Malfitana, J. Poblome and J. Lund (eds.), *Old Pottery in a New Century. Innovative Perspectives on Roman Pottery Studies*, 229-241. Catania, Istituto Beni Archeologici.
- Menchelli, S. and Pasquinucci, M. (eds.), 2006. *Territorio e produzioni ceramiche: paesaggi, economia e società in età romana*. Pisa, Plus.
- Menchelli, S., Pasquinucci, M., Leone, N., Maccari, A. and Picchi, G. 2012. Vasi comuni nell'Etruria settentrionale costiera. In C. Batigne-Vallet (ed.), *Les Céramiques communes comprises dans leur contexte régional*, 87-111. Lyon, Maison de l'Orient et de la Méditerranée.
- Menchelli, S. and Sangriso, P. 2017. Pisan sigillata: Augustan ideology with a few images. In M. Flecker (ed.), *Neue Bilderwelten. Zur Ikonographie und Hermeneutik Italischer Sigillata*, 53-72. Rahden/Westf, Verlag Marie Leidorf GmbH.
- Olcese, G. (ed.) 2003. *Ceramiche comuni a Roma e in area romana: produzione, circolazione e tecnologia (tarda età repubblicana-prima età imperiale)*. Mantova, SAP Editore.
- Panella, C. 2010. Roma. Il suburbio e l'Italia in età medio e tarda-repubblicana. Cultura materiale, territori, economie. *Facta* 4, 11-123.
- Paoletti, M. 2000. Sigillata. In S. Bruni (ed.), *Le navi antiche di Pisa*, 233-257. Firenze, Polistampa.
- Paribeni, E. 2016. Un impianto produttivo integrato. Le ragioni di un successo. In F. Fabiani and E. Paribeni (eds.), *Archeologia a Massa. Scavi all'ombra del Mercurio*, 97-101. Roma, Nuova Cultura.
- Paribeni, E. and Segenni, S. (eds.) 2015. *Notae Lapidinarum dalle cave di Carrara*. Pisa, University Press.
- Pasquinucci, M. 2007. I porti di Pisa e di Volterra. Breve nota a Strabone 5.2.5, 222C. *Athenaeum* 95, 677-685.
- Pasquinucci, M. and Menchelli, S. 2003. Porti, approdi e dinamiche commerciali nell'ager Pisanus e nella valle dell'Arno. In *IV Jornadas de Arqueología Subacuática*, 237-249. Valencia, Universitat de Valencia.
- Pasquinucci, M. and Menchelli, S. 2010. Il sistema portuale di Pisa: dinamiche costiere, import-export, interazioni economiche e culturali (VII sec. a.C.-I sec. d.C.). <https://bollettinodiarcheologiaonline.beniculturali.it/wp-content/uploads/2019/01/1_PASQUINUCCI_MENCHELLI.pdf>.
- Pasquinucci, M. and Menchelli, S. 2013. Dinamiche tardo-antiche nella fascia costiera livornese. I casi di Portus Pisanus (Livorno) e di Vada Volaterrana. In L. Botarelli and D. La Monica (eds.), *Conoscenza e tutela del patrimonio sommerso*, 139-152. Roma, Aracne.
- Pasquinucci, M. and Menchelli, S. 2017. Rural, urban and suburban communities and their economic interconnectivity in coastal North Etruria (2nd century BC-2nd century AD). In T. C. A de Haas and G. W. Tol (eds.), *The economic integration of Roman Italy, Rural Communities in a globalizing World*, 322-341. Leiden and Boston, Brill.
- Picchi, G., Cabella, R., Capelli, C., Ducci, S., Menchelli S., Pasquinucci M. and Piazza, M. (2010). Attività manifatturiere nel retroterra di Portus Pisanus. In *Rei Cretariae Romanae Fautorum Acta* 41, 291-302. Bonn, Rei Cretariae Romanae Fautores.
- Picchi, G. and Menchelli, S. 2018. Pots for food. Some regional instances in Italy. In *Rei Cretariae Romanae Fautorum Acta* 45, 403-412. Bonn, Rei Cretariae Romanae Fautores.
- Poblome, J., Brulet, R. and Bounegru, O. 2000. The concept of Sigillata. Regionalism or integration ?. In *Rei Cretariae Romanae Fautorum Acta* 36, 279-283. Abingdon, Rei Cretariae Romanae Fautores.
- Poulou-Papadimitriou, N., Nodarou, E. and Kilikoglou, V. (eds.) 2014. *LRCW4. Late Roman Coarse Ware, Cooking Ware and Amphorae in the Mediterranean: Archaeology and Archaeometry. The Mediterranean: a market without frontiers* (BAR International series 2616). Oxford, Archaeopress.

- Reynolds, P. 1995. *Trade in the Western Mediterranean, AD 400-700: The Ceramic Evidence*. Oxford, Tempus Reparatum.
- Reynolds, P. 2010. *Hispania and the Roman Mediterranean. AD 100-700. Ceramics and Trade*, London, Duckworth.
- Rice, C. 2016. Shipwreck Cargoes in the Western Mediterranean and the Organization of Roman Maritime Trade. *Journal Roman Archaeology* 29, 165-192.
- Rickman, G. E. 1980. The Grain Trade under the Roman Empire. *Memories of the American Academy in Rome* 36, 261-275.
- Rizzo, G. 2003. *Instrumenta Urbis I. Ceramiche fini da mensa, lucerne ed anfore a Roma nei primi due secoli dell'Impero*. Roma, École Française de Rome.
- Rossignani, M. P., Bruno, B. and Locatelli, D. 2002. Insediamenti ed economia nell'area di Portus Lunae nella prima metà del II sec. a.C.. In M. Khanoussi, Paola Ruggeri and C. Vismara (eds.), *L'Africa romana, Lo spazio marittimo del Mediterraneo occidentale: geografia storica ed economia. Atti del XIV convegno di studio* (Sassari, 7-10 dicembre 2000), 753-765. Roma, Carocci.
- Russell, B. J. 2013. *The Economics of the Roman Stone Trade*. Oxford, University Press.
- Rovelli, A. 2000. Some considerations on the coinage of Lombard and Carolingian Italy. In I. L. Hansen and C. Wickham (eds.), *The long eighth century: production, distribution and demand*, 195-223. Leiden, Brill.
- Sangrison, P. 2017. Una schola ai Vada Volaterrana. < <http://www.fastionline.org/docs/FOLDER-it-2017-385.pdf>>.
- Santoro, S. 2007. Le ceramiche da cucina prodotte in Italia ed esportate nel Mediterraneo: un primo panorama archeometrico ed archeologico sulla base di una banca dati. In M. Bonifay and J.-C. Tréglia (eds.), *LRCW2. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and Archaeometry* (BAR international series 1662): 365-381. Oxford, Archaeopress.
- Shepherd, E. J. 2016. Mattone sagomato per nervature. In Fabiani, F. and Paribeni, E. (eds.), *Archeologia a Massa. Scavi all'ombra del Mercurio*, 82-83. Roma, Nuova Cultura.
- Stiaffini, D. 2005. Vetri di età tardoantica e altomedievale dagli scavi degli horrea in località S. Gaetano di Vada. In D. Ferrari (ed.) *Atti VIII Giornate di Studio Il vetro nell'alto Medioevo*, 9-17. Bologna, La Mandragora.
- Tchernia, A. 2016. *Le vin de l'Italie romaine*. Rome, 2^{ème} édition, École Française de Rome.
- Thierrin-Michael G., Cherubini L., Del Rio A., Mencelli, S. and Pasquinucci, M. 2004. Les amphores de l'ager Pisanus et Volaterranus: Productions et distribution vers le Nord à la lumière des analyses. *SFECAG, Actes du Congrès de Vallauris*, 237-244. Marseille, Société Française d'Étude de la Céramique Antique en Gaule
- Vitali, D. (ed) 2007. *Le fornaci e le anfore di Albinia*. Bologna, Università di Bologna.

Literary sources

- M. Tulli Ciceronis Pro P. Quinctio Oratio, edited with text, introduction and commentary by T. E. Kinsey. Sidney, University Press 1971.
- Diodorus Siculus, Biblioteca storica, a cura di G. Cordiano, M. Zorat, C. Micciché, Biblioteca Universale Rizzoli, Milano 2004.
- Pliny, Naturalis Historia, Livre III, Texte établi, traduit et commenté par H. Zehnacker. Les Belles Lettres, Paris 1998.
- Pliny, Naturalis Historia, Livre XIV, Texte établi, traduit et commenté par J. André. Les Belles Lettres, Paris 1972.
- Pliny, Naturalis Historia, Livre XVIII, Texte établi, traduit et commenté par H. Le Bonniec, Les Belles Lettres, Paris 1958.
- Polybius, The Histories, Books, 3-4, Translated by W. R. Paton. Harvard University Press, Cambridge, Massachusetts London, England 2010.
- Strabo, Géographie, Livres V et VI, Texte établi et traduit par F. Lasserre. Les Belles Lettres, Paris 1972.