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ITALIAN SIGILLATA: SOME INSIGHTS INTO A COMPLEX REALITY

Mara Sternini

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Italian sigillata and the economics of the Roman city

In a recent thought-provoking essay, Astrid Van Oyen¹ has argued that terra sigillata may be instrumental for a fresh reappraisal of the old debate concerning the nature of the ‘city’ in the Roman Empire. She sees sigillata as an effective crowbar, so to speak, for breaking out of the ‘consumer city vs. producer city’ cage: a statement which one may certainly agree with.

Artisan production in Roman cities has long been underestimated, due to the prevalence of a model theorized by Max Weber and strongly advocated by Sir Moses Finley.² According to this model, ancient cities, including Roman ones, were primarily social and political centres that lived on taxes and land rents. Only in Middle Ages urban manufactures and trades would become economically relevant, and give origin to capitalistic economy.

As Wilson fairly admits, however, the ‘consumer city’ model has been favoured mainly by Anglophone scholars, whereas “it never caught on, for example, among Italian ancient historians”³ and “few, if any, Roman archaeologists today would defend the consumer city model as an adequate conceptualization of the economic role of the Roman city.”⁴

1. Van Oyen 2015b.
2. In addition to the literature cited by Van Oyen, see the accounts provided by Wilson 2002 and Ziche 2006.
3. See the works produced in the 1970s and 1980s by Andrea Carandini (Carandini 1979) and his colleagues and pupils, under the aegis of Istituto Gramsci (Giardina and Schiavone 1981).
4. Wilson 2002, p. 231, n.1.

To begin with, Weber's original typology is not as rigid as it is often represented by its defenders and opponents. The dichotomy that has caused so much ink to be spilled by historians and archaeologists is indeed a false problem, or, as Van Oyen puts it, a 'red herring'. Suffice it to say that Weber does not deny *a priori* the existence of the producer city in antiquity. In his own words: "in the Asian, ancient, and medieval type, it would depend on the existence of local crafts which ship their goods to outside markets."⁵

Now, that Italian sigillata was geared toward external markets is something that does not need – I believe – to be proven. So the salient question becomes: was its production located in urban centres? Until not long ago the answer was generically affirmative, but then this view has been challenged by Gunnar Fülle.⁶ Remarking that in Arezzo all the known workshops⁷ are located outside the extension admittedly reached by the town at the end of the 1st century BC, he finds more appropriate to speak of sub-urban industry for the main production centre, whereas other production sites appear to have been placed in a truly rural context.

Sub-urban, however, has more a spatial than an economic meaning.⁸ For obvious reasons, in antiquity (and beyond) all artisanal workshops, and particularly those who had to do with fire, were as a rule located beyond the city walls. Arezzo is no exception, but its pottery workshops appear all the same framed in the urban context (the workshop of Perennius is connected to a building with mosaic floors⁹ that was probably the patron's private *domus*) and meet *prima facie* Weber's conditions for the producer city.

In Pisa¹⁰ and in the other cities where there is evidence of a sigillata production – Cuma,¹¹ Caes,¹² Napoli¹³ and Pozzuoli¹⁴ – the situation is quite similar.

5. Weber 1978, p. 1216. Cfr. the remarks by Pucci 1985a.

6. Fülle 1997, Fülle 2000.

7. For an analytical list of the finds see Olcese 2012, pp. 9-22, Cfr. also Kenrick 2006, Vilucchi 2012.

8. Champlin, in an essay devoted to the concept of *suburbium* in Roman culture, rightly argues that "it has little to do with the economic bonds between city and territory." (Champlin 1982, p. 97).

9. Salvi and Vilucchi 2005.

10. Paoletti 1995, Menchelli 1997, Menchelli *et al.* 2001, Menchelli 2004, Olcese 2012, pp. 80-81.

11. Olcese 2012, pp. 342-344.

12. Olcese 2012, pp. 291-292.

13. Olcese 2012, pp. 349-355.

14. Olcese 2012, pp. 365-368. Ostia is now ruled out as a centre of production (cfr. Olcese 2004, pp. 297).

However, other sigillata workshops were definitely located in extra-urban contexts: Capolona,¹⁵ Isola di Migliarino,¹⁶ Castiglioncello,¹⁷ Torrita di Siena,¹⁸ Marzuolo,¹⁹ Vasanello,²⁰ and Scoppieto.²¹

Space, scale and production models of Italian sigillata

The city/country dichotomy is as old an issue as the consumer city/producer city one (in fact, the two are closely intertwined, and not uniquely in the field of Roman history). The debate has been characterized by the aprioristic assumption that city and countryside were separate and antinomic economic entities. Only in recent years scholars have been trying to leave both antitheses behind, by giving more attention to socio-economic interactions of individuals and/or groups, and less to their specific physical locations (which were not unchangeable, particularly so in the early Roman Empire). As Goodman puts it, “it is better to think in terms of a spectrum, with the truly urban at one end and the truly rural at the other, but many indistinctly defined stages, including the urban periphery, in between.”²²

At Pompeii, for example, it is estimated that at the moment of the eruption about 10 per cent of the land within the city walls was in agricultural use, for commercial purposes; and in earlier periods the percentage might have been even larger.²³ Nor is it true that urban periphery and countryside were inhabited as a rule by the lower class, whereas the elite always resided in the urban centres: the presence of wealthy *domus* in the towns’ outskirts is an almost ubiquitous phenomenon, while the typical Roman villa, combining a *pars rustica* and a *pars urbana*, bears witness to the custom of the aristocrats of temporarily shifting their residence from town to country, in order to oversee the production of their estates, without renouncing their lifestyle: a telling indication that urban boundaries had actually little meaning for the social and economic reality.

15. Olcese 2012, p. 23.

16. Olcese 2012, p. 80.

17. Olcese 2012, p. 67.

18. Pucci 1992, Olcese 2012, pp. 109–112.

19. The site, near Cinigiano (Grosseto), is currently being investigated by the Roman Peasant Project (<http://www.sas.upenn.edu/romanpeasants/index.html>). The finds are still unpublished. I thank Emanuele Vaccaro for providing me with information about the sigillata.

20. Sforzini 1990.

21. Nicoletta 2016.

22. Goodman 2007, p. 236.

23. Beard 2008, pp. 162–163.

Van Oyen acknowledges that the urban/rural dichotomy is not the right model to characterize differences between the sites that produced Italian sigillata. In her opinion, the difference is more in scale than in nature.

Indeed, we cannot speak of scale without previously determining what the production system was in given contexts, and setting it in relationship to its spatial and environmental dimension.

As Arnold points out in a valuable case-study,²⁴ differences in pottery making follow a general progression from part-time household production to full-time industrialized manufacture. These models, however, are simply typological schemes, useful to categorize a continuum of behaviour. Space is a crucial variable in production studies. A desire to optimize resources, to achieve greater production efficiency and to more easily reach wider markets will usually be reflected in a reallocation of space, with a reorganization of the activities within it. Sometimes, however, it may result in its extension, and consequent new functionalization.

According to the two most credited studies on the subject,²⁵ the Italian sigillata might have been produced according to only one of these models: the individual workshop, the nucleated workshop or the manufactory. Admittedly, the difference between the workshop and the manufactory is difficult to discern. Scale, of course, could be a criterion of distinction. Unfortunately, archaeological evidence of productive structures of Italian sigillata is scanty, especially in Arezzo itself. However, Fülle's conclusion that "to sum up, there does not exist any strong or even cogent indication or evidence for large single-unit production in Arezzo"²⁶ seems to be excessively skeptical in the light of the Via Nardi dump, consisting of more than 150,000 wastes stamped by Cn. Ateius.²⁷

In economic theory, the manufactory is a particular form of cooperation whereby many people work next to one another on the same project, in the same production process or in different processes connected to each other, but without any machinery powered by other than human or animal strength (in which case it is called a factory). In my view, the Scoppieto site – which was still unpublished when Fülle wrote the sentence quoted above – provides

24. Arnold 1991.

25. Van der Leeuw 1977 and Peacock 1982, pp. 9-10 (see a synthesis in Rice 1987, p. 184). On Peacock's theoretical background see Greene 2005, p. 40 ss.

26. Fülle 1997, p. 135.

27. Sternini 2014.

indisputable evidence for the existence of a proper Italian sigillata manufactory. With its more than respectable size, and its 24 wheelthrower posts (that imply a quite larger labour force in order to have all other tasks performed) it certainly went beyond the average individual workshop.²⁸

As for the other model, the nucleated workshop, it is characterized by individual workshops grouped together to form a clustered productive complex. Nucleation – according to Peacock – is favoured by availability of raw materials, labour, markets or any combination of the three. Space, however, is another relevant factor which must be taken into account, not only in terms of environmental resources, but also of routes of communication, both between the workshops of the nucleated area and between the latter and the trade hubs through which its production was commercialized. Here, I believe, is a major key to a comprehensive understanding of the economics of Italian sigillata.

Arezzo is undoubtedly a nucleated area. There is enough evidence to say that in the plain at the north west of the town, towards the Arno valley and in connection with the Castro brook, a cluster of workshops formed a complex that reminded Gamurrini of the Ceramicus of Athens.²⁹ There is, however, a spatial and functional continuity that stretches from the workshop of Perennius at S. Maria in Gradi, just outside the urban walls, to those of Vibius near S. Domenico and of Cn. Ateius near Via Nardi, up to those at Ponte a Buriano and Cincelli, about ten km to the north of the town. Even the workshops located to the south were integrated into this space, for they stood in the proximity of the Castro, whose stream linked this other cluster to the one at the north west mentioned above.

Now, this is not exactly the nucleated workshop model usually referred to, since it includes large plants that rightfully fall in the manufactory model: another proof that rigid typological distinctions are impossible (and in any case of little purpose) when discussing the ancient economy.

Moreover, its spatial dimension, whose importance I have already stressed, tends to increase in the course of time. The delocalization at Ponte a Buriano and Cincelli, on the Arno's banks, may have responded to the need of abundant water, clay and timber, but in fact the river connected Arezzo to *Faesulae* and *Florentia*, and, beyond them, Pisa and the Tyrrhenian coast; and it is well known that two workshops of the potter Ateius have been discovered in Pisa (Via San Zenò and Via San Stefano) and one in the *ager Pisanus* (Isola di Migliarino).

28. Pucci 2014, p. 10.

29. Vilucchi 2012, p. 19.

Also, the excavations of the workshop of C. Umbricius Cordus at Torrita di Siena, in the valley of the Chiana River, proved that this territory too, included in Arretium's *centuriatio*, was connected to the Arretine nucleated area of production: the presence of vases bearing the stamps of Camurius and Manneius of Arezzo shows that part of the production of an Arretine potter could be delegated to another potter based in the countryside.

At Scoppieto, in the manufactory run by the Plotidii, some vases were made with moulds signed by two potters from Arezzo: first – for a limited period – C. Titius Nepos; later – and for a longer period – M. Perennius Crescens. Archaeometric analyses have confirmed the Arretine provenance of the moulds.

The economic relationships implied by such an evidence are susceptible – just as in the case of Torrita di Siena – of a variety of interpretations,³⁰ but it is a relevant fact that the Chiana River linked the Arno to the Tiber, and that Scoppieto stands on a hill that overlooks the Tiber valley. On these grounds, it is reasonable to conceive of the nucleated area of Arretine production as being actually much wider and more articulated than generally thought. Accordingly, the nucleated production model, which usually applies to smaller geographic contexts, should be extended to a macro-region that encompasses two major road axes, connected to each other: the Arno valley, from Arezzo to Pisa and the Tyrrhenian coast, and the Tiber valley, from Arezzo down to Rome.

Scale and space are demonstrably two interdependent variables. The idea that the achievement of such a territorial expansion and the implementation of an increasingly versatile socio-economic organization were at the same time the condition and the effect of the Italian *sigillata*'s success sounds plausible, and may help explain the “abiding puzzle that an inland site such as Arezzo should have been capable of generating exports that travelled throughout the Roman World.”³¹

Glocalization and networks

The term ‘glocalization’ has become popular since the 80s onwards. It defines a system in which a product designed for the local market is eventually distributed on a global level. Since it implies the aptitude to operate simulta-

30. Pucci 1992, p. 144, Pucci 2014, pp. 10-11.

31. Kenrick 2002, p. 6.

neously at different scales, the term could be appropriate to describe the production of the Italian sigillata, where large manufactories coexisted with smaller units.

Another concept that may be useful in the study of Italian sigillata is that of ‘network’, for it allows us to think of space and scale both in physical and social terms.³²

Of course, spatial analysis is not unknown to classical archaeologists, particularly in the form of GIS (Geographic Information System), and the notion of network does occur in their research; yet the networks they talk about are often little more than distribution maps. By contrast, the concept of network that is at the core of approaches such as that of the Actor-Network Theory³³ is more complex, for it is based upon a ‘topological’ rather than ‘geometric’ understanding of space. It aims at describing and interpreting socio-economic interactions rather than merely physical data. As Ingold has argued,³⁴ the world is not a set of points, but rather a mass of intersecting lines that reflect the actual ‘wayfaring’ of the agents, and incorporates the temporal dimension. For this reason, the term ‘meshwork’ – he suggests – might be preferable in the archaeological discourse, in that – according to his own definition – it captures the flow of movements that ‘weave’ through a given environment: in the meshwork, the lines are not just signs connecting two or more points but the paths along which life is lived.

While keeping using here, for simplicity’s sake, the term ‘network’, I will refer by it to the semantic implications of Ingold’s ‘meshwork’. Either concept, however, by considering the evidence both at the individual and the group level, overcomes the micro-macro dichotomy and is apt to cover multi-scale phenomena, getting closer to the concept of ‘thick description’ elaborated by Geertz.³⁵

Moreover, what makes networks so useful to the archaeologist that studies the material culture is the fact that they include both people and objects.

32. Knappett 2011 and 2013.

33. The Actor-Network Theory (ANT) was developed by French sociologists Bruno Latour and Michel Callon and British anthropologist John Law. Its basic tenet is that social reality is the product of an intricate web of relationships in which human and non-human social actors interact (see Latour 2005). In recent years its application is becoming increasingly popular in archaeology: see Brughmans 2010 and 2013, Östbor and Gerding 2014, Collar *et al.* 2015, Brughmans *et al.* 2016, Brughmans and Poblome 2016. In the field of Roman Sigillata, the works of Van Oyen (2012, 2015a and b, 2016) stand out as particularly stimulating.

34. Ingold 2007.

35. Geertz 1973.

Anthropology has taught us that artifacts possess their own agency³⁶ (and this is true, as we will see below, for the Italian sigillata too): networks fit very well, in fact, with the notion of distributed agency. However, “it is important to stress ... the fact that network methods are part of an archaeological research process, not a replacement of it.”³⁷

The Italian Sigillata network

In reframing our knowledge of the Italian Sigillata by means of the conceptual tool of the network (in the sense explained above) we get some indisputable advantages.

First of all, once we take the above recognized area as a whole, we may definitely put aside the obsolete opposition town/countryside. A network is made of links and nodes that form a continuum, both spatial and functional. I have already mentioned the case of Torrita di Siena, in whose workshop, along with the vases of C. Umbricius Cordus, other vases signed by Camurius and Manneius of Arezzo were made. It is a recent discovery that the same Manneius had vases bearing his stamp produced at Marzuolo, a rural site in the territory of Rusellae (close to the Ombrone River).

The evidence from Scoppieto, reported above, and that from Vasanello, where vases stamped by L. Umbricius Scaurus of Arezzo were made in the workshop of Ancharius,³⁸ proves the existence of organizational and economic links between the town of Arezzo and other rural sites up to more than 150 km distant. This is true even in the case – not altogether impossible, according to Pucci³⁹ – in which the Arretine moulds of C. Titius Nepos and M. Perennius Crescens used at Scoppieto had been purchased by the local potter Plotidius, who used them to make vases in his own right and not as a subcontractor (in fact, the latter possibility would testify in a way to the agency of sigillata: a mould for decorated relief vases was no ordinary instrument of production; it was the creation of a highly skilled craftsmanship, best found in urban contexts, and could generate per se special links in the network).

36. For a discussion of the archaeological objects' agency see Jones and Boivin 2010 and Hodder 2012.

37. Collar *et al.* 2015, p. 16.

38. Nicoletta 2016, p. 183 (with literature).

39. Pucci 2014, p. 11.

At any rate, it is certain that town and countryside kept the dialogue open. As fresh evidence keeps coming from new excavations and surveys, it appears that – as far as the production of Italian sigillata is concerned – there was no boundary separating the two domains. Rather, we discern trails of movement. Each such trail is but one strand in the tissue of trails that form the network.

Obviously, these trails were traveled – often in a physical sense, always in a topological sense – in both directions, but we are unable – at least so far – to determine with any confidence how exactly persons and objects moved from one node to another. For example, we know that certain potters – whose number is likely to increase in the future – adopted the putting-out system, whereby subcontractors accomplished the work in more or less distant workshops; but what was the final destinations of the vases? Where they shipped to the headquarters of the *locator*, who eventually sold them, or were they collected by his agents and shipped directly to the markets through other routes, that is via other links? It is generally assumed that smaller-scale sites did not engage in long-distance trade. Is that always so?

Clearly, the network's nodes are in this regard of particular relevance.

Cities: nodes and agency

Nodes can be connection points, communication endpoints or redistribution points. What kind of nodes were cities?

Van Oyen's idea is that even when sigillata was not produced in cities "it still almost always passed through a city before reaching the consumer."⁴⁰ She relies for that on the evidence provided by the cities of Roman Britain.⁴¹ Unfortunately no comparable evidence is available for Italy, and while it is a fair assumption that what was not consumed by the local markets – those close to the rural workshops that produced it – was directed to cities and larger towns, it is anything but unlikely that before reaching big redistribution nodes such as the ports of Pisa, Pozzuoli and Ostia it "trickled down the sequence of transport routes," as Van Oyen words it, treading the thick texture of the network's lines.

A recent study that compares land, sea and river transportation facilities and estimates the distribution costs for the sigillata produced in Etruria argues

40. Van Oyen 2015b, p. 289.

41. Mainly Willis 2005.

that vases from Arezzo, taking obviously advantage of the river, could be easily diffused throughout the Tiber Valley, but, contrary to what one could expect, the inland roads allowed a deep penetration of the adjacent areas at affordable costs.⁴² Land roads and waterways were not two separate, alternative systems, but could be strategically combined, depending on the circumstances.⁴³ Once more, a network approach may correct some long-held beliefs.

As for cities, there is little doubt that they worked as switching devices within the network, but in addition to that infrastructural role, they might have had a superstructural one as well. Since people bought Italian sigillata mostly at urban markets, or from traders coming from the city, in the imagination of customers it was perhaps perceived – Van Oyen suggests – as an urban commodity. If so, here is another instance of the sigillata's agency: it could explain, at least in part, the conundrum of the stamps *Arretinum* or *Arretinum verum* impressed on vases that certainly were not made in Arezzo. I agree with scholars who believe that such stamps were meant to “give the buyer the suggestion of holding in his hands a product similar to that of Arezzo, or alternatively, manufactured by a craftsman who declared himself Arretine or claimed an Arretine training”⁴⁴, in any case, a singular token of globalization/glocalization.

The latter are concepts that, when applied to ancient Rome, must be handled with particular care,⁴⁵ and Italian sigillata may be a case in point.

The idea that globalization is a synonym for cultural homogenization is in fact a myth,⁴⁶ it rather involves the hybridization of the well-to-do class and the simultaneous marginalization of those who lack the means to appropriate the new lifestyle. The ‘guaranteed’ Arretine vase could meet the desire of local people to acquire, through a fashionable object of material culture, the status of urban elite. One must not neglect, however, that the guarantee in this case is provided not just by the shape, the colour etc., but also by a written text. In the traditional archaeological narrative, there is normally a dualism between subjects and objects: the object is seen as mute in relation to the subject, who is the sole agent. Here the object directly addresses the subject: in other words, far from passively objectifying a social practice, it

42. Kiiskinen 2013.

43. For instance, when the Clanis valley waterway was not available (according to Pliny it was irregularly navigable), bridging the Arno valley to the Tiber valley by land was a quite viable option.

44. Malfitana 2012, p. 208.

45. Pitts and Versluys 2015.

46. Appadurai 1996.

exerts an agency: it ‘speaks’, sends a message that has its own outcome. Be it truly Arretine or not, it can modify the subject’s self-representation, for by choosing it, the buyer may see himself as an urban burgher.

Returning to the cities, among those belonging to the Italian sigillata network, Pisa appears to have been one of the most important nodes. Of course its port gave the Arretine workshops the opportunity to ship their products to the other coastal regions of Italy and the large provincial markets. Reputedly, that was the driving force that induced Ateius to establish some workshops in that north western terminal point (Pisa-Isola di Migliarino) of the Italian sigillata network,⁴⁷ and favoured eventually the entrepreneurial activities of the Late Italian potters, that took the baton. However, that was also the last stretch of the Arno valley, a multi-productive area rich in raw materials (ores, clay, timber), food supplies (grain, oil, wine), and artifacts. A holistic approach, such as that fostered by the network-pattern analysis, far from being limited to the pottery, should take into accounts all the resources that fueled exports, including metalworking: Arezzo was famous for its weapon manufactories since the Etruscan period, and supposedly supplied the Roman army in Germany in the Augustan age.

This latter circumstance deserves attention. Long ago Loeschcke suggested that Ateius produced for the *annona militaris*.⁴⁸ Weapons and pottery could in fact be two sides of the same coin, so to speak.

Pisa is strictly connected, in the history of the Italian sigillata, to another important city Lyon. Although located outside Italy, the Gaulish city is an essential node of the network, since Ateius established a branch workshop there. Actually, we do not know – in this as in other similar cases – if a workshop where people with the nomen Ateius are attested was really a branch of the same enterprise or a separate business run by independent freedmen or slaves *cum peculio*; nevertheless the logic is the same: Lyon, located on the Rhone’s banks, was a perfect base to reach the major Roman army camps of the *limes*.⁴⁹ Moreover, Lyon was the seat of the mint that coined the money necessary to pay the Rhine army, and pottery and coins could have shared the same communication routes.

47. Ateius seems to have been preceded at Pisa by M. Valerius Volusus (Sheperd 2004).

48. Loeschcke 1909; The *gens Ateia*, that was granted land assignments between Arezzo and Valdichiana, had a prominent position in the Augustan age: C. Ateius Capito was *consul suffectus* in 5 AD and *curator aquae* in 13 AD (Sangrison 1998, Sternini 2012, pp. 25-26).

49. The fact that Ateius established a (minor) workshop at La Graufesenque might prove that he sought to create a link with the southern Gaulish countryside.

The other obvious node is Rome itself. The *Urbs* was certainly a large consumption market, and an essential redistribution point for Italian sigillata. There is no full agreement, however, on the latter's provenance. While, according to Rizzo (who relies on Pavolini), the available statistics show a constant prevalence of Arezzo, until the end of the 1st century AD,⁵⁰ Klynne states that "Central Italian Sigillata had no less than 60 percent of the market share in the region of Rome during the late Augustan period" and takes that as evidence of Arezzo's increasingly difficulties.⁵¹ However, the Central sigillata mostly comes from the Tiber valley. A series of workshops have been documented there (the last is that of L. Nonius at San Cassiano⁵²), or just supposed (like the so-called 'OctPro – OctSal group'⁵³). Some are still obscure, like the La Celsa workshop, near Livia's villa at Prima Porta,⁵⁴ whereas the productions of Vasanello and Scoppieto are better known.

Encompassing a wider network

The salient fact is the existence of several links (more, I strongly suspect, are likely to be discovered in the next years) between medium and lower Tiber valley workshops and those of Arezzo. I have already mentioned the moulds of C. Titius and M. Perennius used at Scoppieto, and the circumstance that vases of L. Umbricius Scaurus were made at Vasanello. In addition, it has been noted that at Vasanello the name of some of the workers coincide with those of C. Titius, and in general, the possibility has been suggested that some Arretine potters had branches in Central Italy⁵⁵.

Maybe they were not branches in the modern sense of the word, but forms of structural connection did exist, and this gives strength to the idea that even the middle and lower Tiber valley was somehow part of the same inter-regional sigillata network.

So far scholars have studied Italian sigillata taking into account distinct production areas (Arezzo, the Tyrrhenian coast, the Tiber Valley, etc.). I suggest here that future research moves from a different perspective. Much is to gain, I believe, by inserting local realities (whose peculiarity, at any rate, is never

50. Rizzo 2003, pp. 199-200.

51. Klynne 2003, p. 32.

52. Bergamini and Manca 2008.

53. Olcese 2004.

54. Carbonara 1991.

55. Olcese 2004 emphasizes that vases with the same stamp have different chemical composition.

be ignored or overlooked) in a wider network that had Arezzo as its centre of gravity and driving force, but included a much larger geographic extension. The concept of homophily (nodes that are connected in that they share certain parameters of similarity) may prove useful.⁵⁶ Only in such a new perspective can discussions about space and scale acquire their fullest dimension.

Persistent challenges

As for the *vexata quaestio* of the workshops' internal organization, this is an issue that exceeds the scope of the present paper, also because recent discoveries have not produced decisive evidence in that respect.⁵⁷

At Scoppieto – by far the best known sigillata manufactory in Italy – the stamps prove that, along with the two major firms⁵⁸ (the Plotidii in the first phase, P. Avillius Gl () in the subsequent one), no less than 95 other firms worked over the about one hundred years of its life, some for a longer, others for a shorter period. This necessarily implies some form of cooperation, and cannot but corroborate the theory that stamps had, among others, an internal purpose which, however, it is difficult to specify.

A similar uncertainty surrounds the forms of distribution of Scoppieto's sigillata. Among the advantages of the concentration of many potters in the same site – that has all the features of a manufactory – one is represented by the attractive force such an agglomeration exerted on intermediaries responsible for the distribution of products. It cannot be excluded that the Plotidii and P. Avillius Gl (), as the manufactory's chief owners-operators, who represented self-employed craftsmen with no links between them other than common productive interests, were in control of the pottery's trade. But even this is sheer speculation. More so when other minor sites, with scantier evidence – in fact, the majority – are concerned.

56. Collar *et al.* 2015, p. 22.

57. I remark, nevertheless, that the hypothesis formulated in Kenrick 2005 that the word *Pub/Publ* on several Arretine stamps is not an individual name (a potter Publius probably never existed at Arezzo) but indicates a *servus publicus*, and implies therefore “some kind of municipal involvement,” has gone virtually unnoticed so far, while it surely deserved to be discussed from a socio-economic point of view.

58. For the use of this term in ancient Roman economy see Frier and Kehoe 2007.

We must have for the time being the humility to admit that we are “dealing with possibilities, probabilities and uncertainties in favour of some partnership, some officinator-worker relationships and some don’t know.”⁵⁹

Yet, in my opinion, it is not a futile exercise to reformulate old issues in a widened conceptual frame. When other production sites of the relevance of Scoppieto will be investigated, the overall picture will be no doubt clearer. The purpose of this article was less to produce new data on Italian sigillata than to point out the potential of inserting the whole of its production and commercialization into the same network, covering both Etruria and Latium, in the conviction that “what might appear to be a random distribution of activity in Euclidean space is often seen as being highly ordered on a network,”⁶⁰ even if the exact dynamic still eludes us.

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59. Hartley 2002, p. 133 (quoted by Nicoletta 2016, p. 183; the pages devoted by Nicoletta to this topic are nevertheless the best available picture of the state of the art).

60. Batty 2005, p. 152 (quoted by Brughmans 2010, p. 286).

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VOLCANIC MILLSTONES FROM ANCIENT HALASARNA, KOS ISLAND

MINERALOGY, GEOCHEMISTRY AND COMPARISON OF ARCHAEOLOGICAL SAMPLES TO ROCK SAMPLES FROM ANCIENT QUARRIES ON KOS AND NISYROS, DODECANESE, GREECE

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Introduction

The Hellenistic-Roman sanctuary of Apollo (sacred precinct of the Hellenistic period) and the late-Roman/early-Byzantine settlement of the ancient deme of Halasarna, are located in the central part of the south coast of Kos Island, Dodecanese, Greece. The archaeological excavation is conducted since 1985 by the University of Athens, on the south coast of Kos, where the modern village of Kardamaina lies. Among the buildings that have already been investigated, the most important seem to be a temple of the early 3rd century BC, probably dedicated to the cult of Apollo (Building Γ) and a temple of the Early Roman period (Building Δ). The remains of a late Hellenistic building (Building Α), destroyed by the illegal digging for the construction of a modern hotel complex had been formerly identified as temple remains, a theory which has been reconsidered due to recent research. Three more buildings adjacent to the sanctuary, dating from late Hellenistic to Roman period, have

been excavated during the latest years. According to the findings, the sanctuary reached its greatest glory in the late 4th century BC and during the Hellenistic period; it was eventually destroyed by an earthquake in 139 AD. During the late-Roman and the early-Byzantine period, a settlement and a grave complex had been established on these buildings, which flourished between the earthquakes of 469 and 554 AD. Many of the residences were founded on top of the Hellenistic remains and provided most of the implements presented in this paper.¹ The damaged properties were rebuilt on the remains of the destroyed buildings and the site was reoccupied until 654 AD, when it was abandoned.

The archaeological investigation of the site which is still in progress, has brought to light important findings related to the cults of the sanctuary (fragments of statues, inscriptions, etc.) as well as various others, mainly household utensils (coarse pottery and stone implements), property of the late-Roman/early-Byzantine residents. The stone vessels and numerous querns² used for grinding cereals found in the excavation are extremely interesting. Unfortunately, dating of a considerable number of the Kardamaina querns proved to be a difficult task, since they were unearthed during illegal excavations that took place in 1981. Most of these millstones are made of volcanic rocks, whose provenance has long been a matter of discussion. Ancient sources (e.g. Strabo, *Geographika*, X 488-489) claim that Nisyros Island used to provide raw volcanic material for millstones crafting: “Νίσυρος δέ...ἔστι...στρογγυλή δὲ καὶ ὑψηλὴ καὶ πετρώδης τοῦ μύλου λίθου. τοῖς γούν ἀστρυγεῖτοσιν ἐκεῖθεν ἔστιν ἡ τῶν μύλων εὐπορία” (Nisyros is round and high and plenty of millstone-rocks. The provision of millstones by its neighbors took place there).

In this paper, a thorough study of geological and archaeological samples was undertaken, in order to determine –if possible– the provenance of the volcanic rocks that were used in ancient Halasarna for the querns. Geological samples were taken from two ancient quarries (Peleketa and Kastelli) in Kos Island and three more areas in Nisyros Island (Stavros, Argos, Aghia Eirene). In the case of Argos area, the existence of ancient quarries was impossible to be verified and thus samples come from the dark-grey lavas that crop out in this narrow area. All these samples were compared in terms of mineralogy, petrography, mineral chemistry and geochemistry to a plethora of archaeological samples, found in the excavations and covering a wide period of time. Finally, the study of these artifacts aims to identify the local quarries

1. Kokkorou-Alevras 2004, pp.19-23 (and references therein).
2. Poupaki 2011.

from which the lithic material was extracted in order to decide whether it was local or imported as raw material or finished artifact, from neighboring Islands or other sites, e.g. the opposite coasts of Asia Minor. Furthermore this research aims to shed some light on aspects of everyday life as well as on the living standards of the ancient Halasarnitae.

Archaeological data

The archaeological research has brought to light the remains of seven Hellenistic buildings (A, B, Γ, Δ, E, Z and a stoa, FIG. 1) which belong to the sanctuary of Apollo. Among the numerous and important findings of the archaeological excavation, many fragments of stone vases, querns and tools were discovered. The earliest handmills and tools, which were found, date back to the prehistoric period.³ The classical and Hellenistic querns were probably used by the priests and the personnel of the sanctuary. The most important group of querns studied is the rotary handmills, which must be dated from the early-Roman period to the abandonment of the early-Byzantine settlement at the end of the 7th century AD.

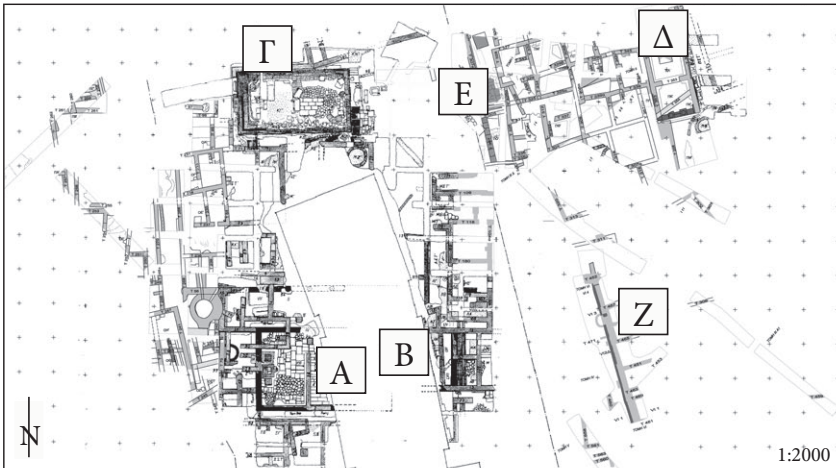


FIG. 1. Topographic sketch-map of the archeological site of ancient Halasarna.

3. For the latest results of the research related to the pre-Neolithic, Neolithic and Bronze-Age inhabiting of Halasarna region, see Georgiadis 2015.

The following quern-types have been recognized so far⁴:

- I. saddle-querns (FIG. 3b): four fragmented examples of prehistoric times and one of geometric period;
- II. hopper-rubbers (FIGS 2c and 3d): six fragmented examples were found, all dating between 5th and 3rd century BC. Both types are carved into volcanic stones that does not exist on Kos. It is worth mentioning that the material and the shape of some of the saddle querns and of all the Koan hopper-rubbers resemble those of millstones from Olynthus⁵, Delos⁶, Mahdia⁷, Kerynia⁸ and Majorca⁹ shipwrecks.
- III. rotary querns (FIGS 2a, b, d, 3a, c): This is by far the largest group of artifacts recovered. Their dimensions, material and key features allow us to distinguish the following subgroups, which are securely dated by the stratigraphy of the excavation and the strong similarities with other published examples of known age: (a) 1st century BC–1st century AD. The main features of this group are their thickness and the sloping-outwards grinding surface, which supports the rotation axis. The stone used was probably not extracted from Kos. (b) early 1st century AD: The main feature of this group is thickness as well as the fact that the upper part of the millstones is carved into a deep hopper. They are crafted from low quality rock that could be Koan. (c) 2nd–5th century AD: The millstones of this group must be dated since the Roman times, but they had also been used during the first phase of the settlement (139–469 AD), since they were found *in situ*, either inside the houses or embedded in their masonry. Even though these querns could be dated earlier, a dating in Roman times was avoided, due to their special features: they are thin, the grinding surfaces are incised, the hopper of the upper millstones is slightly shallow, the axis of rotation is fixed on a table and perforates the nether millstones, and last but not least the wooden frame which permits the steady rotation of the upper millstone around the axis, is fixed inside the hopper. (d) mid 5th – early 7th century AD: The millstones of this group can be attributed to the later inhabitants (469-654 AD). They are slightly thicker than the millstones of the previous group, the grinding surfaces are not incised and the wooden frame is firmly fixed on two places, both inside and outside the hopper.

4. Poupaki 2009; Poupaki 2011.

5. Robinson and Graham 1938, p. 330.

6. Déonna 1938.

7. Baatz 1994, p. 98.

8. Katzev 1969, pp. 55-59.

9. Arribas 1987, p. 571; Williams-Thorpe and Thorpe 1990, p. 135.

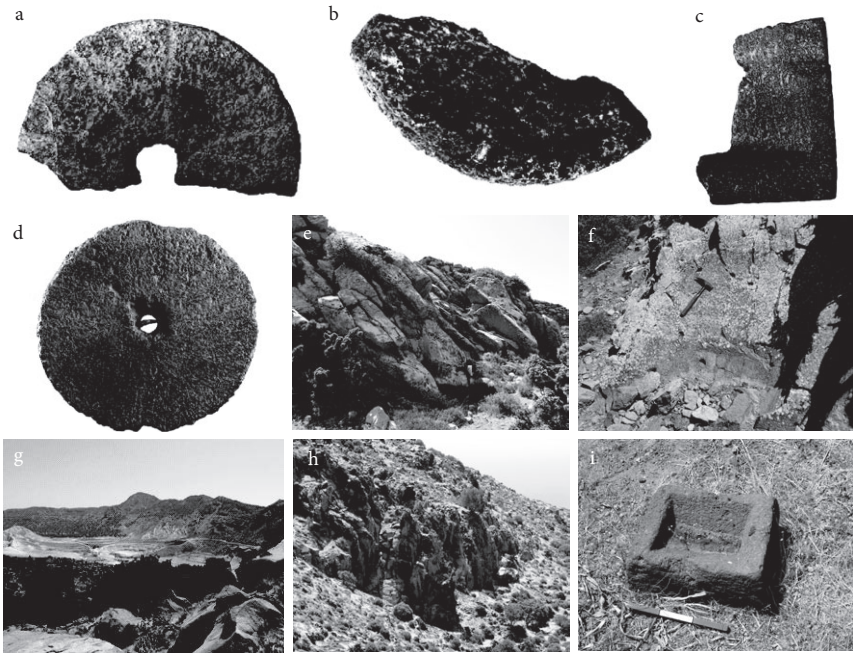


FIG. 2. (a-d) millstones LS 65, 7, 25 and 67 from the ancient Halasarna excavations; Ancient lava quarry at (e) Peleketa and (f) Kastelli areas, Kos Island. Note the quarry marks that are obvious in both sites; (g) Lava outcrops in Stavros area, Nisyros Island; (h) Lava domes in the area Stavros-Ag. Eirene, Nisyros Island; (i) Handmill (hopper-rubber) from Argos area, Nisyros Island.

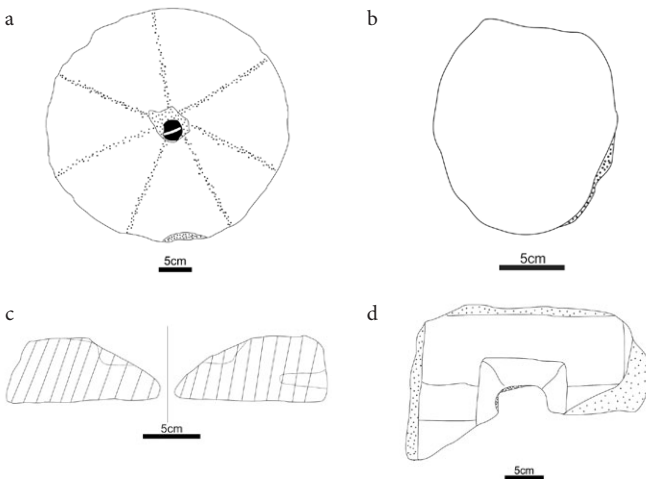


FIG. 3. Sketch-figures of different types of millstones: (a and c) rotary querns; (b) saddle quern; (d) hopper-rubber.

The rotary-querns of the third and fourth group are carved in reddish or grayish volcanic rock, which is common in western Kos, Kefalos peninsula.¹⁰ Therefore, these querns had been considered as products of a single Koan workshop. Furthermore, strong similarities had been observed between these querns and the volcanic rocks extracted from Peleketa and Kastelli quarries. Schematic drawings of the most common quern-types are presented in Figure 3.

Concerning the speculation on the possible distribution of Koan mills, recent archaeological research undertaken by the University of Athens shed light on the extraction of koan volcanic rocks since prehistoric times. As the archaeological research goes on, querns and grinders made of koan volcanic rocks were found in neighboring Islands, from the Neolithic period until the early Bronze Age.¹¹ Indeed, koan volcanic rocks have been also identified in prehistoric artifacts and especially 'saddle querns' from Kalymnos¹² and Agathonisi Islands.¹³

Minor exports of olynthian mills carved also in the same stones cannot be excluded. According to the results of the present analyses, koan raw material has been used for a small number of hopper-rubbers, in order to reduce the imports from Nisyros. A single roman hopper mill found in Agathonisi, carved in a rock similar to koan volcanic rocks¹⁴ could indicate small scale exports of koan hopper mills.

Koan rotary querns carved in local stones, though, must have been better known in the surrounding Islands from the late Hellenistic until Byzantine period. This conclusion is supported by the fact that rotary querns of purple volcanic rocks, similar to the studied ones from Kos, have been found in Delos, Halikarnassos and Knidos archaeological sites, whereas the description of the rock of the rotary querns from the cargo of the ship wreck discovered close to the Serçe Limani coast, dated in the 11th century AD,¹⁵ resembles the same raw material as well.

The important quarries of Kos and Nisyros Islands, which have been described in the ancient sources and from which samples were collected are:

10. Poupaki 2001, pp. 62-66; Poupaki & Chatzikonstantinou 2001, pp. 543-544; Poupaki 2004, pp. 174-175.
11. Georgiadis 2012, p. 104.
12. Poupaki 2012, nos. EA 159-160; Nikolakopoulou 2011, pp. 253-254, nos. A, B, Γ, Δ, Στ.
13. Poupaki, in print a, no. ΛΘ 126 and 101.
14. Poupaki, in print b, no. ΛΘ 45.
15. Runnels 2004.

Peleketa quarry (Kefalos peninsula, Kos): it is situated one kilometer southwest of Palatia, covering a large area of more than 2 square kilometres (~ 1 sq. mile) on both sides of the country road leading from Kamares to Lathra (FIG. 2e). Reddish and greyish lava had been extracted. The quarry-marks detected on the dispersed quarried boulders show that the exploitation can be dated back to the late 5th century BC and that the quarry was active till the Roman imperial period.¹⁶

Kastelli quarry (Kefalos peninsula, Kos): it is situated between two rocky hills, three and a half kilometer southeast of Peleketa in Skinos bay. The higher hill was fortified in the medieval period and remains of this fortification, recorded as “menaropyrgoma”, are preserved till nowadays. On the lowest part of the hill quarry-traces (FIG. 2f), inadequate to date the period of extraction, have been identified.¹⁷ Strong similarities have been remarked between the rock extracted from Peleketa and Kastelli and the building material used in the Hellenistic temples and theatre of the neighboring ancient deme of Isthmos, as well as for the buildings erected in Kos town before the synoecism (366/5 BC), where the well-known town of Kos-Meropis is attested. The most important case concerns the Hellenistic city wall built with fine dressed plinths of volcanic rocks, recorded as “sideropetra” (iron stone) by the Italian archaeologists, who excavated Kos during the Italian domination of Dodecanese.¹⁸

Stavros area (Nisyros): It is situated on the south rim of the edge of the volcano (FIG. 2g), close to the contemporary monastery of Stavros. The monastery was erected on the remains of a medieval fort built by the Knights of the Order of St. John and on the site of the Hellenistic acropolis of Argos, a few remains of which are nowadays preserved. No ancient quarry marks had been observed there.

The area between Stavros and Agia Eirene (Nisyros): On the road from Stavros to Agia Eirene, where no traces of ancient quarrying or other antiquities had been recorded, a few samples of volcanic rocks were also collected from lava domes exposed in the area (FIG. 2h). During the survey, the coastal area of Agia Eirene, where a huge accumulation of volcanic boulders is lying, was also inspected. Sampling from this coastal site was avoided, because no in situ material could be found.

16. Poupaki 2001, pp. 62-66.

17. Poupaki 2001, p. 61; Poupaki and Chatzikonstantinou 2001, 543-544.

18. Poupaki 2012, vol. A, 78-80.

Argos (Nisyros): in the south and southeastern coast of the Island, a slope extended between the crossing of the volcanic domes of Karaviotis and Trapezina and the andesitic flows is a huge area where important quarrying traces have been detected. In this area, a subterranean quarry has been surveyed lately by the Greek Institute of Geological and Mineralogical Researches,¹⁹ which could have provided appropriate rock for querns, such as the hopper mills of Kardamaina. Till nowadays there is confusion among the scientists about the exact location of that subterranean quarry, which had also been visited by Ross in the late 18th century.²⁰ There has been a well-spread theory that the ancient quarry of Nisyrian querns was found in Avlaki, a coastal village to the north. After a thorough research of all the relative literature,²¹ we dare to identify the tunnels carved in the black porous hard volcanic rocks surveyed by IGME as the ancient subterranean quarry that Ross visited, where he noticed cuttings on the walls for the extraction of blocks for querns. On the fields around the subterranean quarry significant examples of Olynthian mills (hopper-rubbers) had been noticed, even half-finished or even fragmented handmills (FIG. 2i). Additionally, new open-air quarry areas were located during our field work, from where different volcanic rocks had been extracted, probably between the 4th and the 2nd centuries BC.

Geological Setting

Kos and Nisyros Islands constitute the easternmost part of the so-called South Aegean Volcanic Arc. This volcanic arc has developed in the back arc region of the Hellenic subduction zone, where African plate is subducted beneath the Eurasian one, with contemporaneous destruction of remnants of the Tethyan oceanic lithosphere.²² While Nisyros Island is dominated by volcanic rocks only, the Island of Kos displays a more complex geology (FIG. 4). Apart from minor Palaeozoic units, the southwest-vergent nappe consist of Mesozoic to Cenozoic sediments and magmatic rocks, including ophiolites. Some of these units have undergone different degrees of metamorphism,²³ during several events between Jurassic and Miocene times.²⁴ The oldest rock units in Kos Island, form the Dikaios Mountain in the central part of the Island towards the

19. IGME 2008.

20. Ross 1843, II, p. 79; Bean and Cook 1957, p. 119; Runnels 1981, pp. 91-94; Giannidis 1987, pp. 121-122; Koumentos 1994, p. 46.

21. Dawkins and Wace 1905, p. 170.

22. Pe-Piper and Piper 2005.

23. Jacobshagen 1986.

24. Altherr *et al.* 1994, Seidel *et al.* 1977 and 1982.

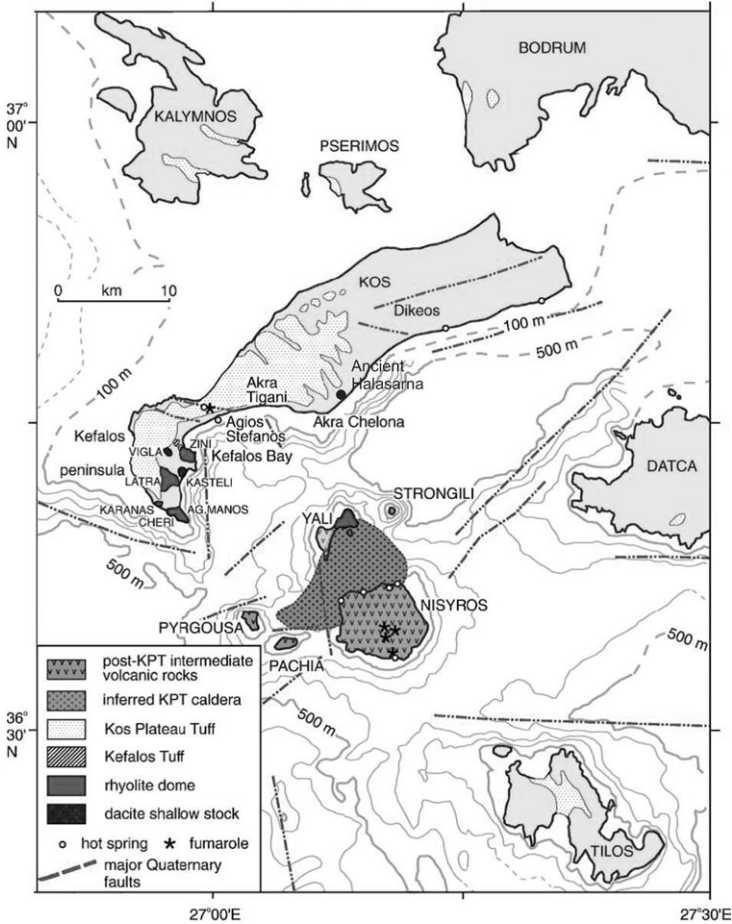


FIG. 4. Geological map of Kos and Nisyros Islands, after Bachmann and Schnyder 2006. The shaded area refers to undifferentiated non-volcanic rocks.

south coast and consist of Permian-Carboniferous, slightly metamorphosed sediments (marls, limestones, sandstones and rare mafic intercalations).

At 12 Ma, a large quartz-monzonite intruded part of this series and thus caused contact metamorphism at places²⁵. The western part of the Dikaiois unit is overlain by quaternary volcanics and minor Plio-Pleistocene sediments while to the east, Dikaiois unit is tectonically (north-dipping normal faults) bordered by a flysch sequence of Late Cretaceous to Tertiary age²⁶.

25. Altherr *et al.* 1982.

26. Dürr and Jacobshagen 1986.

Neogene molassic sediments are also widespread in the western Island and are uncomfortably overlying Mesozoic carbonates.²⁷ Volcanic rocks, mainly andesites, dacites and/or rhyolites, are present in some places along the Island, like the Kamari caldera or the Zini where ignimbrites crop out²⁸ but the most widespread volcanic rock is the Kos Plateau Tuff (KPT),²⁹ which occupies the largest part of the west side of the Island. This tuff originated from a submarine volcanic center between Kos and Nisyros Islands that erupted approximately 0.16 Ma years ago and resulted in the formation of a large caldera which most probably extends from Kefalos bay in southeastern Kos Island to Nisyros Island. Nowadays, volcanic activity is present in the form of post-eruptive hot springs and solfataras.

After the KPT eruption, volcanism shifted towards the nearby area of Nisyros Island, which is considered to be the youngest volcanic center in Greece. The inception of volcanism is poorly constrained, but deposits attributed to the KPT eruption are found at the top of the submarine lava sequence³⁰ indicating that the onset of subaerial volcanism was younger than 161 ka.³¹ Alternating episodes of explosive and more effusive activity gradually resulted to a complex stratovolcano composed of ash layers and lavas, with eruptive products ranging from basaltic-andesites to rhyolites.³² Today, Nisyros is well known for its famous ca. 4 km wide caldera, which is thought to have been formed during two large Plinian-type eruptions (Lower Pumice and Upper Pumice), approximately 45ka before present,³³ and has since been partially refilled by dacitic domes. Post-caldera volcanism is represented by the extrusion and growth of NE-SW trending rhyo-dacitic lava domes which today fill the western half of the caldera.³⁴ These domes are the most recent magmatic eruptions on Nisyros. Since then, the important hydrothermal activity has led to thirteen phreatic eruptions during historic times. The most recent ones date back in 1871–1873 and 1888.³⁵ These phreatic eruptions formed characteristic phreatic craters (Polivotis and Mikros Polivotis respectively) and caused discharge of fumarolic fluids, H₂S and associated seismic activity.³⁶ Even today, Nisyros exhibits intense hydrothermal activity which is

27. Papanikolaou and Nomikou 1998.

28. Dalabakis and Vougioukalakis 1993.

29. Allen 2001.

30. Volentik *et al.* 2005.

31. Smith *et al.* 1996.

32. Kinvig *et al.* 2010; Volentik *et al.* 2005.

33. Vougioukalakis 1998; Volentik *et al.* 2005.

34. Volentik *et al.* 2005.

35. Marini *et al.* 1993; Caliro *et al.* 2005.

36. Marini *et al.* 1993.

expressed in the surface as fumaroles, boiling mud pools, CO₂ degassing and hot springs, mainly in the southern part of the caldera.

Sampling and analytical methods

In order to study in detail the mineralogy and geochemistry of the millstones, 22 samples from different types of millstones found in the excavations of the ancient Halasarna were collected.³⁷ Sampling was conducted with respect to the findings, and the quantity obtained was the least possible in order to make either a thin section or in some cases, for geochemical analyses as well.

Furthermore, 13 rock samples were collected from 2 quarrying sites in Kos (Peleketa, Kastelli) and 3 sites in Nisyros Islands (Stavros, Stavros–Ag. Eirene, Argos), from where, according to the ancient sources, volcanic material was extracted in order to be used for millstones crafting. Both archaeological and rock samples investigated are listed in Table 1.

From these geological and archaeological samples, 25 thin and polished sections underwent detailed mineralogical investigation using optical microscopy. From those, 12 (5 geological and 7 archaeological) representative thin-and-polished sections were examined using a JEOL JSM-5600 scanning electron microscope, equipped with back-scattered imaging capabilities, at the laboratories of the University of Athens. Powders from 10 representative samples (5 geological and 5 archaeological) were processed by X-ray diffraction, using a Brooker (Siemens) 5005 X-ray diffractometer, in conjunction with the DIFFRACplus software. Results were evaluated using the EVA 10.0 software. Finally, chemical analyses of all 35 samples (both geological and archaeological) were conducted by ICP-MS, at the AcmeLabs in Canada.

37. The examined samples derive from: “olynthian type” handmills of classical-hellenistic period (ΛΣ 1, 2, 25, 26, 40, 42, X; Poupaki 2011, nos. 30, 31, 32, 33, 34, 35, and unpublished) rotary handmill of late-hellenistic or early-roman period (ΛΣ 4, 7; Poupaki 2011, nos. 38, 40), of 100-400 AD (ΛΣ 59; Poupaki 2011, no. 46), of 2nd-mid 6th century AD (ΛΣ 39, 60, 151; Poupaki 2011, nos. 43, 47 and Poupaki in print a, no. 52) of mid 6th-mid 7th century AD (ΛΣ 65, 99; Poupaki 2011, nos. 55-56).

TABLE 1. Description of the studied samples

Group	Sample	Typology	Origin	Description
Geological (i)	Ko-Pel1, -2	geological	Peleketa, Kos	grey massive lava with porphyritic texture
	Ko-Kast1-3	geological	Kastelli, Kos	grey-reddish massive lava with porphyritic texture
Geological (ii)	N-Lat1, -2	geological	Stavros-Ag. Eirini, Nisyros	black aphanitic lava
	N-St1, -2	geological	Stavros, Nisyros	black aphanitic lava
	N-Arg1-4	geological	Argos, Nisyros	black aphanitic lava
Archeological (i)	LSX	archeological	Ancient Halasarna	olynthian type handmill of classical-hellenistic period
	LS1	archeological	Ancient Halasarna	olynthian type handmill of classical-hellenistic period
	LS12	archeological	Ancient Halasarna	rotary handmill of mid 6th – mid 7th century AD
	LS14	archeological	Ancient Halasarna	rotary handmill of 2nd – mid 6th century AD
	LS39	archeological	Ancient Halasarna	rotary handmill of 2nd – mid 6th century AD
	LS59	archeological	Ancient Halasarna	rotary handmill of 100-400 AD
	LS60	archeological	Ancient Halasarna	rotary handmill of 2nd – mid 6th century AD
	LS65	archeological	Ancient Halasarna	rotary handmill of mid 6th – mid 7th century AD
	LS99	archeological	Ancient Halasarna	rotary handmill of mid 6th – mid 7th century AD
	LS151	archeological	Ancient Halasarna	rotary handmill of 2nd – mid 6th century AD
	LS2	archeological	Ancient Halasarna	olynthian type handmill of classical-hellenistic period
	LS4	archeological	Ancient Halasarna	rotary handmill of late-hellenistic or early-roman period
	LS6	archeological	Ancient Halasarna	rotary handmill of 2nd – mid 6th century AD
	LS7	archeological	Ancient Halasarna	rotary handmill of late-hellenistic or early-roman period
	LS11	archeological	Ancient Halasarna	rotary handmill of 2nd – mid 6th century AD
Archeological (ii)	LS25	archeological	Ancient Halasarna	olynthian type handmill of classical-hellenistic period
	LS26	archeological	Ancient Halasarna	olynthian type handmill of classical-hellenistic period
	LS40	archeological	Ancient Halasarna	olynthian type handmill of classical-hellenistic period
	LS42	archeological	Ancient Halasarna	olynthian type handmill of classical-hellenistic period
	LS4	archeological	Ancient Halasarna	rotary handmill of late-hellenistic or early-roman period
	LS57	archeological	Ancient Halasarna	rotary handmill of 2nd – mid 6th century AD
	LS15	archeological	Ancient Halasarna	rotary handmill of mid 6th – mid 7th century AD

Petrography

GEOLOGICAL SAMPLES

Samples from Kos-Peleketa quarry (KoPel₁, KoPel₂), studied by optical microscope, exhibit a characteristic porphyritic texture (FIG. 5a). Their fine grained matrix consists mostly of volcanic glass and microlitic plagioclase crystals with minor euhedral to subhedral K-feldspar crystals (sanidine). Phenocrysts, reaching sometimes sizes up to 1 cm, are mostly euhedral, zoned and/or twinned plagioclase, euhedral to subhedral biotite and to a lesser extent euhedral pyroxenes or amphiboles. Olivine is rare and forms smaller phenocrysts disseminated in the matrix. Opaque phases, zircon, often as inclusion in biotite and apatite in decreasing modular abundance are the main accessory minerals. Volcanic glass is also present in the matrix. Quite similar are the microscopic features of the samples from the quarry of Kos-Kastelli (Ko-Kast₁, Ko-Kast₂, Ko-Kast₃). In these samples, the phenocrysts are mostly plagioclase and biotite, with minor contribution of pyroxene and amphibole (hornblende) that are scarcely set in the glass-dominated matrix. Sanidine is also present and usually forms microlites. Again, olivine, apatite, zircon and opaque are the main accessory minerals. No voids or cavities were observed (FIG. 5b).

On the other hand, samples from all three sites from Nisyros Island exhibit significantly different features (FIGS. 5c-e). The dark grey-black lavas from Stavros area (NST₁, NST₂) are characterized by vesicular porphyritic texture. Phenocrysts are mostly plagioclase crystals, biotite is absent. Pyroxenes and rarely hornblende can also be present as phenocrysts. In places, the plagioclase phenocrysts seem to be oriented and give a trachytic texture to the rock. Opaque minerals and apatite are quite rare. Samples from Ag. Eirene (N-LAT₁, N-LAT₂) and Argos (N-ARG₁, N-ARG₂, N-ARG₃, N-ARG₄) areas respectively, are very similar and have much lesser phenocrysts compared to the samples from Stavros area. All samples display a strong vesicular texture, with voids occupying up to 30 % of the rock's volume. Most of the times the vugs are empty but in some cases subordinate calcite-filling was observed. Moreover, these samples are characterized by a more aphanitic texture, as the few phenocrysts, mostly plagioclase, pyroxenes (both ortho- and clino-) and subordinate amphibole, are very fine grained and randomly set in the vitreous matrix. Again biotite is absent, and opaque, olivine and apatite can be found as accessory phases.

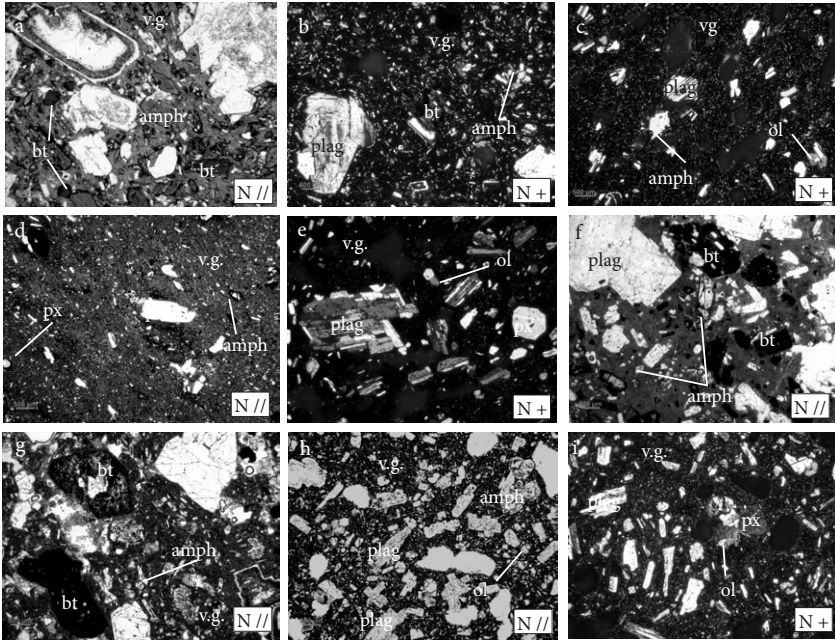


FIG. 5. Microphotographs of representative samples: plagioclase (plag), amphibole (amph) and biotite (bt) phenocrysts, set within a matrix rich in volcanic glass (v.g.), (a) sample KO-PEL1 and (b) sample KO-KAST1; (c) plagioclase, amphibole and olivine (ol) phenocrysts, in vesicular-microlitic matrix, sample N-ARG2; (d) plagioclase, amphibole and pyroxene phenocrysts set in microlitic (plagioclase) matrix, sample N-LAT1; (e) multiple-twinned plagioclase phenocrysts along with pyroxene and olivine, set in glassy matrix sample N-ST2; (f) plagioclase, biotite and amphibole phenocrysts, sample LS14; (g) plagioclase, biotite and amphibole idiomorphic crystals set in glassy matrix, sample LS39; (h) vesicular-trachytic texture dominated by amphibole and plagioclase phenocrysts, sample LS26; (i), vesicular-trachytic texture, phenocrysts are plagioclase, pyroxene and olivine, sample LS40. Symbols (N//) and (N+) stand for parallel and crossed polarization respectively.

As a conclusion there are distinct differences between group-1 and group-2 concerning the color, the texture, the porosity and the presence of major mineralogical constituents such as biotite.

ARCHAEOLOGICAL SAMPLES

The detailed microscopic study of the archaeological samples (FIGS. 5f-i) leads also to the discrimination of two different groups. The first group (group-I), which mainly contains rotary mills (samples LSX, LS1, LS12, LS14, LS39, LS59,

LS60, LS65, LS99 and LS151) of grey-reddish colored lavas that exhibit characteristic porphyritic texture. Euhedral plagioclase crystals are the most common phenocrysts and usually are strongly zoned. Biotite, including zircon in places is always present, as euhedral to subhedral crystals, while amphiboles and pyroxenes can also be present as phenocrysts in decreasing order of modular frequency. The fine grained matrix is vitreous, containing numerous sanidine microlites and there were no voids observed. Apatite, olivine and opaque minerals are along with zircon the main accessory phases.

The second group (group-II), which almost entirely consists of hopper mills, is totally different. Samples LS2, LS4, LS6, LS7, LS11, LS25, LS26, LS40 and LS42 consist of dark grey lava, with characteristic vesicular texture. It must be noted that samples from both groups exhibit a considerable amount of weathering, which is commonly expressed with the kaolinitization of feldspars.

The described differences in the mineralogical composition were verified by X-ray diffraction analyses of representative samples; both archaeological and geological (TABLE 2).

TABLE 2. XRD results from representative samples

Samples	Plag	K-fsp	Px	Amph	Bt	Mont	Cr
Geological	KOPEL1	+			+		
	KOKAST1	+	+	+	+	+	
	NARG2	+		+			
	NST2	+		+			
	NLAT1	+					+
Archaeological	LS1	+	+		+		
	LS2	+		+			
	LS40	+		+			
	LS60	+		+	+	+	
	LSX	+	+	+	+		

Plag: plagioclase; **K-fsp:** K-feldspar; **Px:** pyroxene; **Amph:** amphibole; **Bt:** biotite; **Mont:** montmorillonite; **Cr:** cristobalite.

The above two groups show important similarities with some of the geological samples and thus they could be correlated. The first one has similar macroscopic features (light grey to reddish color with no porosity and equigranular to porphyritic texture) and microscopic features (porphyritic texture and strong presence of biotite), with the geological samples from Kos Island (group-1). In fact, this group of handmills belongs to the products of the Koan workshop, which was probably active even in the Hellenistic

period and manufactured hopper-mills e.g. sample LSX, in order to reduce the import of Nisyrian products. The production of that workshop reached its peak during the 5th and 6th century AD by carving high-quality rotary querns (LS12, LS14, LS39, LS60, LS65, LS99 and LS151), even though some early attempts must be dated back to the 2nd century AD (LS59).

The second archaeological group is distinctly different from the previous one. Apart from the totally different macroscopic appearance (dark-colors and high porosity), these samples are microscopically characterized by vesicular, aphanitic to light porphyritic texture, and absence of biotite, features that are observed only in the geological samples from Nisyros (group-2).

These querns which are Olynthian mills (LS2, LS25, LS26, LS40 and LS42) are dated dominantly in the Hellenistic period and must be utensils used in the sanctuary for the preparation of different bloodless offerings (cakes, pies etc.). A pair of rotary querns (LS4 and possibly LS7) of Nisyrian millstone may indicate that the activity of the Nisyrian workshop did not ceased when the hopper-rubbers became unpopular, but it managed to adopt the modern patterns, so as to produce the technically advanced type of rotary quern.

Additional mineral-chemical and geochemical examination of the samples was made in order to extract more information and make the best possible correlation of the archaeological to the geological samples.

Mineral chemistry

Trying to identify any differences that could help in the determination of the provenance of the volcanic rocks that were used for the studied millstones, 12 representative samples (5 geological and 7 archaeological) were examined using scanning electron microscopy (FIG. 6). All five major mineralogical phases of the studied samples were examined in detail regarding their mineral-chemistry: feldspar group minerals, pyroxenes, amphiboles, biotites and olivines initially seem not to be very helpful, as the studied compositions (TABLE 3) revealed a relatively wide range for most of the mineral phases and did not result in any actual systematic mineral-chemical differences.

Despite the difficulties, a few differentiations that were recorded can be used as clues and probably enhance the distinction that was made between the samples based on petrographical evidence, as described above. Feldspar group minerals from the lavas sampled in both Kos Island quarries, share

TABLE 3. Representative SEM-EDS analyses of the major mineral phases from the studied samples

Wt%	Geological samples										Archaeological samples									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SiO ₂	58.83	57.57	58.67	54.21	47.64	48.11	49.18	39.55	39.30	37.92	66.13	51.86	57.19	53.57	54.38	48.54	49.14	39.55	37.63	38.11
Al ₂ O ₃	26.30	28.07	26.63	2.07	10.94	11.28	11.83	15.49	14.02	-	19.92	30.31	26.62	2.21	3.21	10.87	11.06	15.09	15.31	-
MgO	-	-	-	16.82	17.28	12.68	11.48	16.04	15.66	39.34	-	-	-	16.09	15.76	11.75	12.45	16.85	15.69	39.56
FeO	-	-	-	6.40	8.87	13.38	13.63	11.99	14.99	23.40	-	-	-	7.76	6.87	14.09	13.18	13.62	15.95	22.70
Fe ₂ O ₃	-	-	-	-	-	-	-	1.63	2.04	-	-	-	-	-	-	-	-	-	-	2.18
MnO	-	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CaO	7.75	10.34	16.49	19.89	11.54	11.47	10.67	-	-	-	0.01	13.87	9.23	21.15	20.55	11.99	11.16	-	-	-
K ₂ O	0.68	0.40	0.08	-	-	-	-	8.54	9.46	-	10.71	0.09	0.40	-	-	-	-	8.54	8.40	-
Na ₂ O	6.45	4.98	2.12	0.22	2.16	0.06	-	-	-	-	3.24	4.44	6.38	-	-	0.14	0.43	-	-	-
TiO ₂	-	-	-	0.32	1.56	0.20	0.46	6.25	4.51	-	-	-	-	-	0.02	0.14	0.62	6.15	6.3818	-
Total	100.01	99.36	100.18	99.93	99.98	97.18	97.25	99.49	99.87	100.66	100.00	100.48	100.02	98.02	98.44	97.52	98.04	99.90	99.41	100.37
Si	32 O	32 O	10.051	10.465	2.021	1.729	6.824	6.951	5.541	5.967	0.980	11.929	9.399	10.291	1.954	1.964	6.953	6.921	5.546	5.375
Al	5.537	5.978	5.598	0.089	0.469	1.886	1.970	2.539	2.009	0.000	4.231	6.481	5.639	0.104	0.142	1.835	1.836	2.484	2.484	0.000
Mg	0.000	0.000	0.000	0.930	0.951	2.681	2.419	3.349	3.332	1.515	0.000	0.000	0.000	0.000	0.869	0.851	2.509	2.614	3.523	3.340
Fe ²⁺	0.000	0.000	0.000	0.114	0.210	0.667	0.812	1.401	1.788	0.506	0.000	0.000	0.000	0.000	0.184	0.159	1.178	0.857	1.597	1.905
Fe ³⁺	0.000	0.000	0.000	0.039	0.058	0.920	0.799	0.169	0.219	0.000	0.000	0.000	0.000	0.000	0.049	0.049	0.510	0.706	0.000	0.000
Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ca	1.483	1.997	1.481	0.790	0.451	1.743	1.616	0.000	0.000	0.000	0.002	2.692	1.784	0.829	0.789	1.840	1.684	0.000	0.000	0.000
K	0.155	0.081	0.159	0.000	0.000	0.000	0.000	1.531	1.719	0.000	2.463	0.011	0.080	0.000	0.000	0.000	0.000	1.528	1.532	0.000
Na	2.234	1.784	2.230	0.020	0.015	0.016	0.000	0.000	0.000	0.000	1.129	1.561	2.231	0.000	0.000	0.000	0.039	0.117	0.000	0.000
Ti	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.659	0.481	0.010	0.000	0.000	0.000	0.000	0.000	0.015	0.066	0.694	0.685	0.000

1-3 & 11-13 feldspar; 4-5 & 14-15 pyroxene; 6-7 & 16-17 amphibole, 8-9 & 18-19 biotite; 10 & 20 olivine

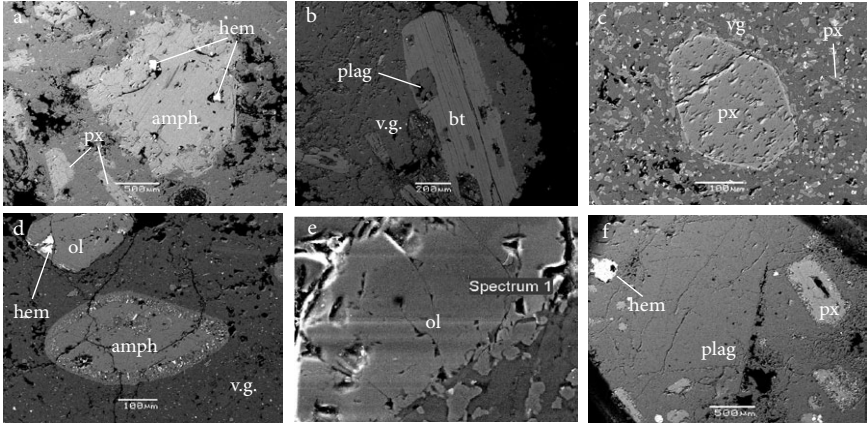


FIG. 6. SEM-BSE images from various samples: (a) amphibole (amph) including hematite (hem) and pyroxene (px) phenocrysts, sample KO-PEL2; (b) biotite (bt) phenocryst set in glassy matrix (v.g.), includes plagioclase (plag), sample KO-KAST1; (c) pyroxene phenocryst, sample NST1; (d) olivine (ol) and amphibole phenocrysts in glassy matrix, both carrying hematite inclusions, sample NLAT3; (e) olivine, sample LS2; (f) plagioclase including pyroxene and hematite, sample LS1.

common composition that range from oligoclase to labradorite (27.85-64.86 An%), identical to the composition observed at the archaeological samples of group-I. K-feldspar (sanidine) of the same composition was also identified in both geological and archaeological samples of group-I and group-I respectively.

On the other hand, feldspars from the studied samples of Nisyros Island exhibit common compositions with the feldspars from the second group of archaeological samples (group-II): They show a compositional range from andesine to bytownite (34.13-89.7 An%), with the majority of the analyzed samples having An% ≥ 50 , indicating a more calcic composition, compared to the plagioclases of Kos samples and the group-I of the archaeological samples. Finally, K-feldspars (sanidine) from the geological samples of Nisyros as well as the archaeological group-II, share quite the same compositional range (FIG. 7a).

In all the studied samples, the analyzed amphiboles proved to be calcic and belong to the hornblende group, with no significant chemical variations (FIG. 7b). This means that amphiboles cannot contribute on the discrimination of the archaeological samples and their correlation with geological ones. A quite similar situation was observed regarding the pyroxenes, which

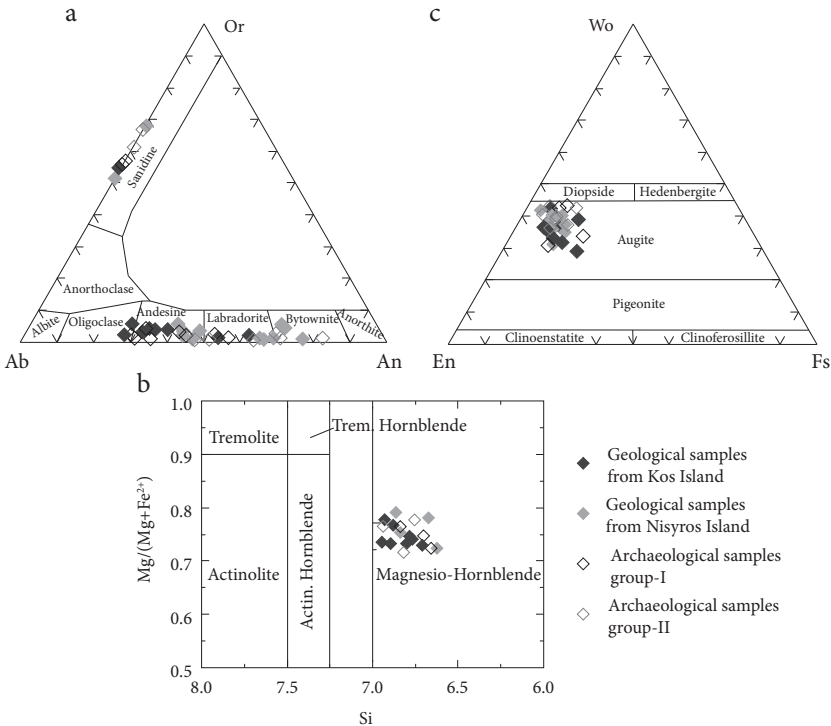


FIG. 7. (a) Feldspar classification diagram; (b) $[Mg/(Mg+Fe^{2+})]$ vs Si plot of analyzed calcic amphiboles; (c) ternary end-member classification diagram of analyzed clinopyroxene compositions.

exhibit quite homogeneous chemical compositions. In the majority of all samples, both geological and archaeological, the observed clinopyroxenes, belong to the augite group (FIG. 7c). Moreover, only a few orthopyroxenes were identified in the geological samples of Nisyros and the archaeological group-II, being respectively rare in the geological samples of Kos Island and the archaeological group-I.

Biotites were found only in the geological samples of Kos Island and the archaeological samples of group-I as they are commonly absent from the rest of the studied samples (groups-2 and group-II). Their composition is quite stable ($Fp > 60\%$) and they are classified as Mg-rich biotites (phlogopites).

Finally, olivine, which was commonly found in lavas from Nisyros and the archaeological group-II, has always a relatively restricted forsteritic composition (75-79 Fo %).

Geochemistry

Thirty five representative samples (13 geological and 22 archaeological) were analyzed by ICP-MS in order give us information about their geochemical affinities and allow possible correlations. Major, trace and RE elements concentrations of the analyzed samples are presented on Tables 4, 5, 6a and 6b.

TABLE 4. Major elements analyses of the studied samples

Sample	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	CaO	Na ₂ O	K ₂ O	TiO ₂	P ₂ O ₅	MnO
Ko-Pel 1	62.55	16.58	3.83	2.55	4.78	3.47	2.50	0.45	0.07	0.07
Ko-Pel 2	62.16	17.03	3.57	2.03	4.72	3.64	2.58	0.45	0.13	0.05
NST 1	53.74	18.2	7.38	4.65	9.04	3.41	1.14	0.91	0.18	0.12
NST 2	54.29	18.52	7.07	4.64	8.91	3.50	1.16	0.90	0.18	0.12
NLAT 1	70.78	14.62	2.54	0.92	2.50	4.16	3.40	0.34	0.08	0.07
NLAT 2	69.57	14.71	2.56	0.96	2.51	4.07	3.25	0.34	0.08	0.07
NARG-1	57.51	17.38	7.05	3.01	6.80	3.90	1.66	1.08	0.21	0.13
NARG-2	57.78	17.70	7.04	2.92	6.88	3.99	1.66	1.10	0.21	0.12
NARG-3	57.86	17.45	7.11	2.98	6.82	3.96	1.70	1.09	0.22	0.12
NARG-4	54.26	18.33	7.04	4.68	8.89	3.38	1.15	0.91	0.19	0.12
Ko-Kast 1	62.28	16.40	3.76	2.58	4.12	3.29	2.80	0.44	0.12	0.07
Ko-Kast 2	62.63	16.60	3.55	2.12	4.30	3.39	2.73	0.43	0.13	0.04
Ko-Kast 3	62.56	16.50	3.83	2.44	4.66	3.45	2.75	0.45	0.13	0.06
LS1	62.12	16.49	4.90	1.75	4.63	3.52	3.65	0.60	0.23	0.08
LS2	54.12	17.90	7.01	4.83	9.13	3.41	1.14	0.90	0.21	0.12
LSX	59.61	16.38	5.80	3.57	7.27	3.17	2.16	0.60	0.12	0.09
LS4	59.37	17.23	4.67	1.91	7.10	3.61	2.45	0.66	0.18	0.14
LS6	60.29	17.86	4.68	2.27	6.47	3.70	2.2	0.62	0.16	0.07
LS7	48.65	16.88	10.81	5.33	9.71	3.85	1.72	1.64	0.57	0.17
LS11	61.67	16.92	4.65	1.76	5.03	3.64	3.57	0.58	0.23	0.07
LS12	60.82	16.36	4.69	2.74	5.87	3.44	2.35	0.54	0.20	0.08
LS14	61.8	16.57	4.96	2.16	5.03	3.54	3.55	0.60	0.22	0.09
LS25	54.19	18.33	7.00	4.68	9.08	3.43	1.13	0.90	0.18	0.12
LS26	53.83	17.55	6.68	5.85	9.13	3.30	1.24	0.81	0.17	0.11
LS40	54.06	18.33	7.11	4.81	9.05	3.40	1.14	0.91	0.19	0.12
LS41	56.33	16.05	5.46	4.02	8.94	3.31	1.88	0.61	0.13	0.09
LS42A	53.91	18.45	7.10	4.78	9.15	3.44	1.14	0.91	0.23	0.12
LS42B	54.12	18.16	7.05	4.71	9.15	3.42	1.13	0.89	0.24	0.12
LS57	60.93	16.57	4.70	1.54	5.69	3.49	3.63	0.58	0.24	0.07
LS59	62.25	16.84	4.83	2.04	4.92	3.68	3.59	0.59	0.20	0.08
LS60	61.98	16.99	4.81	1.65	4.32	3.55	3.65	0.6	0.21	0.07
LS65	61.78	17.08	4.94	1.69	4.92	3.62	3.61	0.61	0.27	0.08
LS99	62.64	17.00	4.85	1.76	4.57	3.60	3.63	0.59	0.19	0.07
LS150	53.75	18.42	7.05	4.74	9.02	3.41	1.18	0.90	0.23	0.12
LS151	61.85	17.04	4.91	1.78	4.6	3.64	3.64	0.61	0.20	0.10

TABLE 5a. Trace elements concentrations of the analyzed geological samples

Sample	Ba	Be	Co	Cs	Ga	Hf	Nb	Rb	Sn	Sr	Ta	Th	U	V	W	Zr
Ko-Pel 1	926	3	16.0	2.8	16.3	3.6	9.6	62.4	1	813.9	0.7	10.5	3.1	88	41.0	135.6
Ko-Pel 2	1058	4	17.2	3.1	17.2	3.6	10.2	71.2	1	845.9	0.9	10.0	3.2	84	68.3	135.2
NST 1	450	1	43.2	1.3	17.7	3.1	10.1	29.5	1	523.9	0.8	2.9	1.4	211	139.6	132.6
NST 2	406	3	37.7	1.4	16.4	3.2	9.5	28.7	1	513.7	0.8	3.5	1.1	192	137.3	128.9
NLAT 1	855	<1	21.8	2.8	13.8	3.6	15.5	92.6	1	291.7	1.0	12.0	3.0	44	160.8	159.3
NLAT 2	884	2	33.2	3.1	12.3	3.8	15.5	88.6	<1	281.6	1.1	12.5	3.9	48	153.3	157.8
NARG-1	496	<1	31.8	1.5	17.6	4.2	12.4	46.5	1	428.2	0.6	5.3	1.9	214	136.7	168.3
NARG-2	464	2	23.9	1.5	15.7	4.4	12.3	44.6	1	415.9	0.9	5.2	1.5	200	104.9	169.4
NARG-3	451	2	25.9	1.7	16.4	4.3	12.7	47.0	1	411.4	0.6	5.1	1.2	213	120.5	169.9
NARG-4	346	<1	31.3	0.9	14.9	3.2	9.0	28.5	1	500.4	0.6	3.5	1.2	189	136.2	127.9
Ko-Kast 1	846	<1	14.7	1.7	14.1	4.3	9.1	70.6	<1	770.0	0.9	10.5	3.0	89	18.4	153.2
Ko-Kast 2	825	5	11.8	1.7	13.6	3.5	8.7	66.8	<1	769.6	0.6	10.5	3.5	90	17.3	131.4
Ko-Kast 3	826	3	15.5	2.0	14.9	3.2	8.6	72.2	<1	842.0	0.6	9.5	3.0	90	23.9	125.2

Sample	Mo	Cu	Pb	Zn	Ni	As	Cd	Sb	Bi	Ag	Au	Hg	Se	Y
Ko-Pel 1	0.2	5.3	2.7	8	7.0	0.6	<0.1	0.1	<0.1	<0.1	0.9	0.01	<0.5	19.9
Ko-Pel 2	0.3	12.0	1.9	21	10.1	<0.5	<0.1	0.2	<0.1	<0.1	<0.5	0.01	<0.5	13.6
NST 1	0.7	18.1	1.5	26	17.2	<0.5	<0.1	0.3	<0.1	<0.1	1.9	0.05	<0.5	21.0
NST 2	0.5	13.5	1.3	26	16.2	0.5	<0.1	0.5	<0.1	<0.1	1.5	0.05	<0.5	20.7
NLAT 1	1.4	6.1	1.9	12	2.8	1.6	<0.1	0.3	<0.1	<0.1	<0.5	0.06	<0.5	14.4
NLAT 2	0.8	2.3	1.0	6	5.2	<0.5	<0.1	0.4	<0.1	<0.1	0.5	0.06	<0.5	13.5
NARG-1	0.3	19.1	2.0	24	2.8	1.1	<0.1	3.1	<0.1	<0.1	<0.5	0.05	<0.5	27.0
NARG-2	0.7	42.2	1.9	26	2.2	<0.5	<0.1	0.6	<0.1	<0.1	0.6	0.02	<0.5	27.5
NARG-3	0.7	27.3	2.2	28	2.2	0.7	<0.1	0.3	<0.1	<0.1	<0.5	0.05	<0.5	26.1
NARG-4	0.5	25.9	1.8	28	16.2	0.8	<0.1	0.2	<0.1	<0.1	<0.5	0.04	<0.5	20.8
Ko-Kast 1	0.1	11.4	1.8	28	13.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.5	11.9
Ko-Kast 2	0.1	5.3	2.7	8	7.0	0.6	<0.1	0.1	<0.1	<0.1	0.9	0.01	<0.5	10.8
Ko-Kast 3	0.2	12.0	1.9	21	10.1	<0.5	<0.1	0.2	<0.1	<0.1	<0.5	0.01	<0.5	12.8

TABLE 5b. Trace elements concentrations of the analyzed archaeological samples

Sample	Ba	Be	Co	Cs	Ga	Hf	Nb	Rb	Sn	Sr	Ta	Th	U	V	W	Zr	Mo
LS1	1446	3	22.8	4.2	15.2	5.8	10.4	120.4	2	745.4	0.9	31.2	5.5	93	111.2	193.8	0.6
LS2	575	1	43.8	1.0	15.6	2.9	9.0	28.8	<1	494.8	0.7	3.5	1.1	193	172.4	124.6	0.6
LSX	627	1	26.9	1.5	13.2	3.0	8.7	49.9	2	633.2	0.7	8.2	2.6	134	106.2	112.8	0.7
LS4	838	1	21.3	3.3	13.1	3.4	11.9	65.1	<1	595.8	1.0	9.6	2.4	124	92.5	133.4	0.6
LS6	704	1	35.6	1.6	13.8	2.8	9.4	53.2	1	647.4	0.8	7.5	2.0	130	179.3	113.7	0.6
LS7	921	2	54.8	0.5	19.3	5.1	52.4	33.3	1	1306.8	2.8	12.4	2.8	296	141.5	220.0	2.8
LS11	1405	2	35.7	4.6	15.6	5.4	10.1	118.6	1	773.2	0.9	29.7	4.8	79	131.2	195.9	0.6
LS12	673	2	31.1	3.5	13.0	3.4	10.0	57.8	<1	588.3	1.0	11.4	2.9	94	120.9	124.6	0.3
LS14	1393	3	26.7	4.3	15.4	5.4	9.6	114.5	1	751.1	0.7	28.3	4.9	86	102.6	196.4	0.4
LS25	345	<1	35.2	1.1	15.2	3.2	9.1	28.2	1	487.4	0.7	3.8	1.0	177	136.7	125.7	0.4
LS26	364	<1	55.1	1.2	14.3	2.9	8.5	27.4	1	534.3	0.7	3.5	1.2	183	221.0	116.5	0.6
LS40	322	2	54.5	1.2	15.6	3.2	9.0	28.5	1	497.3	1.0	3.4	1.0	193	205.3	132.1	0.5
LS41	564	3	38.2	0.9	12.3	2.9	8.3	41.7	<1	475.1	1.0	6.5	2.1	139	166.3	117.5	0.8
LS42A	343	3	45.4	1.1	14.2	3.4	8.7	27.1	<1	482.0	0.7	3.4	0.9	182	171.4	125.8	0.4
LS42B	342	<1	43.4	1.2	15.1	3.5	8.2	26.5	1	505.9	0.7	3.4	1.1	193	176.5	130.8	0.4
LS57	1429	3	25.5	4.1	14.9	5.7	9.8	122.5	1	790.5	0.9	30.8	4.9	80	104.0	199.8	0.3
LS59	1453	5	37.0	4.1	16.4	5.3	10.1	115.2	2	801.6	0.9	28.9	5.3	81	173.1	191.3	0.4
LS60	1459	3	21.4	4.6	14.9	4.5	10.1	119.9	2	760.9	0.8	28.0	4.9	85	73.7	172.3	0.5
LS65	1468	<1	18.2	4.2	16.8	5.4	10.1	118.2	1	783.1	0.8	28.2	5.1	83	61.9	197.1	0.2
LS99	1412	3	27.0	3.9	15.3	5.1	9.6	114.0	2	762.8	0.8	28.1	5.0	87	121.1	180.6	0.8
LS150	387	3	79.5	1.2	14.7	3.4	8.8	26.6	1	493.2	1.0	3.6	1.0	177	397.7	125.5	0.5
LS151	1383	4	35.2	4.5	15.8	5.1	10.1	114.7	1	734.1	0.9	30.1	5.3	97	148.6	193.1	0.6
LT234	934	7	43.3	14.1	14.0	9.6	42.2	288.0	2	303.1	2.6	45.8	11.8	40	210.9	380.2	0.7

TABLE 5b (continued)

Sample	Cu	Pb	Zn	Ni	As	Cd	Sb	Bi	Ag	Au	Hg	Se	Y
LS1	23.6	12.9	23	10.0	2.0	<0.1	0.4	<0.1	<0.1	1.6	0.03	<0.5	20.7
LS2	24.7	20.5	23	16.5	1.2	<0.1	1.5	<0.1	0.8	<0.5	0.05	<0.5	20.0
LSX	16.2	4.0	22	14.2	1.2	<0.1	0.2	<0.1	<0.1	0.9	0.03	<0.5	18.4
LS4	6.2	10.6	25	10.5	1.3	<0.1	3.9	<0.1	<0.1	<0.5	0.01	<0.5	14.5
LS6	13.0	4.1	18	16.1	1.0	<0.1	1.8	<0.1	<0.1	1.5	0.04	<0.5	15.6
LS7	92.0	6.6	77	23.8	0.5	<0.1	0.5	<0.1	<0.1	1.1	0.03	<0.5	24.1
LS11	22.9	9.8	16	11.1	2.5	<0.1	0.6	<0.1	<0.1	1.2	0.04	<0.5	16.7
LS12	8.2	4.1	18	7.9	1.1	<0.1	<0.1	<0.1	<0.1	<0.5	0.03	<0.5	13.6
LS14	22.5	42.1	14	7.3	2.9	<0.1	0.5	<0.1	<0.1	<0.5	0.03	<0.5	17.6
LS25	20.3	3.9	25	17.6	<0.5	<0.1	0.2	<0.1	<0.1	<0.5	0.04	<0.5	19.9
LS26	37.7	4.9	28	52.7	1.0	<0.1	1.0	<0.1	<0.1	1.4	0.06	<0.5	19.0
LS40	22.4	10.8	23	22.3	<0.5	<0.1	0.5	<0.1	<0.1	1.1	0.06	<0.5	20.4
LS41	16.0	5.2	14	41.7	1.3	<0.1	0.7	<0.1	<0.1	<0.5	0.05	<0.5	14.4
LS42A	27.6	3.3	22	17.9	1.7	<0.1	0.7	<0.1	<0.1	1.1	0.05	<0.5	20.5
LS42B	24.8	3.4	22	16.5	1.5	<0.1	0.5	<0.1	<0.1	<0.5	0.04	<0.5	19.1
LS57	22.4	12.0	15	10.4	2.7	<0.1	0.4	<0.1	<0.1	<0.5	0.02	<0.5	18.3
LS59	25.4	6.9	13	4.9	2.5	<0.1	1.1	<0.1	<0.1	0.9	0.05	<0.5	17.2
LS60	30.6	12.6	22	9.9	1.4	<0.1	0.4	<0.1	<0.1	1.7	0.02	<0.5	16.2
LS65	25.0	14.6	18	12.7	2.0	<0.1	0.3	<0.1	<0.1	2.1	0.03	<0.5	17.6
LS99	27.3	13.9	20	10.4	2.7	<0.1	0.9	<0.1	<0.1	0.9	0.03	<0.5	15.8
LS150	24.5	83.6	30	19.8	0.9	<0.1	0.7	<0.1	<0.1	0.6	*	<0.5	19.6
LS151	21.4	8.4	16	8.5	1.5	<0.1	0.9	<0.1	<0.1	<0.5	0.03	<0.5	17.0
LT234	2.3	26.7	25	4.8	8.2	<0.1	1.4	<0.1	<0.1	1.9	0.04	<0.5	25.6

TABLE 6a. Rare earth elements concentrations of the analyzed archaeological samples

Sample	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Ko-Pel 1	55.2	88.9	11.51	38.0	6.92	1.52	5.37	0.68	3.64	0.78	1.81	0.30	1.86	0.28
Ko-Pel 2	37.0	69.8	7.00	23.6	4.20	1.00	3.60	0.46	2.63	0.46	1.45	0.21	1.46	0.25
NST 1	19.7	37.3	4.67	18.2	3.69	1.20	3.99	0.63	3.71	0.87	2.41	0.37	2.38	0.34
NST 2	19.3	36.7	4.38	18.2	3.78	1.05	3.80	0.59	3.67	0.76	2.27	0.34	2.12	0.34
NLAT 1	35.9	53.7	5.13	17.3	2.53	0.66	2.57	0.36	2.10	0.45	1.53	0.24	1.78	0.27
NLAT 2	35.7	57.4	5.50	16.6	2.72	0.69	2.54	0.36	2.12	0.48	1.50	0.22	1.59	0.27
NARG-1	23.4	45.5	5.21	21.9	4.04	1.25	4.64	0.66	4.22	1.00	2.74	0.43	2.81	0.40
NARG-2	26.1	46.3	5.63	23.4	4.47	1.21	4.75	0.71	4.77	1.01	2.92	0.38	2.93	0.41
NARG-3	24.2	46.9	5.37	21.6	4.70	1.29	4.62	0.71	4.12	0.95	2.76	0.42	2.67	0.43
NARG-4	18.5	37.5	4.53	18.3	3.75	1.07	3.77	0.57	3.54	0.74	2.12	0.32	2.20	0.34
Ko-Kast 1	32.2	54.8	5.98	20.3	3.29	0.90	3.01	0.42	2.13	0.44	1.37	0.19	1.41	0.17
Ko-Kast 2	31.0	52.8	5.91	21.1	3.57	0.92	2.94	0.37	2.13	0.48	1.31	0.18	1.10	0.18
Ko-Kast 3	32.9	54.1	6.29	21.7	3.95	0.92	3.36	0.43	2.46	0.48	1.41	0.22	1.53	0.20

TABLE 6b. Rare earth elements concentrations of the analyzed archaeological samples

Sample	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
LS1	62.7	112.5	11.54	40.1	6.04	1.31	4.84	0.63	3.85	0.69	1.80	0.28	1.96	0.33
LS2	18.8	35.3	4.38	17.9	3.45	1.13	3.48	0.58	3.64	0.80	2.24	0.32	2.28	0.32
LSX	35.7	40.0	6.86	26.2	4.60	1.24	4.47	0.58	3.28	0.65	1.67	0.27	1.75	0.24
LS4	28.8	50.7	5.50	19.7	3.06	1.04	2.95	0.44	2.70	0.55	1.55	0.23	1.65	0.24
LS6	27.4	46.9	5.03	18.1	3.03	1.06	3.32	0.46	2.53	0.57	1.81	0.26	1.65	0.28
LS7	75.4	141.7	15.51	59.7	10.33	2.90	8.42	0.98	5.45	0.91	2.67	0.36	2.20	0.29
LS11	60.1	108.4	10.95	38.1	5.95	1.23	4.70	0.58	3.33	0.64	1.69	0.29	1.82	0.30
LS12	28.4	45.3	4.90	19.3	3.25	0.85	3.02	0.40	2.37	0.48	1.57	0.20	1.61	0.25
LS14	58.6	106.2	10.82	37.0	5.89	1.23	4.90	0.60	3.49	0.68	1.74	0.26	1.89	0.29
LS25	18.5	37.5	4.34	19.2	3.37	0.99	3.79	0.60	3.48	0.76	2.15	0.31	2.09	0.35
LS26	20.8	40.3	4.57	17.4	3.50	1.03	3.49	0.54	3.33	0.67	2.01	0.30	2.13	0.34
LS40	18.9	35.4	4.24	18.3	3.66	1.10	3.82	0.56	3.57	0.83	2.32	0.35	2.19	0.35
LS41	21.8	39.7	4.14	16.4	2.83	0.83	2.73	0.42	2.46	0.49	1.50	0.25	1.59	0.25
LS42A	18.6	38.6	4.36	17.2	3.49	1.16	3.65	0.59	3.67	0.80	2.28	0.32	1.87	0.32
LS42B	18.9	38.3	4.42	18.3	3.64	1.11	3.72	0.61	3.92	0.75	2.32	0.30	2.16	0.34
LS57	61.1	101.9	11.14	41.5	5.85	1.28	4.82	0.57	3.00	0.58	1.83	0.26	1.84	0.29
LS59	58.5	105.1	11.14	39.8	5.84	1.24	4.36	0.60	3.31	0.65	1.80	0.27	1.53	0.28
LS60	59.6	105.2	11.14	40.4	5.94	1.28	4.11	0.53	3.56	0.54	1.52	0.24	1.50	0.25
LS65	58.7	103.0	10.72	38.8	5.98	1.29	4.85	0.58	3.27	0.55	1.70	0.26	1.98	0.28
LS99	56.9	102.0	10.54	36.1	5.58	1.23	4.65	0.57	2.81	0.57	1.70	0.27	1.54	0.26
LS150	19.7	38.1	4.33	17.8	3.56	0.98	3.42	0.59	3.54	0.75	2.17	0.30	2.04	0.36
LS151	58.6	106.9	11.05	38.8	5.96	1.44	4.59	0.63	3.04	0.65	1.92	0.28	1.92	0.28
LT234	68.4	120.9	12.38	42.5	7.53	1.49	5.89	0.76	4.86	0.94	2.60	0.42	3.08	0.49

MAJOR ELEMENTS

The majority of the analyzed samples, both geological and archaeological are characterized by SiO_2 content that ranges from 52 to 68 wt. % and thus they can be considered as intermediate to acidic. The only exception is the archaeological sample LS7, which has significantly lower SiO_2 value (48.65 wt. %) and should be considered as basic. The significant variation of Fe_2O_3 (2.54-10.81wt. %) and MgO (0.92-5.85 wt. %) could possibly reflect the presence or not of biotite, while the variations in Na_2O (3.31-4.16 wt. %), CaO (2.5-9.13 wt %) and K_2O (1.14-3.65 wt. %) contents, refer possibly to Na-Ca substitution in plagioclases and the presence of sanidine, facts that are both widespread among the studied samples. Al_2O_3 content in all samples ranges from 14.62 to 18.52 wt. %, but it is generally lower in samples coming from Ag. Eirene area, Nisyros (NLAT). TiO_2 , P_2O_5 , MnO and Cr_2O_3 values are quite low in all analyzed samples (up to 1.64 wt. %, 0.57 wt. %, 0.18 wt. % and 0.18 wt. % respectively). Finally, loss of ignition ranges from 0.9 to 3.4 %.

The analyzed samples were plotted in the TAS (K_2O+Na_2O) – SiO_2 diagram after Le Bas et al., 1986 (FIG. 8). All the samples fit in the field of the subalkaline-tholeiitic volcanic rocks, except for one (archaeological sample LS7) that has the minimum SiO_2 value. This sample is characterized basic, plots in the alkaline rocks field, is specifically classified as trachybasalt and cannot be correlated to any of the analyzed geological samples. The majority of the samples shows a relatively wide variation regarding their SiO_2 values and thus covers a respectively wide compositional range from basaltic andesite towards dacite, including trachy-andesites and dacites. Furthermore, two geological samples (NLAT-1, NLAT-2 from Ag. Eirene area, Nisyros Island) that have the greater SiO_2 values, plot in the field of rhyolite and cannot be correlated to any of the analyzed archaeological samples. It must be noted that all the analyzed samples of both archaeological and geological origin fit well to analogous volcanic rocks of the same age from the Aegean region³⁸ and reflect the complex geochemistry of the Aegean volcanic rocks.

Regarding the possible correlations between archaeological and geological samples (FIG. 9a), it seems that almost every archaeological sample of group-I fit well to the geological samples from Kos Island (both Kastelli and Peleketa quarries, as no differences were remarked between them). Samples LSX and LS12 from this group, could correlate to these quarries as well, but seem to have slightly different geochemical affinities. Archaeological samples of group-II (except for sample LS7 that was previously discussed) seem to share common geochemical characteristics with geological samples from Nisyros Island and more specifically those from Argos and Stavros areas (samples from Ag. Eirene are distinctly different as mentioned above).

TRACE AND RARE EARTH ELEMENTS

Trace and RE elements concentrations can be used in order to verify the legitimacy of the conclusions that were extrapolated from the major elements concentrations. The concentrations of the trace elements revealed that samples from archaeological group-I, fit well to the geological samples from both sampled quarries of Kos Island. Moreover, it must be noted that samples LSX and LS12 from this group, that have slightly different geochemical affinities regarding their major elements concentrations, now fit very well to the geological samples of Kos and this overturns any ambiguities that were previously raised. Since the immobile elements concentrations of these two samples are in the same range to those of the rest of the samples from this

38. Ersoy and Palmer 2013.

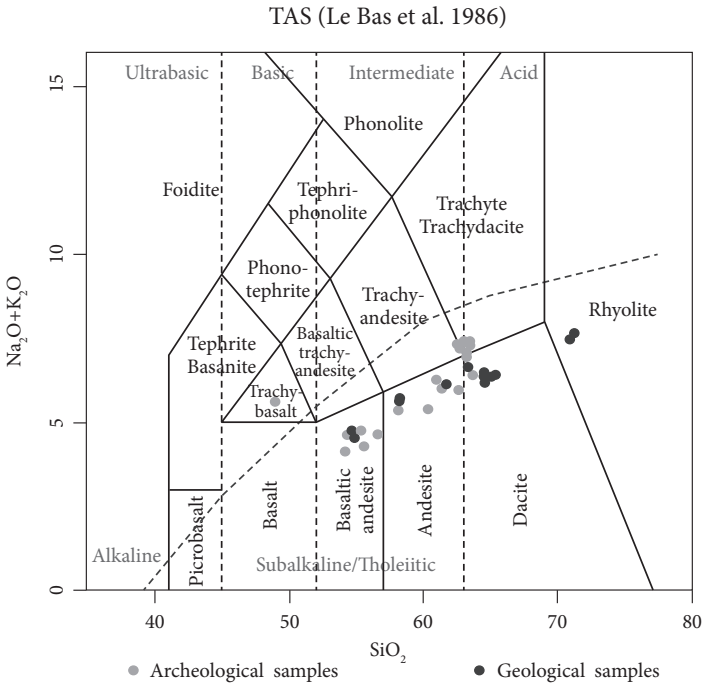


FIG. 8. TAS classification diagram of all the analyzed samples after Le Bas *et al.* 1986. The studied samples show a relatively wide variation, ranging from basaltic andesite towards dacite, including trachy-andesites and dacites.

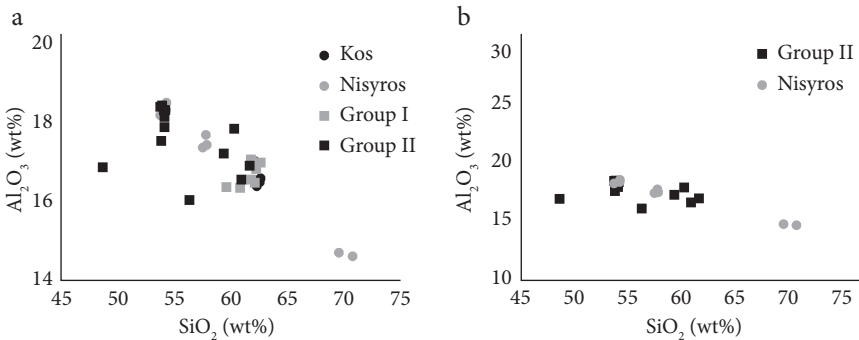


FIG. 9. (a) Representative major elements variation diagram. Archaeological samples of group-I fit to the geological samples from the quarries of Kos Island and samples of group-II fit to the geological samples from Argos and Stavros. (b) Representative trace elements diagram. The archaeological samples of Group-II_A fit exactly to the geological samples from Stavros while those of group-II_B fit better to the geological samples from Argos.

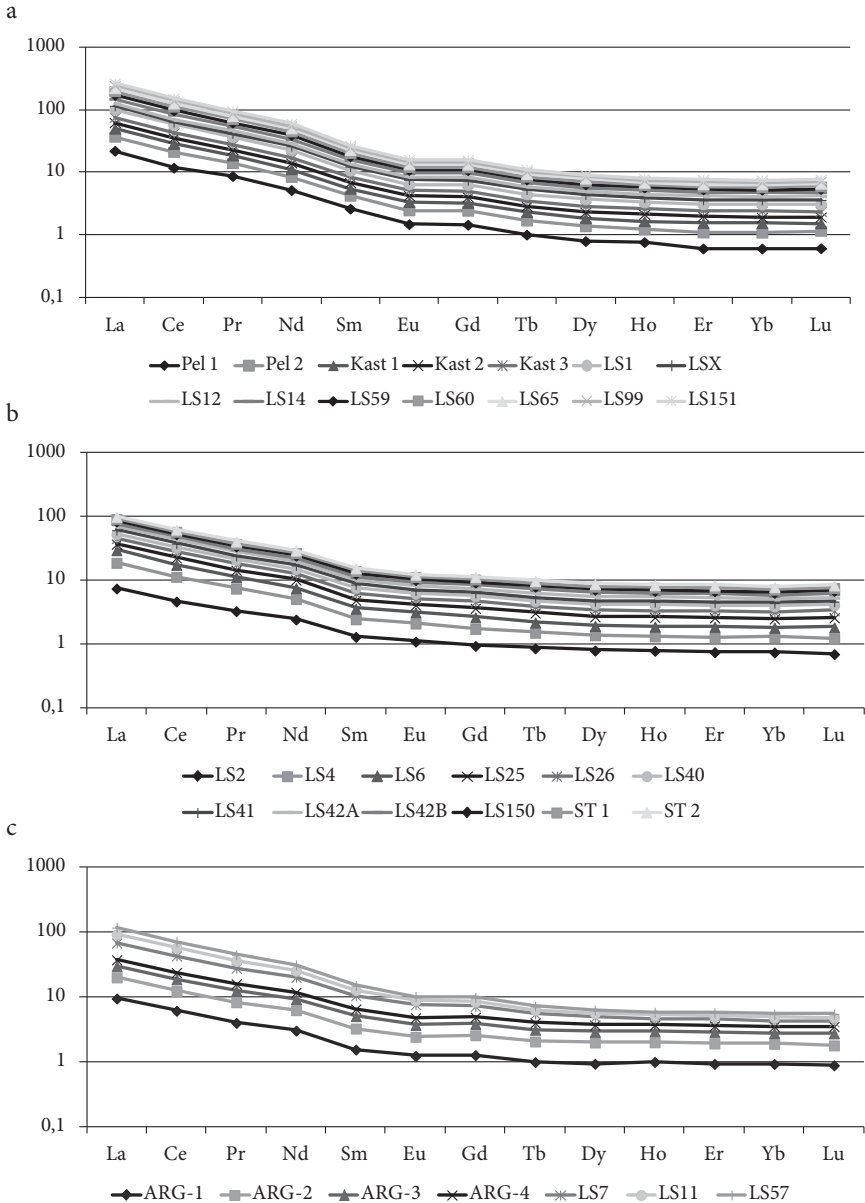


FIG. 10. Spider plots of REE concentrations of the analyzed samples normalized to MORB after Sun and McDonough 1989: (a) Geological samples from Kos Island (Pel, Kast) compared to the archaeological samples of group-I; geological samples from Nisyros Island, (b) Stavros area (St), compared to the samples of the archaeological group-II_A and (c) Argos area (Arg), compared to the samples of the archaeological group-II_B.

group, the slight differentiation regarding the major elements could be possibly result of weathering and not reflection of their original geochemical differentiation. Regarding the archaeological samples of group-II, trace and rare earth elements geochemistry indicated that they should be divided into two subgroups: Group-II_A includes ten samples (LS2, LS4, LS6, LS25, LS26, LS40, LS41, LS42A, LS42B, LS150) that show clear geochemical relations with the geological samples from Stavros area, Nisyros Island and group-II_B should include the rest of the samples (LS11, LS57) that have quite the same concentrations of trace elements with the geological samples from Argos area, Nisyros Island (FIG. 9b).

The above mentioned discriminations were validated by the correlation of the Rare Earth Elements (REE) concentrations of the analyzed samples in MORB-normalization diagrams.³⁹ In general, all samples, both archaeological and geological, display relatively enriched REE patterns compared to the mean MORB content.

Regarding the comparison of the geological to the archaeological samples, the REE patterns proved to be very efficient. In the case of the geological samples from Kos, a relatively small enrichment of REE in the geological samples of Kastelli compared to those of Peleketa quarry is observed and makes it clear that archaeological samples of group-I can be better related to the first area (FIG. 10a), as they share quite the same relative enrichment. Regarding the samples of group-II and the geological samples from Nisyros Island it is clear that the REE patterns of the geological samples from Stavros area fit well to those of the archaeological group-II_A (FIG. 10b) while the geological samples from Argos area are similar to those of the archaeological group-II_B (FIG. 10c). The third sampling area from Nisyros shows enriched patterns that cannot be correlated to any of the archaeological samples, a fact that was stated by the concentrations of the major elements as well.

Discussion and Conclusions

Combining the results of different analytical methods, it is clear that the raw materials used for millstones crafting come mostly from both Kos and Nisyros Islands.

39. Sun and McDonough 1989.

More specifically, the available analytical data led to the subdivision of the rock samples from the five studied quarries into two groups (group-1 and group-2) as well as the archaeological samples into two groups (group-I and group-II).

Group-I, which mainly contains rotary mills (samples LSX, LS1, LS12, LS14, LS39, LS59, LS60, LS65, LS99 and LS151) has similar macroscopic and microscopic features with the geological samples from Kos Island (group-1), while the Olynthian mills of the second archaeological group (group-II) (samples LS2, LS25, LS26, LS40 and LS42) are distinctly different from the querns of the previous one and, except for sample LS7, present features observed only in the geological samples from Nisyros (group-2).

Regarding the possible correlations between archaeological and geological samples, based on major element geochemistry, it seems that almost every archaeological sample of group-I fits well to the geological samples from both quarries of Kos (Kastelli and Peleketa) with a slight uncertainty for samples LSX and LS12. Archaeological samples of group-II (except for sample LS7) seem to share common geochemical characteristics with geological samples from Nisyros and more specifically those from Argos and Stavros quarries, while the samples from Ag. Eirene quarry are distinctly different.

Trace element concentrations overturned any ambiguities that were previously raised regarding samples LSX and LS12, so all the samples from archaeological group-I, fit to the geological samples from the quarries of Kos Island.

REE diagrams proved that archaeological samples of group-I can be better related to the Kastelli quarry than the one found in Peleketa.

Trace and rare earth elements geochemistry indicated that the archaeological samples of group-II, should be divided into two subgroups: Group-IIa includes ten samples (LS2, LS4, LS6, LS25, LS26, LS40, LS41, LS42A, LS42B, LS150) that show clear geochemical relations with the geological samples from Stavros quarry, Nisyros and group-IIb including the rest of the samples (LS11, LS57) that fit to the geological samples from Argos quarry, Nisyros.

Sample LS7 could not be related to any of the studied quarries, as its mineralogy and geochemistry is significantly different from all the studied geological samples and thus remains still a matter of research.

In terms of archeological interest, it is now obvious that the raw material that was extracted from the subterranean quarry or the open-air one of Argos (Nisyros) was used for Olynthian mills. These artifacts are considered as the high-quality products of the Nisyrian workshop, during the period when the production reached its peak. It was the period of exports found not only to the opposite Koan Halasarna, but also to further destinations, such as Majorca (Shipwreck of El Sec),⁴⁰ or Tunis (shipwreck of Mahdia)⁴¹ and elsewhere. During the Hellenistic period the Koan workshops manufactured Olynthian mills from local stones extracted either from Peleketa or Kastelli quarries. A possible export of these products cannot be excluded, in case that it is proved that certain artifacts from other Islands (e.g. from the recently excavated site in Kastraki, Agathonisi)⁴² are carved in Koan stone.

Moreover, the recent discovery of a Delian type of mill in the Halasarna excavation revealed that this type of raw material was used also for crafting additional types of handmills.

The numerous fragments of rotary querns discovered in Halasarna, carved in local volcanic stones, provide adequate evidence about the location of a workshop in the vicinity of the early-Byzantine settlement, which has not as yet been found. In the vicinity of the excavations several remains provide important information about the different activities that took place by the Protobyzantine inhabitants, such as Protobyzantine ceramic kilns, specialized in Amphoras of types globular byzantine, 1 and 13,⁴³ a stone matrix for casting bronze jewelry,⁴⁴ unfinished marble implements, as bowls and pestles⁴⁵ etc., whereas no trace of millstone carving has been left neither in the surroundings, nor in the areas of raw material extraction in Kefalos peninsula. We estimate that a millstone workshop could be located in the vicinity of the quarries of Kastelli or Peleketa in Kefalos, but no excavations have been undertaken in these areas, so far.

The numerous objects studied, may indicate that they were not only household utensils used by the inhabitants of the settlement. The study of the early-Byzantine amphoras, dated from the 5th to the 7th century AD, which came to light during the same excavation, are strongly affiliated with the

40. Arribas 1987, Williams-Thorpe and Thorpe 1991.

41. Baatz 1994.

42. Poupaki, in print a.

43. Didioumi 2014.

44. Kalopissi-Verti 1998.

45. Poupaki 2011, no. 99; Poupaki in print a, nos. 13 and 14.

“annonic contributions” in oil and wine.⁴⁶ These were obligatory levies of all the regions of the Roman Empire imposed since the Age of Diocletian. That is, “annona” was an effort of Byzantine State to increase tax incomes or the provision of Constantinople and other regions of the Empire in consumption goods.⁴⁷ The commercial network for the distribution of the “military annona” was well-established and certain types of amphoras (LR1 and LR13) had been associated with the transfer of the “annonic goods”. Since the Roman period certain types of rotary querns were in use by the soldiers and great quantities of rotary querns and inscribed examples were discovered in excavated fortified military settlements of the Central and Western Europe (oppida). These querns were carved in special stone material, originating from certain quarries (e.g. Mayen in Germany)⁴⁸. Furthermore, it is well known (Xenophon, *The Anabasis*, 1.5.5: “ὄνους ἀλέτας” (upper handmills)) that certain types of rotary handmills were used by different orders of Roman soldiers (the smaller ones were used by the order of 10 soldiers, the contubernium, whereas the bigger ones by the order of 100 soldiers, the centurium).⁴⁹ Basing upon all the above mentioned information we set the hypothesis that the rotary querns carved in Koan stones were also used for the military supplies of the Byzantine army or that they were also exported in other neighboring areas (e.g. examples similar to Koan rotary querns had been noticed in Delos Island, Knidos and probably the same rock was used for the 11th century findings in Serçe Limanı shipwreck⁵⁰ or they were loaded on the ships carrying the “annonic goods” from the Egypt to Constantinople). The rotary handmills were indispensable belongings of Roman soldiers and continued to be important even in Byzantine period. It is obvious that they were the single implement for the transformation of grain into flour, which was the basic ingredient for their meals (bread, rusks, porridge etc.). The high quality of the Koan volcanic rocks prevented the mixture of the flour with smashed stone during the rotation of the upper millstone on the lower.⁵¹

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46. Diamanti 2010a and b.

47. Svoronos 1978, Goutzioukostas and Moniaros 2009.

48. Röder 1956 and 1958.

49. Childe 1943.

50. Runnels 2004, Williams-Thorpe and Thorpe 2004.

51. Poupaki 2012.

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SPECIAL FISH PRODUCTS FOR THE JEWISH COMMUNITY?

A PAINTED INSCRIPTION ON A BELTRÁN 72 AMPHORA FROM AUGUSTA EMERITA (MÉRIDA, SPAIN)

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Amphorae from “Casa Del Mitreo”

THE AMPHORA COLLECTION AT THE *MUSEO NACIONAL DE ARTE ROMANO* (MNAR)

146 items from the present amphora collection of the MNAR were analyzed by us. Some of these come from several important excavations in Mérida, but also from stray finds; yet others have no known provenience¹. It is important to underline that this collection was never formed according to the dictates of museology or from a particular research interest, but with the aim of accumulating a sample from old and not well-documented excavations, or from unknown proveniences. Most were selected because of their inscriptions, their good state of preservation, or from some other arbitrary justification. Nevertheless, within the collection we can single out some smaller ensembles from old excavations in the “Casa del Mitreo”, in “Alcazaba”, and on the former site of the MNAR itself.

1. Finds from the Theater 1910–1936; Casa de Luis Díez 1947; South Water channel 1964; “Casa del Mitreo” 1966; Columbaria; “Alcazaba” 1974, 1986; Casas de Otero 1976; Excavations for the basement of the MNAR 1977; Reyes Huertas Street 1981; City Slaughterhouse; unknown provenience.

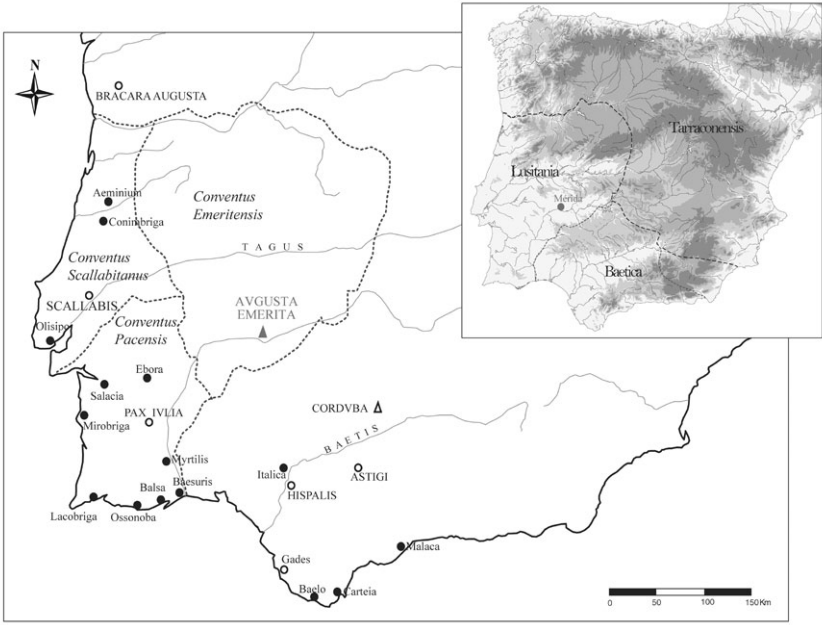


FIG. 1. Mérida in the Iberian Peninsula.

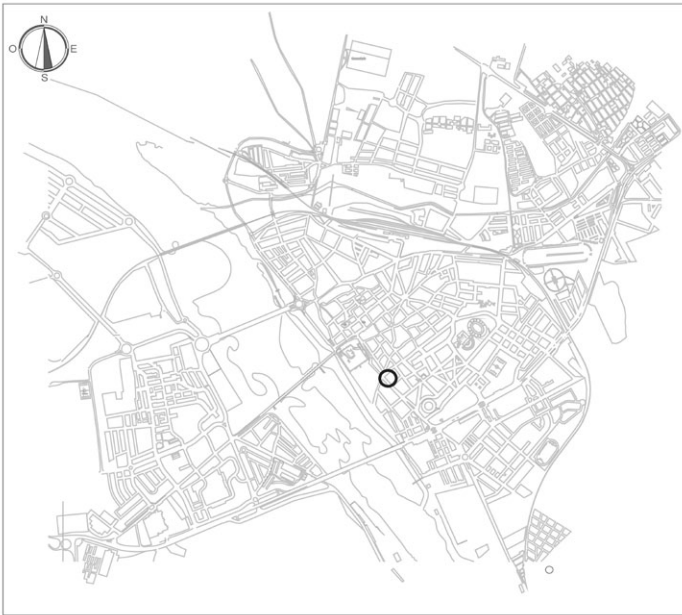


FIG. 2. “Casa del Mitreo” in Mérida.

During our research in Mérida some of the pieces previously published by R. Lequément² and by M. Beltrán Lloris³ were located, including the small amphora acting as the type-vessel for Beltrán 72,⁴ and the one used for form 73⁵ (actually a Dressel 14 *parva*⁶).

THE OBJECT AND ITS CONTEXT

The main focus of this article is a Beltrán 72 amphora found in the old excavations of the so-called “Casa del Mitreo”. This is one of the most important and best-known houses of ancient *Augusta Emerita*, but unfortunately not much information about the excavation and the chronological development of this building is available.

The site of the “Casa del Mitreo” is located near the actual bullfighting arena on the “San Alvin” hill. In 1913, J. Ramón Mélida presented to the Spanish Academy of Arts (Real Academia de Bellas Artes de San Fernando) a report of the finds made during the excavations undertaken in that area in 1902⁷.

Despite those earlier finds, it was only in the 1960s that the site became known to scholars, due to the discovery of a spectacular *domus*, later called the “Casa del Mitreo”. This Roman house is, together with the House of the Amphitheatre, among the most important brought to light in *Augusta Emerita*. Its excavation, uncovering almost the entire building, was done in a more or less systematic way: today it is part of the tour of Roman Mérida.

The house took its name from the mistaken belief that it was the *mithraeum*, to which the almost complete sculptural assemblage found some years before under the Arena belonged, according to the earlier information given by J. Ramón Mélida. It was for the most part excavated and published by E. García Sandoval in 1966, with a focus on the peristyle area, the mosaics and the wall paintings being the most attractive aspects of the house. Here one must pay special attention to the spectacular mosaic known as the “Mosaic of the Cosmos”. This, together with the well-preserved wall paintings, makes the building unique in the Iberian Peninsula and in the western part of the Roman Empire (FIGS. 3 and 4).

2. Lequément 1976; 1978.
3. Beltrán Lloris 1970.
4. Beltrán Lloris, 1970, p. 574, fig. 236.5; presented by us in FIG. 6.
5. Beltrán Lloris 1970, pp. 575-576, fig. 237.1; presented by us in FIG. 9.
6. Almeida 2016.
7. García Sandoval 1970, p. 743; presented by us in FIGS. 1 and 2.

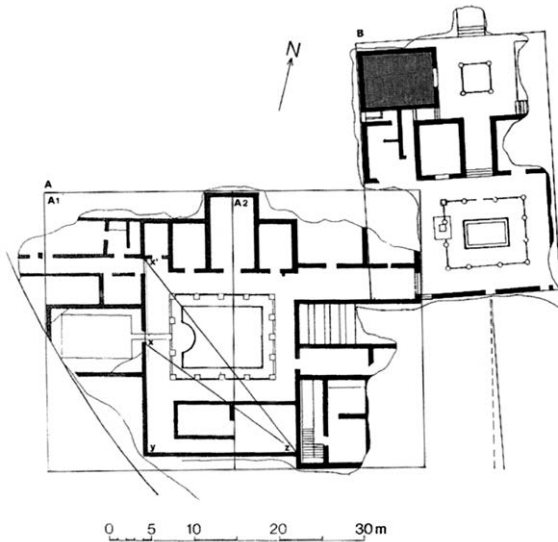


FIG. 3. Plan of *Casa del Mitreo*; dark grey the room of the “cosmogonic mosaic”.

Despite the in-depth understanding of the building, its constituent parts and their decorative motifs, there is yet a pronounced deficiency in our comprehension both of the sequence of the building’s phases as well as of the material culture found during the excavation process. The scarce archaeological data of which we can be sure emphasize a violent event taking place in Late Antiquity that caused the immediate abandonment of the house. Probably it was the result of a vast fire. A large amount of metal objects was retrieved: most of these forming part of the house’s carpentry, but also including household and daily artifacts. These and other identified materials (statues, inscriptions etc.) place the last phase of the building within the fourth century AD⁸. However, the ceramic ensemble received scant mention, mostly considering the sigillata and the lamps⁹; the amphorae were roughly described, without any fuller consideration.

The situation recorded during our visit to the MNAR in 2012 resulted in a quite different picture. The object to be discussed here was part of a heterogeneous amphora ensemble, in which those containing fish products formed the majority: the Lusitanian forms were overwhelmingly present, with a good number of Almagro 51c¹⁰. Of the types of amphorae we identified from

8. Sánchez Sánchez and Nodar Becerra 1999; Sabio González 2012, pp. 234-236.

9. García Sandoval 1970, p. 767.

10. Almeida 2016.



FIG. 4. Cosmogonic mosaic of “Casa del Mitreo” (after J. Lancha 1983).

this important context, most were remarkably well preserved: something that caused us to wonder about their inclusion within the material of the last moments of the “Casa del Mitreo”, even if we possess little stratigraphical data and no detailed archaeological report. The chronological framework of most of the various documented types (Almagro 51c, Keay XVI, Agora M254, Kapitän II, etc.) spanned the period between the second half of the third century and the first half of the fifth century AD. This chronology fit the destruction date of the house.



FIG. 5. Drawing of Beltrán 72 from “Casa del Mitreo”.



FIG. 6. Picture of Beltrán 72 from “Casa del Mitreo”.

The inscribed object: the Beltrán 72 amphorae

HISTORIOGRAPHICAL BACKGROUND AND DIFFICULTIES RELATING TO THE GEOGRAPHICAL AND TYPOLOGICAL POSITION OF BELTRÁN 72 AND RELATED TYPES

The amphora under scrutiny is an example of the *Baetican* form Beltrán 72. The rim is completely preserved, together with the upper part of the body, one complete handle and the second one partially preserved (FIGS. 5 to 7). Apart from being a transport vessel, in this case for fish sauces or salted fish products, it is of epigraphical interest too, due to an ink inscription on the neck and upper part of the body. The Beltrán 72 amphorae are not among the most common Hispanic products of the time, but it should be noted that they are amongst the most frequent forms found in Mérida¹¹.

As the name indicates, and as mentioned above, this type of amphora was first defined by M. Beltrán Lloris, who gave to it the number 72 within the classification of forms presented in his book on Roman amphorae in Spain¹². For the formal description of the type, Beltrán Lloris used two exemplars, one from Mérida and another from Jaén (FIG. 7).

Unfortunately, the formal characterization of the type was left somewhat unclear, and during the decades following the publication of M. Beltrán Lloris, a number of diverse hypotheses proliferated, based on morphological, petrological and/or epigraphical data. The result created a confused picture, full of misunderstandings which, sadly, are still present in several important studies today.

One of the main problems which presented itself at the very beginning was the formal classification of the Beltrán 72. This involved the common yet incorrect identification with the Lusitanian type Almagro 50, which was in fact the Baetican type Keay XVI. M. Beltrán Lloris had defined type 72 as a “*small piri-form amphora with a yellow porous fabric*”¹³. Based on this description, other examples were identified throughout the Roman world further outlining its chronological span and its main areas of import. Moreover, these also brought to bear the many variations in form from the standard norm first presented in

11. Almeida and Sánchez Hidalgo 2012; Almeida *et al.* 2014; Almeida 2016.

12. Beltrán Lloris 1970, p. 573.

13. “*Pequeña anforita de aspecto piriforme, con el cuello largo y estrecho, rematado en un pivote cónico estriado como un tornillo y asas de sección circular que se unen a la altura de la boca, guarnecida por un resalte circular levemente apuntado. Pasta amarillenta muy porosa*”, Beltrán Lloris 1970, p. 573.

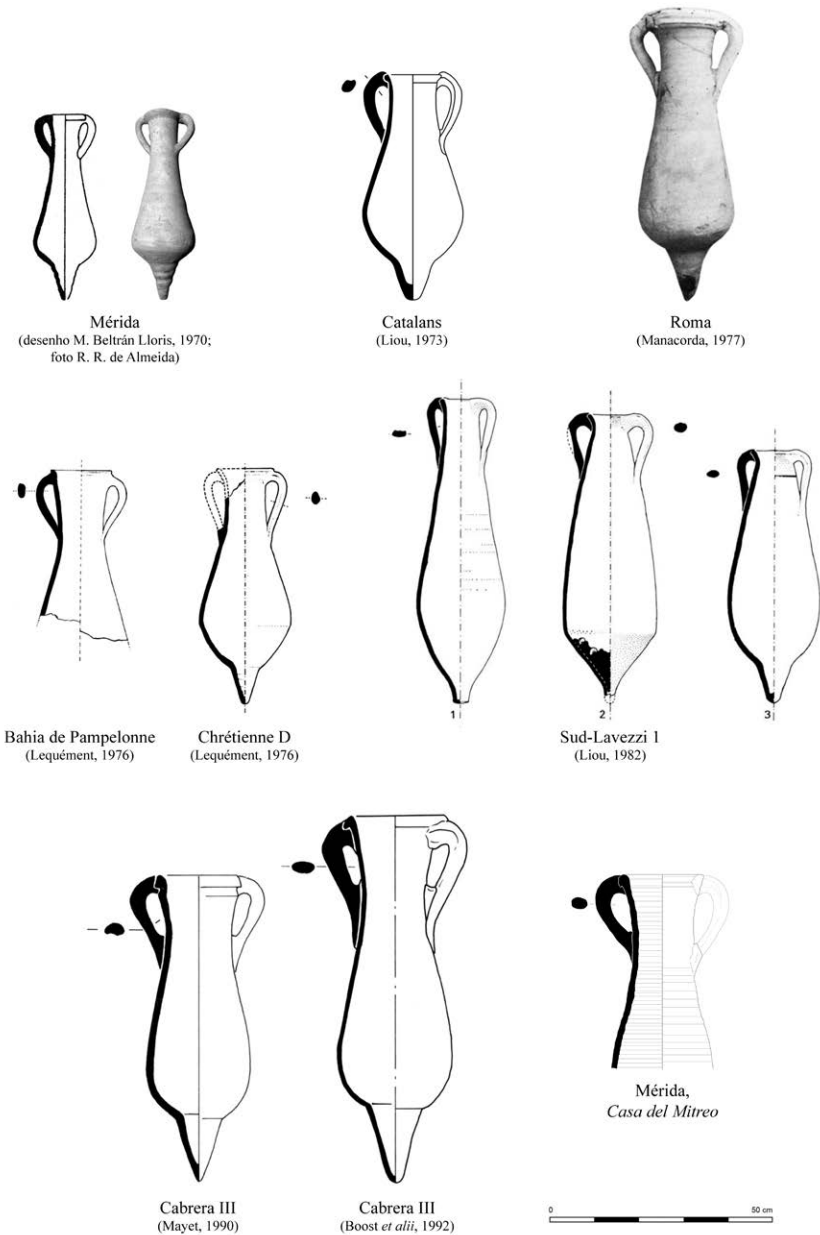


FIG. 7. Beltrán 72 from different places.

1970. Examples of this are a piece from the “Catalans” shipwreck in Marseille¹⁴, the five small specimens from the Pampelonne bay in Saint-Tropez published by R. Lequément¹⁵, who mentioned that these pieces are Beltrán 72 and in all likelihood produced in the southern part of the Iberian Peninsula, and the nine amphorae from the Sud-Lavezzi 1¹⁶. These “early” finds gave the idea that our type was present in many variants, all different in shape to the “original model” from Mérida as defined by M. Beltrán Lloris. Even so, scholars commonly believed that all the pieces were originally from *Baetica*.

Nevertheless, during the last decades of the twentieth century belief was questioned and in 1977, A. Parker presented his argument for the formal association amphorae of the type Beltrán 72 and those of the type Almagro 50¹⁷. He suggested that most of the latter originated in *Lusitania*, because at the time he knew of no other parallels. But in reality, the type he was relating with and referring to was not the Lusitanian Almagro 50, but the one actually known as Baetican Keay XVI. This was an unfortunate association. From that moment onwards, the scholarly community accepted the Lusitanian origin of the Beltrán 72 amphorae, on the basis of the suspected Lusitanian origin of the Almagro 50¹⁸.

Around the same period, M. Pereira published his study on amphorae stamps from the Algarve, including a large group of presumed Almagro 50 stamps, which in fact belonged to Keay XVI amphorae¹⁹. Therefore, following the scarce knowledge and data from *Baetica*, and at the same time the sheer quantity of fragments of that type found within the Lusitanian borders, supported by the large number of stamps, scholars assigned this production entirely to Lusitania, even if no direct evidence was available²⁰.

In the 1970s, D. Manacorda presented some fragments of Beltrán 72 and Almagro 50 amphorae from Ostia²¹, together with one complete example from a private collection in Rome (FIG. 7). In the important publication of the excavations of the “Terme del Nuotatore”, D. Manacorda drew attention to the dif-

14. Liou 1973, p. 585, Fig. 18,1; Liou 2001, p. 1071; In this paper FIG. 7.

15. Lequément 1976. In this publication R. Lequément presents another Beltrán 72. It is an exemplar from the “Chrétienne D” shipwreck in Saint-Raphaël (Lequément 1976, p. 183, Fig. 6). We present this piece in our FIG. 7.

16. Liou 1982.

17. Parker 1977.

18. Fabião 1997.

19. Pereira 1974-77.

20. Fabião 1997, p. 62.

21. Manacorda 1977.

ficulties of establishing morphological differentiation between the Almagro 50 and the Beltrán 72 types, especially when small fragments were involved²²: he linked both to a Baetican production, something already suggested for Ostia by C. Panella²³, even if at the time examples of these forms were scarce in Spain and they were much better represented on Portuguese sites²⁴.

In the 1980s, interest in ceramic petrographical studies grew, due to the efforts of the Southampton school. With the publication in 1986 of the book by D. Peacock and D. Williams on the petrography of Roman amphorae, numerous questions on the geographical provenance of many amphorae types were on their way to being solved. Unfortunately that situation did not apply to our types. Though the Beltrán 72 type got no mention in this book, the proposal of the Lusitanian production for the Almagro 50 (once again, the type they referred to was the Baetican Key XVI) was supported by petrographic analysis, which might be taken to confirm a Lusitanian production for the Beltrán 72 too. It is curious that both British scholars did not take account of the suggestion made by S. Keay in 1984, of dividing the form Almagro 50 into two variants. The first and most abundant one received the number XVI in Keay's classification of the late antique amphorae from Catalonia, while the less common version was numbered as XXII. In Peacock's and Williams' work, only a petrographical and formal definition of the Key XVI version was presented, as a southern Lusitanian production²⁵.

Before continuing, we need to review how odd this line of research actually was. Three aspects require commenting. The first is related to the morphological differences between the Key XVI and the examples found in Ampurias by M. Almagro²⁶, and later reproduced by M. Beltrán Lloris, which form the basis of the formal definition of the Almagro 50 type. The second concerns the obvious petrological and formal differences between Almagro 50 supposedly from southern Portugal (Algarve) and all the other fabrics and amphorae types that were produced in this region. The third matter is epigraphical evidence, which also presents differences compared with the epigraphical patterns known on amphorae from other areas of Roman Lusitania²⁷.

22. Manacorda 1977, p. 142.

23. Panella 1972; 1973, p. 606.

24. Fabião 1997, p. 62.

25. Peacock and Williams 1986, pp. 130-131.

26. Almagro 1955.

27. Fabião 1997, pp. 63ff.

Coming back to the historiographical account of the Beltrán 72 amphora type, the most important works appeared during the late 1980s and the 1990s, but these, in some way, were at the same time responsible for creating misunderstanding of this amphora type. The discovery of the Cabrera III shipwreck dated to 257 AD²⁸ and the workshop organized in Conimbriga in 1988 on Lusitanian amphorae, which was published two years later²⁹, combined to reinforce the hypothesis of a Lusitanian origin for this form.

The cargo of the Cabrera III shipwreck proved that the Beltrán 72 and the Almagro 50 were exported together. In addition, the resemblances in fabric and the existence of the stamp ANGE on both types confirmed the production of both in the same workshops. However their provenancing to *Lusitania* was not discussed³⁰, even if the cargo held other non-Lusitanian amphorae such as the Africana II and above all different Baetican containers.

Nevertheless, neither the production places nor the consuming centres yielded evidence in support of the hypothesis of its production in Lusitania. In the Acts of the *Conimbriga* workshop, A.-D. Diogo presented a new typology for the Lusitanian amphorae. Following the classification made some years before by S. Keay, A.-D. Diogo proposed the form Lusitania 5 as the Keay XVI and the Lusitania 6 as the Keay XXII, considering that both were produced in *Lusitania*. But he did not include the Beltrán 72 within the amphorae from this Roman province, because he did not find any in the studied Lusitanian kiln sites³¹.

In the years following to the publications of Cabrera III and the Colloquium of *Conimbriga* several amphorae classified as “Almagro 50 with light fabric” (the same as saying, Baetican Keay XVI) were found in different places in the Algarve. Some of these were documented in places connected to the production of fish products, as for example in Quinta do Marim³², Balsa³³, or even Ilha do Pessegueiro, on the Atlantic coast. These discoveries provided new arguments to reaffirm the local/regional production of the “Almagro 50 with light fabric” in the south of *Lusitania*.

28. Guerrero Ayuso *et al.* 1987; Bost *et al.* 1992.

29. Alarcão and Mayet 1990.

30. Mayet 1990a, p. 25; Mayet 1990b, pp. 32-33.

31. As a direct consequence of the meeting held at Conimbriga, this type will be integrated in the Lusitanian Typology with the number 14 a few years later (Diogo 1995).

32. Silva *et al.* 1992.

33. Fabião 1994.

The continuing and incorrect correlation between the Almagro 50 / Keay XVI and the Beltrán 72 as Lusitanian amphorae is still to be seen in several manuals and references to publications in amphorae studies³⁴. Even so, the years between 1996 and 1998 witnessed an important change for the hypothesis on the production of Almagro 50, Keay XVI, Keay XXII and Beltrán 72.

In 1996, the study “Les Amphores du Sado”³⁵ was published, providing an update on the products of this important Lusitanian region. This work focused on two main research lines. The first was a review and revision of the amphorae types produced in this area, as documented by the kiln sites. The second was the petrological characterization of the Lusitanian amphorae production areas, not only at Sado, but also from the Tagus valley and the Algarve. In the first part of the book, the idea of the Beltrán 72 as a Lusitanian amphora was stressed, even if no examples had been found in the kiln sites of Lusitania. The main argument was still based on the fabric, similar to the “Almagro 50” (i.e. Keay XVI), supported by the shared stamp *Annius Genialis* produced in one or the other *officina* (not yet found, but certainly to be placed in Algarve). Beyond those two arguments, the authors dealt with the formal origin of the form Beltrán 72, suggesting that it could be a later development of Beltrán IIB type, but produced in Lusitania³⁶. In this case, the Beltrán IIB amphorae would have given rise to two shapes: one, the most numerous, is the Almagro 50, and the other, the Beltrán 72. It is curious that the Beltrán IIB, never produced or only sporadically so in Lusitanian workshops, spawned this development in this province, but not at all in its original production region of Roman *Baetica*.

Concerning petrological studies, the publication of F. Mayet and her collaborators, in their analysis of the fabrics from the Algarve workshops, demonstrated great variety, but none of the fabrics was similar to that of the form they considered to be Almagro 50 (again: the Baetican Keay XVI) and Beltrán 72³⁷. The book did, however, present a “case study” of a site where the provincial products were consumed, being the villa of São Cucufate (Vidigueira, Portugal), where

34. In Lattara 6, for instance, the Beltrán 72 type is placed in the chapter of the Baetican amphorae but is considered an equivalent of Keay XVI (Raynaud 1993, p. 24). The well-known books *Les Amphores. Comment les identifier* (Sciallano and Sibella 1991) or *Anfore antiche: conoscerle e identificarle* (Caravale and Toffoletti 1997) consider the Beltrán 72 type to be Lusitanian. Finally, as a consequence of the colloquium held in *Conimbriga*, in *Céramiques Hellénistiques et Romaines III* (Lévêque and Morel 2001), C. Panella included the Beltrán 72 in the Lusitanian forms (Panella 2001) and F. Mayet “still” considered the Beltrán 72 as one of the “principales amphores lusitaniennes” (Mayet 2001a, p. 277).

35. Mayet *et al.* 1996.

36. Mayet *et al.* 1996, p. 19.

37. Mayet *et al.* 1996, pp. 156-162.

only two examples of Almagro 50 represented the typical fabric of the Tagus/Sado workshops, whilst most had a fabric quite similar to the types Dressel 7-11 and Beltrán IIB. Therefore, in the light of this data, a Lusitanian origin for the Beltrán 72 type and many of the “Almagro 50” should have been reconsidered. Even more paradoxically, in their final pages the authors recognized the possible duality of the Almagro 50 production, putting forward some as of Lusitanian manufacture, and the “Almagro 50 with light fabric” (that is, the Keay XVI), together with the Beltrán 72, as of possible Baetican manufacture³⁸.

Although it was not their goal, these scholars revived the original research lines of M. Beltrán Lloris³⁹ and D. Manacorda⁴⁰ on the Baetican origin of the Beltrán 72 and the Keay XVI amphorae. In 1997, C. Fabião published an article⁴¹ on the Lusitanian attribution of both types, analyzing the three main issues, namely the morphological, the petrographical and the epigraphical questions. He concluded that the hypothesis for a southern Lusitanian origin was unsubstantiated, and that both types were produced in *Baetica*, as had already been indicated by the first discoveries of specimens in Baetican kiln sites, such as Puente Melchor⁴².

In the same year appeared both the amphorae from São Cucufate⁴³ and the Ph.D. thesis of D. Bernal Casasola, presented on the “Economy and Commerce of Late Antique *Baetica* and the Straits of Gibraltar area”.⁴⁴ In this study, both the Beltrán 72 and Keay XVI received special attention.

Eventually in 1998, thanks to the publication of E. García Vargas’ book on the “Amphorae Production in the Bay of Cadiz”⁴⁵, the Baetican origin of both forms was confirmed: their production in kiln sites such as Puerto Melchor was substantiated. Both forms were also produced in other parts of *Baetica*, as the studies carried out in the “Los Matagallares” workshop and at other production places in the provinces of Málaga and Granada demonstrated⁴⁶.

Finally, in that same year, the congress *Ex Baetica Amphorae* was organized, with proceedings published in 2001. At this congress the scholarly commu-

38. Mayet *et al.* 1996, pp. 171-179.

39. Beltrán Lloris 1970.

40. Manacorda 1977.

41. Fabião 1997.

42. Lagóstena Barrios 1996.

43. Lopes 1997.

44. Mayet and Schmitt 1997.

45. García Vargas 1998.

46. Bernal Casasola and Navas Rodríguez 1998.

nity accepted the primary Baetican origin for the majority of the amphorae of the “Almagro 50 light fabric” / Keay XVI and Beltrán 72 types⁴⁷, also concluding that only the Almagro 50 amphorae with “orange fabrics” were produced in *Lusitania* in the Tagus and Sado valleys⁴⁸.

In the first years of the twenty-first century, R. Étienne and F. Mayet published their synthesis on the Hispanic economy, dedicating one of their books to fish sauces and salted fish products⁴⁹. The French authors divided the Almagro 50 into two variants: the “Almagro 50A” (= Keay XVI), mainly produced in *Baetica*, and the “Almagro 50B” (closer to Keay XXII), manufactured in the Sado and Tagus workshops. Concerning type Beltrán 72, they equated it to the Keay XVI; so, consequently, it was a Baetican production.

All studies published in the years either side of the year 2000 indicated the general agreement among scholars working in the Iberian Peninsula. However, in the international community, the problems caused by the misunderstanding of the late antique Baetican and Lusitanian productions persisted. One clear example is the publication of the Punta Ala A shipwreck, dated to 250 AD, with several Beltrán 72 aboard: all of these, pitched, were considered by the authors as belonging to a scarcely known amphora type, with a Lusitanian origin and products⁵⁰, quoting the “up-to-date” bibliography.

Recently, D. Bernal Casasola presented a synthesis, bringing some order and filling some gaps generated by several years of geographical controversy. Based on this work, we wish to present a new proposal on the typological development and production origins of this form⁵¹.

TYPOLOGICAL REMARKS

The Beltrán 72 can be defined as a small piriform-shaped amphora, normally 60-70 cm and occasionally 80 cm in height. The maximum diameter is situated at the lower part of the body, where it reaches 20-25 cm across. It has a hollow conical base, around 14-15 cm high, and 6-7 cm in diameter in its upper part. The neck is not separate from the body, being like a prolongation

47. Mayet 2001b; Fabião 2001; Bernal 2001.

48. “(...) seules les amphores à pâte orangée on été fabriqués dans les vallées du Tage et du Sado (...); si leur profil est parfois assez proche des premières, la pâte ne permet pas de les confondre (...)” Mayet 2001b, pp. 651-652.

49. Étienne and Mayet 2002.

50. Dell’Amico and Pallarés 2006.

51. Bernal Casasola 2016.

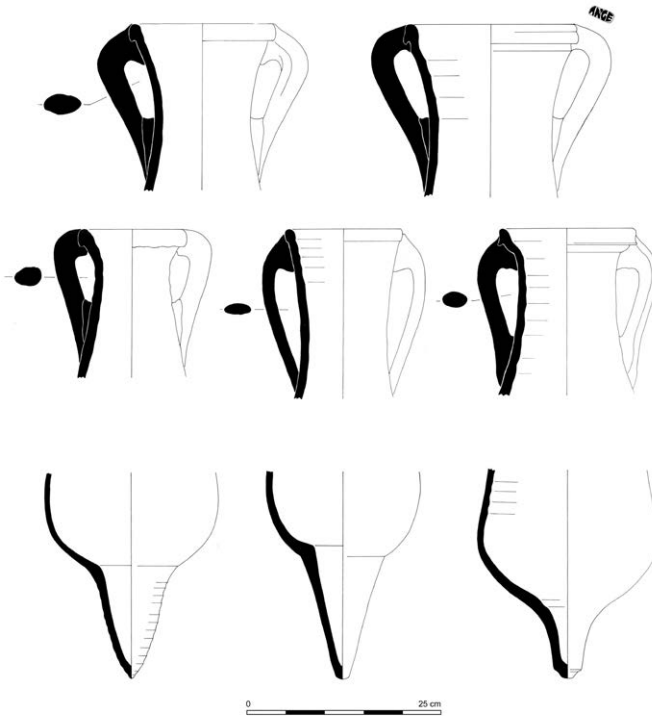


FIG. 8. Beltrán 72 from Cabrera III shipwreck (after Bost *et al.* 1992).

of the same: it has a minimum diameter of 10-12 cm and widens at its mouth to 17 to 22 cm across.

The rim form can be divided in two main types⁵². The first one is triangular in profile, close to the latest forms of Beltrán IIA. The second type is rounded and either thickens to the outside, as some examples from Cabrera III show⁵³, or has a more complex design, as with the pieces found in the workshop of Los Matagallares⁵⁴. The presence of different rim versions in the Cabrera III shipwreck rules out the option of creating chronological divisions based on rim shapes. Rather, the variety must be seen and interpreted as indicating a multiplicity of contemporary workshops producing the Beltrán 72 type⁵⁵.

52. Bernal Casasola 2001a, pp. 286-287.

53. Bost *et al.* 1992, p. 132.

54. Bernal Casasola 1998, pp. 263-267.

55. Mayet 1990b; Bost *et al.* 1992; Bernal Casasola 1998; 2001; 2012.

Moreover, the handles are long (17 to 22 cm), springing directly from the rim and staying close to the neck in an “S” profile⁵⁶. They have an oval section and are fixed to the body with the help of a lump of clay inserted between the body and the handle (FIG. 8). This technical detail is shared with both of the forms Keay XVI and XXII.

Based on the complete exemplars known to us, it looks like we have two standard sizes. The first one was most common and the tallest, present in contexts such as Cabrera III, Chrétienne D, Rome etc. The second one is smaller, with a body height of no more than 30-40 cm. This is exemplified by the pieces from Mérida and Jaén already published by M. Beltrán Lloris in 1970, and there are also other examples from Mérida published in the last years⁵⁷. The existence of the smaller version is quite interesting: it must be part of the *parvae* trend, typically witnessed in the Dressel 20 and later Baetican amphorae⁵⁸.

No analyses have been made of the contents transported in the Beltrán 72, but there are two main reasons to believe it is a vessel carrying fish products. The first one is its production place, that is to say the coasts of *Baetica*, one of the major areas of fish processing from Antiquity to the present times. The second are the traces of resin used to coat the vessels as seen in some exemplars from the Cabrera III⁵⁹ and Punta Ala A⁶⁰ shipwrecks: this habit suggests a liquid or semi-liquid content, in this case probably a kind of fish sauce or pieces of fish preserved in brine.

As for the epigraphic evidence, even if the stamp ANGE⁶¹ is still the best documented one for our amphorae, other stamps are known too. The mark CVRVVC is known on one exemplar from *Conimbriga*⁶², and AEMHEL is found on another vessel from the “Casa del Mitreo” in Mérida, and was recently published⁶³. These three stamps appeared on Keay XVI amphorae too; the Keay XVI form providing more examples⁶⁴.

56. Bost *et al.* 1992, pp. 132-133.

57. Bustamante Álvarez 2011, fig. 20; Bernal Casasola 2016.

58. Bernal Casasola 2001a, pp. 305-307; 2016.

59. Bost *et al.* 1992, p. 133.

60. Dell'Amico and Pallarés 2006.

61. Bost *et al.* 1992, p. 133.

62. Alarcão 1976, pl. XXII, no. 56. It was A.M.D. Diogo who took notice of this stamp (Diogo 1995, p. 285; Fabião 1997, p. 64).

63. Fabião and Guerra 2016, no. 100d2.

64. Fabião 1997; Lagóstena Barrios 2001; Fabião and Guerra 2016.

THE PRESENT SITUATION AND FUTURE DEVELOPMENTS CONCERNING THE
BELTRÁN 72 TYPE IN *BAETICA* AND *LUSITANIA*

Due to its historiographical background we consider the Beltrán 72 as a unique case. It is probably the only known amphora type based on a *parvae* model, and not that common among the pieces found in archaeological contexts and museums depots.

Below we will approach the three main concerns related to the Beltrán 72. They are the chronological framework of production and export, the original regional core for its production, and the making of similar or related forms in the Iberian Peninsula.

Our amphora form is securely documented in archaeological reports presenting contexts from the second half of the third until the middle of the fifth centuries AD. The earliest phases can be traced back to the shipwrecks of Cabrera III and Cala Reale A, but are also seen in the production workshop of Los Matagallares, where production is considered to have started during the first half of the third century AD. Unfortunately the final phases are not defined as well as the beginning. It has been suggested that the Beltrán 72 ceased to be made around the middle decades of the fifth century AD⁶⁵, although as some finds from Seville seem to suggest they could have seen further production up to the end of the fifth or early sixth century. In Seville, the type was found in layers that were above the *spolia* of the “Casa de la Columna”, placed in the final years of the fifth century and the first quarter of the sixth centuries AD⁶⁶. The authors classified the vessels as a Lusitanian production. Still in *Hispalis*, the abandonment contexts of the “Casa del Sestile”, dated between 525 and 550 AD, contained some exemplars of Beltrán 72⁶⁷. These two contexts from Seville are the only ones where the form was found later than the middle of the fifth century AD, but it is possible that these finds had a residual character. The excavations of “La Almoina” in Valencia could present a more typical situation. Within the material found in a well at the *macellum*, dated on excellent grounds to the first part of the fifth century AD, are some examples of Beltrán 72⁶⁸. Outside the Iberian Peninsula, the lack of good differentiation between the Baetican and Lusitanian amphorae repertories prevents a clear evaluation of the Baetican types from the second

65. Bernal Casasola 2016.

66. Amores Carredano *et al.* 2007, p. 136.

67. Amores Carredano *et al.* 2007, p. 137.

68. Ribera i Lacomba and Rosselló Mesquida 2007, p. 190.

half of the fourth century AD⁶⁹, and obstructs the recognition of the Beltrán 72 outside the Hispanic region.

Concerning discoveries of Beltrán 72 *in situ* at production places, its production is attested at only a small number of workshops. Nevertheless, the petrographical characteristics of most exemplars do indicate a Baetican origin, mainly in the western part of the Baetican coastal regions, around the Cádiz Bay and the Straits of Gibraltar, but also involving the coast of the province of Granada during the third and fourth centuries AD⁷⁰. In the “Los Matagallares” workshop, in this latter region, the production of Beltrán 72 seems to have been quite important, ranking just behind the Almagro 51c, Dressel 14 and Keay XLI, but above the Keay XVI⁷¹.

It should be stressed that within the late Roman Baetican amphorae production repertoire there are similar forms to the Beltrán 72: for example the “Majuelo I”, that was exported to different markets⁷², *Caesarea Maritima* being the most remote site at the present⁷³.

The production of Beltrán 72 in *Lusitania* still continues to be a topic for research and an open question. In the last years, the hypothesis of Beltrán 72 being produced in the Algarve together with the Keay XVI has been abandoned. However, the question of their production in the Tagus and Sado valleys has lately been reopened. Even if the recent publications on Lusitanian amphorae production exclude the production of Beltrán 72 in the central part of Portugal⁷⁴, there do still exist some incomplete amphorae with petrological characteristics typical of the region and with a great similarity in form, or at the very least some telling resemblances, to the Beltrán 72. We have in mind items from Quinta do Rouxinol in the Tagus⁷⁵ valley or Quinta da Alegria in the Sado valley⁷⁶, but also others located in Abul, in layers dated from the second quarter/middle of the third century AD⁷⁷, or in Pinheiro, in contexts of both the early fourth century AD⁷⁸ and again at the end of the

69. García Vargas and Bernal Casasola 2008, p. 679; González Cesteros and Berni Millet forthcoming b.

70. Gener Basallote *et al.* 1993, pp. 975-977, fig.7; Bernal Casasola and Navas Rodríguez 1998, p. 89, fig. 13B.

71. Bernal Casasola 1998, p. 267.

72. Bernal Casasola 2001b; Bernal Casasola and Bonifay 2010.

73. Oren-Pascal and Bernal Casasola 2001; presented by us in FIG. 9.

74. Fabião 2004, p. 397; Fabião 2008.

75. Duarte and Raposo 1996, Fig. 6, nos 8-9.

76. Mayet *et al.* 1996, fig 55, no. 193.

77. Mayet and Tavares da Silva 2002, p. 196, fig. 101, nos 33, 37, 39 and 40.

78. Classified as “unusual forms” by Mayet and Tavares da Silva 1998, fig. 91, no. 113.

fourth/beginning of the fifth centuries AD⁷⁹. Within this set of amphorae that closely resemble the Beltrán 72, the best preserved example was found in the upper layers of a vat in the supposed fish-sauce factory in Rua dos Fanqueiros, in the centre of Lisbon (FIG. 9), and dated to the second half of the fifth century AD⁸⁰. Another piece in quite good condition (it lacks only the spike) was found in the riverbed of the Rio Arade in Algarve⁸¹.

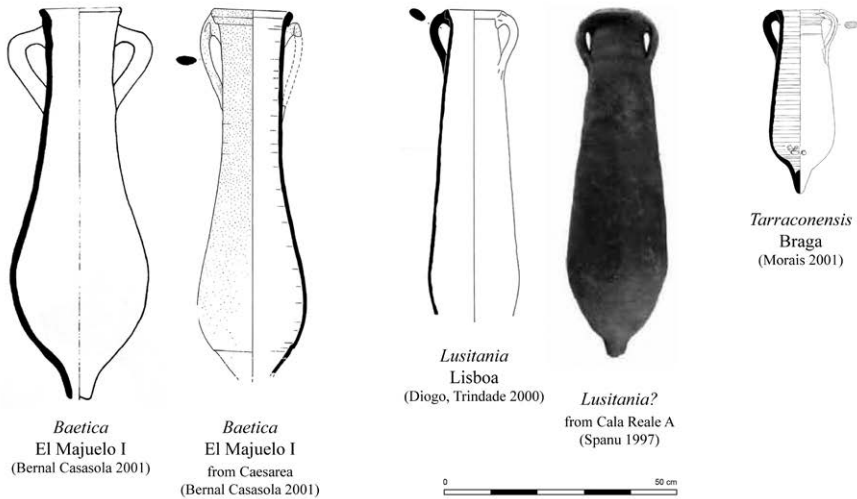


FIG. 9. Baetican and Lusitanian forms related to Beltrán 72.

We think these are not mere Lusitanian “copies” of Beltrán 72, but represent a similar and related form, as with the Majuelo I from *Baetica*. An in-depth study on these exemplars and their place within the Lusitanian amphorae production would be most welcome.

At the same time, it is now clear that in Lusitanian workshops the Key XVI type was produced alongside amphorae of the form Almagro 50, albeit in smaller quantities⁸²: clear evidence of the close connection that existed between the Lusitanian and the Baetican amphorae production. Accordingly, it cannot be discounted that one day a “true” Beltrán 72 in a Lusitanian fabric can be found.

79. Classified as “indeterminate” by Mayet and Tavares da Silva 1998, fig. 120, no. 47.

80. Diogo and Trindade 2000.

81. Cardoso 2013, p. 113, no. 5817.01.06.

82. Almeida and Raposo 2016a and b.

Some of these Lusitanian forms close to Beltrán 72 were exported outside the Iberian peninsula. This seems to be the case with some pieces from the Cala Reale A shipwreck⁸³, dated to the second half of the fourth or beginning of the fifth centuries AD, with a cargo of Lusitanian Almagro 51c, Almagro 51a-b, Sado 3, and some of the related forms (FIG. 9). Those from Cala Reale A are quite interesting from a morphological point of view. They are very similar to other examples found in the Sud-Lavezzi 1 shipwreck, also dated to the late fourth and early fifth centuries⁸⁴. The recent research of S. Bombico confirmed the Lusitanian fabric of the vessels⁸⁵.

Finally, in the area of *Bracara Augusta* (Braga) R. Morais has argued for a possible *similis* production of Beltrán 72⁸⁶, a possibility that could be considered for other places in *Gallaecia*, where the minor production of Keay XVI has been also documented, as for example at San Martiño de Bueu⁸⁷.

In sum, we can conclude this discourse on the Beltrán 72 and other “south-Hispanic types”⁸⁸ by stressing again the need to overcome the deep-rooted problems of the original production locale of this form. By paying attention to comparability in form, we must establish and distinguish which pieces were produced in *Baetica*, and which in *Lusitania*, allowing to postulate the routes and ports that Baetican and Lusitanian products followed in Late Antiquity⁸⁹.

The painted inscription: reading and significance

As mentioned, our Beltrán 72 from “Casa del Mitreo” featured a *titulus pictus*. The inscription is written in red ink (*rubrum*), relatively more rare than black ink (*atramentum*), although the use of either depended on geography and chronology. The inscription takes up three horizontal lines from the upper part of the neck to the upper part of the belly (FIGS. 5 and 6). The letters are of the same size, around 10 cm tall and 1 cm width.

83. Spanu 1997, ff. 113.

84. Liou 1982; Massy 2013.

85. Bombico *et al.* 2014, p. 367.

86. Morais 2001.

87. Morais 2007; Fernández Fernández 2016.

88. This expression was used by S. Keay (1984), due to the difficulties of determining a clear division among the different fabrics from South Spain.

89. Bernal Casasola and Bonifay 2010, p. 47.

As to the meaning of our *titulus*, it is undoubtedly a short and difficult text, as is often the case with *tituli picti*. Nevertheless, we believe it is important to present the *titulus* for interpretation, and to stimulate discussion on it.

The letters of lines 1-2 can hardly be identified as Greek or Latin, but they could be Hebrew – a possibility supported by the established presence of a Jewish community in Roman Mérida.

כא

עללים

P. A. (?)

The two first lines seem to form one word (seven or eight letters). Tentatively, the beginning might be interpreted as יסכא- -, i.e. as the first letters of a word starting in ὀξύ- / oxy-, perhaps ὀξύγαρον / *oxygarum*. Unfortunately the three following letters cannot be read as γργ, (*garum*), so that יסכא may rather be understood as an abbreviation. The following letters are very uncertain, but an indication of the recipient of the product (-ל) is one possibility. The last line seems to be formed by two Latin letters and two dots, one between the letters and the other to close the inscription (FIG. 10). It is possible to read the first as P, and the second as A. As such they could refer to the name of the merchant of the product, as in most painted inscriptions on fish-sauce amphorae⁹⁰.

Although two different scripts were employed, the writing seems to have been done by the same person, that is to say all the letters have a similar hand-style and use the same ink; they are also placed around one vertical axis, in carefully executed parallel lines (FIGS. 6, 10 and 11). This aspect leads us to think that probably the writer of our inscription was not bilingual, nor was he accustomed to write in one of the scripts, most likely Hebrew. This deficiency in skill could be a factor in the difficulties in reading the first two lines⁹¹; the third line in Latin is easily read by an expert eye.

90. Martin-Kilcher 1994, pp. 402-403; Martin Kilcher 2004; Étienne and Mayet 1998; Martínez Maganto 2001; Lagóstena Barrios 2004.

91. We have asked several experts in ancient Hebraic epigraphy if they were able to read our inscription. Though most agreed on the Hebrew character of our inscription, none was able to read it properly.



FIG. 10. Inscription of the Beltrán 72 from “Casa del Mitreo”

Contrary to Greek or Latin, Hebrew was not a language commonly used in daily life, but rather a language used mainly for cult and ritual. In the present case the use of Hebrew could be explained if the contents of the amphora had to do with Jewish dietary rules. The amphora's typology indicates that it was one used for transporting *garum* or some kind of brine, which we know were consumed by Jewish communities in the Roman and Late Antique periods. S. Krauss (1866-1948) collected and commented on the Talmudic testimonies for the use of *muries* (סיירומ), brine (ימלה = gr. ἄλμη), *oxygarum* (וןריגיסכא = gr. ὀξύγαρον), a sauce of vinegar and *garum*, and other products of this kind⁹². It is therefore possible that the inscription mentions some of these products.

At present we do not know of any amphora inscription mentioning *oxygarum*, but this product is cited in several texts, especially by Apicius, who used it in several recipes. The first letter of our inscription may mention this product as our amphora content.

92. Krauss 1898; 1910, pp. 110-112.

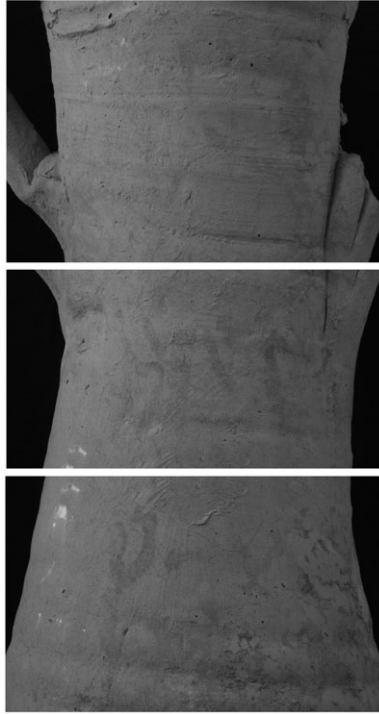


FIG.11. *Titulus pictus* in different lines.

The Jewish community in Mérida under Roman and Visigoth rule

At this point, it is important to shed some light on the Jewish presence in Roman and Visigoth *Emerita Augusta*. The presence of a Jewish population has been proposed from the arrival of the first Semitic contingents in the Iberian Peninsula onwards: namely those who came from the Levant together with the Tyrians to settle in south Spain in the ninth century BC. Following this line of thought newcomers with a Jewish background could have been assimilated after some generations of mixing with Phoenician and Punic inhabitants⁹³. We have no archaeological or epigraphic evidence confirming this hypothesis; the literary interpretations used as possible

93. García Moreno 1993; Sayas Abengochea 1993. Both authors mention that the early presence of Jews in the Iberian Peninsula is based on arguments used by Jews of the Middle Ages to affirm their presence there before Jesus' death. García Moreno also points

arguments are at best circumstantial. Even if an early Jewish presence in the Iberian Peninsula cannot be disregarded, it is more likely that further Jewish communities arrived during the last centuries BC, once the Roman expansion and the commercial unification of the Mediterranean was underway. However, little archaeological or epigraphical evidence survives to illustrate the presence of Jewish communities in the Iberian Peninsula before the fourth century AD. Although it should be obvious that there were significant Jewish communities within the population of the most important cities of ancient Hispania, at least from the Hellenistic period, a moment when Jews migrated to the Western Mediterranean, coming mainly from the influential Alexandrian community⁹⁴.

The foundation of the *Colonia Emerita Augusta* as most important city and capital of *Lusitania* could have attracted the settlement of Jews from the earliest days of the colony. Unfortunately, we have to wait till the second and third centuries AD to see the first real evidence of the presence of a Jewish population in the Lusitanian capital in the form of stone inscriptions⁹⁵. These inscriptions, and others dating from Late Antiquity and the early Middle Ages, were written in Latin⁹⁶. Our inscription on the Beltrán 72 amphora would thus seem to be the first in Hebrew found in the city and indeed in the whole of *Lusitania*.

From the fourth century AD there is more evidence of a Jewish presence in Mérida. From then on to at least till the late sixth century AD, when the hostile anti-Jewish Visigoth laws came into effect, the Jewish community in the city must have held a privileged position⁹⁷. This was probably so because a large and influential part of the populace was in fact Jewish – as is seen by the famous inscription of Annianus Peregrinus, *exarcon* of the two synagogues and an important person within the large Jewish community of *Emerita Augusta* at the end of the fourth or early fifth centuries AD⁹⁸, and also by the sheer richness of some of their elite members⁹⁹.

out that in view of the deep changes that affected Judaism after the Babylonian exile, any original contingent of Jews could hardly be distinguished from other Semitic groups.

94. García Moreno 1993; Sayas Abengochea 1993; Noy 2013.

95. García Iglesias 1976; 1978, pp. 52-55.

96. We would like to thank A. Bar-Magen Numhauser for the interesting comments and suggestions about the Jewish inscriptions of Mérida and the Iberian Peninsula.

97. García Iglesias 1976, pp. 82-85.

98. García Iglesias 2010.

99. García Iglesias 1978, pp. 162-171. Scholars as García Iglesias and García Moreno (1993), among others, have tried to achieve an understanding of the economic status of the Jewish population in the Iberian Peninsula during Antiquity. The exact economic position of the Jewish communities within the Roman and Visigoth societies is not easy to establish, due

Within the Iberian Peninsula, the Mérida region is second only to the Tarragona area in the number of late Roman and Visigoth Jewish inscriptions¹⁰⁰. Even if the Jewish population of ancient *Hispania* was spread throughout the Hispanic territory, two main geographical foci can be ascertained on the basis of epigraphical and archaeological evidence. The first one is on the Levante coast in Spain and the Balearic Islands, with special relevance to Tarragona and Mallorca. The second focus is the city of Mérida¹⁰¹. In both cases the Jewish presence is documented at least from the first century AD, but it is during Late Antiquity, from the fourth to sixth centuries that the Jewish community seems to increase and become important from an economic point of view. It is perhaps not coincidental that our amphora inscription dates within these chronological borders.

Other Hebrew inscriptions on amphorae

It is not easy to find ceramic vessels bearing ink inscriptions in Hebrew, not even in the Levant area as also Aramaic was a common language in Palestine¹⁰².

The most interesting comparanda to our inscription come from Italy, as for example on some Keay 52 amphorae from the synagogue of Bova Marina in Calabria¹⁰³ and from different places in Rome¹⁰⁴. These items, produced in south Italy and/or in northeast Sicily, are to be dated to the fifth century AD. However, they bear no ink inscription, but stamp impressions with the representation of the Menorah (FIG. 12). Given the religious connotations of the stamp, most scholars proposed that the amphorae must have carried a kosher product and were produced for a deliberate purpose, namely to transport wine for the numerous Jewish communities located in south Italy¹⁰⁵. However we know that inscriptions on amphora stamps were in most cases not linked to the commercial function of the amphorae or their contents, but have to

to the scarce textual references and the poverty of archaeological evidence. Nevertheless, even if it is most probable that Jews existed at different socio-economic levels in their community, a very considerable portion of them were wealthy, because of the commercial and artisanal activities they adopted.

100. García Iglesias 1978, pp. 51-70; Noy 1993, pp. 238-262.

101. Bar-Magen Numhauser 2011.

102. We do find some *ostraca* and even amphorae with Aramaic painted and scratched inscriptions. Nevertheless they are not usual in the archaeological record.

103. Arthur 1989.

104. CIL XV, 3552.1-2; Galterio and Vitale 1994; Pacetti 1998.

105. Arthur 1989; Galterio and Vitale 1994.

do with the production processes of the clay containers at their kiln sites¹⁰⁶. Accordingly we would like to reconsider this view. Possibly, the Menorah stamps were made to emphasize the Jewish connotations of these containers and indirectly the contents they bore too. Probably the amphorae as well as the wine (the Keay 52 form is normally associated with wine) were produced by Jewish businessmen, maybe by the very Jewish community that met in the Synagogue in Bova Marina¹⁰⁷. It could then be a kosher wine. But, and this is an important 'but', we have no indication that this wine was only consumed by Jews. Such kind of information is never conveyed in a stamp, but only in the *tituli picti*, which unfortunately were not attested on these amphorae.

The best parallel to our Beltrán 72 Hebrew inscription is to be found on a Late Roman Amphora 1 (LRA 1) from the Late Roman and Byzantine harbour of Classe in Ravenna. Though we have not handled this interesting piece ourselves, the illustrations found in the publications on Ravenna and the harbour of Classe¹⁰⁸, and a new one recently published by E. Cirelli¹⁰⁹, sustain the classification of this exemplar as one of the early versions of the LRA 1, produced during the late fourth and fifth centuries AD. The *titulus pictus* was published in 1984 by M. Dukan, C. Sirat and M. Zerdoun: it presented one line on the upper part of the belly, almost at the beginning of the neck, where it was easy to read. It said שְׁלוֹמַי – Shalom. This word can be a personal name. Even if in ancient times it was not so common as today, we have several examples in the Roman and Byzantine periods. On the other hand, Shalom is frequently used as a formal way to introduce or to finish Jewish inscriptions¹¹⁰.

Because of the use of the Hebrew alphabet and the well-known word Shalom, it can be suggested that the product carried in this amphora was primarily destined for the Jewish community of Ravenna, and further, that it was kosher, since the consumers were members of the Jewish community. We agree with this interpretation, but we think it is also important to place this inscription within the typological context of the amphora it was written on. The LRA 1 is a widely distributed amphora form produced mainly in Cilicia, north Syria and Cyprus from the late fourth to the early seventh centuries AD. They have the highest number of ink inscriptions found on amphorae produced in the Eastern Mediterranean in Roman and early Byzantine times¹¹¹. The inscrip-

106. Manacorda 1993; Manacorda and Panella 1993; Panella 2001, pp. 185-186; Berni Millet 2008, pp. 23-38.

107. Arthur 1989, pp. 138-139.

108. Stoppioni Piccoli 1983.

109. Cirelli 2014.

110. Dukan *et al.* 1984, pp. 292-293.

111. Pieri 2005, p. 78.

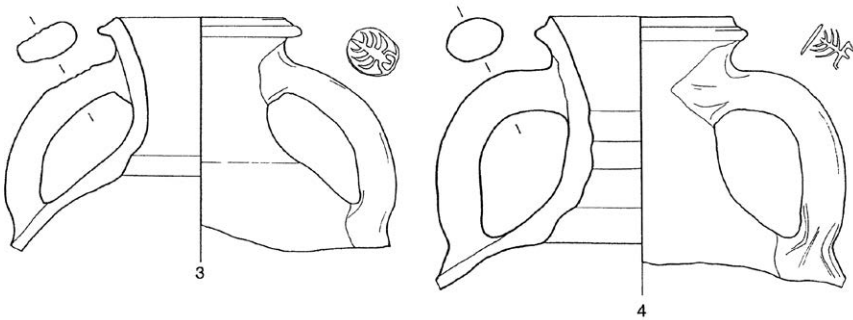


FIG. 12. Keay LII with Menorah stamps from Rome (after Pacetti 1998)

tions on LRA 1 amphorae normally make mention of taxes, quantities and sometimes names, but also employ Christian theological formulas and signs such as Christograms. The use and significance of these theological formulas and signs is still a controversial issue, but one suggestion is that they had a prophylactic meaning, maybe placing the cargo under divine protection¹¹². In the Classe example we are arguably seeing a similar situation, but in this case the prophylactic word is one adapted to the Jewish faith. Following this line of argument, if we admit the same kind of purpose for the Shalom inscription on this LRA 1, then maybe the *mercator* or the *navicularius* of the vessel was a Jew. Further, it would be a little strange to have a *titulus* written in Hebrew, if the consumers or the buyers of the product were not Jews. It is reasonable, therefore, to assume that both the merchant and the consumers were Jews and the product appropriate for them, it should have been kosher.

Searching for other Jewish inscriptions on amphorae, we have come across some examples from the Roman period that require a brief mention. A stamp with a Greek name in the Greek alphabet and a palm, dated before 254/5 AD, was found outside the synagogue of Dura Europos¹¹³. It has been suggested that the palm could be an Iulab. However we would refrain from including this stamp within the corpus of Hebrew amphorae inscriptions. From Dura Europos too came another two jars, with the name Samuel written in Hebrew, Aramaic and Greek. The only mention of these pieces is to be found in the excavation report from 1933. The absence of any illustration of the pieces prevents us from affirming if these were transport amphorae or some other kind of pottery jars, and whether the inscriptions were *tituli picti* or *graffiti*. In fact, we are of the opinion that a single name, written in three

112. Pieri 2005, p. 79.

113. CIJ ii 1952, no. 844; IJO III, Syr130 (Noy and Bloedhorn 2004).

different languages, should not be taken as having commercial relevance, but possibly indicated the owner's name of the jar¹¹⁴. The same case can be made for the Jewish names found on *tituli picti*, normally in Greek and Latin, on amphorae in places such as Tanais¹¹⁵, where no reference either to the amphorae form, or to their chronology, is made.

Another instance is presented by four amphorae from Pompeii, with ink inscriptions in *atramentum* written in Greek¹¹⁶. Following the transcription of M. Della Corte¹¹⁷, they contained the word “Jewish” or “Judean” in second position, following the name Trules, which is thought to be the merchant's name. In his work on the Jewish inscriptions of the Western Mediterranean, D. Noy suggested two possibilities for the second word. The first was that it was directly linked to the content, with the following interpretation: Trules who handles wine, fish products or any other amphora-borne goods¹¹⁸, coming from Judea or “Jewish” (made after the Jewish procedure). The second option is that the word refers to the merchant's origin, in this case: Trules who is native to Judea. This second option seems to us less founded since amphorae inscriptions usually do not included references to the origin of the merchant, but only to the origin or the manner of preparation of the content. Such references are to be found above all in *tituli picti* of the first century AD, which agrees with the chronology of the Pompeii finds. Scholars are still debating the exact interpretation of these interesting inscriptions that mention a geographical region. In a recent study we set forth our position on this topic¹¹⁹: we do not believe that they concern the provenance of the product, but refer to the way it was made. The most disputed instances concern some amphorae at Lyon of the Augustan and Julio-Claudian periods modeled on the south Spanish fish-sauce amphorae of the Dressel 7-11 family and on the Haltern 70. In our opinion, an amphorae from Lyon with a reference to “hispanicum”, does not attribute the origin of this product to Spain (we have not yet found a single Spanish amphora with a reference to Spain), but rather it is informing the consumer that he is buying a product made in the Spanish way. Thus, we can argue that the amphorae from Pompeii were carrying a kosher

114. It is usual to find the name of the owner of an amphora written as a *graffito*, but unusual as a *titulus*.

115. Selov 1978; IJO I, BS28 (Noy *et al.* 2004).

116. Noy 1993, pp. 59-60.

117. Della Corte 1946.

118. We do not really know what product it was, since we have not seen the amphora form, nor know the archaeological context. The description of Della Corte is not sufficient to suggest any particular amphora form.

119. González Cesteros and Berni Millet, forthcoming a.

product – they were containers for a product made following a “Jewish” or “Judean” recipe, which was probably consumed mainly by Jewish.

We would also like to briefly mention a stamp with a couple of letters on a complete amphora from Ibiza, which has hitherto been accepted as Hebrew. The piece was first published by J. M. Solà Solé¹²⁰, who thought it was a Hebrew inscription and, based on the typological information given by J. Maña, placed the amphora in the first century AD or a little bit earlier. Both the typological and the linguistic information are mistaken, however. From the images of the stamp and the almost complete amphorae presented by J. M. Solà Solé, it is quite clear that the inscription is not Semitic, but probably a pre-Latin Italian language. Further, by its form, the amphora should be considered a late Graeco-Italic product of the second century BC¹²¹. Undoubtedly this piece was part of the early Roman amphorae production. It should be seen in the context of the Roman expansion into Hispania, where the Ibiza amphorae should be placed; it has no connection to any postulated early Jewish community on the Balearic Islands. Their existence in this period, even if feasible, is not yet confirmed.

In conclusion we would like to underline a chronological distinction between the Jewish amphorae inscriptions written in Greek and/or Latin, and those that used Hebrew. The early examples from Pompeii, Tanais and also the names from Dura Europos were written mainly in Greek, which was the lingua franca of the Eastern Mediterranean, a language in common use by the Jews of these regions who were part of the Western Diaspora beginning in Hellenistic times. On the other hand, the examples from Ravenna and the stamps of Rome and Bova Marina were dated in the fifth century AD, when the use of the Hebrew language and alphabet seems to increase within the Jewish communities. Our Beltrán 72 amphora, which probably dates from fourth century AD, may be an early example in this process, at a moment when the use of Hebrew seems restricted to the religious life of the Jewish communities throughout much of the Roman Empire.

120. Solà Solé 1960.

121. Even if it is not written in a Semitic language, this stamp is very interesting because few parallels exist, although the production of Graeco-Italic amphorae in almost every region in central and south Italy is well known (Tchernia 1986, 45-51; Empereur and Hesnard 1987, 26-28). We would like to thank A. Sáez Romero and J.A. Zamora for their comments on this piece.

Conclusion: the relevance of our inscription

It is well known that in Antiquity fish products were consumed in large quantities¹²², being an essential part of the diet of the populations around the Mediterranean basin. Jews were no exception. Consumption of marine products in the Levantine area and the Jewish territories is attested from early on, mainly during the Hellenistic period, due to the contact with Greek communities, did the consumption of such products really take off in the Levantine area. From the Roman period, we know of substantial quantities of Hispanic fish-sauce amphorae in several Levantine archaeological contexts, the finds from Caesarea¹²³ Jericho¹²⁴ and Masada¹²⁵ being of special relevance related to the Jews. In the last two places some interesting inscriptions on Hispanic fish-sauce amphorae were found. One deserves to be singled out here. It is a *titulus* on a possible Dressel 12 from south Spain, with the inscription “Garum Βασιλέωζ”: the first word in Latin and the second in Greek¹²⁶. None of these inscriptions however were written in Hebrew: nor in Aramaic, or any other Semitic alphabet in use in the area.

If the Jewish population in Palestine, or at least its upper classes, regularly consumed these kind of Hispanic products, it is to be assumed that the Jewish communities of the Iberian Peninsula were even more familiar with these fish products produced in such vast quantities in the Gibraltar region.

Accepting, then, the consumption of fish products by the Jewish populations all around the Mediterranean basin, the next question is: what kind of fish sauces and/or fishes were permitted under religious prescriptions to be consumed? Which products were kosher? The Talmudic texts stress the importance of high-quality conservation of the fish, and of the necessity of preserving them in kosher salt or in a salted preparation, if they are not going to be consumed fresh¹²⁷. Not all types of fish and fish sauces could be eaten by Jews. For a kosher product, we have to exclude fish sauces made with species without scales or fins, as well as the sauces that include invertebrates or shellfish. *Garum* seems to have been the most appreciated fish sauce in Antiquity,

122. Curtis 1991; Fernández Nieto 2007.

123. Bernal 2000; Johnson 2008.

124. Bar-Nathan 2002.

125. Cotton *et al.* 1996.

126. Cotton *et al.* 1996, pp. 227-229. The third letter must not have been a σ, but maybe something similar to ς, which is somewhat strange. On the other hand, together with this interesting *titulus* in Masada were found some wine amphorae with inscriptions referring to the King in the genitive. All of these were placed within the Herodian period of Masada.

127. Krauss 1910, p. 112.

beyond the *allec* or *hallec* and the *muria*¹²⁸, other terms as *liquamen* and certainly *laccatum* are much more controversial¹²⁹. Normally *garum* was made with parts of big fish or even with the whole fish¹³⁰, and it is usual to find the word *Scomber* (mackerel) following it¹³¹. Mackerel fulfils kosher requirements, and was probably the main ingredient in the varieties of *garum*¹³².

If we are reading the first part of our inscription as oxy, then quite probably the following term is describing a kind of fish or, better, a fish sauce. We have not yet found any *tituli picti* with the name *oxygarum*, but, as already noted, it is mentioned by ancient authors,¹³³ who described it as a *garum* made with vinegar¹³⁴. But as pointed out before, the reading of the inscription on our amphora should not be taken as certain. Nevertheless, if our proposal is correct, we are looking at the first instance of *oxygarum* in *tituli picti* and, surprisingly, it is not written in the ubiquitous Greek or Latin.

One essential question concerning the inscription remains: why are the first two lines written in Hebrew? We are in the Western Mediterranean, in the Iberian Peninsula, in the fourth century AD. Even if the Jewish community in Mérida was one of the biggest in ancient Hispania from the city's foundation in Augustan times, it is likely that Latin and perhaps Greek too were their daily tongues. All other examples of Hebrew inscriptions found in the city and dated to the Roman period and Late Antiquity are written in Latin. It looks as if the Hispanic Jewish community began to use Hebrew more than before by Late Antiquity, maybe due to the beginning of hostilities and the anti-Jewish policy carried on in the Late Roman, and above all the Visigoth rule of the Iberian Peninsula. Even if persecution did not become systematic until the end of the sixth century AD, there were first signs of some Christian intolerance towards the Jews already in the early fourth century¹³⁵.

Despite the problems encountered by the Jews (and remembering we do not have much information on their daily life under Roman rule in the Iberian

128. Curtis 1991, p. 7.

129. Djaoui 2016.

130. Curtis 1982-1983, p. 233.

131. González Cesteros 2012.

132. Cotton *et al.* 1996, pp. 236-238.

133. García Vargas and Bernal Casasola 2011, p. 136.

134. Brun 2011, p. 24.

135. The Elbira Council took place at the beginning of the fourth century, but it should not really have affected the relations between the Roman administration and most of the Christians with the Jewish communities of Hispania. It is from the Visigoth rule of the Iberian Peninsula, and above all from the reign of Recaredo, when the anti-Jewish laws created serious hostility and a progressive marginalization of the Hispanic Jewish community.

Peninsula), it is probable that they were quite well integrated within Hispanic society. Probably the only real point of difference with other ethnic groups were their religious practices. It is to this context that our amphora inscription belongs. In the inscription the name of the product follows the normal formula used on fish-products amphorae¹³⁶. It does not appear in the common scripts used in the fourth century AD in the Iberian provinces, however, but in a ritual one used by Jews: something quite exceptional, as suggested by the relative absence of parallels. The only convincing explanation for this is that the inscription referred to a kosher product, one that probably would be used only in a religious context, maybe the Sabbath¹³⁷ or a similar community ritual. Our inscription could indicate that even if the Jewish community in Mérida was “Latinized” to a high degree, they preferred their sacred language for ritual purposes.

The difficulties of reading the inscription does not allow certainty that the product mentioned was *oxygarum*. Why then is our inscription so difficult to read, even if the ink traces are not erased? To find a possible answer to this question we should think about the person who wrote the *titulus* and the context in which it was written. Was our inscription done by a Jew, or even by a person that had knowledge of the Hebrew alphabet? Probably it was in the commercial port, or in the actual production place, that this kind of commercial inscription would have been composed. Even if the product was set aside from the start for a specific consumer, and accepting that Jews were involved in productive and commercial milieus in south Spain, we have no evidence for either Jewish-controlled fish factories, or Jewish-run amphorae kiln sites in *Baetica*. Accordingly it is difficult to see any other explanation for a Hebrew inscription, other than that the item/product was to be sent to a Jewish consumer for some special reason.

One final question is posed by the *titulus* of the Beltrán 72 of “Casa del Mitreo”. It relates to the date of the material assemblage from its context. All the finds coming from the destruction levels of this house were dated to the first part of the fourth century AD. This implies that we could be looking at one of the earliest inscriptions in the Hebrew alphabet found in the Iberian Peninsula. Three other inscriptions from Roman and late antique Hispania with Hebrew letters have been found up to now. Two of these lack solid chronological contexts. This is the case for the trilingual inscriptions of

136. Martin-Kilcher 1994, pp. 402-403; Martin-Kilcher 2004.

137. After S. Krauss; Roman authors remark on the consumption of fish by Jews during the Sabbath. Krauss 1910.

Tortosa¹³⁸ and Tarragona¹³⁹, which are both dated only on the base of linguistic and iconographic details. In the case of the lead objects found in Santa María del Camí, some kilometers from the city centre of Palma de Mallorca, we can, based on more reliable evidence, date the objects to the fourth-fifth centuries, although even later occupation and use of the nearby lead mines can also raise doubts on their chronology¹⁴⁰.

In sum: we must remain cautious in reading this particular inscription, but there is no doubt that this is an exceptional *titulus*, which opens a range of new questions to scholars. Accordingly, we would like to reiterate that it was our main intention here to construct a new approach to amphora typology and, above all, to present an interesting find to the scholarly community – in order to promote a fruitful discussion.

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138. Noy 1993, pp. 247-253; Bar-Magen Numhauser 2011, pp. 110-113.

139. Noy 1993, pp. 254-256; Bar-Magen Numhauser 2011, pp. 113-115.

140. Noy 1993, pp. 238-239; Bar-Magen Numhauser 2011, pp. 109.

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SU UN TIPO STATUARIO FEMMINILE DI ETÀ ELLENISTICA (CD. NIOBIDE LOUVRE-NAPOLI) E LO SCULTORE NIKERATOS DI ATENE

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Introduzione

Il Simposio internazionale organizzato nel 2003 dall'Università di Friburgo, in occasione del centocinquantenario della nascita di Adolf Furtwängler, ha riproposto all'attenzione della critica un filone di studi sulla scultura greca che sembrava aver esaurito ogni possibilità di rinnovarsi e di percorrere nuove strade¹.

L'occasione è servita, da un lato, a porre una proficua riflessione sui limiti della *Meisterfrage* e della *Kopienforschung*, ovvero sullo studio dei capolavori della grande plastica greca attraverso le copie di età romana, così come impostata dal Furtwängler² e come sviluppata nella prima metà del secolo scorso; dall'altro, ha permesso di fare il punto sulle caratteristiche impresse negli anni più recenti e di riconsiderarne alcuni aspetti, specialmente quelli legati alla critica delle copie (*Kopienkritik*)³.

Come ha osservato Carlo Gasparri nella sua recensione agli atti di quel simposio, i risultati sono in molti casi tanto discordanti e contrastanti da suscitare giustificate domande sul senso da dare alle nuove indagini in tale direzione e

1. Strocka 2005.
2. Furtwängler 1893.
3. Utile sintesi in Anguissola 2015.

sulle reali possibilità di sviluppo di questo tipo di ricerca⁴. Non si può, infatti, negare che in qualche caso la ricerca degli originali greci perduti attraverso le copie di età romana si sia davvero impantanata, offrendo risposte non univoche e, molto spesso, contrastanti tra loro, anche a causa della mancanza di confronto fra gli archeologi; di converso, però, non si può tacere dei pregiudizi che ancora pesano su questi studi da parte di chi dimentica che anche le sculture, con esiti diversi per gusto e qualità, sono dei manufatti, prodotti finali di un processo produttivo che appartiene anch'esso alla cultura materiale di un'epoca, sia pure con il carattere di eccezionalità che gli è proprio.

Chi scrive è tra coloro che credono che questo filone di studi, pur con tutti i difetti ad esso riconosciuti, non debba essere abbandonato *tout court*, semmai ripensato e riproposto – questo sì – con rinnovata consapevolezza dei limiti e delle possibili prospettive, alla luce delle più recenti acquisizioni sulle modalità di produzione delle copie in età romana, e solo in presenza di determinate condizioni di ricerca, che mettano al riparo dal facile quanto inutile attribuzionismo.

La moderna *Kopienkritik*, ovvero lo studio delle repliche e delle varianti romane riferibili a un modello greco, rappresenta, infatti, l'aspetto più rinnovabile di questo percorso di indagine, soprattutto alla luce dei dati e della documentazione archeologica emersa negli ultimi anni. Notevoli progressi nella conoscenza si sono verificati negli ultimi decenni a seguito dello studio e pubblicazione di importante documentazione materiale emersa da scavo, come i calchi in gesso tratti da originali greci bronzei utilizzati da un'officina di scultori attiva a Baia in età imperiale⁵, o le matrici di sculture rinvenute a Sabratha⁶; o ancora, grazie all'individuazione di botteghe di copisti di età romana ottenuta attraverso una fine e acuta ricerca di indizi, metodologicamente riconducibile alla tradizione morelliana, ma utilizzata questa volta per svelare nel prodotto artistico sia specifici modi dalla duplice valenza formale e stilistica, sia tratti significativi sul piano della tecnica da ricondurre entro la cultura artistica della bottega che li ha prodotti⁷. Per non tacere dei casi in cui anche una più puntuale ricerca sul contesto di utilizzo della copia di età romana e sui programmi figurativi utilizzati nella scelta dell'arredo, può essere foriera di nuovi, utili spunti di riflessione per l'interpretazione dell'originale greco perduto, e viceversa, per la comprensione dei significati sottesi

4. Gasparri 2009.

5. Landwehr 1982; Landwehr 1985; Gasparri 1995; Landwehr 2010.

6. Barone 1980; Barone 1994.

7. Gasparri 1989; Gasparri 1995.

alla scelta del tipo statuario greco da parte del committente romano⁸; o più semplicemente per la comprensione dei meccanismi di fruizione di determinati modelli da parte della committenza romana.⁹

Quella che si vuole contribuire ad affermare in questa sede è, insomma, la convinzione che anche la produzione copistica di età romana, rispondendo a precise regole di produzione, che l'archeologo deve essere in grado di conoscere e decifrare, rappresenta un aspetto non trascurabile della cultura materiale di età romana¹⁰. Sebbene non sia strettamente legata al concetto di utilità come sono invece altri prodotti della cultura materiale propriamente detta, anche la produzione copistica di età romana, occupa un posto di tutto rispetto nella ricostruzione storica del passato, e non tanto per il fatto di essere un fenomeno produttivo che reca in sé il connotato della ripetibilità, bensì per le informazioni molteplici e articolate che essa fornisce sui modi di produzione, sui programmi decorativi in funzione dei diversi contesti di utilizzo, pubblici e privati, sulle scelte di rappresentazione dei committenti, sui significati sottesi a quelle scelte.

Partendo da questa premessa generale, il presente lavoro intende offrire all'attenzione degli studiosi il caso particolare di un tipo statuario femminile di tradizione ellenistica, finora mai studiato come tale. Per esso si propone qui, per la prima volta, la denominazione di "cd. Niobide Louvre-Napoli", dalle migliori repliche che ce lo restituiscono, mantenendo per comodità la prima identificazione che riconosceva in esse – senza reale fondamento, come vedremo – la raffigurazione di una delle sfortunate figlie di Niobe.

8. Si veda, ad esempio, il caso del discobolo Ludovisi in Pafumi 2000, particolarmente esemplificativo di come il contesto di utilizzo, sia pubblico che privato, svolgesse in età romana un ruolo cruciale nella scelta del tipo statuario e dunque del soggetto da imporre agli osservatori, in un gioco di studiati rimandi ai significati di cui lo stesso soggetto era stato veicolo già nel contesto del suo originario utilizzo in età greca.
9. È questo un filone di studi innovativo nel quale lo spostamento del *focus* dall'originale perduto al contesto sociale di utilizzo della copia romana ha permesso altri percorsi di lettura rispetto a quelli tradizionali. Ad esempio, si è recentemente parlato di *clichés* visuali, ovvero la richiesta di immagini precise e spesso ripetute, ben riconoscibili da parte della committenza romana: Anguissola 2012, p. 49. Sull'utilizzo, invece, di immagini ripetute in uno stesso contesto si rimanda a Bartman 1988; Bartman 1994. Un caso particolare di esposizione contestuale di repliche del medesimo tipo è analizzato in Pafumi 2007, in riferimento agli arredi delle residenze imperiali sul Palatino.
10. La bibliografia si è recentemente arricchita di numerosi contributi e studi monografici. Fra questi ultimi si segnalano: Perry 2005; Anguissola 2012. Di riferimento anche Gasparri 1994 e i volumi miscelanei: Preciado 1989; Gazda 2002; Trimble and Elsner 2006; Junker and Stähli 2008. Per una bibliografia più completa sul tema delle copie e dell'imitazione nell'arte antica per gli anni 1980-2010, si veda Anguissola 2012, pp. 217-21; Anguissola 2015, pp. 256-259.

Intorno a questo tipo statuario ruotano problematiche fondamentali che, sebbene non tutte di facile soluzione, ne fanno tuttavia un ottimo caso-studio. Tali problematiche, infatti, investono non solo tutti gli aspetti della tradizionale *Kopienkritik* (ricostruzione dell'archetipo; identificazione del soggetto rappresentato; datazione e attribuzione dell'archetipo), ma anche quelli, di più recente acquisizione, che attengono alla fortuna del tipo, alla sua tradizione copistica, all'analisi delle singole repliche in quanto prodotti di processi materiali. Aspetti, questi ultimi, scaturiti dalla necessità di trovare punti fermi nella disamina di un fenomeno – quello della produzione copistica di età romana, appunto – che per diffusione, articolazione, complessità, registra un sempre più crescente impatto nel panorama recente degli studi sulla scultura antica e, in generale, sulla cultura materiale di età romana, di cui, come si è già detto, è anch'esso espressione.

Il punto di non ritorno è stato segnato, negli ultimi anni, dalla rinnovata considerazione per le copie di età romana, cui, com'è noto, già il Futwängler aveva accordato importanza, ma questa volta con un definitivo ribaltamento della prospettiva d'indagine che, come avviene anche in questo saggio, muove innanzitutto dall'analisi dei singoli esemplari della tradizione copistica, intesi come prodotti di un'industria artistica che segue precise regole di produzione; dall'analisi della loro diffusione, cronologia ed eventualmente del loro contesto di utilizzo in età romana, per arrivare solo alla fine, nei casi più fortunati, e solo fin dove possibile, ad una ipotesi di ricostruzione e identificazione dell'archetipo greco perduto e dell'orizzonte artistico e cronologico di riferimento. In tutti gli altri casi, meno fortunati, esso sarà comunque un buon metodo per mettere ordine a una casistica che per ricchezza e varietà non può che trarre giovamento dall'apporto di tutti gli strumenti di analisi e di tutte le categorie interpretative oggi disponibili (analisi archeologica, filologica, sociologica, tecnica, storico-artistica, ecc...)

Il tipo della cd. Niobide Louvre-Napoli e la sua tradizione copistica (*Kopienforschung*)

Il tipo statuario femminile, oggetto di questa disamina, risulta trådito, allo stato attuale, da tre repliche esatte: Louvre, Napoli, Berlino. Si tratta di tre statue corrispondenti tra loro in tutti gli elementi compositivi più importanti, a dimostrazione dell'esistenza di un preciso modello dal quale tutte discendono. A questi tre esemplari, tuttavia, si può aggiungere anche una variante



FIG. 1. Parigi, Museo del Louvre, inv. n. Ma 829, cd. Niobide di Patraso. (Foto S. Pafumi).



FIG. 2. Parigi, Museo del Louvre, inv. n. Ma 829, cd. Niobide di Patraso, particolare (Foto S. Pafumi)

conservata a Roma, presso i Musei Capitolini, che tramanda lo stesso tipo femminile drappeggiato, ma con accentuata connotazione senile del corpo.

Di seguito, si fornisce un breve catalogo delle repliche e varianti del tipo.

A) REPLICHE

1) **Parigi, Museo del Louvre, cd. “Niobide di Patrasso”, inv. n. Ma 829. (FIGG. 1-2, 10)**

Marmo pentelico, alt. totale m 1,70.

Provenienza: Da Patrasso. La statua entrò a far parte delle collezioni del Louvre nel 1829. Fu donata dal generale Schneider, comandante delle truppe francesi nel Peloponneso, a Carlo X di Borbone (re di Francia dal 1824 al 1830).

La testa e gli avambracci, oggi perduti, erano lavorati separatamente. Il corpo è ricomposto da due frammenti con piano di contatto a metà delle cosce.

Bibliografia: *Musée National du Louvre. Catalogue sommaire des marbres antiques*, Paris 1922, p. 49, n. 829.

Datazione: età primo-imperiale.

2) **Napoli, Museo Archeologico Nazionale, cd. Niobide Farnese, inv. n. 6391. (FIGG. 3-6)**

Marmo bianco a grana fine e abbastanza cristallina con venature di mica, probabilmente pentelico (corpo); marmo bianco a grana fine, forse pentelico (testa). Alt. totale m 1,88.

Provenienza: Già a Roma, Villa Madama, poi Collezione Farnese.

Di restauro: il braccio destro da metà dell'omero, quello sinistro con la mano e parte del rotolo del mantello da essa trattenuto (il braccio sembra ancora conservato nel disegno di M. van Heemskerck, 1532-1536), vari tasselli nel panneggio, un ampio tassello ovaliforme sul seno sinistro, la punta del piede sinistro con porzione della base. Mancano le dita della mano destra, già restaurate. Nella testa, antica ma non pertinente, sono di restauro: il naso, il mento, il lobo dell'orecchio destro con parte dei capelli e la parte inferiore dell'occhio destro.

Bibliografia: Pafumi 2009, pp. 189-192, n. 89 (con bibliografia precedente).

Disegni e incisioni: Heemskerck I, f. 34v (Michaelis 1891, p. 344; Hülsen and Egger 1913-1916 I, p. 20, tav. 35). La statua è raffigurata acefala, mancante del braccio destro e apparentemente anche dei piedi;



FIG. 3. Napoli, Museo Archeologico Nazionale, inv. n. 6391, cd. Niobide Farnese, veduta frontale (da Pafumi 2009).



FIG. 4. Napoli, Museo Archeologico Nazionale, inv. n. 6391, cd. Niobide Farnese, veduta posteriore (da Pafumi 2009).

sembra, invece, ancora esistente il braccio sinistro ma, forse, non tutta la mano corrispondente.

Datazione: età antonina

3) **Berlino, Antikensammlung, Staatliche Museen, inv. n. SK 585.**
(FIGG. 7-8)

Marmo bianco a grana fine, probabilmente pentelico. alt. totale con plinto m 1,875; alt. del plinto cm 75; alt. della statua senza testa e collo m 1,64.



FIG. 5. Napoli, Museo Archeologico Nazionale, inv. n. 6391, cd. Niobide Farnese, veduta lato destro (da Pafumi 2009).



FIG. 6. Napoli, Museo Archeologico Nazionale, inv. n. 6391, cd. Niobide Farnese, veduta lato sinistro (da Pafumi 2009).

Provenienza: Dalla collezione Baireuth, già in Sanssouci. Forse acquistata a Roma nel 1755 durante il viaggio in Italia della marchesa Wilhelmine von Bayreuth.

Di restauro: molte pieghe nel panneggio; il braccio sinistro dall'avambraccio; il braccio destro, poi rimosso e oggi conservato in magazzino (con n. di inv. SL2.2-98). Nella testa, antica ma non pertinente, sono di restauro: naso, parte del sopracciglio sinistro, della fronte e della capigliatura fino a comprendere l'orecchio sinistro, collo, tutta la parte posteriore della testa.

Bibliografia: *Beschreibung der antiken Skulpturen im Alten Museum*, Berlin 1922³, pp. 225-226, n. 585; Heilmeyer 2005, p. 20; Fendt 2012, pp. 132-136, tavv. 47-48 (con altra bibliografia precedente).

Datazione: età antonina.

B) VARIANTI/TRASFORMAZIONI

4) Roma, Musei Capitolini.

(FIG. 9)

Marmo pario (Stuart Jones); alt. m 1,45.

Provenienza: Già in Vaticano, Teatro del Belvedere. Fu trasferita nelle collezioni pubbliche insieme ad altre 145 sculture nel 1566 dal pontefice Pio V. Nell'inventario di Prospero Boccapaduli, cui fu affidato il trasporto delle sculture, è menzionata al n. 73. Già nel Palazzo dei Conservatori, fu spostata prima del 1687.

Di restauro: testa, avambraccio destro e mano; dita della mano sinistra, parte del piede destro, margine del plinto e qualche piega della veste.

Disegni e incisioni: Maffei-de Rossi, tav. 28; Ficoroni 1744, p. 52 con tavola.

Bibliografia: Stark 1863, p. 29; Stuart Jones 1912, pp. 288-289, tav. 70.

Datazione: età imperiale

Tutte e tre le repliche note (Louvre, Napoli, Berlino) restituiscono una figura femminile, di dimensioni maggiori del naturale, gravitante sulla gamba destra, con la sinistra flessa, leggermente arretrata e scartata di lato.

La donna indossa un chitone manicato cinto sotto il seno e un pesante *himation*; ai piedi calza semplici sandali con suola piuttosto alta e corda che passa tra l'alluce e il secondo dito del piede. Porta il braccio destro in fuori e solleva sensibilmente la spalla sinistra con rotazione posteriore. Questo movimento determina l'inarcarsi del fianco destro con ripercussioni importanti sul ritmo di tutta la figura, tanto da rappresentarne la cifra compositiva distintiva. Il chitone è animato sul tronco da un fraseggio di pieghe rilevate soprattutto sotto il seno sinistro, convergenti verso il nodo della cintura. Sotto la cintura, le pieghe assumono un aspetto più corposo, segnate da profondi sottosquadri, ma con dorsi arrotondati e leggermente inarcati a seguire il movimento del torso, mossi da incisioni indicanti minori increspature. Nella parte inferiore del corpo, sotto il drappeggio del telo dell'*himation*, le pieghe del lungo chitone scendono in scannellature più o meno profonde, dall'andamento vivace che accompagna specialmente il movimento del piede sinistro scartato di lato. L'*himation* copre la spalla



FIG. 7. Berlino, Antikensammlung, Staatliche Museen, inv. n. SK 585, veduta frontale (Foto G. Geng, Antikensammlung, Staatliche Museen zu Berlin - Preussischer Kulturbesitz)



FIG. 8. Berlino, Antikensammlung, Staatliche Museen, inv. n. SK 585, veduta posteriore (Foto G. Geng, Antikensammlung, Staatliche Museen zu Berlin - Preussischer Kulturbesitz)

sinistra, fascia il dorso e il fianco destro e risale sul davanti, formando sul grembo un voluminoso rotolo trattenuto dalla mano sul fianco sinistro, mentre i lembi ricadono in un motivo di pieghe a ventaglio dai margini prima a zig-zag, poi più distesi lungo il profilo della gamba. Il drappeggio dell'*himation* appare sapientemente modulato: fortemente increspato sul lato destro, in cui profondi sottosquadri rendono pieghe pesanti dall'andamento quasi concentrico, si distende, invece, sulla gamba sinistra flessa,



FIG. 9. Roma, Musei Capitolini (da Stuart Jones 1912).

lasciando trasparire in qualche punto la consistenza della stoffa del chitone sottostante, mosso da più leggere e rade increspature.

Sostanzialmente corrispondenti nelle dimensioni leggermente superiori al vero, nella ponderazione e nel ritmo della figura, le tre repliche (Louvre, Napoli, Berlino) ripetono in modo assai puntuale anche la disposizione del mantello arrotolato sul grembo e trattenuto sul fianco sinistro, non lasciando dubbi sull'esistenza di un preciso tipo statuario dal quale tutte discendono. Questo ha, come si è già detto, quale cifra iconografica peculiare, proprio l'incarcarsi del fianco destro, effetto di un movimento di torsione che doveva trovare compiutezza nella posizione della testa, verosimilmente volta a sinistra. La creazione originaria potrebbe aver fatto parte di un gruppo di almeno due elementi, come sembrerebbe dimostrare l'atteggiamento aperto della figura che, se considerata in rapporto a una seconda figura posta alla destra di chi osserva, troverebbe maggiore giustificazione e compiutezza.

La statua dei Musei Capitolini, qui classificata come variante/trasformazione (FIG. 9), di dimensioni inferiori rispetto alle altre repliche, utilizza lo stesso tipo iconografico preso in esame, adattandolo, però, alla raffigurazione di una donna più anziana. Per le puntuali coincidenze dello schema, prescindendo dalle differenze dovute alla caratterizzazione senile, sembra plausibile risalire allo stesso modello, opportunamente adattato alla rappresentazione di una donna in età avanzata.

Osservazioni sulla tradizione copistica del tipo (*Kopienkritik*)

La replica di Parigi (FIGG. 1-2, 10), arrivata in Francia nel 1829 come dono per Carlo X, proviene dalla città greca di Patrasso. A un esame comparativo, la replica è sostanzialmente corrispondente alle altre due (Napoli e Berlino) per gli aspetti formali, ma se ne discosta sensibilmente sul piano stilistico per una maggiore freschezza nella resa complessiva e un uso più moderato del trapano nel trattamento delle vesti. Nonostante le lacune e i danni subiti, si legge ancora una particolare cura nell'esecuzione del modellato e delle superfici panneggiate. Alcuni dettagli della composizione, come ad esempio l'abbottonatura delle maniche del chitone o il nodo sul petto della cintura, sono trattati con cura e naturalezza, mentre nelle altre due repliche gli stessi dettagli sono resi in maniera più accademica e semplificata, tanto da risultare, per questo, più raggelata. Nella replica del Louvre, si può osservare a tratti anche la linea che indicava la cimosa della stoffa nella parte finale del mantello. Tuttavia, rispetto alle altre repliche essa presenta una resa più semplificata del retro, che contrasta con la vivacità della veduta frontale raggiunta attraverso un gioco di pieghe vario, mai ripetitivo, frutto di sapiente lavoro del *marmorarius*, pur nella sostanziale aderenza al modello.

Sul piano tecnico, la replica di Parigi, documenta l'utilizzo di pezzi lavorati a parte. Ciò accade non solo per la testa – pratica comune e assai diffusa nella produzione scultorea di età romana –, ma anche per le braccia, oggi perdute, che erano originariamente unite mediante perni. Il punto di giunzione del braccio sinistro è posto sotto il lembo del mantello ricadente dalla spalla; il piano di contatto nascosto dalle pieghe della stoffa era stato opportunamente lavorato a scalpello per favorire una migliore aderenza delle due parti. Anche



FIG. 10. Parigi, Museo del Louvre, inv. n. Ma 829, cd. Niobide di Patrasso, particolare (Foto S. Pafumi).

il piano di contatto del fianco sinistro con la mano poggiata che sosteneva il rotolo del panneggio, è lavorato a scalpello a mo' di *anathyrosis* (FIG. 10).¹¹

La tecnica del *piecing* – secondo la definizione inglese ormai in uso per l'utilizzo di elementi lavorati separatamente e ricongiunti mediante perni – fu particolarmente impiegata in età tardo-ellenistica e primo imperiale, proprio in concomitanza con la nascita della produzione statuaria di massa per la committenza romana, per i notevoli vantaggi che essa era in grado di offrire, sebbene vi siano interessanti testimonianze del suo utilizzo anche intorno alla metà del II sec. d. C.¹² La tecnica permetteva, infatti, di risparmiare sui

11. Il piano di frattura netto dei due frammenti di cui si ricomponne la statua, potrebbe far pensare all'utilizzo di un blocco di ridotte dimensioni che avrebbe reso necessaria la lavorazione separata non solo delle parti sporgenti, ma anche della parte inferiore della figura.
12. Per la tecnica della lavorazione separata di alcune parti nello stesso materiale, nota nella letteratura moderna con la definizione inglese di *piecing*, non esiste ancora uno studio sistematico. Assai utile è tuttavia l'analisi del fenomeno in Brusini 2001, pp. 137-148 e 265-274 con altra bibliografia di rimando. Per un particolare rinvenimento di frammenti

costi di produzione grazie all'utilizzo di blocchi di marmo di dimensioni più contenute e l'eventuale preparazione in serie delle parti separate; consentiva, inoltre, un più facile stoccaggio e trasporto del prodotto finito, evitando i possibili danni di punti più facilmente soggetti a rottura. Infine, le parti separate potevano essere montate anche ad avvenuta collocazione della statua nel luogo di destinazione e di utilizzo della stessa. La provenienza da una città greca assai vicina ai luoghi di approvvigionamento del marmo, in questo caso il pentelico, autorizza a pensare che la tecnica del *piecing* sia stata utilizzata dal *marmorarius* per ragioni diverse da quelle prettamente economiche, e che possa essere piuttosto un indizio di procedure consolidate dall'uso, all'interno della bottega responsabile della sua realizzazione.

Da osservare, infine, che la superficie della statua di Parigi non è levigata, essendo rimasta priva dell'ultima rifinitura, come dimostrano le tracce evidenti della raspa.

Mancando dati certi sul luogo di rinvenimento, genericamente indicato con la città di Patrasso, non è possibile trarre indicazioni utili per la conoscenza del contesto di utilizzo; tuttavia la replica di Parigi potrebbe essere la più antica fra quelle finora note del tipo, potendosene collocare l'esecuzione, per tecnica e stile, in età primo-imperiale.

La replica di Napoli (FIGG. 3-6, 11), già Farnese, si trovava a Villa Madama negli anni 1532-1536, forse collocata nella nicchia centrale dell'edicola occidentale della loggia del giardino, quando la vide e disegnò l'artista fiammingo Marteen van Heemskerck in occasione del suo soggiorno romano¹³. Fra gli inventari che registrano le statue della collezione Farnese durante il periodo romano, solo quelli degli anni 1644 e 1650, relativi alle antichità di Villa Madama, permettono di identificarla con sicurezza¹⁴. Essa è documentata poi a Napoli Capodimonte dall'inventario del 1796 nel quale è menzionata come statua di Ecuba¹⁵, e nel "Nuovo Museo dei Vecchi Studi" dall'inv. del

scultorei rivelatisi pertinenti alla stessa statua, di cui costituivano gli elementi lavorati separatamente: Gasparri 2003.

13. Marteen van Heemskerck, Skb. I, fol. 34v, Berlino, Staatliche Museen Preussischer Kulturbesitz, Kupferstichkabinett (Michaelis 1891, p. 144; Hülsen and Egger 1913-1916, I, p. 20, fol. 34v, c.).
14. **1644**, p. 210, n. 5120: Villa Madama: *Un'altra (donna) simile, tutta vestita, con mano destra guasta e sinistra che tiene le falde della veste*. **1650**, p. 227: Villa Madama: *Un'altra (donna) simile tutta vestita con la testa guasta e sinistra che tiene la veste*.
15. **1796**, p. 181,128: *Statua di Ecuba, alta con sua pianta pal. 7,1/6 – ha molto merito per l'elegante e bella maniera del suo panneggiamento, e si reputa di un'ottima scultura; fu ristaurata in Napoli, con essersi fatto il collo, le due braccia, le mani, la punta del piè sinistro con porzione di pianta, e varj tasselli nel panneggio, ed esiste nel nuovo Museo di Nap.*



FIG. 11. Napoli, Museo Archeologico Nazionale, inv. n. 6391, cd. Niobide Farnese, particolare del panneggio (Foto S. Pafumi).

1805 che ne corregge l'identificazione segnalandola invece come una figlia di Niobe¹⁶. Acefala nel XVI sec., come si evince dal disegno di Marteen van Heemskerck, ma ancora dotata del braccio sinistro portato a sorreggere sul fianco il mantello arrotolato, fu presto restaurata adattandovi una testa antica che, tuttavia, già nel 1650 appariva in cattive condizioni. Fu restaurata anche a Napoli dallo scultore Angelo Brunelli che provvide al rifacimento delle due braccia, della punta del piede sinistro e del collo¹⁷. La base antica è assai ridotta e inserita entro un plinto moderno, di forma rettangolare; di essa è possibile riconoscere l'andamento ondulato quasi a significare un appoggio caratterizzato da asperità, forse di tipo roccioso. Questo particolare ha certo contribuito all'interpretazione della statua come figura di Niobide.

16. 1805, p. 173, 36: *(F. 128) Statua femminile in atto di ammirazione, o di stupore, che la farebbe caratterizzare per una figlia della famosa Niobe. Certamente il nome di Ecuba datogli nell'antico catalogo, non gli può mai convenire, mentre che le sue forme gentili e giovanesche, la dichiarano di età appena uscita dalla pubertà. Le due braccia, la punta del piede sinistro, ed il collo, sono restaurati assai bene da Brunelli. La statua è singolarmente bella, per il partito dei panni tanto davanti che di dietro, e merita essere messa tra le assai belle, anche per i restauri. Alta pal. 7,1/12-II.*
17. Si veda la nota precedente.

La testa, piccola rispetto al corpo, è antica ma non pertinente. È rivolta a sinistra ed è caratterizzata da un'acconciatura raccolta, con capelli che si bipartiscono sulla fronte allargandosi ai lati del viso in ciocche sottili e ondulate, disposte quasi orizzontalmente e separate le une dalle altre da un ampio solco di trapano; l'uso del trapano segna anche l'attaccatura della capigliatura sulla fronte, mentre è completamente assente nella calotta cranica dove il resto della capigliatura è tradotto in maniera sommaria. Il volto giovanile, dall'ovale pieno e dalla fronte piuttosto bassa, mostra con lo sguardo diretto a sinistra e verso l'alto, un'espressione ansiosa, benché raggelata. Gli occhi grandi, sotto arcate sopracciliari dal margine netto, presentano la palpebra superiore carnosa e rotondeggiante, l'incisione della caruncola lacrimale e della pupilla, l'iride realizzata con incavo semilunare. La radice del naso è piatta e abbastanza larga; gli zigomi sfuggenti; la bocca, piccola, dal profilo sinuoso, ha labbra carnose e separate da un solco di trapano desinente in due piccoli fori. La testa utilizzata per completare la replica Farnese sembra ispirarsi a modelli di V sec. a. C. e soprattutto al tipo della cosiddetta Hera Borghese¹⁸; può essere datata su base stilistica, e specialmente per la resa degli occhi, alla fine del II sec. d. C.

Il *marmorarius* della replica napoletana ha utilizzato per la realizzazione della sua copia il sistema della riproduzione per punti (*pointing process*)¹⁹. Sono da segnalare, inoltre, le tracce diffuse di una colorazione rossastra visibili soprattutto nella parte inferiore del panneggio, lungo il lato destro. La parte posteriore presenta un lavoro più sommario e schematico, evidentemente perché non destinato alla vista. Alcuni elementi appaiono fortemente indicativi per tentare un inquadramento cronologico della replica napoletana nella tradizione copistica del tipo. L'uso assai largo del trapano nella resa del panneggio, il caratteristico motivo a "coda di rondine" in qualche caso ben osservabile nella parte terminale del tratto (FIG. 11), il vivace gioco chiaroscurale delle pieghe, la pulitura delle superfici, orientano verso una datazione nella seconda metà del II sec. d. C., probabilmente già in età antonina.

Anche la replica di Berlino (FIGG. 7-8), come quella di Napoli, proviene da Roma, dove fu acquistata nel 1755 dalla marchesa Wihelmine von Bayreuth

18. Per il tipo dell'Hera Borghese: Landwehr 1985, pp. 90-91, n. 53; Gasparri 1995, p. 175; Brusini 2001, pp. 147-163 (con elenco delle repliche); Pafumi 2014, pp. 306-307, n. 116.
19. Riconoscibili sul panneggio vari segni di "punti" o misurazioni, forse riconducibili al copista. Com'è noto, il sistema della triangolazione (*pointing process*) prevedeva l'uso di un compasso a tre braccia con il quale venivano fissati tre punti per iniziare la sbazzatura del blocco di marmo. Si continuava poi con lo stesso sistema aumentando i punti di riferimento e togliendo via via il materiale di troppo. Ovviamente al numero dei punti presi come riferimento corrispondeva anche il grado di aderenza al modello.

(1709-1758), probabilmente già restaurata e identificata come “figlia di Niobe”. Alla morte di Wihelmine nel 1758, la statua passò in eredità al fratello Federico II e dal 1765 al 1773 è documentata la sua presenza nella galleria di Potsdam. In epoca napoleonica, nel 1806, la statua fu portata a Parigi dove rimase fino al 1815, anno della restituzione²⁰.

La testa, ancora una volta più piccola rispetto al corpo, è antica ma non pertinente. Anche in questo caso i capelli si bipartiscono al centro della fronte, allargandosi ai lati del viso in ciocche sottili e ondulate. Il volto giovanile ha occhi grandi, sotto arcate sopracciliari dal margine netto; la bocca ha labbra carnose e separate da un solco di trapano desinente in due piccoli fori. La testa, databile al II sec. d. C., è stata riconosciuta vicina a quella dell'Artemide di Ariccia il cui *Vorbild* è datato al 440-430 a. C.²¹

Nelle repliche di Napoli e Berlino, l'utilizzo dello stesso marmo, riconoscibile come pentelico, la pressoché totale coincidenza delle dimensioni e dello schema compositivo e strutturale, le analogie di stile copistico, la similarità nel trattamento chiaroscurale delle pieghe, farebbero ipotizzare la loro provenienza da una stessa bottega di copisti, la cui attività sembra doversi collocare nel II sec. d. C., verosimilmente in età antonina.

Entrambe le repliche mostrano buona qualità e reciproca corrispondenza nell'esecuzione, da ritenersi anche come buona aderenza al modello, senza tuttavia eguagliare i livelli di naturalezza riscontrati nella resa della replica di Parigi che, benché utilizzi lo stesso marmo pentelico, è invece ascrivibile a una bottega più antica, attiva nel I sec. d. C.

Purtroppo per nessuna delle repliche fin qui discusse sono noti con esattezza i contesti monumentali di provenienza e di utilizzo originario.

Ricostruzione e datazione dell'archetipo (*Vorbild*)

Sebbene sia sempre rischioso trarre conclusioni da argomenti *ex silentio*, non sembra di poter dubitare che l'archetipo fosse il tipo femminile giovanile, tradito dalle tre repliche esatte (Louvre, Napoli, Berlino) del tutto corrispondenti tra loro, mentre la caratterizzazione senile dello stesso tipo statuario,

20. Fendt 2016 (<http://arachne.uni-koeln.de/item/gruppen/409876>).

21. Roma, Museo Nazionale Romano, inv 80941: LIMC II (1984), sv. *Artemide / Diana*, pag. 798, n. 5 * [E. Simon]. Hüneke 2009, p 365, n. 227 [S.-G. Gröschel].

documentata dalla statua dei Musei Capitolini, si può classificare piuttosto come un adattamento (*Umbildung*)²².

Rimane, invece, irrisolto il problema della completa ricostruzione dell'archetipo, poiché non si conosce con certezza il tipo di testa pertinente. Delle tre repliche note, infatti, quella di Parigi presentava testa e braccia lavorate separatamente, oggi perdute, mentre le due repliche di Napoli e Berlino hanno entrambe teste di restauro, benché antiche. Anche la variante senile dei Musei Capitolini presenta una testa di restauro. Lasciando quindi da parte, almeno per adesso, il problema della ricostruzione della testa per mancanza di documentazione certa, poniamo attenzione al resto della composizione che ci tramanda una figura giovanile vestita di chitone e con *himation* arrotolato e trattenuto dalla mano sul fianco sinistro, stante, ma in atteggiamento dinamico per la torsione del busto.

Non v'è dubbio che, da un punto di vista formale e tipologico, il tipo statuario richiami alla mente soluzioni codificate in ambiente pergameno. Queste trovano, ad esempio, nella statua della cosiddetta *Tragoidia* (FIG. 12), databile al 200-150 a. C., una delle espressioni più compiute e maestose²³. Ma i riferimenti a tipi femminili di ambiente artistico pergameno possono essere moltiplicati. Si veda, ad esempio, la cd. Leto di Pergamo, nella quale, però, la diversa consistenza della stoffa di cui è fatto il mantello crea un diverso fraseggio di pieghe²⁴. Molto interessanti appaiono anche le connessioni con il tipo della cosiddetta "Juno Cesi" (FIG. 13), ritenuta da taluni un originale pergameno, da altri una copia romana da prototipi pergameni²⁵.

22. Per la terminologia utilizzata dalla *Kopienkritik*: Gasparri 1994, pp. 267-269; Anguissola 2012, pp. 31-42. L'ipotesi di una variante di bottega (*Werkstattwiederholungen, Werkstattnachbildung, etc.*), attribuibile, eventualmente, alla stessa officina di epoca ellenistica responsabile della creazione originaria, rimane difficile da dimostrare, benché la caratterizzazione senile della raffigurazione femminile trovi facile giustificazione in relazione ad una creazione di genere di età ellenistica. Sulle varianti di bottega, si veda: Gasparri 2000. Per altre raffigurazioni di vecchie donne da creazioni di epoca ellenistica: Pollit 1986, pp. 141-144.
23. Berlino, Pergamon Museum, inv. n. 47. Marmo bianco, alt. m. 1,80. Winter 1908, pp. 76-80, n. 47, tavv. 14-15; Reinach 1913, IV, 419,5; Horn 1931, p. 52, tav. 18, 2; Ridgway 2000, p. 43, tav. 22.
24. Berlino, Pergamon Museum, inv. n. 53. Marmo bianco. Winter 1908, pp. 87-88, tav. 20; Reinach 1913, IV, p. 418,7; Linfert 1976, p. 110, nota 431a; Flashar 1999, p. 68, tav. 15.1.
25. Roma, Musei Capitolini, inv. n. 731. Marmo bianco, alt. m. 2,28. Stuart Jones 1912, p. 340, 2, tav. 85; Helbig⁴, n. 1427 (H. von Steuben): copia da un originale vicino al grande Fregio dell'Altare di Zeus, prima della seconda metà del II sec. a. C.; Morrow 1985, 172, 216, n. 7, fig. 15; Haskel and Penny 1981, pp. 242-243, n. 51. Bieber 1961, p. 119 (copia da un prototipo pergameno); La Rocca 1996, p. 619 (opera di uno o più artisti pergameni).



FIG. 12. Berlino, Antikensammlung, Staatliche Museen, inv. n. 47, cd. *Tragödie* da Pergamo (da Smith 1991).



FIG. 13. Roma, Musei Capitolini, inv. n. 731, cd. Juno Cesi (da Ridgway 2000).

Contribuiscono notevolmente a definire l'ambiente artistico di origine, anche i molteplici punti di contatto con un tipo iconografico, certamente utilizzato per la raffigurazione di qualche divinità, presente sui rilievi dell'*Hekataion* di Lagina, databili tra la fine del II e l'inizio del I sec. d. C. Anche questi rilievi sono attribuiti a un artista di formazione eclettica che elabora, tra gli altri, molti spunti pergameni²⁶.

operanti a Roma); Ridgway 1990, p. 357 (opera di un maestro greco per una collocazione romana del II sec. a. C.); Ridgway 2000, p. 270-271, tav. 71.

26. In particolare due figure rispettivamente l'una del fregio sud con assemblea di divinità legate alla Caria: Reinach 1909-1912, p. 175, n. 31; Mendel 1912-1914, I, p. 483, n. 208 (1914,8) [I,8]; Schober 1933, tav. 32; Junghöler 1989, tav. 5, n. 208/4; e l'altra del fregio nord con scena di alleanza tra Stratonikeia rappresentata come Amazzone e la personificazione di Roma alla presenza di eroi e divinità, tra cui probabilmente *Hekate*: Reinach 1909-1912,

Una statuetta femminile in pietra del museo di Kabul (FIG. 14), datata al 250-150 a. C., proveniente da un tempio di Ai Khanoum²⁷, documenta, poi, la fortuna di cui il motivo del voluminoso mantello arrotolato sul grembo e trattenuto dalla mano sul fianco sinistro, sembra aver goduto tra il II e il I sec. a. C. trovando ampissima diffusione.

Nel panorama più generale dei tipi femminili a noi noti attraverso le copie di età romana, la formulazione più vicina al modello dal quale il tipo della cd. Niobide Louvre-Napoli discende è senza dubbio quella trädita da un'altra serie non cospicua di repliche, datate tra il I a. C. e il II secolo d. C., che ci restituisce una raffigurazione della dea salutare *Hygieia*. La serie è riconducibile a una creazione originale, variamente datata nel corso del III sec. a. C. Il tipo cui tale creazione fa riferimento – già definito “Belvedere” da una delle migliori repliche finora note, quella del Vaticano (FIG. 15) – è stato recentemente ribattezzato “Conservatori-Berlino” da I. K. Levente²⁸, che ne ha convincentemente identificato il prototipo con una statua di *Hygieia* creata dallo scultore ateniese *Nikeratos*²⁹ come parte di un gruppo che comprendeva anche l'immagine di Asclepio, generalmente riconosciuto nel tipo Pitti (FIG. 16)³⁰. Il gruppo, forse originariamente collocato a Pergamo, fu portato a Roma e collocato nel Tempio della Concordia, dove fu visto anche da Plinio³¹.

p.172, n. 16; Mendel 1912-1914, I, p. 516, n. 223 (1914, 26) [III,10]; Schober 1933, tav. 11; Junghölder 1989, pp. 81-82, tav. 4, n. 223/5.

27. Kabul, Museo; pietra, alt. m. 1,00. Smith 1991, p. 225, fig. 269.

28. Sull'*Hygieia* tipo Belvedere: LIMC V (1990), s. v. *Hygieia*, p. 566, nn. 191-193 (F. Croissant) che data la creazione ad un'epoca non posteriore alla prima metà del III sec. a. C. La discussione più recente e più completa sul tipo si trova in Levente 1998, pp. 101-116, dove è ribattezzato tipo Conservatori-Berlino. Alle tre repliche (Vaticano, Museo Chiaramonti inv. n. 1246; Roma, Musei Capitolini, Palazzo dei Conservatori, inv. n. 899; Berlino, Staatliche Museen, inv. n. sk 353) già raccolte dal Croissant è da aggiungere una quarta replica di Velletri, Palazzo Ginetti, per la quale: Levente 1998, p. 101, fig. 2. Il tipo dell'*Hygieia* Conservatori-Berlino discende dall'*Hygieia* tipo Broadlands – Conservatori, il cui prototipo è stato datato alla metà del IV sec. a. C.

29. Sullo scultore *Nikeratos*: EAA vol. V (1963), p. 475, s.v. *Nikeratos* (B. Conticello); Moreno 1994, pp. 255-265; EAA II Suppl. 1971-1994, vol. IV, pp. 18-20, s.v. *Nikeratos* (P. Moreno), con disamina delle principali problematiche e bibliografia.

30. L'Asclepio è generalmente riconosciuto nel tipo Pitti per il quale vd. LIMC II (1984), s.v. *Asklepios*, p. 889, nn. 382-393 (B. Holtzmann). Ritenuto una libera variazione del tipo Este, il tipo Pitti è caratterizzato dalla torsione della figura verso destra, resa possibile dalla presenza di un sostegno, il bastone, presso cui la figura si appoggia con il gomito sinistro.

31. Plinio, *Naturalis Historia*, XXXIV, 80: <<...*Niceratus Aesculapio et Hygia, qui sunt in Concordia templo Romae...*>>. L'identificazione con la creazione di *Nikeratos* è di I. K. Levente (Levente 1998) che data il prototipo dell'*Hygieia* Conservatori-Berlino al terzo quarto del III sec. a. C.

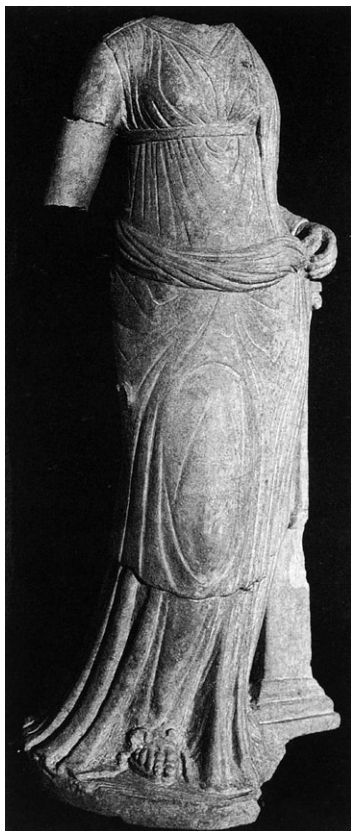


FIG. 14. Kabul, Museo, statua femminile
(da Smith 1991)



FIG. 15. Roma, Palazzo dei Conservatori, Museo Nuovo, inv. n. 899, statua di *Hygieia* (foto DAI Rom 60.1256).

Le strette connessioni dell'*Hygieia* Conservatori-Berlino con il tipo della cd. Niobide Louvre-Napoli, se si prescinde dalla posa più statica e ieratica della raffigurazione di *Hygieia*, vanno ben al di là della generica consonanza di schemi e sono tali da lasciare supporre una particolare vicinanza fra i rispettivi modelli di riferimento e il loro ambiente di origine. Si può ragionevolmente credere, infatti, che i prototipi di entrambe le figure siano usciti dalla stessa bottega, e siano probabilmente opera di uno stesso artista o della sua cerchia. Spingendosi oltre nella valutazione relativa dei due modelli, sembra possibile riconoscere nel tipo della cd. Niobide Louvre-Napoli una creazione coeva o di poco posteriore che riformula lo schema già utilizzato per l'*Hygieia* tipo Conservatori-Berlino, lasciandone pressoché inalterate le caratteristiche



FIG. 16. Firenze, Palazzo Pitti, Statua di Asclepio (foto da LIMC II).

formali e compositive, così come anche la ponderazione, ma variando alcuni elementi del ritmo per conferire maggiore dinamicità alla figura.

Se le osservazioni fin qui condotte colgono nel vero, ciò può essere avvenuto solo all'interno di una stessa officina, in un arco di tempo breve, forse non troppo lontano dal momento della prima formulazione del tipo dell'*Hygieia*. Se ne deduce che anche per il nostro tipo statuario il contesto cronologico può essere ragionevolmente fissato al III sec. a. C., più probabilmente verso la fine del secolo, mentre sembra del tutto plausibile attribuirne la paternità allo stesso scultore dell'*Hygiea* Conservatori-Berlino, ovvero *Nikeratos* di Atene, che sappiamo essere stato attivo in Attica, a Delo, Pergamo, Cizico nel corso del III sec. a. C., e che convincentemente è stato chiamato in causa da I. K. Levente per il tipo dell'*Hygiea*, o eventualmente alla sua officina.

Per un'identificazione del soggetto

Si può porre a questo punto il problema dell'identità del soggetto rappresentato nel tipo statuario così individuato. Rimane, infatti, priva di fondamento, sebbene plausibile per l'atteggiamento che sembra accennare a un tentativo di fuga, l'ipotesi della sua pertinenza a uno dei gruppi raffiguranti la saga dei Niobidi. L'identificazione è stata solitamente avanzata nella precedente letteratura in relazione alle singole repliche del tipo, spesso definite, appunto, come statue di Niobide, ma senza il suffragio di solide basi. Sulla serie di statue illustranti la storia di Niobe e dei suoi figli è stato ampiamente discusso³². Tra le rappresentazioni a tutto tondo note attraverso le fonti antiche, la più famosa è certamente quella menzionata da Plinio e dallo stesso assegnata a Prassitele o a Skopas³³: il gruppo sarebbe stato portato a Roma dall'Asia Minore e dedicato tra il 30 a. C. e il 25 a. C. da C. Sosio nel tempio di Apollo Medico in Campo Marzio. Purtroppo allo stato dei fatti tale gruppo rimane ignoto quanto al numero e alla tipologia delle figure che lo componevano³⁴, e inoltre, rimane di difficile definizione anche sul piano stilistico e cronologico³⁵. Non è da tutti condivisa, infatti, la proposta di identificarlo nel gruppo noto attraverso le copie di età romana in gran parte finite a Firenze³⁶, che della rappresentazione originale ci restituiscono sei figli e quattro figlie oltre alla madre e al pedagogo, con l'aggiunta di due figlie morte restituiteci, invece, per la prima volta, dalle sculture frammentarie in bigio morato rinvenute negli anni Cinquanta del secolo scorso a Villa Adriana a Tivoli³⁷. L'ipotesi della pertinenza del tipo in esame a questo, o a un altro gruppo di Niobidi poggia, dunque, su dati non univoci, com'è anche il fatto, in passato addotto come prova, che la base su cui la replica di Napoli insiste sia caratterizzata, nella parte antica conservata, da ondulazioni indicanti una superficie rocciosa.

32. Si vedano almeno: Stark 1863; Loewy 1927; *RE*, XVII, 1936, c. 644 ss., s. v. (A. Lesky); Mansuelli 1958, I, pp. 101-109; Bieber 1961 pp. 74-76; *EAA*, V (1963), s.v. *Niobe e Niobidi*, pp. 517-524 (G. A. Mansuelli); Diacciati 2005.
33. Plinio, *Naturalis Historia*, XXXVI, 28: <<par haesitatio est in templo Apollinis Sosiani Niobae liberos morientes Scopas an Praxiteles fecerit>>.
34. Doveva essere composto da almeno sedici figure: Niobe, sette figli ed altrettante figlie ed il pedagogo. Nessuno dei gruppi di epoca romana restituisce le figure delle divinità saettanti, che forse mancavano anche nel gruppo originale.
35. Due le posizioni: creazione della fine del IV secolo, forse attribuibile a Skopas di Paro (Geominy 1984, pp. 321-333); oppure opera classicistica di età tardo-ellenistica (Hölscher 1985, pp. 130-132)
36. Per le repliche fiorentine: Mansuelli 1958, I, pp. 107 e ss; Bieber 1961, pp. 74-75; Geominy 1984. Per una sintesi delle diverse proposte di datazione e di ricostruzione del gruppo dei Niobidi di Firenze, da ultimo: Diacciati 2005.
37. Adembri *et al.* 2000, pp. 230-231 (V. Moesch).

Rimane priva di riscontro anche l'ipotesi di quanti hanno pensato di potervi riconoscere un tipo iconografico di età ellenistica creato in origine per rappresentare una Danaide nell'atto di accostarsi alla fonte³⁸. In particolare, la proposta che la figura facesse parte della serie di statue raffiguranti Danao e le Danaidi collocate nel portico del tempio di Apollo sul Palatino³⁹ non può più essere presa in considerazione, dopo il convincente riconoscimento delle Danaidi palatine nelle erme in marmo nero antico del Museo Palatino, rinvenute sul colle nel corso degli scavi ottocenteschi di Pietro Rosa.⁴⁰

Non sembrano convincere neanche le ipotesi più recenti, come quella di S. G. Gröschel, secondo cui il tipo, databile alla fine del II sec. a. C., potrebbe raffigurare una musa "danzante"⁴¹; o ancora, quella di A. Fendt, che vi riconosce, invece, una musa che trattiene la lira con il braccio sinistro piegato e accarezza le corde con la mano destra sollevata⁴². Contro queste ipotesi parlano il voluminoso e pesante himation, non confacente ad una figura in atto di danzare, e la posizione del braccio destro, che difficilmente potrebbe giungere a toccare le corde di una lira posta sul fianco opposto.

Occorre dunque procedere verso altra direzione, non disdegnando l'aiuto che le fonti letterarie in questo caso possono ancora fornirci. In particolare quelle che riguardano l'attività dello scultore greco *Nikeratos*, nel cui orizzonte artistico, come si è già detto, appare del tutto plausibile ascrivere il prototipo della cd. Niobide Louvre-Napoli.

Sullo scultore *Nikeratos* disponiamo di numerose informazioni e, tuttavia, sulla sua attività rimangono ancora ampie zone d'ombra. Scultore ateniese, attivo nella prima metà del III sec. a. C., fu contemporaneo di Senocrate e *Phyromachos*. A lui si deve, a Delo, la prima della lunga serie di Galatomachie pergamene, il donario di Stasicrate a Filetero. Si trattava di un monumento composto da almeno otto grandi figure di bronzo di cui rimangono tracce degli attacchi su un lungo basamento posto lungo la Via Sacra, a occidente del Tempio degli Ateniesi⁴³.

Epigrafi attestano l'attività di *Nikeratos* non solo a Delo, ma anche a Cizico e a Pergamo, in collaborazione con *Phyromachos*⁴⁴. Del monumento innal-

38. Stark 1863, p. 328; Ruesch 1911, p. 75.

39. Stark 1863, p. 328.

40. Tomei 1990.

41. Hüneke 2009, p. 365, n. 227 (S. G. Gröschel).

42. Fendt 2016: <http://arachne.uni-koeln.de/item/gruppen/409876>.

43. Moreno 1994, pp. 262-265.

44. *EAA*, V, 1963, p. 475 (B. Conticello); Moreno 1994, p. 263.

zato a Pergamo dai due artisti ateniesi restano numerosi frammenti della base presso il santuario di Atena⁴⁵. Esso era probabilmente costituito da un ciclo eroico di statue dedicato alle gesta dei Demaratidi di Sparta e degli Alcmeonidi di Atene trasferitisi in Asia.

Taziano ricorda come opera di *Nikeratos* la statua ritratto di Glaucippe e di un elefante – ritenute il suo capolavoro – e una statua della poetessa Telesilla, vissuta intorno alla metà del V sec. a. C., che era stata portata a Roma nel Teatro di Pompeo⁴⁶. Ma è stato espresso il dubbio che lo scultore delle due statue possa essere lo stesso *Nikeratos*, dal momento che Taziano aggiunge nel secondo caso un patronimico e un etnico, come a voler distinguere due diversi scultori omonimi.

Plinio è invece, tra le fonti antiche, colui che cattura maggiormente la nostra attenzione. In un passo di controversa interpretazione, infatti, egli ricorda che *Nikeratos* “*repraesentavit Alcibiaden lampadamque accensu matrem eius Demaraten sacrificantem*”⁴⁷. Tuttavia, poiché la madre di Alcibiade aveva un diverso nome (Deinomache), è stato supposto che Plinio abbia fatto confusione⁴⁸. La statua di Alcibiade potrebbe pertanto corrispondere alla *quadriga ab Alcibiade regitur* ricordata dallo stesso Plinio tra le opere di *Phyromachos*⁴⁹ per la realizzazione della quale potrebbe aver collaborato anche *Nikeratos*, mentre, come è stato già da altri notato, è possibile che nel passo relativo a *Nikeratos* si faccia riferimento ad un altro personaggio maschile rappresentato con la madre sacrificante alla luce delle fiaccole: non Alcibiade, bensì il re Demarato⁵⁰. Il gruppo acquista significato grazie al racconto erodoteo⁵¹, che narra della richiesta fatta da Demarato alla madre dinnanzi all’altare presso il quale ella sacrificava, di conoscere la verità sulla sua nascita, e ciò a causa dei dubbi sollevati dal popolo sulla legittimità della sua sovranità. Le connessioni della vicenda di Demarato, così come di quella di Alcibiade, con la Misia e con Pergamo⁵² rafforzano l’ipotesi che *Nikeratos*, abbia creato a Pergamo un gruppo raffigurante Demarato e la madre. Sappiamo, infatti, che egli fu attivo a Pergamo nel III sec. a. C. specialmente in collaborazione

45. Moreno 1994, p. 263, con bibliografia a nota n. 511.

46. Taziano, *Contra Graecos*, 33.

47. Plinio, *Naturalis Historia*, XXXIV, 88.

48. Plinio, *Naturalis Historia*, XXXIV, 80.

49. Plinio, *Naturalis Historia*, XXXIV, 80.

50. *EAA II Suppl.* 1971-1994, vol. IV, pp. 18-20, s. v. *Nikeratos* (P. Moreno).

51. Erodoto VI, 66-69.

52. Demarato, conosciuta la verità dalla madre, intraprende un viaggio che lo porterà in Oriente fino al cospetto di Dario dal quale, secondo una versione del racconto, otterrà il dominio di alcune terre e città della Misia tra le quali anche Pergamo.

con *Phyromachos*⁵³. Il gruppo di Demarato e la madre potrebbe essere stato in rapporto anche con la statua di Telesilla, ricordata da Taziano⁵⁴. Secondo una leggenda riportata da Pausania⁵⁵, infatti, la poetessa era stata, insieme alle altre donne di Argo, protagonista della difesa della città, in occasione degli assalti sferrati da Cleomene e Demarato, sovrani di Sparta, nel 506 a. C.

Sembra dunque probabile che a Pergamo esistesse un carro di Alcibiade, probabilmente opera di *Phyromachos* e forse anche di *Nikeratos*, vicino o in relazione con i due diversi gruppi di Telesilla che si oppone a Demarato e dell'apoteosi di Demarato con il giuramento richiesto alla madre di lui, opera del solo *Nikeratos*⁵⁶. L'ipotesi di riconoscere nel tipo della cd. Niobide Louvre-Napoli una delle due immagini femminili di questa doppia rappresentazione, probabilmente la madre sacrificante presso un altare, offre un nuovo importante tassello per una più concreta conoscenza dell'opera di *Nikeratos*. La provenienza da Patrasso di una delle migliori repliche può servire a rafforzare le connessioni della creazione originaria perduta con l'ambiente peloponnesiaco cui apparteneva il re Demarato.

Il tipo femminile della cd. Niobide Louvre-Napoli, così ricondotto a *Nikeratos*, verrebbe dunque ad aggiungersi alla statua di *Hygieia* del tipo Conservatori-Berlino, già da Levente ricondotta allo stesso scultore⁵⁷. Ancor meglio dell'*Hygieia*, la statua della cd. Niobide Louvre-Napoli, ci permette di valutare il livello raggiunto dai bronzisti ateniesi attivi in Grecia e in Misia nel corso del III sec. a. C. nella realizzazione della figura femminile con formule articolate e complesse e con soluzioni formali che contribuiscono ad accrescere movimento e *pathos* alla rappresentazione ideale. Un indirizzo che sarà stato sviluppato con successo nei numerosi monumenti multipli realizzati da *Nikeratos*, da solo o in collaborazione con *Phyromachos*, proprio per la committenza pergamena.

53. Moreno 1994, p. 263.

54. Per l'ipotesi di una ampia composizione comprendente da un lato Alcibiade sulla quadriga, opera di *Phyromachos*; dall'altro Telesilla, Demarato e la madre, opera di *Nikeratos*: EAA II Suppl. 1971-1994, vol. IV, pp. 18-20, s.v. *Nikeratos* (P. Moreno); Moreno 1994, pp. 263-264.

55. Pausania II, 20.8-9.

56. Moreno 1994, p. 264.

57. Levente 1998.

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