



Col·lecció
INSTRUMENTA



ECONOMIC EVIDENCE
AND THE CHANGING NATURE
OF URBAN SPACE
IN LATE ANTIQUE ROME

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3. ARCHAEOLOGICAL EVIDENCE FOR TRADE/EXCHANGE

3.1. FOODSTUFFS, PROXIES AND CONTAINERS

Initially much of the work investigating the economy of the later Roman Empire through archaeological evidence was conducted by Italian scholars, as a result of advances made in the 1970s and '80s in the field of ceramic studies. Key to the presentation of this research was the third volume of "*Società Romana e Impero Tardoantico*"¹²¹. This work was primarily orientated with an archaeological focus and hence provided a fresh perspective on the issues which had been dominated by historical discourse¹²². A review article by Chris Wickham in the *Journal of Roman Studies* brought this work to the attention of the wider discipline in Britain¹²³. It also explored the relationship between the work of the Italian scholars, led by Andrea Carandini and the then established, text based paradigm for understanding the Late Roman economy.

Whilst by far the greatest mass transit of goods for the *Annona* concerned the supply of grain to Rome and later Constantinople, the possibility of recovering direct evidence of these shipments is remote at best. As the grain itself does not survive archaeologically except in very particular circumstances, one cannot attempt to interrogate this facet of the exchange mechanisms of the Empire through this medium. Furthermore, the proxy evidence for this trade is limited to the structures used to store and process the grain. Whilst such structures show the use of grain within the Empire they cannot be used to show either the distribution patterns once the grain had left the storage facilities, the scale of said distribution, nor the original provenance of the grain. In order to understand the nature

¹²¹ GIARDINA (ed.) 1986.

¹²² An alternative view of the place of archaeological evidence in the study of Roman economics is presented by GREENE (2006).

¹²³ WICKHAM 1988. See also TOMBER (1993) for a discussion of approaches to using quantified ceramics in the study of long-distance exchange.

of the *Annona* archaeologically we must turn to the other goods which were shipped alongside grain following the Severan reforms of the 3rd century A.D. The principal *Annona* commodity, which can be traced through proxy evidence, is olive oil. This was a staple of Mediterranean life, not just as a food product but also for lighting and for use in bathing. Again, the oil itself does not survive well archaeologically and except in the few cases where it has been possible to employ lipid residue analysis we must rely on the remains of the containers used for its transportation as evidence for distribution and the scale of imports as part of the *Annona* system¹²⁴. The amphorae which were utilised to transport oil and other liquid goods around the Mediterranean world in antiquity form a significant corpus of archaeological data and are prevalent in many excavated ceramic assemblages. There are however, two common misconceptions which need to be addressed before their remains can feasibly be used as a source of evidence for this study. Although amphorae were undoubtedly a widespread and common means of transporting liquid goods, they were not the exclusive means of such transport. There are both epigraphic and iconographic references to the use of skins and it is not inconceivable that barrels were also used¹²⁵. As the available data is merely a sample of the total ceramic population and no attempt is made to quantify the total volume of oil transported, this will have no adverse effect upon the conclusions drawn from interpretation of the amphorae providing that a suitable methodology is employed, which accounts for incomplete recovery or preservation of the material within the archaeological record. The second misconception which must be addressed has been elucidated in recent work by Michel Bonifay¹²⁶. The basic premise of his research being that contrary to established belief, many North African amphorae were used as containers for *garum* and other fish products rather than exclusively for oil as was previously believed. The study of food supplies in the Roman Empire is a complex matter as in almost all instances it is necessary to use proxies for the actual material. The poor preservation of organic material presents a very great challenge to the investigation of questions pertaining to foodstuffs. However, the quality of the available proxy evidence for the Late Roman period and in particular Late Roman sites within the Mediterranean are well appointed to be able to offer a means of addressing the questions and issues raised in this study.

Of the available archaeological evidence, it is the amphorae which provide the most useful means of approaching this question on a quantitative basis. Whereas other forms of portable material culture may be subject to vagaries of taste or fashion, purely functional objects such as amphorae will provide a truer reflection of the processes leading to the distributions of the goods they contained. Amphorae are in effect a part of, rather than a proxy for the commodities which they contained. As yet there are no all-encompassing syntheses of the material pertinent to the supply of staple goods to Rome in Late Antiquity. The various excavation reports and hitherto unpublished data from key Late Antique sites in the centre of Rome provide an unmatched opportunity for reconstructing distribution patterns resulting from the movement of foodstuffs across the Empire and into the capital. This holds true for other cities just as much as for Rome. However, as a result of its privileged position within the political structure of the Empire and the richness of the available sources of evidence, the city of Rome must remain the primary focus of this study. The combination of significant quantities of excavated material, extant warehousing and transport infrastructure offer an unparalleled opportunity to push forward the agenda of studies based on primarily economic data as a tool for understanding social practice. The particular methodology to be employed in the examination and interpretation of these material data puts the focus back on the archaeological evidence itself and formulates a new approach to the study of this problem.

¹²⁴ See EVERSHED (1993: 77, 90) for a discussion of the applicability of lipid studies to archaeological ceramics.

¹²⁵ PEÑA 1998a; as suggested by EGRI 2007; TOMLIN 2009: 338.

¹²⁶ See BONIFAY 2005a.

Approaches based on studies of amphorae have very particular strengths and weaknesses, which should be appreciated before addressing the specific methodology and questions pertinent to the study of economic evidence and social practices in Late Antique Rome. Recent refinements in the typologies and understanding of African ceramics have given us the tools to fully investigate the implications of one of the most startling changes in the Roman ceramic record¹²⁷, the almost complete saturation of goods of African origin throughout the western Mediterranean after the late 3rd century. Concomitant with this gradual increase in our knowledge about the material itself is an increasing corpus of data from the major cities¹²⁸, alongside an increased interest in the later periods of archaeological sites¹²⁹. This form of approach offers the best means of directly addressing the material transported. There remain problems of inference, and the impossibility of knowing what proportion of amphorae in use in the ancient world actually survive to be recovered archaeologically¹³⁰. Uncertainty over the proportion of the total archaeological population which is represented in the archaeological record is the principal problem with amphora based studies of the economy. It is this uncertainty and the inability of archaeologists to provide a satisfactory answer to this question which has led to attempts to discredit the approach by some of those historians who are concerned with quantification of trade¹³¹. Whilst the point that there is no way of knowing how much material fails to survive in the archaeological record is valid¹³², it does not mean that a study of this material is pointless or irrelevant. I would argue, and will demonstrate¹³³, that whilst a study of amphorae is very unlikely to ever be able to allow the absolute quantification of the goods which were present at a given site in antiquity, there are other issues which can be addressed very successfully through a study of the remains of amphorae in archaeological deposits.

The suitability of amphorae for addressing these problems has been clearly demonstrated through much of the data recovered from a number of sites and used within a number of research projects over the past 20 years. Notably a series of studies have defined patterns of distribution for these vessels across the Roman world¹³⁴. Whilst these studies have been focussed more on long distance trade and exchange, the principal analytical tool being a determination of the presence or absence of goods of various provenances at the sites investigated, they prove the ability of the data to answer suitable questions asked of it. The simplistic trade routes represented by neat lines on a map¹³⁵, have been somewhat superseded by the development of more complex and nuanced models of exchange¹³⁶. However, the basic tenets of the position; that through appraisal of the goods present at a site it is possible to reconstruct both patterns of exchange and patterns of consumption remain valid. Furthermore, recent studies have shown how a detailed appraisal of the

¹²⁷ In particular BONIFAY 2005, and work carried out by David Peacock in establishing petrographic links between ceramics and kiln-sites. PEACOCK *ET AL.* 1989, 1990.

¹²⁸ The two are very closely linked as the more that is known about the material, the more likely it is to be recorded and retained at excavated sites.

¹²⁹ This is typified by the excavations at the Crypta Balbi in Rome.

¹³⁰ See ORTON 2000: 40–42.

¹³¹ E.g. DUNCAN JONES 1974. A study which is overwhelmingly concerned with historical sources for grain prices and attempting to reconstruct population sizes.

¹³² This is true for many reasons. Partial excavation of sites, discarding of material by previous excavators not interested in, or unable to understand the material or the disposal of material in antiquity in ways which are not archaeologically recoverable are all possibilities.

¹³³ The methodology for this study will be fully discussed in Chapter 6.

¹³⁴ E.g. REYNOLDS. 1995; EIRING & LUND (eds) 2004.

¹³⁵ For a recent example see YOUNG 2001.

¹³⁶ KINGSLEY. 1996; KINGSLEY & DECKER (eds) 2001.

ceramic material from a specific site or group of sites can be used to derive a more fine-grained interpretation of socio-economic practice¹³⁷.

3.2. ARCHAEOLOGICAL EVIDENCE FOR THE *ANNO* IN THE LATE EMPIRE

As previously stated there have been a number of studies dealing with the Roman *Anno* and the supply of foodstuffs to the city during the Imperial period. Documentary sources relating to the organisation of the supply of grain for Rome have been explored and an overall impression of the mechanisms of the supply can be understood¹³⁸. However, very little has been explicitly written on the nature of these mechanisms of supply in the Late Empire or Late Antique periods. Indeed the most accessible work on this subject, Emin Tengström's 'Bread for the people' is over 30 years old¹³⁹. Despite its age, this work remains a useful synopsis of the available historical evidence for the *Anno* in the Late Empire as it was conceived as an exceedingly comprehensive review of the available evidence. Alongside the increasing emergence of archaeological evidence as a source for understanding the process of the movement of goods via the *Anno*, this work and its comprehensive treatment of the historical sources provides a background against which the archaeological material can be interrogated.

In attempting to trace the origins of the supply, one is limited in this study by the lack of stamped amphorae. Without such evidence it is difficult to ascribe closely-located sources or destinations to many of these containers. It is even more difficult to assess the extent to which these amphorae represent a conscious effort by the state to manipulate or control the supply of oil to the city of Rome. And hence the questions asked of the historical and epigraphic evidence are naturally different from those which the archaeological evidence has the greatest potential to answer. Questions of origin are difficult to answer even where there is better evidence available for study than is the case for the Late Antique period. It is also the case that often the questions asked of the archaeological data lead to highly variable answers. Studies of Baetican Dressel 20 amphorae used extensively in the movement of oil until the mid 3rd century and often found to be stamped or otherwise marked, have led to contradictory interpretations as to the nature of the oil supply from Baetica. At one extreme Remesal Rodríguez argues that the needs of the state to redistribute the necessary goods to the armies and the city of Rome were the driving force behind the early imperial economy¹⁴⁰. At the other is the view that the stamps on Baetican Dressel 20s represent a purely commercial notation and therefore that the amphorae themselves are moved due to purely commercial motivations¹⁴¹. These two views are based on the same sets of evidence but offer widely divergent interpretations of their significance. As can be seen, even in this situation where there is a great deal of evidence available, widely different interpretations for the form of the Roman economy can be drawn from the same sets of data. Although there is very little textual information available for study here, that which is available can be employed to some significant effect.

The greatest problem facing the archaeologist in studying ancient trade is that of relating the extant or excavated archaeological remains to the processes involved in the movement of those goods. In one particular example we are privileged to have an insight into this process and through this an understanding of not only the mechanisms of the supply of oil to Rome but also an insight

¹³⁷ IKÄHEIMO 2004.

¹³⁸ CHRISTOL 1994.

¹³⁹ TENGSTRÖM 1974.

¹⁴⁰ 1998: 198.

¹⁴¹ DOMERGUE 1998: 212.

into the limitations of the archaeological record where the study of amphorae as a proxy for oil are concerned. Whilst the series of *ostraca* recovered from the Ilôt de l'Amirauté in Carthage are specifically relating information about the movement of goods through the port of Carthage, the information which they reveal is applicable elsewhere, it is particularly enlightening for this study as the period from which the evidence is derived is central to the temporal boundaries of this study and the ultimate destination for a significant proportion of the oil is recorded as being the city of Rome.

3.3. ARCHAEOLOGICAL EPIGRAPHIC EVIDENCE FOR THE STATE OIL SUPPLY FROM THE ILÔT DE L'AMIRAUTÉ, CARTHAGE

In 1911 the Direction des Antiquites de Tunisie found a deposit of at least 32 *ostraca* on the Ilôt de l'Amirauté in Carthage¹⁴². These contained information on the organisation of the oil supply through Carthage and allow a detailed appreciation of the mechanisms at work in the movement of olive oil within Africa Proconsularis and between that province and Rome¹⁴³. This is particularly important as many African amphorae lack stamps such as those found on Baetican Dressel 20 amphorae and this corpus of *ostraca* therefore represent the only primary textual evidence for the administration of the oil supply. A study of these documents enables much more detail to be added to interpretations of the mechanisms behind the supply of oil. The *ostraca* in question all date to a period in A.D. 373 and are concerned with the reception and storage of oil in Carthage. They form two distinct groups based on their content, the first of which concerns the importation of the oil and the second of which is concerned with storage. As such it seems logical to examine the data in two groups corresponding to the different purposes of the *ostraca* themselves.

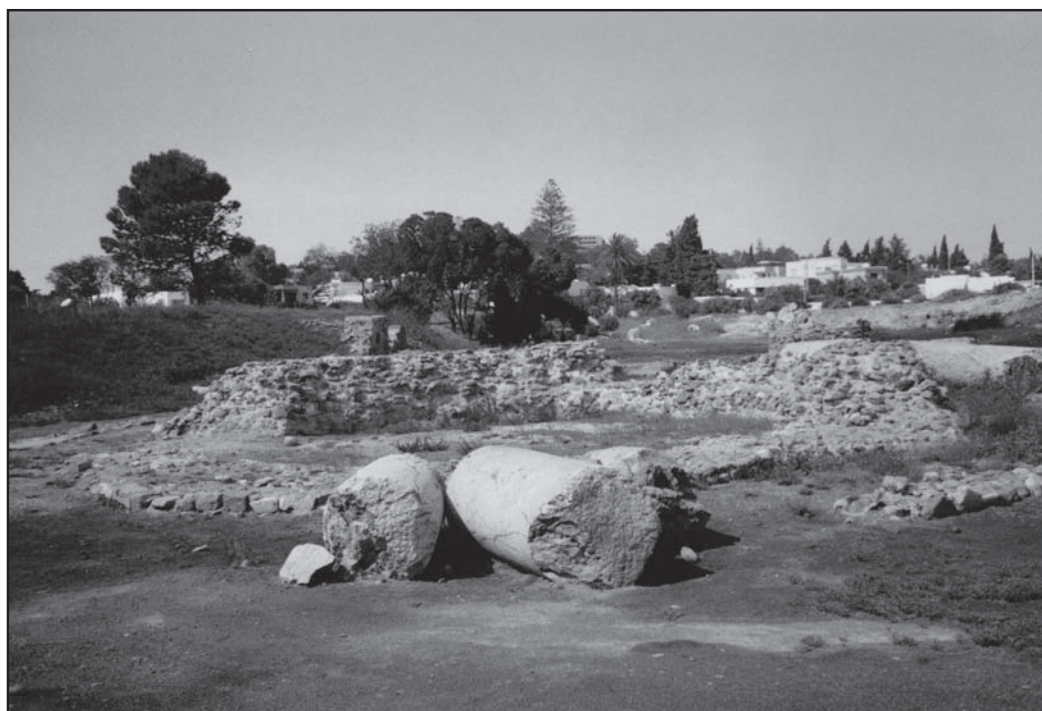


Fig. 1. Excavated remains on the Ilôt de l'Amiraute, Carthage.

¹⁴² Fig. 1.

¹⁴³ PEÑA 1998a: 117.

3.3.1. Group 1: oil imports

The first group is the smaller of the two, consisting of only 6 examples. They are however surprisingly informative. At the most simple level they give quantities of oil received in terms of the number of containers and their type. All of the identified containers are described on the *ostraca* as “*Caproreses Light Centenaria*”. These would appear to represent a type of container which had a capacity sufficient to accommodate one hundredweight of oil¹⁴⁴. The imports are also dated. Interestingly the dates cluster toward the beginning of February A.D. 373 with the first three on the 3rd, 14th and 15th of that month. The remaining three *ostraca* record dates from the beginning of March until late July of the same year¹⁴⁵. This range of dates can plausibly be used to make two inferences, one relating to the collection of the oil at Carthage and the second pertaining to the subsequent shipment of the oil to Rome. Primarily the range of dates allows an argument to be made against a single annual collection of oil at the ports. Secondly, they would suggest that a sufficient quantity of oil could be collected by the mid-summer months and thus the ships transporting oil to Rome could have made their journeys before the end of the sailing season. Clearly small vessels were bringing reasonably large quantities of oil to the harbours and storehouses of Carthage throughout the first part of the year. The notation on the *ostraca* of the *horrea* to which the oil was then sent is highly suggestive of transshipment at the port onto larger vessels, which would then make the trip to Rome. Admittedly this is a very small sample size; it does however serve as an indicator that these transshipments conformed to the likely shipping season. Any vessels heading for Rome would wish to do so before the autumn if practicable in order to commence the return journey before winter made the sea unsafe.

Looking at the specific figures recorded on the *ostraca* it is interesting to note that all of the shipments consisted of approximately 220 amphorae although there is no indication of what type these were. There would appear therefore to be a degree of standardisation in the size of the vessels employed in moving the oil to the port. Whilst a detailed appraisal of the maritime technology in use is beyond the scope of this research, understanding the capacities and draft of the vessels in use may enable a more thorough investigation of other possible transshipment nodes at coastal or riverine sites within the North African provinces. Also the two shipments on the 14th and 15th of February both had 208 of their amphorae accepted by the authorities whilst others were rejected. This appears to reflect either a quota system or perhaps more likely the imposition of quality control by the provincial authorities as has been suggested for the trade in grain¹⁴⁶. Generalising about the total number of imports over the period represented here is dangerous as there is no way of knowing how many other *ostraca* have been lost. It is however, useful in suggesting that even if the trade was not driven by imperial demands, there was extensive involvement on the part of the imperial authorities in assessing the quantities of oil being moved through the ports of Carthage.

3.3.2. Group 2: oil storage

The second group of *ostraca* concern records of the amount of oil being stored in the warehouses of Carthage and contain a much greater quantity of statistical information than the first group. There are seventeen *ostraca* in this group which are further divided into subgroups designated as A, B and C based on the format of the information inscribed on the surface¹⁴⁷. The reading of these

¹⁴⁴ PEÑA 1998a: 129.

¹⁴⁵ PEÑA 1998a: 123–130.

¹⁴⁶ See TENGSTRÖM 1974: 38–39; *Cod Theod.* 14. 15. 2.

¹⁴⁷ PEÑA 1998a: 130.

ostraca seems to be slightly more problematic than the first group. However, they are potentially more useful in providing some idea of the storage capacity of the *horrea* at Carthage. Furthermore, a number of the *ostraca* in this group contain references to the ‘*o(lei?) R(omae?) c(anon?)*’ or “Rome oil levy”¹⁴⁸. From these data it may be possible to determine the proportion of the oil coming into Carthage which was destined for Rome as part of the *Annona* supply. Perhaps even more importantly their date ranges are given in the form of a specific date, again tending towards the beginning of the year though continuing until October¹⁴⁹. This is strongly suggestive of a period of activity in the measuring of the oil stored in Carthage in preparation for its transportation during the practicable shipping season which ended with the beginning of the autumn. As these *ostraca* are from a single group it is quite possible that other records would have related to other periods of time.

The reference to the oil levy for Rome which appears on several of the type 2 *ostraca* (No’s 13, 14, 16, 18 & 19) is important as it provides tangible evidence for the involvement of the ports of Carthage in supplying the oil for the *Annona* to Rome. It also provides some information on the way in which the oil arrived in Carthage as the quantities are all numerated in terms of oilskins as well as *centenaria*, the latter presumably being amphorae of hundredweight capacity. This is not merely a convention as both numbers of oilskins and volume in *centenaria* are recorded together ‘*o(lei?) R(omae?) c(anon?) as(copae) N(umero) CCC[XCI] et K(e)N^T(enaria) [8XCI]*’¹⁵⁰, the important part of the text being the *et* which signifies both oilskins and *centenaria* rather than a form of equivalence between the two measures. This therefore has important implications for the interpretation of amphora data not only from the sites in Carthage but also for all Late Antique deposits particularly in Rome where this oil was bound. If, as these *ostraca* suggest, at this time amphorae were not the only containers used for the shipment of oil then the total quantity moving through the region could be far greater than has previously been thought. It also possibly offers a partial explanation for the reduction in the absolute numbers of amphorae found in Rome during the period after Monte Testaccio passed out of use.

As mentioned earlier, the quantity of oil for the Rome levy was recorded firstly in numbers of oilskins and then in *centenaria*. These figures allow one to suggest a very rough approximation of the proportion of the oil passing through the storehouses at Carthage which was given over to supplying the needs of the city of Rome through the *Annona*. It may also be possible to form a rough estimate of the volume of an “oilskin”¹⁵¹, although obviously this would rest on the fundamental assumption that all oilskins recorded on a given *ostrakon* contained an equal quantity of oil. From the data on *ostrakon* 13 the recorded total of 188 oilskins contained 156 Cwt. of oil. Allowing the above assumption to stand, it can be hypothesised that each oilskin contained approximately 0.83 Cwt. (2dp). Whilst this may be a reasonable proposal to make for that particular day it would not seem to hold true over the rest of the *ostraca*, for example on No. 16, 22 oilskins are recorded as containing 38 Cwt in total. Each oilskin would therefore contain 1.73 Cwt., a much higher quantity than those on *ostraca* 13. Whilst the possibility of different sized oilskins being used is completely reasonable, the fragmentary nature of the *ostraca* means that there is insufficient data to extrapolate figures for all of them.

As the quantities of oil recorded are not in uniform denominations one is left with the rather vexing question of exactly what use it is to know that the oil levy for Rome consisted of 161 oilskins.

¹⁴⁸ PeÑA 1998a: 137.

¹⁴⁹ For example see PeÑA 1998a: 131.

¹⁵⁰ PeÑA 1998a: 137: No. 14.

¹⁵¹ PeÑA 1998a: 136.

Absolute quantification once again proves to be elusive. There still remains the possibility of a relative comparison within the data from each individual *ostraca*, the patterns observed as the result of such an examination may still be useful to this study. The problem inherent in this is that the quantities are recorded in two formats, namely numbers of oilskins and weights in *centenaria*. In order to compare these two methods of quantification it is necessary to employ some form of convention. Experiments on *ostraca* 14 allow the following projections to be made, albeit that they are probably only relevant to this particular record¹⁵². Firstly 49 Byzacena oilskins must roughly equal 115 Cwt. of oil, therefore 1 oilskin carries 2.35 Cwt. Accepting that a *centenaria* carries 1 Cwt¹⁵³, it would follow that the oil levy for Rome consisted of approximately 2,010 Cwt. of oil. Following this line of reasoning it quickly becomes apparent that the figures on the *ostraca* simply do not add up and that the containers actually exceed the total given for the quantity of oil stored. One must therefore regretfully assume that although a standard measure may have been employed, the total volume of the oilskins was not constant.

There does however appear to be a correlation, at least for the Tebelbucitan area, between the relative numbers of oilskins and amphorae. In general the numbers are either 300:50 or 446:65; a ratio of between 6 & 7:1¹⁵⁴. This has obvious implications for understanding the extent to which archaeological evidence derived from the remains of amphorae might be underestimating the magnitude of the supply. Unless the oil was re-packaged for transshipment between Carthage and Rome, the total quantities of imports may have been 6–7 times greater than suggested by the ceramic evidence alone.

3.3.3. The importance of the *ostraca*

As we have seen, the Type 1 *ostraca* dealing with quantities of oil imported record volumes only as *centenaria*. A direct comparison between the quantities recorded on the two types of *ostraca* is not therefore possible in this instance. The principal problem being the uncertainty over the volumetric capacity of an oilskin. Unfortunately the oilskins also seem not to have had a consistent volume, or at least did not contain a uniform volume of oil. The storage manifests (Type 2 *ostraca*) deal only with the denomination and type of container in which the oil arrives, not the total volume of oil being received and put into storage.

Furthermore the point at which a distinction was made between the general supply and the oil destined for Rome as part of the *Annona* is unclear. The administration of the port certainly saw the “Rome Oil Levy” as distinct by this point. It was recorded, weighed and stored as a separate and administratively discrete entity. However one explains the distinction between the oil for Rome and the general supply, it is acknowledged as being different in the records of the port authorities and must have been clear in the minds of those responsible for the shipments. It should be noted that this distinction is derived from purely legal and administrative documentary sources, though they are closer to the trade itself than many other textual references. The vast majority of the data available from amphora assemblages in the archaeological record do not allow such a differentiation to be appreciated from the material evidence alone.

The importance of the *ostraca* is then, that they do refer to specific quantities of oil destined for Rome as part of an oil levy. This levy can only really be interpreted as part of the *Annona*, for even if it was not that in name it surely was in form. The limitations of the data in thwarting attempts

¹⁵² PEÑA 1998a: 136–7.

¹⁵³ PEÑA 1998a: 129.

¹⁵⁴ PEÑA 1998a: 130–143.

at some form of quantitative analysis should not be seen as a total failure of the data to provide any meaningful insight into the role of Carthage in the *Annona* supply. Unfortunately, at this time there is insufficient data for detailed discussion of the quantities of oil to be a practical reality. What remains is the record of the activities of the oil measurers at Carthage and an undeniable link between the Îlot de l'Amirauté in the Circular Harbour and the supply of oil as part of the *Annona* to Rome. These *ostraca* may also provide the only tangible separation between oil containers pertaining to the *Annona* supply and those transported for other purposes and in other capacities.

In comparison with the evidence from Baetican Dressel 20 amphorae at Monte Testaccio, this data is surprisingly clear, although an inscription found under the Giralda in Seville has attested to at least one individual involved in the supply of oil as part of the *Annona* to Rome in the mid 3rd century¹⁵⁵. Although it may be true to say that prior to the arrival of the oil in Carthage there is no certainty of imperial involvement, once the oil had arrived there was assuredly a conception of some of the oil serving a different purpose from that which would be sold on the open market for consumption at other destinations. Furthermore one must expect this distinction to have become increasingly real and nuanced as the oil reached Rome and part of the levy was finally distributed free to those sections of the populous eligible to receive it.

3.4. SHIPPING AND LONG DISTANCE TRANSPORT

Climatic inconsistencies and annual differences within the Mediterranean worked to promote a system whereby shortfalls in production were compensated for through the movement and storage of surplus from other areas¹⁵⁶. Various seagoing vessels, some of them with very large capacities were available for the transportation of goods in the Roman world¹⁵⁷. The duration of the voyages necessary to move goods across the Mediterranean has been the subject of some discussion as the restricted sailing season impacted heavily on the ability to safely utilise marine transport¹⁵⁸. It is clear that sea borne transport was in many ways more effective for the movement of large quantities than overland routes but that some overland transport was obviously required in order for agricultural products to arrive at the port of origin in the first place¹⁵⁹. The fact that it would have been necessary to move goods at least a short distance overland suggests that this may well have been much more common than is often acknowledged. Whilst sea-borne transportation of bulk goods would have been an obvious solution over long distances, this may not have held true for all types of cargo and relied on the presence of navigable waterways. Indeed, it has been suggested that land transport was in fact often more efficient than other forms of transport¹⁶⁰. For example, in 18th century Britain the comparative cheapness of riverine and sea transport did not lead to it becoming the dominant method used, despite the relatively static technological development of overland transport¹⁶¹. Whilst it is undoubtedly true that overland transport made an important contribution to the movement of goods around the Empire, the movement of large quantities of bulk goods over long distances in the Mediterranean would naturally be considered more easily accomplished on the water where greater quantities could be aggregated and less physical effort would be required to move them.

¹⁵⁵ REMESAL RODRIGUEZ 2008a.

¹⁵⁶ ERDKAMP 2005: 145; HORDEN & PURCELL 2000: 152.

¹⁵⁷ CASSON 1971.

¹⁵⁸ KOLB 2000: 318; McCORMICK 2001: 481.

¹⁵⁹ LAURENCE 1998, 1999: 98; RICKMAN 1991.

¹⁶⁰ LAURENCE 1999: 95.

¹⁶¹ PAWSON 1977: 27–29.

3.4.1. Shipwreck evidence

Any study of long distance trade and transportation of goods should include at least a brief synopsis of the evidence from the numerous shipwrecks investigated around the Mediterranean. Whilst it may be fair to say that evidence from a shipwreck ‘provides a unique kind of evidence about ancient trade’¹⁶², the material derived from such sites is not without its limitations. Not least of these limitations are the incorrect, if not deliberately misleading reporting of sites which have historically occurred as a result of the division between “divers” and “archaeologists”. This is caused by a breakdown in communication, which is often mirrored in the reporting of metal detecting finds on land. These problems with the reporting and possible looting of sites tie in to the particular preservation problems which beset underwater sites. In addition to this, underwater sites also suffer from the reduced visibility inherent in the process of discovery through diving. Similarly, the inaccessibility of the deep sea has led to a preponderance of those sites recorded being located in coastal areas¹⁶³. It is possible however, to reconstruct the nature of the trading process through analysis of the cargo carried on the ships recovered as wreck sites¹⁶⁴. The Mediterranean in particular has shown its potential as an archaeological resource, the maritime character of the lands bordering it and the preponderance of sea borne commerce from the Bronze Age onwards have left a rich legacy of sunken material culture¹⁶⁵. The potential of shipwrecks to provide evidence for ancient trade and maritime life in antiquity has been repeatedly stressed by marine archaeologists¹⁶⁶. In order to fully realise the potential of shipwreck archaeology it is necessary to formulate more detailed and specific research questions, expand the range of the discipline to include less well-defined wreck sites and to increase publication rates¹⁶⁷. Whilst amphorae are one of the most common cargoes recovered from shipwrecks it is the possibilities and problems of this source of evidence, which must now be addressed. Whilst wrecks such as the “Isis” discovered off Skerki Bank in the central Mediterranean presents an associated group of material in transit, it is only enlightening in so much as it reveals that the amphorae in its hold had been transported from North Africa¹⁶⁸. Again, whilst demonstrating the probable route of the quick, deep-water passage between Carthage and Rome, and that there was a degree of cabotage practised along this route in addition to the directed trade of the supply of Rome¹⁶⁹ the ultimate destination of the cargo is, and must remain unknown. Such deep-water shipwrecks and the recovery of material from them can only be of benefit to our wider understanding of the methods of transshipment of goods over long distances. However, the long distance trade between North Africa and Rome is well attested and despite the lacuna in our understanding of the precise nature of the shipments, enough is known to establish that it did occur and that it was important to the population of Rome. The current possibilities for using evidence from shipwrecks are therefore of far more importance to studies of the movement of goods between and into sites for which less information is readily available through other sources.

¹⁶² PARKER 1992: 3.

¹⁶³ See McCANN 1994: xvii.

¹⁶⁴ PARKER 1992: 21–22.

¹⁶⁵ See FROST (1964) for an early appreciation of the potential of underwater archaeology in the Mediterranean. BASS (1975) offers a summary of the important underwater excavations of Cape Gelidonya and Yassi Ada.

¹⁶⁶ See GIBBINS (1990) and KINGSLEY (2000) for more recent exponents of the uses of maritime archaeology and particularly shipwrecks.

¹⁶⁷ KINGSLEY 2003: 127.

¹⁶⁸ McCANN 1994: 22–37.

¹⁶⁹ McCANN 2004.

3.5. STORAGE/PROCESSING FACILITIES

Within the remit of studying the economy through archaeological sources it would be unthinkable not to discuss the facilities which were used to store the goods at various points along their journeys and also to discuss those structures which facilitated the processing of commercial goods where such are archaeologically visible. This approach obviously privileges certain activities which leave archaeologically or architecturally recoverable traces. One of the most visible of these traces are the vast *horrea* which occur in many Roman towns and are particularly noted in respect of the shipment of goods to Rome¹⁷⁰. These storehouses are effectively proxies for the goods which they contained. The nature of these goods is generally difficult to determine, though it is possible to define a number of *horrea* buildings as having a potential use as grain stores through the presence of *suspensurae* floors¹⁷¹. Whilst this is not possible for other types of goods, there are distinctive remains of some processing activities such as those relating to the fermentation of *garum*¹⁷², and the dying of clothing¹⁷³. It has further been suggested that the layout of *horrea* may also be indicative of their function¹⁷⁴, though this a somewhat more tenuous proposal. Whilst these architectural proxies for economic activity do not reveal much about the goods themselves, they are extremely useful in determining specific zones within an urban area which may have had a particularly close affinity to economic practices.

¹⁷⁰ See RICKMAN (1971) and also PEÑA (1998a) as discussed below for a detailed evaluation of the mechanisms of the oil supply to Rome and use of *horrea* at Carthage for storing goods destined for consumption in the capital.

¹⁷¹ RICKMAN 1971: 293–297.

¹⁷² Eg. McCANN 1979.

¹⁷³ Eg. WILSON 2001:273–281.

¹⁷⁴ VIRLOUVET 1995: 90–97.