Chapter 1

New Rome, New Theories on Inter-Regional Exchange. An Introduction to the East Mediterranean Economy in Late Antiquity

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The Later Roman Empire’s exchange patterns have long held a fascination for scholars working on the history and archaeology of the western Mediterranean. The wide variety of tools which serve as an interface to examine the economy – historical texts, industrial and agricultural installations, inscriptions, papyri, pottery sherds, shipwrecks, and comparative sources – have been integrated in recent decades to forge a remarkably stimulating field, where even the most phlegmatic individual can be caught expressing flashes of passion. The inclusion of a section discussing the economy in a recent summary of the most pivotal topics of contemporary research into Roman society further reflects its ever-increasing centrality to understanding antiquity.

The situation in the East Mediterranean, by contrast, is conspicuously different to that in the West. Although the quantity of archaeological data available continues to increase rapidly, syntheses of the economic landscape of Late Antiquity in this half of the Mediterranean basin are few. Why this is the case is not immediately apparent. Certainly interest in the social and economic life of town and country in ancient times has a long tradition stretching back to the turn of the twentieth century, and even earlier. Travelogues dating between the eighteenth and early twentieth century often described the perceived wonders of ancient agricultural and industrial installations, which were dutifully recorded by representative of the clergy and military, by school teachers, and learned individuals attached to other entourages. Among the early travellers to Syria was the Marquis Melchior de Vogüé, whose Syrie Centrale remains a reminder of the wonders and prosperity of late antique Syria, and inspired Howard Crosby Butler’s work. Butler himself recognised that Greater Syria’s past was based on an agricultural wealth that had disappeared by his day of Ottoman domination. Like Butler, Ernest Rénan’s Mission de Phénicie depicts landscapes full of terraces, cisterns, silos, wine and oil presses, testimony to how highly developed ancient agriculture had been. In addition to these silent standing stones, artifacts of late antique date were also amongst the earliest materials scientifically excavated in the region. A variety of sixth and seventh century A.D. imported and local amphorae and fine-wares were uncovered in the Tyropoeon Valley in Jerusalem in 1927. Who can turn the pages of the final report on the royal tombs of Ballana, excavated in lower Egypt in the 1930s, where each tomb was carefully stocked with between 200 and 300 LR1, LR3 and LR4
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amphorae from Syria/Cilicia, the Aegean, and southern Palestine, without wondering about the economic mechanisms which underlay their import (market forces or political gift exchange)?

Despite the importance of this early pioneering fieldwork, the East Mediterranean has failed to keep abreast of methodological and theoretical developments which have evolved subsequently in the West, particularly regarding quantitative analysis. Remote sensing techniques, soil flotation, quantitative pottery studies, and even landscape archaeology were all adopted relatively late on Eastern shores, where some of these archaeological tools remain remarkably undeveloped and simplistic even today. Although specialised agricultural and industrial production has been examined in detail in some regions – Syria, Israel, Jordan and Egypt, in particular – little attempt has been initiated to relate localised patterns to broader macro-economic structures. Other than very recent scholarship, Abadie-Reynal’s work on amphorae and fine-ware imported to Argos, and Watson’s work at Pella, are the only published studies which have addressed aspects of the character and structure of inter-regional exchange in the East Mediterranean.

In view of this rather stagnant situation, in the following pages we have briefly discussed the economic rhythms of life and the structure of long-distance exchange in the late antique East Mediterranean. We hope that this initiative will help stimulate greater informed debate about the mechanisms that underlay production and exchange, but appreciate that due to the sheer geographical size of the area under discussion these observations are necessarily selective and not equally relevant to all provinces.

Capital Demands: Rome, Constantinople and the annona civica

In her pottery based discussion of exchange at Argos, Abadie-Reynal adopted a model originally formulated in the West to explain the apparently abrupt decline in N. African imports entering the city in the fifth century and their replacement by Eastern amphorae (the Syrian/Cypriot or Cilician LR1, and the Palestinian LR4 and LR5). She interpreted this transformation in the provenance of incoming wines and olive oil as a result of state intervention and, more directly, to the foundation of Constantinople, which “a tendance à drainer vers elle toutes les richesses du Moyen-Orient”. Without labouring the point, Abadie-Reynal implied that much of the imported foodstuffs packaged in Eastern amphora which arrived at Argos were embedded within a tied economy based on provincial taxation.

With a population of perhaps between 300–400,000 in c. A.D. 450, like the mother city in the West New Rome was a consumer of enormous magnitude. Between A.D. 332 and 610, an estimated 80,000 beneficiaries were entitled to free distributions of panis aedium and olive oil. If the quantity of wheat provided by the State was comparable to that distributed in Rome (which is very likely given that it is logical to assume Constantinople adopted a system tried and tested in the western capital) then 31,200 tons of wheat alone would have been required. This is the equivalent of 624 annual shipments in a merchant vessel capable of accommodating 50 tons (such as the seventh century Yassi Ada A ship).
The role that Abadie-Reynal seems to propose for LR1, LR4 and LR5 was very similar to that of N. African amphorae in the West. Both were manufactured in enormous quantities in restricted geographical areas and exported in mass, with a strong gravitational pull toward the capitals. This idea is important in demonstrating how the theory of exchange in the West has had a direct bearing on the East Mediterranean. Just as imperial Rome is envisaged as the principal manipulator of inter-regional exchange in the West, importing wheat and oil as *annona civica* and selling-on surpluses commercially to Spain, Gaul and other regions, so Constantinople is often assumed to be the exchange magnet of the East. This theory, of course, is entrenched in the traditional Finley/Jones historocentric view of the Roman economy as primitivistic and dominated by a central authority. And in all fairness, without access to archaeological data it is easy to realise how some primary historical sources, such as the influential Theodosian Code, could be interpreted as accurate reflections of a harsh regime strictly structured toward the containment of merchants and sea-captains within a tied economy, where the obligatory *annona* transport of foodstuffs to the civil population in Constantinople, and to military garrisons elsewhere, was of paramount importance within long-distance exchange. If the Code is accepted as the simple truth, then the State economy rigorously suppressed private commerce between the fourth and fifth centuries. But to what extent are such historical texts accurate portrayals of reality? Just how much importance should be attached to the word of Libanius, for example, who referred to Constantinople in A.D. 390 as “that city which grows fat on the sweat of the others”? The Rome/Constantinople analogy provides an interesting means of appreciating the level of demand an imperial capital might generate, and for demonstrating how various forms of exchange might have been structured. However, such a comparison also vividly clarifies how different exchange patterns were in the two halves of the Mediterranean. The argument that N. Africa – modern Tunisia in particular – dominated exchange in the West is uncontroversial. Exported amphorae occur in huge quantities in deposits excavated in cities throughout Italy, southern Spain and southern France. Thus, at the Crypta Balbi, Porticus Liviae and Temple of Magna Mater in Rome, N. African products account for 52–60% of all amphorae between A.D. 350 and 420. At Tarraco and Alicante in Spain, N. African imports represent about 75% of amphora assemblages between the end of the fifth and first half of the sixth century. The same type of wares can also comprise up to 68% of deposits in fifth and sixth century Marseille. Not only have surveys of olive oil presses around Lepcis Magna identified impressive evidence of the olive cultivation that was developed deliberately to produce a massive surplus, but the discovery of pottery workshops and inscriptions on vessels has helped identify the social context of some producers and distributors.

Not surprisingly, N. African amphorae are by far the most common cargo type discovered on shipwrecks between Carthage and southern France. The extremely wide and dense diffusion of African red-slip (ARS) fine wares throughout the West evidently indicates that other manufactured goods (not preserved archaeologically) frequently accompanied the large-scale shipment of state-procured wheat and olive oil as secondary consignments of commercial value. ARS fine wares were manufactured on numerous estates south of Carthage, and cargo consignments such as the fifty plates...
on the Dramont E shipwreck, and the 250 lamps on the wreck La Luque B (of A.D 425–455, and of the early fourth century respectively) confirm that these products were indeed exported as minor consignments, almost certainly stowed in convenient spaces between primary cargoes.22

By contrast, in the East Mediterranean no single region or province served a comparable dominant role as N. Africa. Following the foundation of Constantinople, Egypt was exploited as the capital’s granary up to at least A.D. 534.23 The province’s general prosperity is reflected in the 2.5 million solidi obtained annually through the taxation of her approximately 4.75 million inhabitants, which is thought to have accounted for an impressive 35% of the total revenue of the Empire in Late Antiquity.24 However, despite the State’s great dependence on Egypt, there is neither substantial historical, nor archaeological evidence that as close an economic relationship was fostered between capital and province as had linked N. Africa and Rome. Egyptian wine was, of course, consumed throughout the Mediterranean, but only in extremely limited quantities. Although common in Carthage, LR7 (the main wine amphora produced in late antique Egypt) is rare in Italy and France, unattested in Spain, and was evidently not exported as primary cargo. LR7 is equally rare along the sea-lanes leading to Constantinople, and has not been identified at Anemurium or Thasos, for example. The type only occurred at Sarachane in Istanbul in small quantities in sixth and seventh century deposits, and has been identified in only four of 340 published pottery assemblages in Israel. At Caesarea, LR7 accounts for less than half a percent of all amphorae.25 Furthermore, although Egyptian red slip (ERS) bowls and plates are prevalent throughout Egypt, their circulation north of Alexandria is extremely restricted.26 No attempt seems to have been initiated to imitate established and presumably lucrative N. African trade patterns, by loading state-commandeered corn ships with crates of quality ERS destined for the open market. It is not until after the Umayyad conquest that these products found a receptive market outside Egypt,27 presumably mainly to meet the new demand created by the economic dislocation between the Byzantine Empire and Umayyad provinces in the second half of the seventh and in the eighth century. But even then, the diffusion of ERS seems to have been limited mainly to early Islamic Jordan and Palestine.

In addition to this dissimilarity between the pattern of Egyptian agricultural and manufactured exports and N. Africa’s economic relationship to Rome, recent archaeological research is demonstrating another considerable difference: early Byzantine Egypt was a massive market for a cosmopolitan range of East Mediterranean staple foodstuffs and other products. Wines from Gaza and Ashkelon in Palestine seem to have almost monopolised those imported in amphorae through the port of Alexandria, where they comprised 76% of all deposits in Sector G, Building 12. LR1 were also extremely popular throughout Egypt (representing 14% of amphorae in some deposits at Alexandria), and were even imitated on a limited scale at pottery workshops located in the monastery of St. Jeramia at Saqqara and at Margham in the Mareotis region.28 An estimated 80% of LR1 amphorae from Alexandria, Middle Egypt and the Fayum are of Cypriot origin and 15% derive from Cilicia.29 Manufactured commodities, represented in the archaeological record by Phocaean, Cypriot and African red slip wares, are also common within the province.30 Bearing in mind that
exported wheat seems to have been shipped from Egypt apparently exclusively as tax procured for the *annona civica*, on the basis of currently available archaeological evidence the foreign produce which arrived on the docks of Alexandria in Late Antiquity must be defined largely as one-way traffic. This picture of imbalanced trade could not be more different to the documented situation in N. Africa, which exported great quantities of ARS as commodities, but seems to have imported few Mediterranean goods in return.

The theory of supply and demand make this pattern difficult to explain, and it seems probable that a crucial link is presently missing from our understanding of Egypt’s exchange equation. What was the source of the purchasing power underlying these transactions? Egypt had always been poor in olive oil resources, and a logical explanation for at least a significant part of the amphorae imported into the province in Late Antiquity may well have been economic dependency on non-local olive oil for daily sustenance (and this may partly explain the prevalence of Cypriot LR1 vessels amongst amphora imports).\(^{31}\) One suspects that in the cities the large-scale specialised manufacture of cloth, ivory carving, and perhaps papyrus processing, created broad-based purchasing potential.\(^{32}\) Evidence from *papyri* also suggests that the economy of the rural sector was partly monetised and that workers on estates and villages were paid in coin;\(^{33}\) the extent of the spending potential can hardly have been especially great, but probably enabled rural workers to splash out on the occasional ‘exotic’ import. The daily economics which underlay commercial forces in late antique Egypt are complex and deserve detailed future analysis. Recent studies of *papyri*, coin hoards, and the increased interest in archaeological sites of late antique date, promise to make Egypt one of the most important provinces in coming years for studying inter-regional exchange in the East Mediterranean.

While Egypt is widely perceived to be the bread basket of Constantinople, it is often assumed that the capital imported most of its oil from Syria.\(^{34}\) However, Empereur and Picon’s survey of LR1 amphora workshops in Cilicia, Cyprus and Rhodes has not only become a watershed in the realisation that in some instances equating a single amphora type to a single region and agricultural product is simplistic and incorrect, but it has also created awareness that oil production was common within a far broader expanse of the north-east Mediterranean. The likelihood that a significant proportion of LR1 amphorae – once considered a specific Syrian oil amphora – also contained wine (see Decker, Chapter 4) complicates and weakens our understanding of Syria’s relationship with Constantinople further. The combination of the above evidence indicates that although scholars working in the East Mediterranean can benefit from theoretical models formulated, tried and tested in the West, in many ways they simply serve to accentuate the different exchange structures existing at different ends of the Mediterranean basin.

*The Army and* *annona militaris*

The behemoth of the Roman army struggles to emerge from its lair of the past. Despite the vast literature on the subject, we have comparatively little reliable information
about its size and disposition, key elements if we are to understand its economic impact in Late Antiquity. In war and in peace the army was a fixture in the eastern provinces, a boon and burden, which Lydus (De Mens. I.27) numbered at 389,704. Based on these figures, the proposed estimate of 301,300 for the army of A.D. 518, increasing to 379,300 by A.D. 565, seems perfectly reasonable. Such figures are obviously vital should one wish to grasp any notion of State military expenditure and the subsequent burden on provincial production. Equally vital is the disposition of the army throughout the Empire. The eastern armies, between the reigns of Constantine and Justinian, were divided into mobile (comitatenses) and frontier soldiers (limitanei), and their distribution varied across time. Based in forts and fortress cities from the upper Euphrates to the Red Sea, the army formed a tourniquet against the aggression of Sasanid Persia, one which often proved incapable of staunching enemy incursions. Sasanian armies wreaked havoc from 540–544 and between 572 and 591 despite the impressive array of installations built to contain them noted in detail in the Notitia Dignitatum and confirmed on the ground by archaeologists. The tendency for the field army to be billeted in cities, especially during campaign preparations in order to ease access to supplies, often backfired with serious political and economic consequences, as during Julian’s preparations for war at Antioch in A.D. 363, and at Edessa during 505–506.

In order to maintain their forces, the late Roman State formalised army coemption of resources by legalising and regulating the annona militaris. This military tax was a major component of the ‘state economy’, in which the central government oversaw the collection, transportation and distribution of essential rations and manufactured products, a subject that has framed discussion of the ancient economy for decades. The negative impact of the annona militaris, which remained a fixed institution until the Arab conquest, should neither be exaggerated nor belittled. A number of factors complicate efforts to fully understand the methods and implications of provisioning soldiers. Both the value of the individual annona militaris and the total salary soldiers received are disputed. Further, it is clear that from the late fourth century onward the soldier’s annona was paid increasingly in coin, until cash allowances became predominant under Anastasius. Additional complications arise when one considers that the limitanei exploited land in the vicinity of their postings, and were the victims of imperial economies that undermined their position (until such soldiers probably ceased to exist by Heraclius’ reign). By the mid-sixth century, many of these units may well have been replaced by foederati, the allied forces of client rulers: this feature is especially clear in the case of the Ghassanid phylarchs located along the eastern frontier, from Bostra to Resafa. The Ghassanids themselves drew the annona, probably primarily in cash. Such shifts across time make the overall number, posture, and impact of the military on the eastern provinces extremely difficult to gauge.

From the reign of Constantine the eastern provinces were increasingly the domain of limitanei, who, under normal circumstances, provided at least a portion of their food from their own land and resources. Military territory assigned to soldiers for their own upkeep is known from the time of Septimius Severus. Agricultural activity around eastern forts has left its impression in the Syrian steppe, around sites such as Acadma (Qdeym) and ‘Amsareddi, where Roman and Byzantine forts are surrounded by qanat-
fed irrigation systems that presumably were exploited by the garrison to supply themselves and their mounts. It is also possible that at least a portion of the produce from imperial domains was used to feed the army in the East. Nevertheless, the burdensome task of supplying the soldiery fell primarily on the shoulders of the general populace.

Throughout the East, as evidence from Egypt demonstrates, the actual soldiers collected the *annona* from civilian lands near their postings. Abuse was common, and the task of transporting the *annona* could be ruinous, as was the case for Antiochenes forced to haul grain from their home city to the Euphrates during Constantius’ Persian War. This example of long-distance military exchange is one of several that probably reflect extraordinary wartime circumstances, probably undertaken no more than once or twice in a well-off councillor’s lifetime. For a small-scale cultivator, army requisition of his draught animal for military transport often resulted in a permanent loss and would have been disastrous. In theory, the military were expected to contribute most of the resources necessary to transport the *annona* collected in kind or, as was increasingly the case from the early fifth century on, were expected to accept cash payments with which to purchase their own supplies. This practice never completely ended payment in foodstuffs, and historical texts describe Anastasius supplying his field army with *annona militaris* drawn in kind. Irrespective of the nature of the collection, farmers continued to suffer from the army’s demands. The degree of this suffering, however, may not be as great as some would propose. A comparison with the burden of the *annona civica* is instructive. Justinianic Egypt was bound to give up 8 million *artabas* of grain, or 8–12% of its total yield, which in cash amounted to about 800,000 *solidi*. Assuming an army presence of 15,000 troops in Egypt, the total army tax burden on the populace would amount to 135,500 *solidi* or, if converted into grain, 1.35 million *artabas*, the equivalent of 2% of all Egyptian production. Despite the obvious shortcomings of such a calculation, the order of magnitude allows scope for comparison. The combined *annonae* burdens do not appear oppressive, as several scholars have noted, and, of these, the military component is relatively light.

The implications for the wider economy, however, remain uncertain. Just how great was the burden of supplying the forces required to protect a vast land territory from invasion? The limited capacity of pre-industrial societies to cope with the maintenance of large standing armies is obvious, and the late Roman Empire was no exception. One recent calculation has estimated that in A.D. 518 the army numbered 301,300 (or 1.6% of the total population of 19.5 million) and cost the fisc 5.558 million *solidi*, or approximately 66% of the State’s total budget. In the post-plague world when Justinian was in his final year as emperor, the size of the army has been estimated at 379,300 (2.0% of the total population of 19.5 million), a figure which would have had a total maintenance cost of 7.987 million *solidii*, or 71% of the State’s total expenditure. In 518, at the end of Anastasius’ relatively stable and prosperous reign, which experienced several reforms, the imperial fisc possessed a massive surplus despite the fact that Anastasius had probably greatly increased the basic military pay. This had resulted in easier recruitment among native imperial populations and quelled unrest in the army, a characteristic feature of the military since the reign of Diocletian. Soldiers were, therefore, less apt to unrest and predation upon local civilians. By the end of
Justinian’s reign the army had to guard an empire whose physical size had expanded rapidly, using personnel derived from a society whose population and revenue base had been vastly depleted by plague. Although the above figures can only be considered approximate, they do highlight how the sweeping changes which accompanied political developments in the eastern Mediterranean in Late Antiquity could deeply affect military supply and demand.

While the negative impact of the army on the land is undeniable, there were certain positive features, which require comment (even if in the final analysis they do not tip the scales to a favourable overall balance). Even such an onus as the payment of the *annona* had a potentially beneficial side. In peacetime, the military was expected to shoulder at least part of the burden of transporting supplies using the imperial post (the *cursus publicus*). For landowners living in the interior of the Empire, the maintenance of this system was clearly advantageous: the army’s presence stimulated surplus production and the government bought excess produce for which no other market existed locally. While the State generally forced low prices on cultivators’ goods, this was not always the case: thus, at least some commodities of the Justinianic *aederatio* were procured at near market prices at Oxyrynchus. Furthermore, it is likely that some products which were acceptable as tax would have been difficult to market commercially; soured wine, for example, was rationed to Roman soldiers and, although acceptable as *annona* payments, would have been otherwise difficult to dispose of. Following the conversion of the *annona* primarily to cash payments, Byzantine quartermasters spent their money locally, often procuring supplies at the source of production in exchange for coin, and undertaking the burdensome task of transport. The importance of the State’s maintenance of the *cursus publicus* to the humble landowner and farmer is well illustrated by the impact of its cessation under Justinian: a valuable distribution outlet disappeared, causing landowners to lose a major artery upon which they had previously relied to earn money to pay their taxes.

As in the Danubian provinces (Karagiorgou’s proposed supply of eastern imports via military networks has significant implications for settlement patterns and economic exchange; see Chapter 7), the procurement of the *annona* with coin, as must largely have been the reality in the East Mediterranean at least from Anastasius onward, may partly elucidate how ‘fortress cities’ such as Resafa and Zenobia on the Euphrates could exist without developed agricultural hinterlands. The parallels from the early Roman Empire, when towns sprung up around legionary encampments, are too well known to warrant discussion. Nor has the fact escaped scholars that the permanent deployment of soldiers in the East acted as a stimulus for settlement in the desert fringes, especially following the reorganisation of the limotrophe from the Red Sea to the Euphrates under Diocletian. Centres such as Medinat el-Far and Zebed developed in such a climate (following Palmyra’s decline), when *limitanei* manned the impressive chain of posts and *mansios* on the fortified *Strata Diocletiana*, the military road built to quickly move troops along the frontier and which stretched from Bostra to the Euphrates. Many of the new communities in this zone lacked city status, although ‘villages’ like Zebed and Medinet el-Far were actually clearly larger than some late antique cities. In this period of demographic growth and cultural and military reorientation, which saw the Church ubiquitous even in the desert margins and the
army entrench itself in the Syrian steppe once patrolled by Palmryene cavalry, the unprecedented urbanisation of central Syria hardly seems accidental. Way stations on the Strata Diocletiana policed the highway and provided security, and their garrisons attracted merchants and eventually a permanent population, as had their early imperial predecessors elsewhere. Here the relationship between secure infrastructure and economic activity may be surmised and contextualised in space and time. Traffic on the military road resounded not only to the cadence of troops marching to battle; it also echoed to the monk’s tramping feet and the camel caravan’s complaint. Merchants found a ready market for their wares among the soldiers and new communities of the eastern steppe, and peddled wine to Arab tribesmen who sang of it in their poetry. With the subject of overland trade we move into one of the least understood and shadowy realms of the late antique economy: recently scholars have reminded us that although eastern caravan traffic is often taken for granted, we know virtually nothing about it. Despite the debate surrounding this trade, including the question of whether it existed at all, no excavation has been conducted with the economy as a primary focus along the entire length of the eastern frontier, a depressing admission and one which shows how much we have yet to learn.

In its potential to illuminate major issues of the late antique economy, the desert fringe is similar to the undersea shipwreck, which contains essential economic information that links producer and consumer: excavation of way stations and frontier settlements could reveal articles of trade and provide a rudimentary impression of scales of exchange. Unfortunately, the rapid pace of development in the Middle East is today quickly threatening both this and a host of precious and irreplaceable other evidence. Presently, we can do little more than remind ourselves that the lucrative caravan trade that built Palmyra did not vanish with the city’s collapse, but was continued by other middlemen, including Nestorian Christians (as Mundell Mango reiterates in Chapter 5).

**Ecclesiastical Production and Exchange**

The role of the Church in the late antique economy has long been over-simplified. Though often divided and beset with internal and, more rarely, external hostilities, the Christian establishment was ascendant throughout Late Antiquity. It rose from humble beginnings to become a popular religion on an historically unprecedented scale. As Christianity covered the Empire in a veneer of piety of its own branding and entrenched itself, sometimes literally, above the vestiges of a flagging paganism, the clergy inherited the spiritual and physical wealth of the heathen past. These included offerings and gifts from private individuals, ranging from the most humble cultivator to the emperor himself. At least from the time of Constantine onwards, the Christian church was a landowner on a vast scale. The penetration of monastic communities into the desert fringes of the Empire, and their agricultural development and effect on settlement, is perhaps best illustrated by Euthymius’ activities in the Judaean Desert. Far from an inert entity, which simply drained and stored wealth from the Empire, the ecclesiastical establishment should be seen as a motivator of trade and industry. At one
end of the spectrum we find monks of Palestine weaving baskets for their livelihood, and at the other lies the great ecclesiastical centres of the patriarchates, of which there is no better example than that of the Church of Alexandria, especially during the tenure of John the Almsgiver. If his *vita* is to believed, John accumulated gold amounting to 720,000 *solidi* during his patriarchate, or nearly the total value of Egypt’s entire annual *annona civica*. Mundell Mango’s paper (Chapter 5) illustrates the far-flung trading interests and activities of the clergy at this time, by focusing on the long-distance exchange enterprises that caused products to travel from Egypt to as far as Britain on one hand, and, through the agencies of Nestorian Christians, to China on the other.

As widely travelled as these articles of ecclesiastical trade were the pilgrims who came to visit the Holy Land, who often returned home with physical reminders of the splendid products of the *terra sancta*. Many travellers remained in the Holy Land. Personal piety, no doubt fortified by the turbulent conditions prevailing in the West throughout the fifth century, led those who could afford it to emigrate. The most famous case of such relocation is Melania: after selling her family estate she wandered throughout the western Empire, and finally settled in the Holy City as her grandmother had previously. There she expended large sums on Christian establishments. Although its overall effect is still contested, the notion that Palestine benefitted financially from pilgrimage is beyond dispute. As Kingsley suggests, for example (Chapter 3), such movement of people provided unprecedented positive marketing for Palestine’s ‘holy’ wines. While the impact of the pilgrim trade on the macro-economy of Syria-Palestine is still debated, we can comfortably admit one firm fact: ecclesiastical building was big business. Between the fourth and seventh centuries, houses of worship were erected by the thousand in the Levant. From the provincial churches, like that at Ravenna, which cost 26,000 *solidi*, to Hagia Sophia, which cost Justinian and the Byzantine State approximately 1.73 million *solidi*, labourers from Greece to Egypt benefited by what can only be described as a building boom, in which private acts of piety eclipsed the old euergetism of public building. Theodoret of Cyrrhus describes how such public duties now lay within the bishop’s orbit, and provided a list of the structures he built around his town, including bridges, a bathhouse and porticoes.

The economic activities of the new religion were not restricted to the obvious tourism trade and building, but also involved estate ownership and large-scale agricultural production. John of Ephesus described a monastery, located in a village near the Armenian frontier, which planted 20,000 vines a year for three years in the sixth century; after five to six years of diligent cultivation, insufficient jars could be found to contain the wine that the crops yielded. At Samos, excavation has revealed an ecclesiastical establishment producing wine and olive oil on a large scale, and the cargo on the Yassi Ada shipwreck has been linked to production on church estates. Just such a Byzantine period ecclesiastical building has been excavated at Shelomi in N. Israel, and shows that the church’s economic interests extended far beyond the monasteries scattered throughout the Judaean Desert. The latter, many equipped with presses and other agricultural installations, served not only the needs of the immediate community, but sold produce as well. Elsewhere in Palestine, wine presses attached to monasteries were built with mass production in mind: the vat at
Caparbaricha in the Jerusalem region, for example, held more than 6,800 litres. The ‘army of monks’ that guarded the reaches of the central Syrian steppe were not merely wild men and parasites; their building activities and place in the landscape are documented by inscriptions and standing remains, such as those near Hama commemorating the building of the monastic tower. Wherever such houses existed, fields were tilled and desert lands reclaimed on a scale comparable to the great Cistercian efforts in the Medieval West. Under such circumstances, it is hardly surprising to find ecclesiastic establishments entering into relations with the semi-nomadic groups on the imperial fringe, such as those groups which set up long-term encampments around the monastery of Sabas in Palestine. Such contact would not only have been limited to cultural exchange and intellectual awakening, but would have also involved trade, and was perhaps the foundations of the symbiotic relationship between monks and Bedouin seen even today in Sinai. Further to the south, papyri offer rare insights into the land-based wealth of Egyptian churches and monasteries, which was based on cultivation, and the leasing of fields and potters’ and blacksmiths’ workshops.

Among the agents of change were holy men, such as Symeon the Holy Fool of Emesa who lived outside the limits of the ‘secular’ church. In addition to increasing their influence upon all levels of society throughout Late Antiquity, in life and death these saints founded cult sites and pilgrimage shrines that drew visitors from around the Empire. Most famous of these was the monastery of St. Simeon Stylites in North Syria, the impressive remains of which today testify to the establishment’s wealth and influence. Such foundations were sometimes church initiatives, sometimes the initiative of individual monks, and often due to the effort of private individuals. At the other end of the Empire, the Appions of Egypt built a monastery and provided it with a generous annual grain allowance of 1,000 artabas; however, Appion clearly did not want all his treasure to be stored in heaven: the family retained control of the monastery, and the monks themselves are found from time to time providing various goods for the estate. What landowner with wasteland on his hands could have resisted the double turn of piety and profit offered by the foundation of religious houses on agri deserta, of just the kind we find in the limestone massif or the Syrian steppe, which are studded with monasteries?

The industry of the private individual via the church was also present in the town. The Miracles of St. Artemios depict an urban landscape in Constantinople where private religious foundations are a constant landmark and where they play a significant role in the everyday life of the city, including its economy. Such private intervention in the religious map of Late Antiquity demonstrates the complexity of the period’s economy and the entangled relationships between individual and institution that is sometimes difficult to differentiate. In some instances, at least, ecclesiastical activity was an extension of private wealth and an initiative to develop farming and trade.

Commerce, Private Entrepreneurs, and the Open Economy
The extent of social and economic mobility within the world of Late Antiquity is a
fascinating intellectual minefield, across which it is wise to tread cautiously. Traditionally, the period has been characterised as one of highly limited socio-economic fluidity for many reasons, not least because society was locked within a rigid caste system. Moreover, taxation is often depicted as higher than during the earlier Roman period, and as a debilitating influence which minimised opportunities for mobility. Although modern archaeological fieldwork has cast serious doubt on the minimalistic theory that high taxation exhausted over-cultivated marginal lands, and that diminished crop yields led to empire-wide rural depopulation in both the West and East, the impression that the farmer’s lot in life was so precarious and arduous that economic self-sufficiency prevailed at almost all levels of society is still favoured by many primitivists studying the ancient economy. If we are to accept their battle cry, then shipping was hazardous, overland transport prohibitively expensive, and coins were struck exclusively as a medium to pay military salaries and manage state fiscal affairs during Late Antiquity. The transportation of *annona civica* and *annona militaris*, which demanded regular exchange across different provinces, was politically too sensitive an issue to leave to the ‘rough play’ of market forces. According to primitivistic models, the existence of limited commercial trade, such as in Phocaean, Cypriot and African red-slip pottery wares, relied on the pre-existence of established *annona* structures and routes of communication, which were state controlled. No true commercial networks, in which merchants actively stimulated trade, flourished.

Without wishing to reignite the perennial, but unhelpful, debate about the varying quality of data available to historians and archaeologists, it is now broadly accepted that many of the texts used to discuss trade are of limited value, because they selectively refer to ‘high-level’ tied exchange associated with the State, the Church and wealthy individuals. Even where we do have access to a remarkable set of texts, which supply useful detail about rural production and patronage, and maritime transport, in the form of Libanius’ fourth century letters, Liebeschuetz has conceded that “[p]rivate business affairs were not a proper subject for a literary letter. In his correspondence Libanius the business-man is completely eclipsed by Libanius the Sophist”. The everyday rhythms of the economy amongst the ‘lower class’ strata of society are particularly obscure. Even from the 1,784 lines of text preserved in an agricultural account book excavated at Kellis in Egypt, it is difficult to reconstruct the village’s economy because written entries are unsystematic and unbalanced.

Although historians’ opinions waver, strong grounds do exist to argue that Late Antiquity witnessed substantial horizontal social mobility. Nowhere is the web of contacts between different social and religious groups so evident than within sets of archaeological material culture, the study of which has radically altered the traditional image of late antique exchange. In the place of models arguing that exchange was dominated by the movement of government-subsidised staples and goods of highly specific geographical origin, the belief that large-scale commerce in a very wide range of commodities played an integral role in the complex pattern of the economy is receiving ever-increasing recognition. Without resorting to excavation, for example, Kellis’ isolated geographical location in the Daklah Oasis, 300 km away from the Nile (an overland journey of one week), gives the superficial impression that the village must have been entrenched in a self-sufficient economy. The imported African red-slip
wares, Nile valley amphorae, and Alexandrine glass recorded on the site present a very different picture.

Agricultural produce and other commodities flowed between different regions for various reasons in Late Antiquity. Although the State imported large quantities of wheat (and probably olive oil, and arguably even wine) to Constantinople as we have seen, the majority of its population would have been obliged to fend for themselves. Even if we accept a low estimate of 300,000 for the capital’s population in the fifth century, this means that 73% of its citizens purchased – or perhaps in some cases grew – their own foodstuffs. This reality is reflected in the Notitia Urbis Constantinopolitanae, where twenty-one state-owned bakeries are listed in comparison to 113–120 private establishments. In many other major towns population pressure exerted similar inordinate demands on the surrounding countryside; incapable of meeting these, bulk foodstuffs seem to have been shifted both regionally and across longer distances on a regular basis.

In addition to such economic dependence on staple foodstuffs, one gains the distinct impression that the Mediterranean market was also saturated with a broad array of differently spiced and classed oils, wines, sauces and honey, which were sold as semi-luxury produce for their ‘exotic’ value. The Vandal conquest of N. Africa was accompanied by a significant surge in the volume of imported Eastern foodstuffs reaching Carthage, which cannot be interpreted as tied trade, and Ward-Perkins has emphasised that the continuous flow of Eastern amphorae into the West, following the divide of the Roman Empire, can only logically be explained as the result of commercial transactions. It is extremely improbable that these Eastern amphorae, which reached the West in large quantities during Late Antiquity, were imported to top up daily staple food rations (even following harvest failure), because such long-distance trade must surely have been incredibly inefficient logistically and economically. To these two cases, we may also now add the flow of Eastern imports into Egypt. Much of this trade appears to have been consumer-oriented and developed to meet a market for non-local semi-luxuries.

The freedom and prevalence of the private entrepreneur in satisfying the demand for various commodities has also been identified in the transformation of ship construction in Late Antiquity. The reduction in the number of mortise-and-tenon joints used to build ‘shell-first’ merchant vessels, a greater reliance on iron nails to secure strakes to frames, the end of investing in lead to sheath and protect hulls (and its replacement with the cheaper medium of pitch), and the overall shift toward frame-first ships, are characteristic features of excavated ships of fourth to mid-seventh century date. These technological changes in ship construction are thought to be related to the status of ship-owners, who were “often independent businessmen with limited assets operating under what amounted to a free enterprise system...These owners needed floating cargo containers that required even less labor and more efficient use of materials than in the past.”
Economy, Long-Distance Exchange and the Future

Despite the centrality of the above forms of exchange in moulding the late antique economy, it must be emphasised that our understanding of the macro-economic complexity of the East Mediterranean is at an early stage. The papers presented in this volume should be viewed as an attempt to synthesise some available strands of evidence in order to encourage more detailed and more critical dialogue about various aspects of these exchange systems. Apart from the future discovery of inscriptions, and the much needed sieving of the period’s historical documentation, four forms of archaeological evidence stand out as the most promising for improving our knowledge of the subject under discussion. In no particular order these are landscape archaeology, urban archaeology, shipwreck archaeology, and pottery analysis.

Using carefully formulated research strategies, the study of landscapes in different provinces promises to provide a far clearer understanding of the specialised forms and scales of agricultural and industrial activities pursued across the eastern Empire. As long as these include comprehensive pottery recovery and off-site reconnaissance, it ought to be possible to relate rural installations to specific settlement types with greater precision than at present. Analysis of material culture should also clarify the extent to which certain regions were linked to broader exchange systems or confined within a self-sufficient economy. Much of the future success of landscape archaeology will depend on the intensity of the project (preferably including repeat surveys under different visibility conditions) and the incorporation of pottery quantification.

Urban archaeology has a long tradition in the West, which incorporates the analysis of town economies. This area of research is comparatively undeveloped in the East, and although numerous cities have been extensively excavated during the last one hundred years, the urban economy remains virtually a non-subject. Although amphorae assemblages have been quantified in various towns (many of which are discussed in the following papers), enabling issues about regional self-sufficiency and dependence on inter-regional trade to be discussed, few deliberate attempts have been initiated to identify and discuss urban-based specialised industrial production and retail activity. The on-going debate about the economic character of cities in the West has not been reenacted at the other end of the Mediterranean basin. The seventh century shops at Sardis are an outstanding exception (whose importance is clearly enhanced by their excellent level of preservation). However, the extent to which cities were nuclei of retail trade and commerce is an extremely rewarding subject. Inscriptions from Korykos in Cilicia, papyri from Egypt, and archaeological remains, such as the sixth century dye-works at Jerash, suggest that towns across the Eastern empire witnessed intense commercial activity in both retail and production, the character of which could probably be assessed in useful detail by simply re-analysing many old excavation reports (in the manner adopted by Wilson in this volume; see Chapter 2).

Another area of research, which offers the potential for great scientific strides in the future, is shipwreck archaeology. Despite the exciting data which the study of such ‘fine-grained assemblages’ promises – including insights into cargo character and volume, amphora content, exchange structures, and merchants’ status and origin (identifiable through examining ships’ domestic assemblages) – the potential of shipwreck archaeology is far from realised. This is partly because the sub-discipline is
site-focused, rather than period specific. Why have no projects attempted to compare the composition of second and third century cargoes with those on fourth century merchant vessels? Why have different sixth century ships not been examined to appraise the impact of the Justinianic plague on long-distance trade? The answer is mainly related to the current tendency for most marine archaeologists to favour data collection over problem-solving, which has meant that analyses of well-preserved sites have taken precedence over the study of wrecks of specific date (irrespective of levels of preservation). More strategic sampling and recording, including survey and limited key-hole excavation, offers the potential for greater progress in the future. For the moment, underwater research in the Sea of Marmara and Israel, in particular, continues to provide access to new data about late antique trade. Serious problems remain, however: available results suggest that almost all excavated and surveyed sites are merchant vessels which were involved in commerce; the absence of luxury cargoes and annona ships in the archaeological record in the eastern Mediterranean, not to mention late antique warships, is a sobering indication of the small size, and unrepresentative character, of the available sample.

The final area of research, pottery analysis, is arguably the most influential of all four tools outlined in this paper for examining exchange. Plotting the distribution of specific dated amphorae and fine wares of known provenance on certain types of site continues to clarify trade circulation and penetration, and to reveal aspects of exchange structures. The constant up-dating of such maps leaves little doubt that we are still a long way from obtaining reliable read-outs for the whole empire. This is especially true for inland rural settlements; the recent publication of distribution maps of PRS in Italy (found on both coastal and inland sites) must reflect the wider penetration of other commodities, and we suspect that it is only a matter of time before the question of amphora import into the countryside will demand detailed reconsideration.105

The interpretative capability resulting from pottery quantification continues to offer the greatest potential for new results in the field of long-distance exchange. Many sites have now been subjected to this methodology, but the East still continues to lag far behind the West in terms of the variety and number of deposits examined. For example, other than at Caesarea in Israel, no other major urban or rural site has been examined in the East where changes in the relative quantities and types of amphorae and fine wares present over different centuries have been documented. In the case of Caesarea, the deposits which are available for analysis have not been published in as comprehensive a manner as the chronologically diverse data published from Carthage, Benghazi, Rome, Naples, Marseille, and Spain. Thus, although it is currently possible to generalise about levels of local versus imported wares consumed in cities, short-term change is mainly undetectable. Equally evident is that many areas remain very poorly represented, especially Turkey, Cyprus, Syria, and Egypt. Perhaps the greatest development one might hope for in coming decades is the application of quantitative procedures on pottery assemblages from rural sites (villages, farms, estates), which would radically transform our current ignorance about the economic interplay between town and country in the late antique East Mediterranean. To date, Sumaqa in the Carmel of Israel is the only village which has been subjected to this process (as far as we are aware).108
In view of the concern that ‘cliometrics’ (quantitative history derived from the ancient written record) is an unsuitable tool for examining ancient economies, because ancient societies were statistically innocent and data are never presented as part of a systematic series in texts (and, therefore, cannot be easily verified),\textsuperscript{109} pottery quantification is even more crucial for discussing orders of magnitude in antiquity. Nevertheless, present analysis is still accompanied by a great deal of subjectivity and variations in standards, which requires detailed consideration: quantification based on estimated vessel-equivalents (eve) seem to be the most accurate technique for obtaining results, but no single procedure will yield equally valid statistics from all types of deposit. Although breakage rates and sherd density amongst fine-wares will generally enable analysis by either eve, sherd count or weight to produce similar results, the quantification of amphora assemblages is more complicated and needs to take composition into greater account:\textsuperscript{110} if examined by weight, for example, deposits with a high LR3 presence would cause this thin-walled amphora to be seriously under-represented; analysis by count will also tend to over-represent amphorae of greater volume and hence size. Finally, the question of how many sherds constitute the smallest acceptable sample still requires attention.

Despite the encouraging volume of excavation and survey reports being published, it would be suitable to conclude with a word of caution. As reports appear in ever-greater numbers, from types of site previously poorly known and from regions formerly terra incognita, the complexity of the late antique economy becomes increasingly apparent. Given the inevitable limitations of much excavation and interpretation, and the impossibility of obtaining precise statistics about economic activity in Late Antiquity, the impressionistic nature of much of the information available needs to be acknowledged. Only after much future fieldwork, geared toward assessing specific thematic problems, can tentative conclusions be accepted as valid historical patterns. When confronted with the variety of data from various late antique sources in the East Mediterranean, and by the sheer scale of work required to resolve key issues, at present any conclusion must be tempered with Socratic caution: wisdom is the realisation of our current ignorance.

Notes

1  This paper has benefitted significantly from comments offered by Bryan Ward-Perkins, whom we thank profusely. All errors are our own.
3  Renán, 1864: 96, 251, plate XXXVI; Butler, 1907–1919.
4  Crowfoot and Fitzgerald, 1927: pl. XIV.31 depicts three LR5 and an LR1 amphora with a dipinto on the shoulder.
5  Kirwan, 1938: 386.
6  Although numerous surveys of regional landscapes have been conducted in the East, most have been site-focused and have not attempted to relate results to broader Mediterranean-wide economic structures. By contrast, integration is well developed in the West, where a comprehensive body of work has examined the supply of annona civica from N. Africa to Rome using historical and archaeological evidence: Tengstrom, 1974; Casson, 1980; Rickman, 1980; Foxhall and Forbes, 1982; Fulford, 1980; 1983; Mattingly, 1988a; 1988b. Sirks’ analysis of Roman and late Roman texts (1991a;
199b) offers an excellent foundation for subsequent discussion. In the West, studies of economic self-sufficiency and dependency (based on the quantification of amphora and fine-ware assemblages) have also been developed using fieldwork conducted. For an overview of models on economic self-sufficiency and dependency on imports, see: Fulford, 1987; Tomber, 1993; Reynolds, 1995; for Spain, see Keay, 1984 and Gutiérrez Lloret, 1998. The western urban economy is also a key area of interest: Parkins, 1997; 1998; Whittaker, 1990; 1993.

Although soil flotation was conducted by Dauphin (1993: 47) during her excavation of an ecclesiastical farm at Shelomi in north Israel, comparable work is rare in this country. But for elsewhere in Israel, see: Weinstein-Evron and Chaim, 1999 and Lernau, 1999 for palynological analysis and studies of fish bones from the village of Sumaqa in the Carmel; Fradkin, 1997 for fish imports at Sepphoris; Lernau, 1995 for fish remains at the fortress of Upper Zohar in the Negev desert. Gibson’s study of landscape archaeology in Israel (1995: 211) concluded that most current survey methods, based on field survey, regional survey and site-catchment analysis, are all fundamentally flawed, because they focus on sites and ignore the relationship between landscape use and associated settlements. More in-depth geomorphological studies have been conducted in southeastern Anatolia: Wilkinson, 1990.

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8 Syria: for oil production, see Callot, 1984. Egypt: for wine production, see M. Rodziewicz, 1998a. Recent work in the Wadi Feinan in Jordan has focussed on agriculture and mining activities that include the Roman and Byzantine periods: see Barker, et al. 1999. For viticulture around Pella, see Watson, 1996. In Israel, important details about regional economic specialisation can be extracted from the twenty-four surveys published by the Archaeological Survey of Israel. More comprehensive analyses of specific regions are also available – Golan: Urman, 1985, and Ben David, 1998 for olive oil; Samaria: Dar, 1986; Lod: Schwartz, 1991. These studies are largely site-oriented and did not incorporate systematic sherdings. Surveys which did examine plough zones and field systems have been conducted at Sataf, in the Golan, and at Dor (Gibson et al., 1991; Dauphin and Gibson, 1992–1993; Gibson et al., 1999). The scant archaeological material available regarding ancient mining activities in the Roman and Byzantine periods is tantalising, as noted in Chrysos, 1993. Mining activity in Byzantium remains an unknown quantity.


11 The size of the city’s population may subsequently have declined by as much as one-half following the Justinianic plague: Mango, 1990: 51.

12 Unlike Rome, the *annona civica* was not specifically a dole for the poor in Constantinople. In addition to the *plebs frumentaria*, imperial officials, the military, and official dignitaries received free distributions. The State also used the lure of hand-outs to encourage settlers to build houses in the capital of the Eastern Empire during its early phase of urban development: Sirks, 1991a: 166, 198, 355. Durliat (1990: 269) has estimated that more than 80,000 of Constantinople’s 600,000 population benefited from the *annona civica* in the sixth century.

13 Based on Rickman’s suggestion that the wheat *annona* consisted of 5 *modii* of grain in Rome, and assuming that 1 *modius* was the equivalent of 6.5 kg: Rickman, 1980: 261, 263. For the Yassi Ada A dimensions, see Parker, 1992: 454–55.

14 Notably, Keay, 1984: 147 has argued that the State monopolised exchange in imported olive oil in the West: "the presence of African oil amphorae in the *conventus Tarraconensis* represents a successful attempt by the State to profit from its surplus oil, by selling it at a profit at provincial level".

15 Pharr, 1952.


17 Carignani and Facetti, 1989: 8, 9, 11. By A.D. 440–480, Eastern amphora occur in equal quantities to N. African containers (each about 30%). This is undoubtedly a reflection of the breakdown in *annona* supplies, which must have occurred following the loss of Africa to the Vandals in 442.

In the well in Rue de la Cathédrale, which probably went out of use in the sixth century, N. African wares account for 56% of all amphorae: Moliner and Pounrot, 1998: 275, 272. N. African containers represented 68% of all amphorae in the well at Cap Titol, which ceased to function sometime between the first half of the fifth and the sixth century: Boiron et al., 1998. However, Eastern imports are more numerous in many assemblages post-dating the mid-fifth century. Thus, within the well at Bon-Jésus in Marseille, abandoned in the second half of the fifth century, Eastern amphorae comprised 47% of all amphorae and N. African wares 29.5%: Reynaud et al., 1998. As in Rome, this change in consumption patterns is probably related to the loss of the N. African provinces and of control over olive oil exports. This created a void, which eastern produce was able to partly exploit.

At least in the first three centuries A.D., oil production seems to have been controlled by an urban based aristocracy, whose abbreviated names are stamped on batches of Tripolitanian and Tunisian amphorae: Mattingly, 1988b: 37, 38, 47.

For example, the Dramont E ship wrecked off S. France between A.D. 425 and 455 contained 700–750 Keay Type 25 and 35 amphorae: Santamaria, 1995: 121, 175, 191. The Isis ship was transporting Keay Type 3/5, 25, 31, 35 Tunisian amphorae between Carthage and Italy when she foundered between 375 and 400 on an offshore shipping lane mid-way between Tunisia and Sicily: Freed, 1994: 22–32; McCann, 1994: 51–52.

For estate production south of Carthage, Mackensen, 1998. The fifty ARS plates (Hayes forms 50B, 61B, 64, 65) are the minimum number on the site; it is unknown how many others had already been looted: Santamaria, 1995: 79. La Luque B: Liou, 1973.

Sirks, 1991a: 166. Sirks argues that after A.D. 534 the eastern capital was also provisioned with N. African grain and probably olive oil. Certainly, A.D. 610 Heraclius seized a fleet at Carthage about to transport the corn *annona* to Constantinople and used the supplies to support his rebellion against Phocas.


For summaries of LR7 on all western sites, see Reynolds, 1995: the occasional example is registered at sites such as S. Antonino di Petri and Marseille. Sarachane: Hayes, 1992: 67; the Israeli evidence is summarised and discussed in Kingsley, 1999a: 169, tables 14–16.

For example, ERS is not registered at Hama in Syria: Lund, 1995; only a handful of Egyptian fine-wares were recorded at Sarachane: Hayes, 1992: 7; three fragments are catalogued at Anemurium: Williams, 1989: 27, 57. ERS is known from thirteen sites in Israel, but the highest published quantity within a fine-ware assemblage are the four fragments from the Late Byzantine Building at Caesarea: Kingsley, 1999a: 17, 169, tables 14–15.

ERS bowls seem to be predominant at Tiberias in Palestine during the first half of the eighth century: Stacey, 1988–89: 21–22, 26–27. At Ostrakine in Sinai, whereas Cypriot imports accounted for 75% of fine-wares during the second half of the sixth or early seventh century, by c. 650–685 these had been replaced by ERS wares, which represented 82% of all fine-wares: Oked, 1996: 171.

The assemblages examined in dumps in Sector 12, Building G at Alexandria are the only quantified pottery assemblages so far published from Egypt (Majcherek, 1992: 114–15). Majcherek has observed that Nile valley amphorae comprised only 7–13% of amphora assemblages at this location and that the city’s great dependence on imports seems to have been to the detriment of Egypt’s own agricultural hinterland. LR1 reached the Red Sea port of Berenike in the late fourth and fifth centuries: Hayes, 1996: 159. Forty-nine LR1 amphorae were excavated at Hermopolis Magna: Bailey, 1998: 122; at least another twenty-six were recorded in the southern church at El-Ashmunein, as well as twenty-six N. African *spatheia*: Bailey, 1996: 86. LR1 (alongside the Palestinian LR4) was also the most common imported amphora registered during rescue excavations in North Sinai: Ballet, 1997: 148. The production of LR1 imitations in Nile silt clay, covered with a red slip, at the monastery of St. Jeramia at Saqqara post-dates the sixth century and was apparently only used by the local monastic community: Ghaly, 1992: p.167–69. Production of LR1 imitation in Mareotis is described by M. Rodziewicz, 1998b: 248, fig. 3.1.


Cypriot bowls were the most common imported fine-wares in Sinai: Ballet, 1997: 148. Few fine-wares were recovered in Building 12 in Alexandria, but Cypriot table-wares were the most common imports
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(19 fragments CRS, 3 PRS, 34 ERS): Majcherek, 1992: 87, 91, 92. However, African red-slip vessels were the only imported fine-wares identified in the southern church at El-Ashmunein (187 fragments, compared to 170 examples of ERS): Bailey, 1996: 54, 55, 59.

Strabo states that the olive was only cultivated in the Arsinoite nome: 17.I.35; tr, Jones, 1982: 97.

Alston, 1998: 183–84 has used data from papyri, referring to ninety different types of urban craft, to argue that 28% of the male population of Oxyrhynchus were registered tradesmen. Bagnall, 1993: 86 has used similar sources to estimate that 15–20% of the heads of households were engaged in industrial production in Egypt’s late antique cities. Numerous dumps from ivory carving workshops have been recorded across Alexandria. This industry flourished throughout Late Antiquity and certainly into the seventh century. In addition to luxury objects (Cyril, Patriarch of Alexandria, sent an ivory chair to the Patriarch of Constantinople in A.D. 432 or 433), the city’s workshops also produced objects used more widely on a daily basis: E. Rodziewicz, 1998: 137, 142.

Banaji, 1992: 89, 97 discusses peasants, stone masons and even unskilled workmen in Egypt receiving salaries partly, or even wholly, in gold coin (and the intensification of monetary transactions in the sixth and seventh centuries) and concludes that the “general implication is of a monetary economy that permeated both town and countryside, connecting and unifying them in a lively network of exchanges and making it possible for the State to move progressively to a more thorough going monetisation of the tax system than even Anastasius had wanted or been able to achieve”.

eg. Angold, 1985: 3.


Poidebard, 1934; Mouterde and Poidebard, 1945; Parker, 1986; Kennedy and Riley, 1990.

Wright, 1968: 70–73.

The annona militaris continued to be collected and distributed from the fourth-seventh centuries in Egypt, Syria and Mesopotamia, the only regions for which we have evidence: Kaegi, 1985: 592–93.


ibid: 153.

The status of the limitanei as front-line soldiers has been questioned. Isaac, 1990: 208–210, and 1998: 125–47, argues convincingly that these troops were army regulars.

MacMullen, 1967: 11.

Mouterde and Poidebard, 1945: 106–126.

Bell, et. al., 1962: 18.


Jones, 1964: 460.

Codex Theodosianus VII.4.30; discussed by Isaac, 1990: 288.

Bowman, 1996: 239, Appendix 2 values grain at one-tenth of a solidus for the Byzantine period.

This calculation, based on Treadgold’s pay scale for Justinianic troops is rudimentary (1995: 150), and can only be used for comparative purposes. Numbers of troops stationed in Egypt are unknown and we have used Treadgold’s estimate of 176,000 frontier soldiers for the whole of the eastern empire. Assuming these troops were spread evenly over the whole of the thirteen eastern military commands, which of course they were not, one arrives at a total of 13,538, which we have increased to 15,000 for the sake of mathematical convenience; Treadgold, 1995: 60 assumes this includes 5,000 infantry and 10,000 cavalry. For the predominance of cavalry in the Late Roman Empire from the fourth century onwards, see Jones, 1964: 99–100.


Idem.

The plague killed between one-quarter and one-third of the Empire’s population: see Allen, 1979: 5–20.

Nicasie, 1998: 148 rightly points out that the late Roman army was a mixed blessing for those with whom it came into contact.

Segrè, 1943: 410.


Mouterde and Poidebard, 1945: 159–69.
Mango, 1980: 38.
Clark, 1984: 38 on Melania’s inherited wealth.
John the Lydian III, 76 (Bandy, 1983) noted that Justinian spent 288,000 solidi on the church in only one of the six years its construction took; Treadgold, 1995: 192–93.
Schaff and Wace, 1890: 275.
Brooks, 1923: 129.
Traditional studies of the late antique economy ignore the potential for tax demands to actually improve rural prosperity by compelling farmers to cultivate crops more efficiently. The evidence against severe population decline in the East, at least before the Justinianic plague, is now overwhelming. For a detailed critique of the primitivist stance in the West, see Lewit, 1991.
Hopkins, 1983: xxiv.
MacMullen, 1964. Marcone, 1998: 338, 364, 370 states that inequality was, as ever, the foundation of life in Late Antiquity, and that mobility was a relatively minor phenomenon within a state-coerced environment; however, if vertical mobility was difficult (other than through working in the Church or joining the army), horizontal social fluidity was considerable.
Harris, 1993; Paterson, 1998.
Calculated using the figure of 80,000 free distributions in the capital argued by Durliat, 1990: 232 and Sirks, 1991b: 225.
The earliest ship built frame-first known from the Mediterranean is a fifth or sixth century merchant vessel recently excavated in the harbour of Dor in Israel: Wachsmann and Kahanov, 1997: 4–6. The sixth century seems to have been a transitional period: a ship of the second half of the sixth century from the same site still relied on mortise-and-tenon technology: Kingsley, forthcoming.
Steffy, 1994: 85.
Barker, 1991: 6–7 and 1995: 2–3 discusses how landscape archaeology can reflect the complex interplay between local, regional and Mediterranean-wide factors, many of which cannot be extrapolated from historical sources.


For a brief summary of some East Mediterranean sites, see Kingsley, 1999a: 39–43.


Uscatescu and Martin, 1997: 77 for furnaces from the tinctoria.

Gibbins, 1990; Parker, 1990.

For a brief summary of some East Mediterranean sites, see Kingsley, 1999a: 39–43.

For wrecks of mid-sixth to mid-seventh century at the entrance to Dor harbour in Israel, see Kingsley and Raveh, 1994; Kingsley and Raveh, 1996; Kingsley, forthcoming; Wachsmann, 1996; Wachsmann and Kahanov, 1997. For the Sea of Marmara, see Kassab Tezgör, 1998.


For an overview of quantified deposits from Caesarea, see Blakely, 1996.

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The economy of the early Republic was largely based on smallholding and paid labor. However, foreign wars and conquests made slaves increasingly cheap and plentiful, and by the late Republic, the economy was largely dependent on slave labor for both skilled and unskilled work. By the late Republic, the economy of the late Republic and the early Empire. At Rome itself, Monte Testaccio is a tribute to the scale of this commerce. As with most Roman technology, the Roman sea going commercial ships had no significant advances over Greek ships of the previous centuries, though the lead sheeting of hulls for protection seems to have been more common. The Romans used round hulled sailing ships. What new technologies enabled the growth of inter-regional trade networks? Technologies like the compass, sextant, knowledge of winds, better cartography, larger and sturdier ships, multiple masts, and cartography all aided travelers and merchants at sea. Better plows and better agricultural understanding such as the three-field system increased food production and thus populations. The main axial roads ran from the Northwest in Germany and Britain to the Southeast and the Mediterranean Sea, where it connect to Africa below, the Silk Road to the East, and the Indian Ocean to the southeast. Smaller roads branched off in all directions. State royalty funded the establishment of these networks.