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The Production, Supply and Use of Late Roman and Early Byzantine Copper Coinage in the Eastern Empire

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INTRODUCTION

MAJOR campaigns of archaeological excavations at some of the largest and most important ancient cities around the Mediterranean have produced considerable quantities of late Roman and early Byzantine coins. These coins are a critical source of evidence for the cities' histories and their fluctuating economic fortunes, yet relatively little attention has been paid to what they can tell us about the production of coinage or the functioning of the imperial monetary economy in Late Antiquity. The vast majority of these archaeologically recovered coins, known as site finds, are low-value bronze denominations that were the small change of the Roman currency system.

This article aims to examine what archaeological assemblages of coins might tell us about the monetary economies of the cities where they are found, and to investigate if it is possible to identify whether the pool of circulating copper coinage was uniform across the empire or if different places and regions had access to different forms of currency. Ultimately, the goal is to attempt the reconstruction of small change production at the imperial mints in Late Antiquity and, by looking at coins as a means of exchange in the distribution of commodities, to examine what this tells us about the nature of the monetary economy of the late Roman and early Byzantine empire.

The focus of the study is the analysis of site finds from several excavated sites divided into two case studies: the first will examine coins from nine cities in the central and eastern Mediterranean, while the second will concentrate on five sites from the lower Danube frontier in Bulgaria and Romania. The analysis begins with the currency reforms of the 360s, and ends in the early seventh century when the supply of Roman and Byzantine coinage to large areas of imperial territory dried up after they were lost to Goth, Slav and Arab invaders.

CURRENCY IN LATE ANTIQUITY

By 350 the basic structure of Roman coinage was well established and a network of mints was striking denominations in different metals (Fig. 1). The coinage was nominally tri-metallic though by the fifth century the production of silver coins had declined to ceremonial issues. The introduction of the solidus under Constantine I (307–37), by contrast, led to a massive increase in the production of gold coins.

[1] I am most grateful to Richard Reece, Kevin Butcher, the anonymous referee and the editor of this journal for their helpful comments on a draft of this paper.

The role played by gold coin in the Late Roman and Byzantine economy remains controversial, though from the point of view of the state, which had a monopoly on minting, the purpose of coinage was primarily fiscal. It enabled the imperial government to fulfil its obligations through the redistribution of wealth from the court to the army and aristocracy, on whom the survival of the empire depended, and to ensure that the state's wealth would always return to the centre through taxation. Consequently the presence of gold coins, whether as hoards or single finds, reflects the needs of the state and its machinery rather than the existence of a market economy.[2] There is an alternative view that gold was increasingly important in everyday transactions and the question also arises as to how the situation developed over time and if the system continued to operate in the way that the authorities intended.[3] The recent volume of the *Oxford History of Medieval Europe* presents a picture of wholesale aristocratic tax evasion, forcing the state to pay the army partly in copper, by the time of Maurice (582–602).[4]

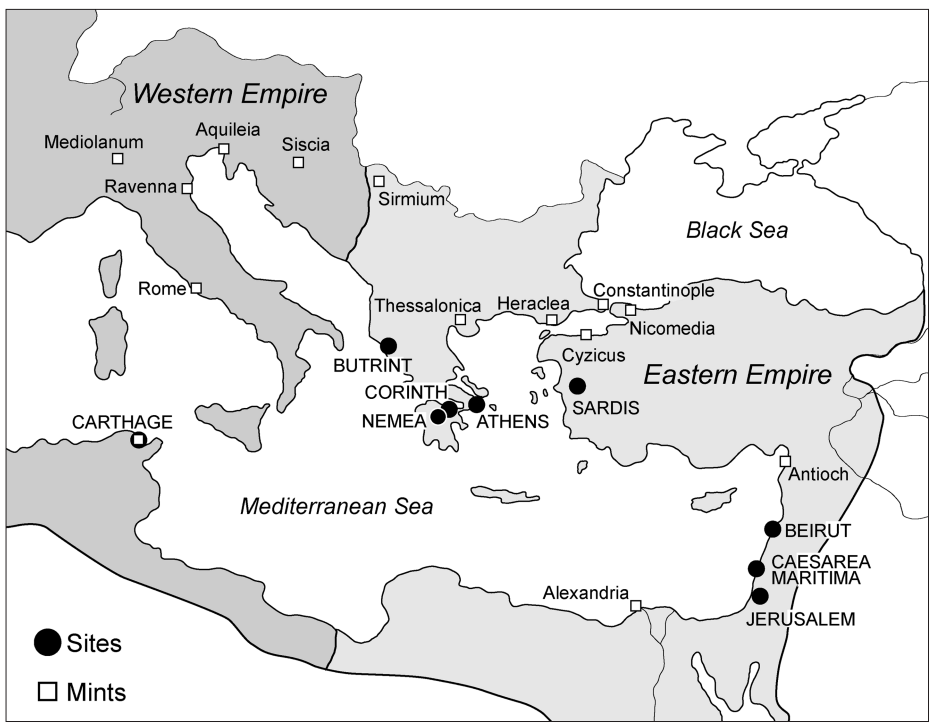

Fig. 1. Map of the central and eastern Mediterranean showing mints and nine sites examined.

The evidence from excavated sites and hoards shows that bronze and copper coinage was issued in very large quantities from the fourth century, yet these coins

[2] This is in turn a reflection of the 'modernist' versus 'primitivist' view of the ancient economy. For an up to date survey, particularly regarding its relevance to modern ideas about the Byzantine economy see the 'Introduction' by Morrisson to Morrisson 2012, pp. 1–9.

[3] Banaji 2006, especially pp. 267–73.

[4] Sarris 2011, p. 239.

are mentioned only very rarely in contemporary historical sources and we know even less about the production of low-value coinage or how people used small change. It would seem the function of bronze coinage was twofold: to facilitate commerce and to allow the population of the empire to convert high-value gold coins into a medium more suitable for the vast majority of day-to-day monetary exchanges, and back again when the time came to pay those taxes that had to be remitted in gold.

The Roman state episodically demonetised its bronze coinage between the later fourth and sixth centuries, and such monetary reforms occurred in 364, 378, 408, perhaps in 425, and again in 498 and 512. The evidence for systematic recall by the Byzantine state is patchy and in principle, therefore, bronze coinage could remain in use for many years.

After the currency reforms introduced at the beginning of the reign of Valentinian I (364–75) in 364 Roman currency included at least three bronze denominations, only one of which seems to have been widely available.[5] Over time these coins became ever smaller and throughout much of the fifth century the mints struck only one type, the nummus, a poorly struck small copper coin between 7 and 15 millimetres in diameter. These are frequently very corroded after a millennium-and-a-half in the ground and it is often difficult to assign many of these late-fourth and fifth century site finds to an emperor's reign or mint. It is rare for more than 50 per cent of excavated finds from late Roman sites to survive in a condition that allows close dating.[6]

Anastasius (491–518) introduced an entirely new arrangement of bronze denominations of different values in 498, marking the division between what we know as Roman and Byzantine monetary history. The reform was in two stages. In 498 a new follis of 40 nummi with fractions of 20 and 10 nummi was struck. In 512 the size of these was dramatically increased and a 5 nummi piece was introduced. The nummus itself continued to be issued at least until the reign of Justin I in the east though it continued for longer in the west. There was some regional variation and Thessalonica, for example, temporarily had its own system that included 16, 8, 3 and 2 nummi, while Alexandria issued 12 and 6 nummi. The smaller denominations had mostly disappeared by the seventh century and after the victory over Persia in 629 the mints in the east were closed with the exception of Constantinople and Alexandria.[7]

SITE-FINDS IN THE LATE ROMAN MEDITERRANEAN AND LOWER DANUBE REGION – DATA AND METHOD

The late Roman and early Byzantine coins from excavations in nine cities in the eastern Mediterranean and North Africa have been collected together for the first case study. The cities are Athens, Corinth and Nemea in Greece, Sardis in Asia

[5] Uncertainty over the value and the names of these coins had lead numismatists to describe them as Æ 1, Æ 2 and Æ 3 according to size. The tiny nummi of the fifth century are called Æ 4.

[6] Reece 1984.

[7] Grierson 1982, pp. 59–77.

Minor, Beirut, Caesarea Maritima and Jerusalem in the Near East, Carthage in North Africa, and Butrint on the Illyrian coast of the Adriatic (see Fig. 1).

Other lists of coins have been published from excavations in large cities in the Mediterranean, but it was not possible to include these in this analysis because the arrangement or format of their publication does not allow them to be easily summarised according to the standard numismatic Issue Periods used here.[8] There is no universally agreed system for the presentation of coin catalogues and the lists from these nine cities are all published using different, and not necessarily complementary, schemes. To some extent this reflects how numismatics developed during the twentieth century, but it is also the case that even those reports of late Roman coins published in the last twenty or thirty years use a variety of arrangements, depending presumably on the preferences of the individuals identifying and cataloguing hundreds or thousands of excavated coins. In most cases it is possible, given time, to bring these coin lists together under a single chronological sequence, but the continuing inconsistency in how site finds are published remains a frustration for those who wish to compare coins from different excavations and settlements.[9]

The second case study examines the published site finds from six fortified urban and military sites in the lower Danube region, including Nicopolis ad Istrum, Sadovec and Dichin in northern Bulgaria, Iatrus to the east of these sites, Sucidava on the north bank of the Danube in modern Romania, and Histria on the Black Sea coast also in Romania (Fig. 2).[10] Although these five settlements were first established at different times in antiquity they were all occupied throughout the fourth and fifth centuries, before being abandoned at various points during the later sixth century when the lower Danube frontier was overrun by barbarians.[11]

[8] Some numismatists choose to list and summarise assemblages by emperor, some by mint, while others consider that a chronological arrangement by reverse type is the best approach. All of these methods of publishing coins are valid, though some are certainly better than others, but the consequence is that comparing excavated assemblages is made much more time consuming and difficult when coins are published in different formats. The availability of published coin lists and the method of presenting this information determine what we are able to say about these important finds (Reece 2008, pp. 425–6).

[9] For example, the only available report for Antioch-on-the-Orontes, published in 1952, arranges the numerous fourth and fifth century coins by emperor, as was standard practice at the time, but without providing sufficient information regarding their reverse types, which, it is now known, are a more useful indicator of their dates (Waage 1952). The coins recovered during the British excavations in Carthage in the 1970s, although identified by reverse type and emperor, are only described in an abbreviated form in the excavation report where they are arranged according to the stratigraphic sequence (Reece 1984; Reece 1994). It would take a great deal of time to allocate these important coin assemblages from Antioch and Carthage in the chronological sequence of Issue Periods used here. In the case of the latter coin list, the arrangements were decided by the project director rather than the numismatist. Inexplicably, the catalogue in the 2006 publication of the coins from the American School of Oriental Research excavations in Caesarea is arranged by emperor not issue, and no summary of the assemblage is provided (Evans 2006).

[10] Although several other important catalogues of excavated coin assemblages have been published in Bulgaria and Romania, similar problems with non-publication of coin assemblages and incompatibility of the published material exist here as around the Mediterranean.

[11] Liebeschutz 2007.

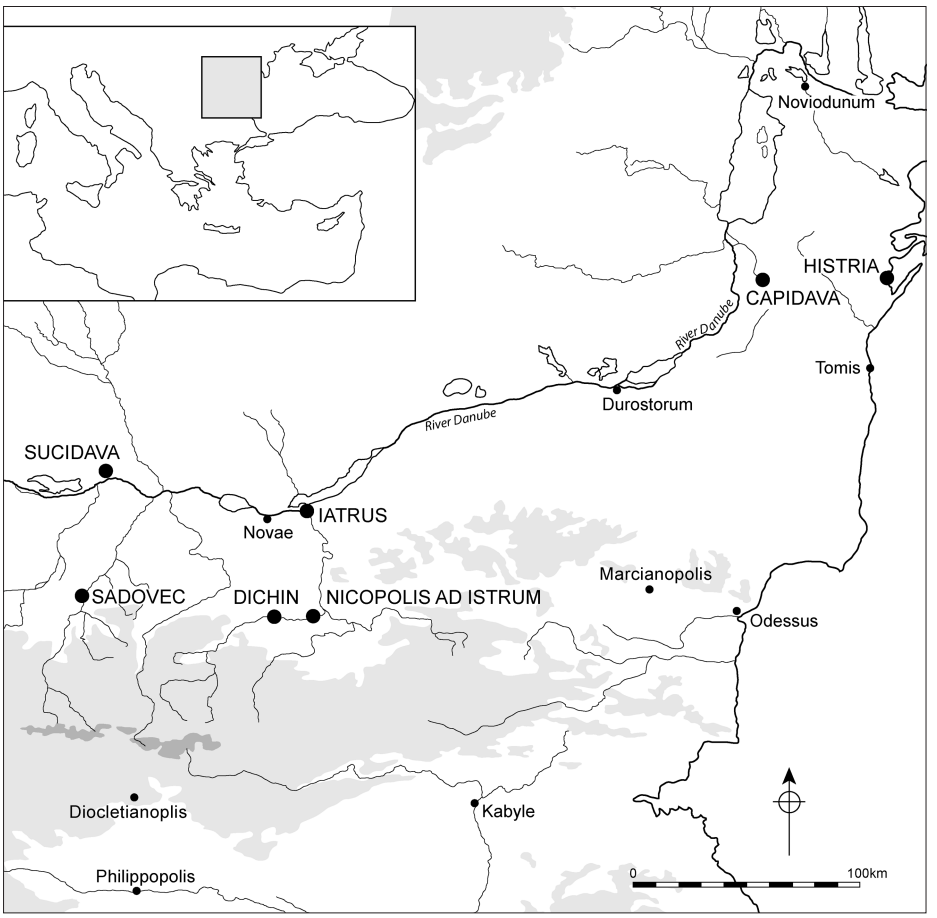

Fig. 2. Map of the lower Danube region showing six sites examined (large dots).

The comparative analysis of thousands of copper and bronze coins from excavations at cities in the eastern empire has not been attempted before and this study adapts an analytical method developed for the study of coinage from Roman Britain. This involves producing coin profiles by converting quantities of coins into 'per mill' values that can be compared to one another, usually in chart form.[12] The period under study here extends far beyond the end of Roman rule in Britain and it has been necessary to extend the chronological sequence of Issue Periods to include the fifth to early seventh centuries. The Issue Periods after 402 are based on imperial accessions rather than numismatic developments because, with the notable exception

[12] Reece 1995. The conversion of raw numbers of coins into statistical values allows separate assemblages to be more easily compared. 'Per mill' values indicate how many coins per thousand fall into each chronological Issue Period.

of the Anastasian reforms in 498/512 Roman and Byzantine small change did not vary during the course of the individual emperors' reigns.[13]

Many published reports of excavated coins include a discussion of the assemblage as a whole. In most cases this is concentrated on the coins' contribution to understanding the excavated site, particularly the history of the place and its changing economic fortunes. Periods that produce most coins usually receive more attention than others when coins are more scarce on a site, and many reports describe the fluctuating levels of coin recovery in terms of political, social and economic stability and decline.[14] However, the focus of this study is more concerned with identifying shared characteristics or differences in sites' numismatic histories, which can be achieved using relatively simple statistical methods. The comparison of coin assemblages has been shown to be an effective method of analysis and for Britain this approach has led to the more reliable interpretation of a site's finds against the background of coinage supply to the island in the Roman period.[15]

The comparison of site finds cannot be undertaken uncritically and there are significant methodological concerns that need to be borne in mind. Some of these are practical, such as the extent of an excavation and the methods used to remove the archaeological deposits, the selection of coins to retain for analysis, the techniques used to clean and conserve the coins, or how they are subsequently identified and described.[16] It is also important to bear in mind that all existing methodologies for the analysis of site finds arrange coins into the sequence in which they were struck, which is not the same as the period of time during which they were in use. We know that bronze coins that were rarely (if ever) recalled and recycled, remained in circulation for many years after their striking. Valentinianic and Theodosian issues, for instance, continued to circulate in the fifth and sixth centuries.[17] Therefore, the

[13] For many years it was uncertain if the small monogrammed copper nummi of Anastasius pre- or post-dated the reform of 498. Although this has recently been resolved (Hahn and Metlich 2000), published excavation reports have been very inconsistent with some numismatists dating the Anastasian monogrammed copper coins from 491 to 498, others to the years after the reform, others to the emperor's entire reign. Using 491 for all coin lists included in this analysis avoids this problem.

[14] This approach is particularly popular among numismatists working in south-eastern Europe. See for instance Hermann 1979; Uenze 1992, pp. 111–13; von Bülow 1995, pp. 49–52; von Bülow 2007, pp. 468–70.

[15] Reece 1995; Guest 2008b; Guest forthcoming.

[16] Identifying late Roman and early Byzantine coins is a subjective process determined by experience and the current state of numismatic knowledge. Coin lists written forty or fifty years ago will identify some coins differently to those published only twenty years ago, and this is particularly the case when dealing with copies and pseudo-imperial coinages such as those struck at Carthage during the Vandal occupation between the fifth and early sixth centuries. For example, Margaret Thompson, writing in 1954, believed that almost half of the coins from the Agora excavations in Athens were Vandalic, which by 1976 were 'recognised as official' coins of emperors such as Valentinian II, Honorius and Theodosius II (Thompson 1954; Buttrey 1976, p. 164, fn 4). Buttrey modified his own views on Vandal coinage while identifying hundreds of coins recovered during the American excavations in Carthage in the 1970s, so that some identified as Vandalic in the 1976 report were thought to be Roman copies only two years later (Buttrey 1978, p. 101).

[17] For instance, the continued use of fourth century coins on settlements has been demonstrated at Beirut where Kevin Butcher looked at contexts producing sealed groups of coins and concluded that Theodosian coins of the fourth century had been lost together with coins of the fifth and sixth

manner in which the results of the analysis are presented should not be interpreted too literally, for a peak of coinage in the late fourth century does not mean that these coins were lost at that time, or even that they were lost necessarily together.[18]

CASE STUDY 1: LATE ROMAN AND EARLY BYZANTINE SITE FINDS IN THE MEDITERRANEAN

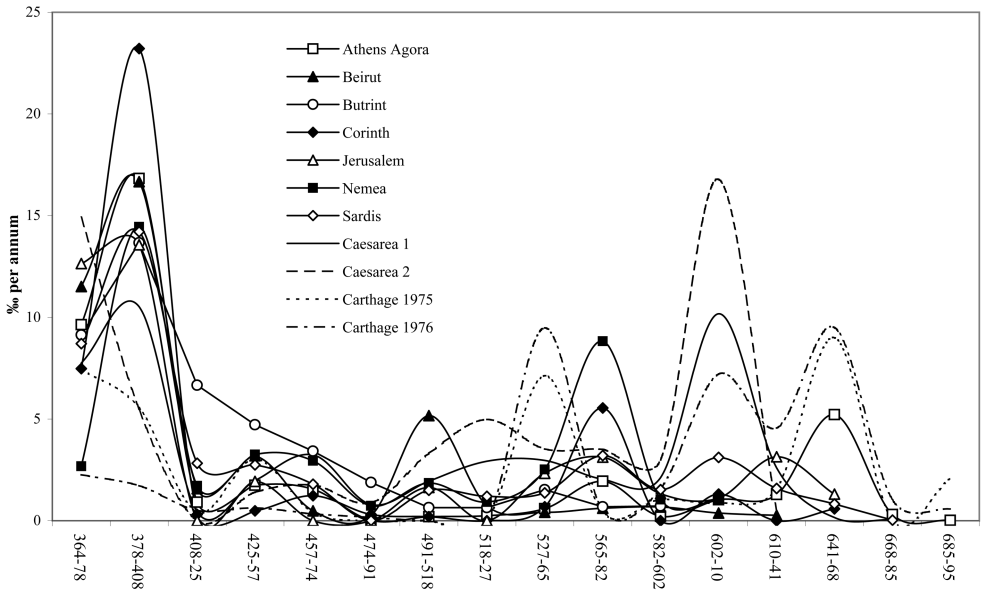

Fig. 3. Relative chronology of site finds from nine Mediterranean cities, adjusted for length of Issue Periods

Table 1 presents the data for eleven coin lists from the nine cities selected for this study (Caesarea Maritima and Carthage both have two large excavated groups), including the 'coins per mill' values that allow the coin lists to be compared to one another. These site assemblages show that the recovery of coins was not constant or uniform during Late Antiquity and that the cities experienced peaks and troughs of coin loss from the second half of the fourth century for the following 250 to 300 years or so. The recovery of sixth century coins at these cities depends to some extent on how long after 600 they continued under Byzantine control and, therefore, received and exchanged Byzantine coins. Nemea in Greece, for example, does not produce any coinage after the reign of Phocas (602–10) while the coin lists for Corinth and Jerusalem close with issues of Constans II (641–68). Sardis and Caesarea end with

centuries (Butcher 2003, pp. 97–114). Also see Butcher 1995, pp. 269–314 and Guest forthcoming for discussions of the same phenomenon at Nicopolis as Istrum and Dichin in Bulgaria. Both Buttrey and Reece raised this possibility in their discussions of the coins from Carthage (Buttrey 1976; Reece 1984; Reece 1994).

[18] In recent decades efforts to formulate an objective approach to the interpretation of archaeologically recovered coins, particularly in the English language, have led to some interesting thinking about the reasons why a coin might, or might not, appear on a site. Most recently, the various stages of a coin's 'biography' have been introduced as a way of exploring this subject. (Butcher 2003, pp. 23–41).

coins of the next emperor Constantine IV (668–85), Carthage with Justinian II (first reign 685–95), while the assemblages from Beirut and the Athenian Agora continue virtually uninterrupted until the tenth century and beyond.[19]

It is apparent from Table 1 that, while each of the nine cities has its own unique coin profile, there are significant similarities between them. This information is also shown on Fig. 3 where it can be seen that coin loss at these cities was episodic, generally consisting of two periods of intensive activity in the fourth and sixth centuries separated by an extended phase of very low coin loss during the fifth century (the chart adjusts the 'coins per mill' values to take account of the length of each Issue Period).

Essentially, the nine cities divide into two groups: the first consists of Athens, Beirut, Butrint, Corinth, Jerusalem, Nemea and Sardis where coins struck during the forty or so years between 364 and *c*.408 constitute more than half of all excavated late Roman and early Byzantine coinage, and a smaller group consisting of Caesarea and Carthage where sixth century coins are relatively more common.[20] All cities, however, show a sudden decline in the number of coins recovered from the beginning of the fifth century to levels far below those seen previously. Excavations on these sites have recovered very few copper coins of Theodosius II (402–50) and Honorius (393–423) struck between 408 and 425, and this pattern continues throughout the rest of the fifth century. The end of the period of reduced loss in the eastern empire occurred in the early sixth century with the appearance of considerable quantities of coins of Anastasius and Justin I (518–27). At Corinth, Athens and Carthage loss increases again later with coins of Justinian I (527–65). This second episode of high coin loss continued throughout the sixth century, albeit with intermittent troughs, until the supply of Byzantine coins came to an end.

While the same general pattern of coin loss is found at all nine cities, it is unwise to draw too many conclusions from direct comparisons of absolute levels of loss over time because the bronze coinages of the fifth and sixth centuries were very different. The Anastasian reforms of 498/512 significantly increased the size and value of Byzantine bronze denominations and, even though excavations tend to produce fewer sixth- than fifth-century coins, the post-498 coins represent a greater monetary value than the more numerous and much smaller earlier coins.

The scarcity in the eastern Roman empire of coinage from most of the fifth century is conspicuous. All nine cities record greatly reduced levels of coin loss after the death of Arcadius (383–408), with the low point occurring during the reign of Zeno (474–91).[21] The dearth of fifth century Roman coins is most apparent at

[19] Although the publication of the ancient coins from the 1990's excavations in Beirut ends with issues of Heraclius, the assemblage included many later coins up to the twentieth century (K. Butcher pers. comm.).

[20] It is reassuring that excavations in different parts of both Caesarea and Carthage have produced coin assemblages that are both local in character as well as sufficiently distinctive from the other seven cities to indicate these do indeed represent variations in the coins used and lost there.

[21] To some extent Butrint shares this low rate of coin loss during most the fifth century, although the pattern on the eastern side of the Adriatic is best described as in serious decline rather than scarce. The published coin report from Butrint suggests some uncertainty regarding the attribution of the eleven coins dated to the reigns of Zeno (see the notes to Table 1). Although the numerous illegible coins from

Carthage where imperial coinage virtually disappears after the middle of the century, coinciding with the Vandal occupation of North Africa from 435, to reappear again with issues of Justinian I after the reconquest in 533. The 188 'Vandal' coins recovered during the University of Michigan's excavations in the 1970s show that a coin-using economy continued to flourish in the city despite being outside the Roman empire.[22] The Vandal coinage (both regal and municipal) filled the gap in the supply of Roman small change at Carthage, but these coins also appear in significant quantities at Athens and Jerusalem, as well as, to a lesser extent, Butrint and Nemea.

Coinage struck after the reforms of Anastasius in 498 is found at all cities, with Athens, Sardis, Caesarea and Carthage producing significant assemblages of early Byzantine bronze coins. Table 2, however, shows that the picture of coin production in the sixth and seventh centuries is complicated by the variety of denominations recovered at the different sites. The Agora excavations in Athens produce the highest proportion of folles: here they make up almost three-quarters of the early Byzantine bronze coins. At Jerusalem and Sardis the follis represents about half of all sixth and seventh century coins, while at the remaining cities smaller denominations are in the majority. 10 nummi are relatively common at Beirut and Carthage, numerous 5 nummi were recovered from Sardis, while the nummus was in widespread use at Jerusalem, Nemea, Caesarea, Butrint and particularly Carthage. Calculating the notional average values of the excavated early Byzantine bronze denominations illustrates how the populations of these cities used and lost different types of small change. The highest average value of sixth and seventh century coins is found at Athens (33.7 folles), while at most of the other cities the average value is between 20 and 27 folles. At Butrint and especially Carthage, however, the average early Byzantine coin value is much smaller – between 10 and 15 folles.

As far as the mints are concerned there appears to be a correlation between high-value denominations and the presence of coins struck at the mint in Constantinople (Table 3). The cities that produce large quantities of folles and half-folles were supplied more from Constantinople than any other mint. In places such as Athens, Corinth, Nemea and Sardis this is not surprising given their proximity to the imperial capital, but it is interesting that coins from Constantinople are common also at Beirut and, to a lesser extent, at Jerusalem. The picture of coin circulation in the Near East in the early Byzantine period is complicated, however, and at Caesarea Maritima nummi from Carthage and Alexandrian denominations is present in greater quantities than those from Constantinople. After the reconquest of North Africa during the reign of Justinian, Carthage appears to have been largely autonomous in monetary terms and almost every coin recovered during excavations there was struck in the city's own mint.

excavations could date to the second half of the fifth century, they might also date to the late fourth and early fifth centuries when Roman official coins were equally small and poorly struck.

[22] See Reece 1984 and Reece 1994 for similar observations in his analyses of coins from the British excavations in Carthage. See fn 16 above for problems distinguishing imperial and Vandal coins.

CASE STUDY 2: LATE ROMAN AND EARLY BYZANTINE SITE FINDS IN THE LOWER DANUBE REGION

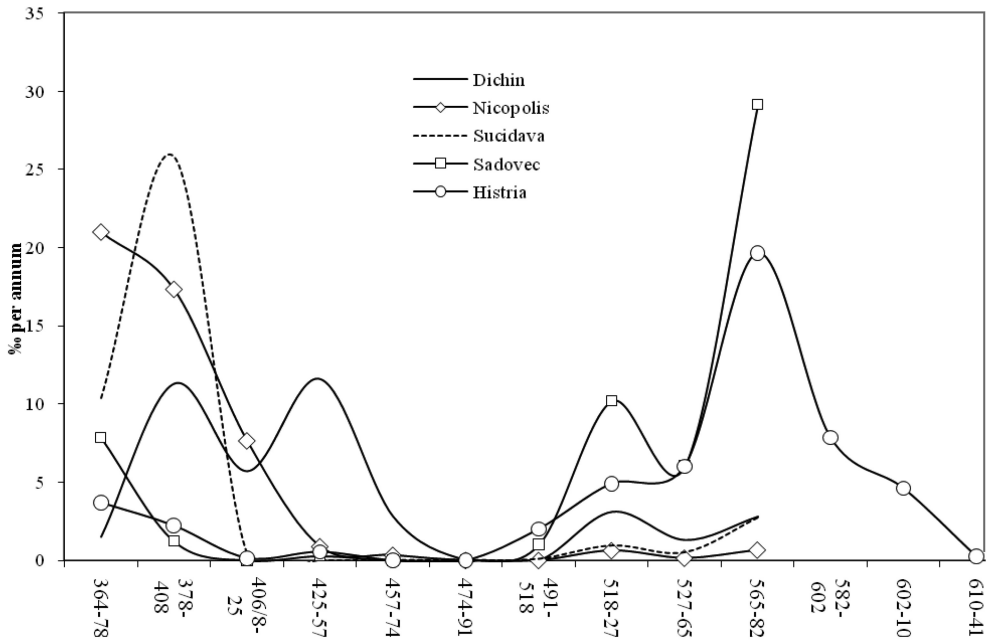

Fig. 4. Relative chronology of site finds from five sites in the lower Danube region, adjusted for length of Issue Periods

The late Roman and early Byzantine coins from the six excavated sites collected together for this case study are presented in Table 4, and their coin loss profiles are shown on Fig. 4.[23] This chart demonstrates that, as with the Mediterranean cities, coin loss in Late Antiquity was not continuous at these settlements in the lower Danube region. Nicopolis ad Istrum and Sucidava produce far more coins of the years 364–408/25 than any other period, while sixth century coins (particularly issues of Justin II, 565–78) are far more common at Sadovec and Histria. The small fortified site at Dichin is the only settlement in the region to produce significant quantities of coins struck during the years 425 and 457, including the 'cross in wreath' type (struck at the eastern mints in the name of Theodosius II from 425 to 435) and coins of the Emperor Marcian (450–7). Therefore, with the partial exception of Dichin, every major settlement with a published coin list from the lower Danube region produces almost no coins struck during the 80 to 100 years between the first two decades of the fifth century and the reigns of Anastasius or Justin I in the early sixth.

In the past the disappearance of coinage on sites close to the lower Danube frontier has been explained as a direct result of the various incursions into the Roman empire by the Huns during the 430s and 440s. The subsequent separation of parts of the diocese of Thrace from the Roman empire continued throughout the remainder of the fifth century when the lower Danube was occupied by the Ostrogoths under Theoderic I (471–526) and his successors, until the reconquest of the Balkans

[23] Fig. 4 does not include Iatrus where in the past sixth-century coins have not been published in a format compatible with the other sites (Schönert-Geiß 1979).

during the reigns of Anastasius and Justinian. The invasions and occupation of these lands over many decades by various barbarian groups have provided an apparently convincing explanation for the absence of Roman coins during these years.[24]

The archaeological evidence for the destruction of cities and forts in the Danubian frontier provinces is unequivocal and excavations at sites such as Nicopolis, Iatrus and Sadovec provide evidence for extensive devastation in the fifth century, followed by reconstruction and the eventual return of Roman currency in the sixth century. The coinage from these settlements, however, paints a more complicated picture of the monetary fortunes of this region in these turbulent times. Fig. 4 shows coin loss apparently already in decline at Sadovec, Sucidava and Histria from the last years of the fourth century (some time before the arrival of the Huns), slightly later at Nicopolis ad Istrum, and latest of all at Dichin where coins of the 450s are far more common than on other sites. The coin evidence, therefore, indicates it is unlikely that Roman control in this region ceased suddenly as the result of a single catastrophic event such as the Hun invasions of the 430s and 440s. In fact, it is more likely that the cities and fortified settlements on the lower Danube were destroyed many years apart, presumably at the hands of different enemies.[25]

Anastasius is believed to have successfully reconquered the lost territory of Thrace around 500, after which the frontier and its hinterlands were extensively refortified against the continuing barbarian threat during Justinian's reign. Other than Histria, however, most of the sites studied here produce relatively few coins of Anastasius and their coin lists generally pick up again in the sixth century with later issues of Justin I and Justinian I (see Table 4). In fact, at Dichin, Sadovec, Nicopolis and Sucidava, coins of Justin I are relatively more common than issues of Justinian and the numismatic evidence does not seem to agree with a single reconquest of this region, whether under Anastasius or another ruler.

Tables 5 and 6 examine the early Byzantine coinage from these sites and it is apparent that the coinage in use on the lower Danube frontier during the sixth century consisted primarily of the follis and half-follis from the nearest mints at Constantinople, Thessalonica and Nicomedia.[26] The average value of the post-Anastasian reform coinage at these sites is higher than at all of the Mediterranean cities with the exception of the Athenian Agora (average values are consistently higher than 30 folles), which indicates that these settlements did not receive the lowest value coinage from more distant parts of the empire.[27]

[24] For an overview of events in the Balkans in the early sixth century see Heather 1998, pp. 507–15; Whitby 2000, pp. 712–21. Also, see fn 14 above.

[25] It is not necessarily the case that destruction events were always caused by violent barbarians. Other explanations, such as general site clearance prior to rebuilding (after a period of abandonment) or accidental burning of partially abandoned settlements, are also possibilities.

[26] Unfortunately, it was only possible to obtain information regarding the denominations recovered from Dichin, Histria, Sadovec and the settlement at Capidava. The published reports from other sites either do not specify the denominations of the excavated coins, or the quantity of sixth century coins is too small to be useful (for instance, Nicopolis ad Istrum produced only four sixth century coins).

[27] This pattern has been noticed at Nicopolis ad Istrum (Butcher 1995, pp. 302–3) and Capidava (Gândilă 2006–7, p. 98 and Table 6). Some cities on the Black Sea coast, such as Tomis, produce significant quantities of 10 nummi and even some 5 nummi during the sixth century, although overall the pattern from the province of Scythia is similar to that observed in Moesia to the west (Gândilă 2008, p. 316 and Table 5).

The final disintegration of the lower Danube frontier appears to have occurred during the reign of Justin II, or later. Issues of Justin II close the coin lists from the three walled settlements close to the Danube at Nicopolis, Sucidava and Sadovec, while the latest coins from Dichin were struck under Tiberius Constantine (578–82). Therefore, it is likely that Roman control over this part of the lower Danube ceased suddenly with the Slav invasions which began in the 580s and continued into the seventh century. Cities on the Black Sea coast did not suffer the same fate and Scythia Minor remained under Byzantine control until the early seventh century when this area of the empire was eventually overrun by Slavs. The coin list from excavations at Histria closes with coins of Heraclius (610–41), and this pattern is repeated across the Dobrodja and Black Sea coast towards Constantinople.[28]

RECONSTRUCTING IMPERIAL PATTERNS OF BRONZE COIN PRODUCTION AND SUPPLY IN LATE ANTIQUITY - INTEGRATING THE NUMISMATIC BACKGROUND

Analysis of the various collections of site finds in the two case studies presented here demonstrates that, while each site produces its own unique coin-loss profile in Late Antiquity in which the excavated coins are likely to be dependent on local causes, there are significant similarities between assemblages that suggest the main characteristic features of these profiles are dependent on empire-wide factors. Previous studies have not recognised this shared pattern of coin loss and excavated coins were invariably studied in isolation; the main stimulus for any discussion being the contribution coins could make to the understanding of a particular site. In the past, interpretations of site finds were based on the notion that coins recovered from an excavation must be a reflection of the intensity of occupation and economic activity over time at that settlement. In this way most analyses of site finds considered that the relative peaks and troughs of coin loss mirrored changes in a settlement's political and economic fortunes: high levels of coin recovery are indicative of peace, stability and prosperity, while falling coin loss, and especially the disappearance of coinage, signifies political disruption and economic decline often associated with the consequences of barbarian invasions and warfare.

Inevitably, this interpretative tradition explicitly associated episodes of falling coin loss with events recorded in the ancient literature. For instance, the decline in coinage recovered on sites in Greece and the Balkans in the early fifth century has been explained as a consequence of the turmoil brought about by the Goth incursions into this part of the empire, while the absence of coins on sites along the lower Danube for much of the following century, particularly issues struck in the names of the Emperors Marcian, Leo I (457–74) and Zeno 474–91), is seen as evidence for the arrival of the Huns in the 430s and 440s and the subsequent decades-long separation of these territories from Roman authority.[29] In this example of academic

[28] Preda and Nubar 1973; Poulter 1981; Metcalf 1991; Madgearu 1997; Gândilă 2008. The Romanian data collected by George Duncan suggests a slightly earlier disappearance of Byzantine coinage (Duncan 1993, pp. 133–9).

[29] For recent surveys that follow this traditional line of reasoning, see Gândilă 2006–7 and Gândilă 2008. Conversely, barbarian invasions are often used to explain the appearance of hoards (for associations of late sixth century hoards with Slav invasions, see Jurukova 1970; Popović 1975 and Popović 1981).

circular-reasoning, the historically-driven narratives for coin assemblages provide overviews of the settlements' occupation in Late Antiquity that correspond neatly with the turbulent political history of the Roman empire. While there is no doubt that the empire was affected by the many wars against barbarians and other enemies in Late Antiquity, the history of the fifth and sixth centuries is full of wars on every frontier and it is not difficult to find a barbarian threat to explain each apparently significant decline in a settlement's coinage.[30]

The most significant problem with politico-economic explanations for excavated coin assemblages is that these tacitly assume consistent production and supply of coinage against which the characteristics of a site's coins can be contrasted. They also fail to consider the many reasons that affect the likelihood of a coin being discovered during an excavation, especially archaeological factors that together produce the coin assemblage we are attempting to understand. A particular drawback is the tendency to conflate coin production and coin use, so that a list of excavated coins is discussed as if it represents a reliable history of the monetary economy of a settlement when on its own it tells us no more than when the coins used there were originally struck.[31] The methodology adopted in this study goes some way towards resolving these issues. The comparison of several site-find assemblages has resulted in the identification of certain important numismatic characteristics shared by these excavated sites that are likely to represent a universal, or background, pattern of coinage production and supply in the eastern empire in Late Antiquity. The similarities between the coin-loss profiles of all fifteen sites examined here suggests that these characteristics were not local responses, but are a reflection of the fluctuating output of late Roman and early Byzantine bronze coinage and how these were distributed around the empire.

In general, the pattern of bronze coin supply from the 360s to the seventh century shows periods at the end of the fourth century and again in the sixth century when low-value coinage was widely available. Coins of the Valentinianic and early Theodosian dynasties (364 to 408/25) are very common on most of the sites studied here, but the general and almost total absence of coinage from the remainder of the fifth century is even more striking. The low point appears to have occurred during the reign of Zeno and very few coins of this emperor have been recovered from any excavated sites in the eastern Mediterranean or the lower Danube (see Tables 1 and 4, and Figs 3 and 4).

Metcalf disputed the methodology of this approach and doubted the value of such historically driven interpretations (Metcalf 1991).

[30] The role of barbarians needs be proven not simply assumed. Associating hoarding and barbarian invasions in the fifth century is often accepted as fact without critical analysis. There are many examples of this persistent tradition of interpretation, but see Vladimirova-Aladzova 1995–1997 for a recent study that uses fifth century hoards to chart the date of invasions and the paths of barbarian armies into the empire. More recently the disruption caused by plague has been regarded as equally damaging, Sarris 2011, pp. 158–60, 295.

[31] To overcome this fundamental problem depends on applying more sophisticated methodologies which view site finds as artefacts from archaeological deposits that are part of an absolute stratigraphic sequence. A number of recent coin reports have attempted to develop more integrated analytical techniques for the study of excavated coins, and it is possible that in future we will be able to discuss site-finds from the point of view of when they were actually used and lost (Butcher 2003; Guest forthcoming; Reece 1984; Reece 1994).

The general absence of copper coinage for most of the fifth century from the eastern Roman empire cannot be explained by local factors or regional patterns of coin loss. Instead, this phenomenon must reflect a general reduction in the supply of small change at this time, which given the extent of this pattern can only be explained if the imperial mints did not produce as many bronze coins as in the later fourth century. Therefore, the absence of fifth century low-value coinage from sites is most likely to have been caused by the greatly reduced output of Roman copper that lasted for up to 80 years or so during the reigns of Theodosius II, Marcian, Leo and Zeno.

Why did the imperial court apparently decide to issue less coin at this time? Perhaps this policy of reduced bronze output was a reaction to the devaluation of the small change already in circulation after the period of intensive production at the end of the fourth century, though at the moment this can be no more than informed speculation. Whatever the causes of this monetary phenomenon, it is worth considering the impact of these very low levels of small change production and how the population of the empire might have coped with limited new copper coinage.

Carthage was under Vandal control from 435 until 533 so was not directly supplied with new Roman or Byzantine coin. The copper coins struck at Carthage throughout the Vandal occupation went some way towards counteracting the sudden fall in the supply of Roman small change to North Africa. Furthermore, it is likely that the presence of Carthaginian coins in places such as Athens, Nemea, Jerusalem and Butrint indicates continuing economic links between the empire and Vandal North Africa. It is clear, therefore, that commerce in these cities did not depend upon the availability of new coinage but was able to continue by using local currencies. Furthermore, even if the small Vandalic coins went some way to filling the gap in the supply of Roman small change, it now seems likely that most people in the eastern empire used old Valentinianic and Theodosian issues to fulfil the role of day-to-day exchange for many decades into the fifth century. The presence of large quantities of later fourth-century coins in archaeological features together with issues of the fifth and, in several instances, the sixth centuries, suggests that late Roman copper coins remained in use for many decades, perhaps centuries, after they were stuck. Consequently, the sudden and dramatic fall in bronze coin output for much of the fifth century does not mean that the population of the eastern empire did not use coins in monetary exchanges – instead they were simply able to make do with old issues that had been produced in very large quantities and remained widely available until at least the Anastasian reforms of 498.[32]

The long period of very low small change production continued at least until the accession of Anastasius in 491, and the evidence suggests that it was only during the later part of his reign that new bronze coins began appearing on most sites in significant quantities, with supply increasing during the reigns of Justin I and Justinian I. The new coinage introduced by Anastasius in 498 included a range of denominations that were considerably more valuable than the small copper coins of

[32] See fn 17. Gabriela Bijovsky, after examining several assemblages of site-finds from Israel, suggests that: 'The 'shelf-life' of these coins is often estimated as 100–150 years' (Bijovsky 2000–2, p. 208).

the late fourth and fifth centuries. The new bronzes were also struck on larger flans and with better quality dies, which means that for the sixth century we are better able to investigate the types of small change present on sites and at which mints these coins were issued.

During the sixth and seventh centuries the evidence from excavated site finds suggests a complex and regionalised picture of coin production and supply in the empire. In fact, there is a great deal of variation between the major cities of the Mediterranean for which we have useable published data (see Tables 2 and 3). The early Byzantine coins from the four sites in Greece and Asia Minor are relatively similar in that they were supplied with the larger and higher value folles and half-folles mainly from the nearest mints at Constantinople and Thessalonica. The three Near Eastern cities present a more mixed pattern with Constantinopolitan bronzes most common in Beirut (where 10 nummi represent about one-quarter of all sixth and seventh century coins), while issues from the eastern mints at Antioch and Alexandria are more frequent finds in Jerusalem and Caesarea Maritima respectively (the Alexandrian 12 nummi from Caesarea suggest close links between these coastal cities). The smaller denominations, including the nummus, were an important part of the available currency at these cities and the recovery of significant numbers of Carthaginian nummi in Jerusalem and Caesarea further demonstrates the connectivity of the monetary economy at this time, though their absence from Beirut shows how regional this could be too. The two most western cities, Carthage and Butrint, present a different picture and the populations of these places were more likely to use and lose lower value coins than in Greece or the eastern Mediterranean. The average sixth and seventh century bronze coin at Carthage and Butrint was worth between one third and a half of the average value of contemporary coinage in places such as Athens, Beirut or Jerusalem.[33] While Carthaginian nummi formed an important part of the currency available at Butrint on the east coast of the Adriatic as well as at Jerusalem and Caesarea, very few coins from other mints have been recovered from Carthage itself and the city appears to have been remarkably self-sufficient in terms of currency provision in the early Byzantine period. Was this a consequence of the century of Vandal occupation perhaps leading to continued monetary isolation in North Africa even after the Justinianic reconquest, or the reliance of the city's economy on the nummus, which most mints were not striking in large quantities?

The frontier along the lower Danube was supplied with coins that produce a different picture of coin use and loss from that in the great emporia of the Mediterranean. Here the post-498 reform coins are predominantly folles and half-folles from the mints at Constantinople and, to a lesser extent, Thessalonica and Nicomedia (see Tables 5 and 6). The settlements on the lower Danube produce significantly more large bronze coins than the eastern cities at this time suggesting that their populations did not receive new coins for the smallest day-to-day monetary transactions. It is

[33] In his report of the small coin assemblage from the excavations at Sabratha, Philip Kenrick noted that the preponderance of the smallest denomination: 'seems to be very much an African phenomenon, and contrasts with sites in the Balkans and the East, where larger coins predominate' (Kenrick 1986, p. 257).

notable that pseudo-imperial low-value coinage, such as from Vandalic Carthage or Ostrogothic Italy, does not appear at sites such as Nicopolis, Sucidava or Iatrus, while locally produced copies, albeit often difficult to distinguish from official coins, are equally uncommon.[34]

Instead, the coinage in use on the lower Danube frontier during the sixth century consisted almost entirely of relatively high-value bronze denominations from the nearest mints, showing that coin use here at this time did not involve the supply and exchange of low-value small change with more distant parts of the empire (see Table 6). It has been already been noted that fourth and fifth century coins regularly appear to have been lost together with sixth century issues and that they almost certainly continued to be used as the very lowest value coinage after the 498 reform. The presence of fourth and fifth century coins in a number of hoards containing post-Anastasian reform coinage confirms that, in some parts of the eastern empire at least, 100 to 150 year-old coins circulated as the lowest small change side-by-side with new coins throughout much of the sixth century.[35] These observations will have important consequences for how we interpret site finds in the future.

BRONZE COIN PRODUCTION: QUANTIFYING THE MONETARY ECONOMY IN LATE ANTIQUITY

The systematic analysis of fifteen important excavated assemblages of late Roman and early Byzantine site finds has yielded significant results for the understanding of how coins were produced, distributed and used on sites in Late Antiquity. The main observations and conclusions are:

1. It has been possible to demonstrate a correlation between the coins lost at settlements and the production and supply of low-value coinage from the imperial mints. In turn, it is proposed that we can now begin to appreciate how the production of the late Roman and early Byzantine currency fluctuated between the end of the fourth and the seventh centuries, which to some extent must reflect imperial fiscal policy.
2. The eastern mints produced far fewer bronze coins from the later years of Theodosius II's reign, particularly during the reigns of Marcian, Leo and Zeno. For a period possibly as long as 80 years the empire did not provide the quantities of new coinage that could be used in everyday commercial transactions and exchanges. The reforms of Anastasius in 498 re-introduced higher value bronze denominations, but the striking of the lowest value small change generally remained limited.
3. People dealt with the absence of new low-value bronze coinage by continuing to use fourth century coins in the fifth century, and fourth / fifth century coins into the sixth century. Thus, coins well over a century old remained in circulation and in use in marketplaces and elsewhere at this time.

[34] Moorhead 2007, pp. 297–9; Reece 2008, p. 425; Butcher 2003, pp. 102–12.
[35] Bijovsky 1998; Bijovsky 2000–2; Hahn 1980; Phillips and Tyler-Smith 1998.

4. The occurrence of Vandalic coins across the eastern Mediterranean suggests that commerce between Carthage and the eastern empire continued throughout the fifth century, and that their non-Roman status was not an obstacle to their use.
5. In the sixth century we can observe different pools of circulating coins in the great cities of the Mediterranean where high- and low-value coins from a variety of mints were used together, and the lower Danube frontier where high-value bronze denominations from the nearest mints predominated. This suggests fundamental differences in the monetary economies of these regions in the early Byzantine period.

While concerns about the reliability of the site find evidence remain to be fully resolved, the methodology of comparing coin-loss profiles has been shown to work for excavated coins from the eastern empire in Late Antiquity. In future it will be possible to discuss the coinage from other excavations in the same way and, applying the same approach, produce more nuanced interpretations that do not simply equate a decline in the presence of coins with the effects on that specific place of warfare, plague, political turmoil or economic crisis. This will lead to the observations made here being refined to produce ever more accurate and reliable descriptions of coin production and use.

Some questions to which it would be valuable to find answers include:

1. What were the patterns of coin supply and use in the countryside beyond the cities and forts studied here? Did the population in villages and farms use the same coins in the same ways as merchants in urban marketplaces or soldiers in their barracks?
2. How does the production and supply of gold and silver coinage compare to bronze? Were coins of different metals and values used in the same ways? Can we think of a single Roman monetary economy, or does the evidence indicate multiple connected economies?
3. How does the evidence of coin hoards compare to the patterns observed for site finds? What might hoards tell us about how coins were perceived that excavated coins do not?

For many years the debate surrounding the nature of the Roman economy has been dominated, at least in British and American academia, by two main themes: the dispute about the nature of the ancient economy (i.e. primitivist or modernist, self-sufficiency or trade), and the pursuit of evidence for economic growth in the ancient world in order follow the ups-and-downs of Roman imperial ‘Gross Domestic Product’. As far as the second theme is concerned the focus seems to have been on quantifying ‘production’ or ‘consumption’ (usually referred to as ‘trade’), and it is significant that many researchers have avoided making use of coinage (other than for measuring output using techniques such as die-studies). The study of coinage recovered from ancient sites and hoards is highly relevant to these economic themes, particularly the second, and it is surprising, therefore, that economic historians have

so far failed to engage with this primary source of evidence for the nature of the Roman economy and how it functioned.[36]

Perhaps historians have been reluctant to use the coin evidence because many perceive these objects to be the exclusive preserve of numismatists and they are not convinced that coins, especially archaeological finds, are sufficiently reliable as a source of evidence. Michael Hendy, a follower of the 'primitivist' school, in his preface to the most comprehensive and authoritative account of the Byzantine monetary system, saw the subject as wider than 'the mere record and analysis of coin hoards and archaeological site-finds', and it is, he continued, 'pointless to analyse coin finds, and to derive 'monetary' or 'economic' conclusions from such analyses, either in total ignorance of the fundamental causative factors behind the production and circulation of a coinage, or on the basis of some superficial or faulty causative and behavioural framework'.[37] These criticisms of the insularity of coinage studies were tempered by the hope that coin finds would play a significant role in the study of Roman and Byzantine monetary economics at some point in the future. A quarter of a century on and we can now see that, in fact, the critical analysis of coin finds can lead to a better understanding of the production and circulation of coinage and, subsequently, to more reliable interpretations of that aspect of the monetary economy. The quest for data with which to quantify levels of production or consumption in the ancient world has not led to a better appreciation of the Roman economy so far, and it will only do so when coinage, as a means of exchange and distribution, is more fully integrated into economic studies

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[36] Quantifying the Roman economy has been a recurring topic in several important recent publications (for example, see Bowman and Wilson 2009; Scheidel, Morris and Saller 2007; Manning and Morris 2005). The studies in Morrisson 2012 reflect a much greater level of sophistication with regard to markets and trade in the Byzantine period and some also use numismatic evidence.

[37] Hendy 1985, p. 1.

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Tables 1-6 over.

Table 1. Late Roman and Byzantine coins from nine cities in the Mediterranean

	Butrint[38]		*Nemea*[39]		*Beirut*[40]		*Corinth*[41]		*Jerusalem*[42]	
Issue Period	*No.*	*‰*	*No.*	*‰*	*No.*	*‰*	*No.*	*‰*	*No.*	*‰*
364–78	44	127.9	9	37.5	216	161.2	20	104.7	20	177.0
378–408	141	409.9	104	433.3	670	500.0	133	696.3	46	407.1
408–25	39	113.4	7	29.2	36	26.9	1	5.2		0.0
425–57	52	151.2	25	104.2	137	102.2	3	15.7	7	61.9
457–74	20	58.1	12	50.0	11	8.2	4	20.9		0.0
474–91	11[49]	32.0	3	12.5	6	4.5	1	5.2		0.0
491–518	6	17.4	12	50.0	187	139.6	1	5.2	5	44.2
518–27	2	5.8	2	8.3	9	6.7		0.0		0.0
527–65	20	58.1	23	95.8	21	15.7	5	26.2	10	88.5
565–82	4	11.6	36	150.0	14	10.4	18	94.2	6	53.1
582–602	5	14.5	5	20.8	18	13.4	0[51]	0.0	3	26.5
602–10			2	8.3	4	3.0	2	10.5	1	8.8
610–41					11	8.2	0[53]	0.0	11	97.3
641–68							3	15.7	4	35.4
668–85										
685–95										
Total	*344*	*1000*	*240*	*1000*	*1340*	*1000*	*191*	*1000*	*113*	*1000*
Fourth–early sixth centuries	710		546		500		*c*.800		510	
Sixth–seventh centuries					22				27	
Roman/ Byzantine	1									
Vandalic	4[54]		6[55]						18[56]	
Ostrogothic	2[60]									

[38] Moorhead 2007.
[39] Knapp and MacIsaac 2005.
[40] Butcher 2003.
[41] Bellinger 1930.
[42] Reece 2008.
[43] Buttrey *et al* 1981.
[44] Evans 2006.
[45] Lampinen 1982.
[46] Buttrey 1976.
[47] Buttrey and Hitchner 1978.
[48] Thompson 1954.
[49] Includes one coin listed as '?Zeno emperor type', two coins as '?Zeno Monogram', and eight coins as '?Leo or Zeno types'.

	Sardis[43]		*Caesarea 1*[44]		*Caesarea 2*[45]		*Carthage 1975*[46]		*Carthage 1976*[47]		*Athens Agora*[48]	
	No.	*‰*	*No.*	*‰*	*No.*	*‰*	*No.*	*‰*	*No.*	*‰*	*No.*	*‰*
	519	121.8	128	108.6	14	209.0	15	104.2	11	31.7	783	134.9
	1816	426.3	372	315.5	11	164.2	24	166.7	18	51.9	2929	504.7
	205	48.1	9	7.6		0.0	1	6.9	3	8.6	90	15.5
	374	87.8	75	63.6	3	44.8	14	97.2	7	20.2	325	56.0
	130	30.5	65	55.1	2	29.9	1	6.9	2	5.8	153	26.4
	1	0.2	16	13.6	1	14.9		0.0	1	2.9	2	0.3
	172	40.4	62	52.6	6	89.6		0.0		0.0	31	5.3
	46	10.8	31	26.3	3	44.8		0.0		0.0	13	2.2
	222	52.1	133	112.8	9	134.3	39	270.8	125	360.2	132	22.7
	232	54.5	41	34.8	4[50]	59.7	1	6.9	3	8.6	192	33.1
	130	30.5	50	42.4	4	59.7	3	20.8	11	31.7	25	4.3
	106	24.9	96	81.4	9[52]	134.3	1	6.9	20	57.6	48	8.3
	210	49.3	95	80.6	1	14.9	7	48.6	49	141.2	232	40.0
	95	22.3	5	4.2			35	243.1	89	256.5	817	140.8
	2	0.5	1	0.8				0.0	6	17.3	30	5.2
							3	20.8	2	5.8	1	0.2
	4260	*1000*	*1179*	*1000*	*67*	*1000*	*144*	*1000*	*347*	*1000*	*5803*	*1000*
			459		17				22		912	
					2							
							64[57]		124[58]		4796[59]	

[50] Includes one copy of Tiberius II.
[51] One coin of Maurice Tiberius found previously at Corinth.
[52] All copies of Phocas.
[53] Seven coins of Heraclius found elsewhere at Corinth.
[54] Vandalic coins dated to 496–523.
[55] Vandalic coins dated to 440–95.
[56] Vandalic coins dated to 480–540.
[57] Vandalic coins dated to 430–533.
[58] Vandalic coins dated to 430–533.
[59] Vandalic coins dated to 440–95.
[60] Ostrogothic coins dated to 541–52.

Table 2. Sixth and seventh century denominations (post-491) from nine cities in the Mediterranean (%)

	No. of coins	*Follis*	*30 nummi*	*20 nummi*	*12 nummi*	*10 nummi*	*6 nummi*	*5 nummi*	*3 nummi*	*2 nummi*	*Nummus*	*%*	*Average follis value*
Athens Agora	1466	73.7		18.7	0.1	2.3		5.2				100	33.7 folles
Jerusalem	40	52.5		22.5	2.5	0.0	5.0	0.0			17.5	100	26.3 f
Sardis	1137	47.6		18.5		7.9		17.7			8.1	100	24.5 f
Beirut	263	34.0	1.2	19.0	0.4	27.0		7.0			11.0	100	21.0 f
Caesarea 2	25	31.4		5.7	31.4[61]	2.9					28.6	100	20.5 f
Nemea	78	30.8		43.6				6.4			19.2	100	21.5 f
Caesarea 1	512	28.7	0.8	13.1	21.3[62]	1.4	5.1	2.7	0.2	0.2	26.6	100	17.7 f
Corinth	28	28.6		53.6							17.9	100	22.3 f
Butrint - triconch	30	23.3		23.3		3.3					50.0	100	14.8 f
Carthage 1976	293	4.8		21.2		25.3		6.5		1.4	40.6	100	9.5 f
Carthage 1975	88	4.5		40.9		9.1		3.4			42.0	100	11.5 f

[61] Of the 11 12 nummi from the Caesarea 2 excavations 10 are local copies.

[62] Of the 109 12 nummi from the Caesarea 1 excavations, 87 were struck for Phocas and together probably form a hoard.

Table 3. Origins of sixth and seventh century (post-491) denominations from sites in the Mediterranean (%)

	Coins	*Rm/It*	*Thes*	*Con*	*Nic*	*Con/Nic*	*Cyz*	*Ant*	*Alex*	*Carth*	%
Athens: Agora	1385	0.9	13.6	77.4	3.7		1.3	2.5	0.1	0.5	100
Jerusalem	36		5.6	52.8	2.8			16.7	8.3	13.9	100
Sardis	1042		5.2	69.3	14.5		7.9	2.5	0.4	0.2	100
Beirut	255		2.0	71.4	6.3	8.2	1.6	7.1		3.1	100
Caesarea 2	35	2.9	2.9	34.3	8.6			5.7	31.4	14.3	100
Nemea	75	1.3	29.3	50.7	8.0		8.0	2.7			100
Caesarea 1	493		2.8	36.3	5.7		2.2	7.7	27.4	17.6	100
Corinth	29	3.4	13.8	69.0	6.9		3.4	3.4			100
Butrint - triconch	30	3.3	13.3	23.3	3.3			6.7		50.0	100
Carthage 1976	305			1.6						98.0	100
Carthage 1975	88		1.1	1.1						97.7	100

Table 4. Late Roman and Byzantine coins from sites in the Lower Danube region

	Dichin[63]		Nicopolis[64]		Sucidava[65]		Sadovec[66]		Histria[67]			Iatrus[68]	
Issue Period	*No.*	*‰*	*No.*	*‰*	*No.*	*‰*	*No.*	*‰*	*No.*	*‰*	*Issue Period*	*No.*	*‰*
364–78	3	20.7	52	293.8	69	145.0	12	110.1	21	51.6	364–95	128	518.2
378–408	49	337.9	92	519.8	368	773.1	4	36.7	27	66.3	395–408	69	279.4
406/8-25	14	96.6	23	129.9	3	6.3		0.0	1	2.5	408–23	28	113.4
425–57	54	372.4	5	28.2		0.0	1	9.2	7	17.2	425–50	6	24.3
457–74	7	48.3	1	5.6		0.0		0.0		0.0	457–74	1	4.0
474–91		0.0		0.0		0.0		0.0		0.0	474–91		0.0
491–518		0.0		0.0	1	2.1	3	27.5	22	54.1	↓		
518–27	4	27.6	1	5.6	4	8.4	10	91.7	18	44.2	First half of sixth century	13	52.6
527–65	7	48.3	1	5.6	9	18.9	25	229.4	93	228.5	↓		
565–82	7	48.3	2	11.3	22	46.2	54	495.4	136	334.2	Second half of sixth century	2	8.1
582–602									64	157.2			
602–10									15	36.9			
610–41									3	7.4			
Total	*145*	*1000*	*177*	*1000*	*476*	*1000*	*109*	*1000*	*407*	*1000*	*Total*	*247*	*1000*
Fourth–early sixth centuries	233		77				15						
Sixth–seventh centuries			17				12						
Roman/Byzantine			11										

[63] Guest forthcoming.
[64] Butcher 1995.
[65] Tudor 1937–40; Tudor 1945–7.
[66] Mackensen 1992.
[67] Preda and Nubar 1973.
[68] Schönert-Geiß 1979.

Table 5. Sixth and seventh century bronze denominations (post-491) from sites in the lower Danube region and Balkans (%)

	Coins	*Follis*	*30 nummi*	*20 nummi*	*Follis/ 20 nummi*	*12 nummi*	*10 nummi*	*6 nummi*	*5 nummi*	*3 nummi*	*2 nummi*	*Nummus*	%	*Average follis value*
Dichin[69]	21	58.8		38.2			2.9						100	31.5 folles
Histria	281	56.2		35.4			4.4		4.0				100	30.2 f
Capidava	166	54.2	1.2	37.3			6.6					0.6	100	30.2 f
Sucidava	83	45.8		6.0	48.2								100	34.0 f

Table 6. Origins of sixth and seventh century bronze coins (post-491) from sites in the lower Danube region and Balkans (%)

	Coins	*Rm/It*	*Thes*	*Con*	*Nic*	*Con/Nic*	*Cyz*	*Ant*	*Alex*	*Carth*	%
Dichin	21		21.2	60.6	15.2		3.0				100
Histria	288		9.7	62.5	16.3		5.6	5.2		0.7	100
Capidava	152		16.4	56.6	17.1		5.3	4.6			100
Sucidava	34		14.7	41.2	23.5		8.8	11.8			100

[69] Including two hoards of 17 coins.