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Emil Malewicz

ROME, RAVENNA, OR SICILY? CONSIDERATIONS ON THE MINT ATTRIBUTION OF *MIBE* 229 *DEKANUMMIA*

Abstract: This article presents an analysis of the mint attribution of the *dekanummia* of Justinian I, known as *MIBE* 229 according to the classification of Wolfgang Hahn. These coins, lacking mint marks, do not feature any clear indicators that would allow for a precise determination of their place of production. However, their stylistic and metrological characteristics suggest an association with the Italian monetary circulation zone. These coins have most commonly been attributed to the mints of Ravenna or Rome. In the following sections of the article, I will present arguments supporting the hypothesis that this type represents one of the earliest bronze issues of Byzantine Sicily.

Keywords: Byzantine coins, coin finds, Akrai (Sicily), Byzantine Sicily

The primary aim of this study is to reassess the mint attribution of the *dekanummia* of Justinian I classified as *MIBE* 229 by Wolfgang Hahn, a coin type traditionally associated with the Italian mints of Rome or Ravenna.[1] These coins, like most Western Byzantine issues lacking mint marks, have so far been attributed to specific mints primarily on the basis of stylistic analysis, particularly through the creation of comparative groups that include both mint-marked and unmarked specimens. Attempts to investigate the provenance of specific western types of early Byzantine bronzes are rare, mainly due to the difficulties involved in compiling comprehensive databases of local museum collections and archaeological finds. Unlike coins struck in the more active eastern mints, these issues are considerably less numerous, and even when a distribution analysis can be conducted, the available data remain far more limited than in the case of, for example, Constantinopolitan emissions. By integrating numismatic and archaeological evidence, as well as the results of archaeometric analyses, this paper seeks to determine whether these coins might instead represent an early bronze emission of Byzantine Sicily. This question bears broader implications for understanding the beginnings of coin production on the island of Sicily.

[1] The starting point for these considerations was the discovery of such coins during excavations conducted by Roksana Chowaniec between 2011 and 2020 in Akrai, Sicily. From 2019 to 2022, I worked on establishing the mint origin of these coin types as part of the project 'Multifaceted research on Byzantine coins from eastern Sicily, with particular emphasis on finds from Polish archaeological excavations in Akrai/Acrae', financed by the Ministry of Science and Higher Education of the Republic of Poland (0116/DIA/2019/48). The process of registering and identifying these finds was supervised by Tomasz Więcek, who was the first to draw my attention to the challenges related to the mint attribution of certain coin types showing Western Byzantine stylistic features.

The structure of the article reflects the interdisciplinary character of the research. Following the historical overview of coin production during the reign of Justinian I, the paper reviews previous hypotheses concerning the attribution of *MIBE* 229, and presents a new analysis based on stylistic, metrological, and distributional data. The next section discusses archaeological evidence from Sicily, with particular emphasis on the finds from Akrai, and compares them with museum collections from other regions of the former Byzantine Empire. Subsequently, the study presents the results of chemical composition analyses (pXRF), aimed at identifying potential metallurgical markers indicative of regional production practices. Finally, the discussion and conclusions synthesise the results, evaluating the probability of a Sicilian origin of *MIBE* 229.

Historical Context

During the reign of Justinian I, the Byzantine Empire underwent significant territorial expansion,[2] which was reflected in the establishment of new coin production centres. The Byzantines minted coins at Carthage,[3] which they had taken from the Vandals. In Italy, they maintained the operation of mints in Rome and Ravenna,[4] both of which had been active during Ostrogothic rule, while the Milanese mint, already marginalised before the Byzantine conquest, ceased to function entirely.[5] In Rome, the Byzantines likely resumed minting operations as early as AD 537,[6] shortly after the city was captured by Belisarius. The Roman mint produced both gold and bronze coinage, supplying a portion of the *Italia Suburbicaria* diocese as well as the *Urbs* itself.[7] Ravenna, recaptured in AD 554, became the administrative centre of the Italian prefecture, and housed a mint that, like Rome, struck coins in gold and copper alloys.[8] The precise mint attribution of silver coinage produced in Italy remains unclear.[9] Following the interpretation of W. Hahn, it can be suggested that silver coins were minted in both Rome and Ravenna, with Rome producing a larger volume.[10] Silver emissions from these two mints primarily circulated near their production centres, in northern Italy, Rome, and its surrounding areas.[11] The reign of Justinian I also saw the activity of short-lived mints. Among these was the mint in Salona.[12] Coins marked with the letter 'P' in the exergue have been alternatively attributed to Perugia, Pula, Padua, or Naples.[13] However, due to the lack of conclusive evidence, any attempt to precisely determine the provenance of these issues must, for now, be regarded as uncertain.

[2] Sarris 2023, pp. 169–217.
[3] Hahn 2013, p. 46. Cécile Morrisson has made a significant contribution to the advancement of research on the coinage of Carthage (e.g. Morrisson 1988).
[4] Hahn 2013, pp. 48–49.
[5] *MEC* I, p. 34.
[6] More about the argumentation in: Hahn 2013, p. 48.
[7] Morrisson 2011, p. 416; Hendy 1985, p. 401.
[8] Hahn 2013, pp. 48–50, 53, 69–71; Hendy 1985, p. 401.
[9] Kent 1982, pp. 275–282; Hahn 2013, pp. 54–55.
[10] Hahn 2013, pp. 54–56.
[11] Morrisson 2011, pp. 416–417.
[12] The existence of a mint in Salona remains a subject of debate. The stylistic features of coins attributed to Salona stand out significantly compared to those struck in Ravenna or Rome. A substantial number of such coins have been documented in Balkan collections (Mirnik, Šermov 1998), supporting the hypothesis of local production. However, recent studies on material from Ravenna have introduced alternative interpretations that may challenge the validity of this attribution. Among these, the work of Elena Baldi (Baldi 2017) presents evidence that could call into question the traditional identification of these coins as Salonian issues.
[13] A summary of the discussion on the origin of coins marked with 'P' in: Hahn 2013, p. 72.

The Sicilian Mint

The question of whether a mint was established on Sicily during the reign of Justinian I remains a topic of scholarly debate.[14] The earliest coin types that can be definitively linked to minting activity on the island date to the reign of Maurice Tiberius (from AD 582). These coins feature mint marks referring to the city of Catania (CAT) and the island of Sicily (SE/CI/LI/A).[15]

However, research on local museum collections and coin hoard discoveries has led scholars to propose the Sicilian origin of several gold and bronze coin types dated to the reign of Justinian I. Wolfgang Hahn and Niall Fairhead, in their study of the *Monte Judica* hoard, identified two types of *solidi*, two types of *semisses*, and one type of *tremissis* that they attributed to Sicilian minting during Justinian's rule.[16] This group comprised nineteen coins, whose obverse design details significantly differed from known issues of the Ravenna and Rome mints. The location of the hoard's discovery—Castel di Judica, approximately 50 km from Catania—along with its stylistic distinctiveness, served as the basis for their attribution to a Sicilian mint.

However, Cécile Morrisson and Vivien Prigent have argued that these coins do not form a cohesive stylistic group.[17] Furthermore, basing the attribution solely on the findspot is problematic, as the Catanian Plain has yielded coins from all Italian mints, as well as from Carthage, Constantinople, and other eastern mints.[18] Additionally, no 'Sicilian' gold coin types from Justinian's reign have been found in archaeological contexts on the island. Setting aside the issue of a Sicilian gold coinage, which remains unresolved due to insufficient data, the reported research was focused on bronze coinage.

In the latest edition of *MIBE*, W. Hahn assigned several types of bronze coins to the group of 'Unattributed Copper Issues of Justinian I Connected with the Italian Parts of the Empire', some of them were specifically designated as 'Sicilian groups'.[19] Those types were cautiously suggested—due to the lack of comprehensive studies on local Sicilian collections—as possibly originating from Sicily. Among them are *folles* and half-*folles* marked with an abbreviation CON (Constantinopolis).[20] The use of this mint mark may be linked to the island's administrative status. Following the provisions of *Novella* 75 from Emperor Justinian's I *Constitutiones*,[21] Sicily effectively functioned as an imperial domain, administered by a *praetor* based in Catania, who was responsible to two imperial court officials, operating independently from the Italian and African prefectures.[22] It is plausible that the presence of the 'CON' mint mark, or the absence of any markings on some coins with a potentially Sicilian origin, reflects the island's direct administrative subordination to Constantinople.

MIBE 229

The introduction of 10-*nummi* coins into circulation was a consequence of the monetary reform of Anastasius I.[23] During the reign of Justinian I, *dekanummia* were minted in Constantinople, Nicomedia, Cyzicus, Antioch, Thessalonica, Carthage, Rome, Ravenna, and Salona, although the last two attributions remain debatable due to the absence of mint marks. As a result of Justinian's

[14] See below, notes 27–33.
[15] *MIBEC*, Maurice Tiberius, 136, 140, pl. 28.
[16] Hahn, Fairhead 1988, pp. 33–34.
[17] Morrisson, Prigent 2011, p. 427.
[18] Guzzetta 1986, pp. 121–133; Castrizio 1991, pp. 67–75; Morrisson, Prigent 2011, p. 427.
[19] Hahn 2013, pp. 73–74.
[20] *MIBE* 242–243.
[21] Just., *Nov. 75* (Schoell–Kroll).
[22] Hendy 1985, pp. 404–405.
[23] A comprehensive study on the reform and its possible sources in: Hendy 1985, pp. 475–490.

Novella 47,[24] issued on 29th August, AD 537, the central mints began adding regnal year marks to their coins in AD 538.[25] On bronze coinage, the regnal year was the most commonly used system, while longer cycles, such as indictions, were applied only sporadically. In Italy, regnal year marks first appeared on coins in the 26th year of Justinian's reign (AD 552).[26]

MIBE 229 *dekanummia* have historically been associated with Byzantine Italy's coinage based primarily on comparative stylistic analysis. A distinctive feature linking them to bronzes with secure attributions (marked ROMA/RAVENNA) is the wreath border on the reverse [Fig. 1].[27] At the beginning of the twentieth century, Warwick Wroth attributed these *dekanummia* to the Ravenna mint.[28] In his research, he classified uncertainly attributed coins with Italian stylistic characteristics into Roman and Ravennate issues. His primary criterion for distinguishing between these mints was the presence of Greek or Latin value marks. On this basis, he identified half-*folles* marked 'XX' as Roman, and assigned coins marked with 'M' and 'I' to Ravenna. During Wroth's time, the British Museum collection included *MIBE* 229 *dekanummia* dated to the 29th, 36th, and 37th regnal years of Justinian I.[29]

Fig. 1. Justinian I, *dekanummium MIBE* 229 from the collection of De Nederlandsche Bank (after: https://www.denieuweschatkamer.nl/geldcollectie/tentoonstelling-en-online-collectie/nationale-numismatische-collectie/detail/ro-13241).

In subsequent decades, museum cataloguing projects did not significantly alter Wroth's conclusions, though they expanded the range of regnal years recorded on *dekanummia*. The Dumbarton Oaks collection catalogue includes *MIBE* 229 coins from regnal years 26, 27, 28, 30, 31, 35, 36, 37, and 38.[30] Notably, *dekanummia* from the 30th regnal year feature two stars in the right field of the reverse, an element believed to commemorate Justinian I's *tricennalia*. In her catalogue of the Bibliothèque Nationale collection, C. Morrisson reaffirmed the attribution of *MIBE* 229 to the Ravenna mint.[31] It was only later that W. Hahn, in both *MIB* and *MIBE*, revised Wroth's attribution, assigning *MIBE* 229 to Rome. He argued: 'Bisher ist dieser Typ Rav zugewiesen worden, er paßt aber besser ins römische System'.[32] Then in *MIBE*: 'They have no mint mark (…) but must be Roman, because Ravenna is supplied otherwise'.[33]

[24] Just., *Nov.* 47.
[25] This occurred in the 12th year of Emperor Justinian I's reign (AD 538–539), which is why the earliest coins bear the inscription XII in the right field of the reverse.
[26] At this time, the issuance of *MIBE* 229 took place. The earliest specimens are marked with the 26th regnal year. The previously mentioned coins, potentially originating from Sicily, but bearing the Constantinopolitan mint mark, are dated from the 14th to 16th regnal year.
[27] Hahn 2013, pls. 32, 33.
[28] Wroth 1908, 404, p. 70.
[29] Wroth 1908, 404–409, pp. 70–71.
[30] *DOC* I, pp. 347–355.
[31] *BNF* I, Rv/AE/02–07.
[32] *MIB* I, p. 74.
[33] Hahn 2013, p. 70.

Hahn also identified a variant (*MIB* 229b) dated to Justinian's 30th regnal year.[34] Thanks to these cataloguing efforts, it has been established that *MIBE* 229 was minted between AD 552 and 565, covering regnal years 26–38.[35] Notably, there is still no known example dated to Justinian's 33rd regnal year.

Weight Standard of *MIBE* 229

Based on his analysis of the weight of Western Byzantine *folles*, including those with clear mint marks indicating their place of production (e.g., RAV/RAVENNA), W. Hahn determined that the weight standard introduced in AD 552 in the western part of the Byzantine Empire followed a ratio of 21 ¾ *folles* per pound, yielding a theoretical follis weight of 15.06 g.[36] Maintaining the 1:4 ratio between *dekanummia* and *folles*, the theoretical weight of a Western Byzantine *dekanummia* minted after AD 552 would be 3.765 g. By averaging the weight of 54 well-preserved *MIBE* 229 specimens, I obtained an average weight of 3.603 g [Fig. 2].

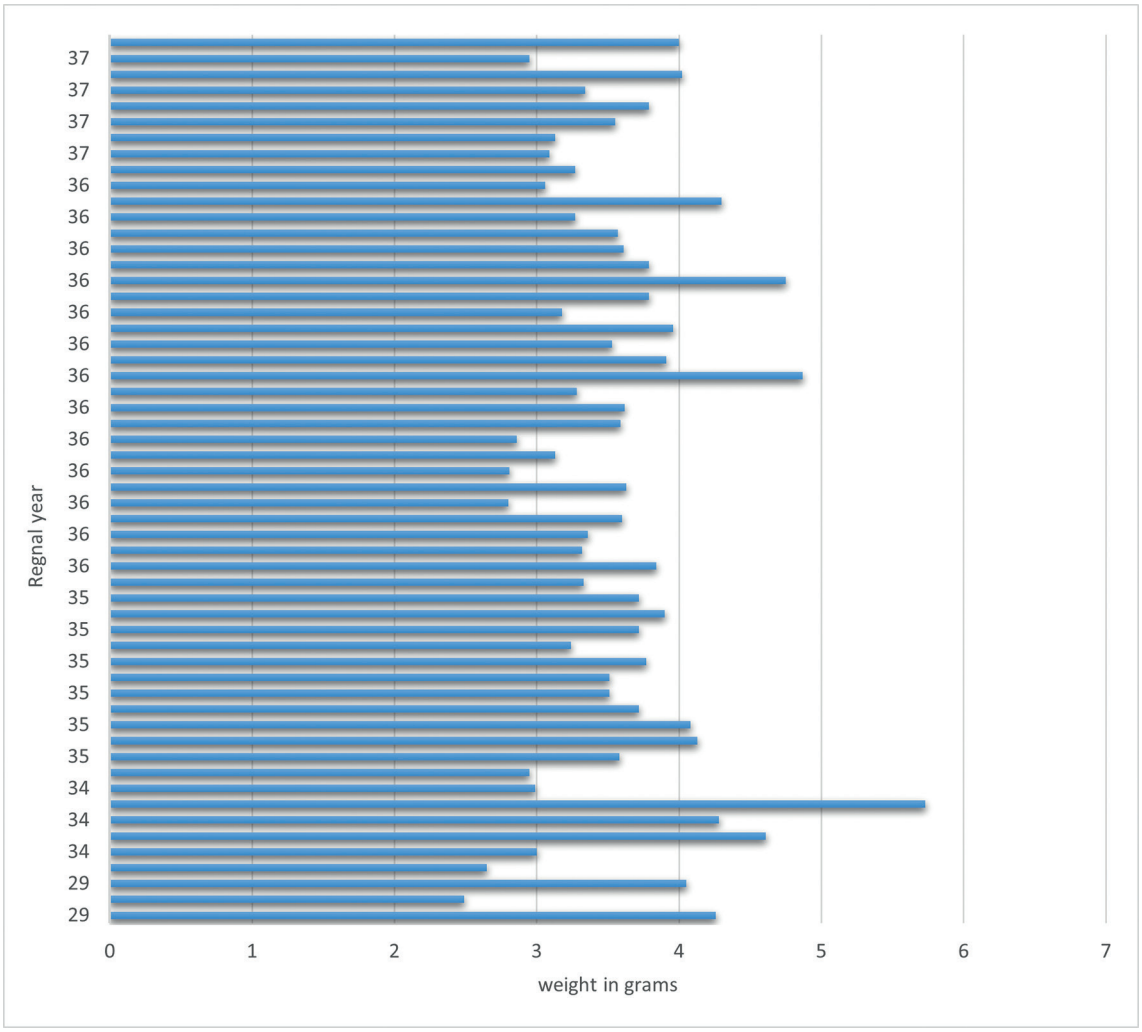

Fig. 2. Weights of 54 well-preserved specimens of *MIBE* 229, including the year of reign (E. Malewicz).

[34] *MIB* I 229b.
[35] *MIB* I, pl. Justinianus I./Kupfer Rom.
[36] *MIB* I, p. 27.

This calculation does not account for the average weight loss over time due to circulation and wear. The deviation from the theoretical weight is therefore 4.3%.[37] Given this, it can be concluded that *MIBE* 229 *dekanummia* were struck following the western weight standard, introduced simultaneously with the first issues of this type in AD 552.

Reevaluating the mint attribution

It is unsurprising that the mint attribution of *MIBE* 229 has never been a primary focus in Byzantine numismatic studies. The reassignment of these coins from Rome to Ravenna (or *vice versa*) does not significantly alter the broader understanding of monetary production in Italy. This is particularly evident given the large number of silver and gold issues that, despite Western Byzantine stylistic features, remain without certain mint attribution. However, the attribution of *MIBE* 229 becomes more intriguing when considering the hypothesis of a Sicilian origin, first proposed by C. Morrisson and V. Prigent,[38] and later developed by V. Prigent.[39] If confirmed, this type would represent one of the earliest, possibly the very first, bronze emissions struck in Byzantine Sicily. They argued that the type should be reattributed to Sicily due to its frequent occurrence in Sicilian collections: 'Al contrario invece il decanummo *MIBE* 229 attribuito a Roma dovrebbe essere trasferito alla zecca siciliana a causa delle numerose attestazioni nelle collezioni locali dove costituisce circa la metà di tutti i decanummi di Giustiniano rinvenuti'.[40] However, Morrisson and Prigent did not provide specific details about these collections, or the exact number of *MIBE* 229 coins they contained. Furthermore, they did not compare these to Italian collections. A more detailed development of this initial argument appeared in V. Prigent's study, *La circulation monétaire en Sicile aux VI^e^ et VII^e^ siècles*, where he identified fifteen specimens of *MIBE* 229 in Sicilian collections and two additional examples from the Museo Bottacin, which entered the museum as purchases from Sicily. He mentioned only four additional *MIBE* 229 coins from collections outside Sicily, and highlighted that *MIBE* 229 does not appear in the well-documented archaeological context of Crypta Balbi in Rome.[41]

Coins from Sicilian Collections and Archaeological Finds

The Sicilian collections cited by V. Prigent largely contain coins that can indeed be considered to have originated on the island. The Museo Regionale di Gela houses Byzantine coins acquired through judicial confiscations from various locations in Sicily. Notably, this collection contains four *MIBE* 229 coins;[42] not just one, as originally listed by Prigent. Additionally, the Baldanza de Messine,[43] Zelantea d'Acireale,[44] Alessi d'Enna,[45] and Mandralisca Cefalù[46] collections were assembled from locally sourced coins within Sicily. V. Prigent also provides information on two

[37] For example, the average weight of Constantinopolitan *dekanummia* from the period of the first reform introduced by Anastasius I (with a *follis* weighing 9.1 g) is 2.15 g based on a sample of sixty-five well-preserved coins. The deviation of the actual weight from the theoretical weight is therefore slightly over 7%, according to the unpublished documentation by a fellow numismatist and researcher of Byzantine coinage Juri Rajala.

[38] Morrisson, Prigent 2011, p. 428.

[39] Prigent 2013, pp. 139–160.

[40] Morrisson, Prigent 2011, p. 428.

[41] Prigent 2013, p. 144.

[42] Castrizio 2004, pp. 121–122.

[43] Castrizio 1994, pp. 29–73.

[44] Manganaro 1970, pp. 273–275.

[45] Castrizio 1991, p. 67.

[46] The collection was established based on the holdings of Enrico Pirajno, Baron of Mandralisca. Coins from nearby Lipari were also included, totalling approximately 280 pieces out of 2,500. About the origins of the collection in: Crisà 2011 p. 374.

MIBE 229 coins from Syracuse and Palermo,[47] but does not refer to specific collections. As a result, the total number of *MIBE* 229 specimens from these Sicilian collections amounts to eighteen examples. This list is further supplemented by two additional coins from the Museo Bottacin, which are known to have Sicilian provenance.[48]

Of particular significance for determining the mint attribution of *MIBE* 229 are the finds from Polish archaeological excavations in Akrai, which yielded five specimens of this type. During excavations in Akrai, a total of 102 Byzantine coins were uncovered. Their good state of preservation allowed for precise typological classification based on known numismatic references. The collection includes issues from thirteen Byzantine emperors: Justinian I, Tiberius II Constantine, Maurice Tiberius, Phocas, Heraclius, Constans II, Constantine IV, Theodosius III, Constantine V, Nikephoros I, Michael I Rangabe, Leo V, and Michael II. The earliest Byzantine coin from Akrai was *MIBE* 229 minted in Justinian I's 26th regnal year (AD 552–553), while the latest was struck between AD 821–829, during the reign of Michael II. A distinctive feature of the Akrai assemblage is the overwhelming presence of locally produced coins. The vast majority were either minted or countermarked in Sicily. Only two half-*folles* of Heraclius originated from Constantinople, reaching the island without receiving a Sicilian countermark. A separate subgroup within the Akrai finds consists of the earliest Byzantine issues, including ten *dekanummia* and one *pentanummium* minted under Justinian I, Tiberius II Constantine, and Maurice Tiberius, dated between AD 552 and 602. Among the coins with definitive mint attribution, nearly 98% were either struck or countermarked in Sicily. When including early coins without mint marks—such as *MIBE* 229—this ratio remains as high as approximately 89%. [Fig. 3]

Including the coins from local Sicilian museum collections mentioned above, along with the finds from Akrai, there are a total of 25 specimens of *MIBE* 229 that can be clearly associated with Sicily.

Fig. 3. The best-preserved Justinian I *dekanummia MIBE* 229 from the Polish excavations in Akrai (photo by T. Więcek).

Coins from Finds and Local Collections from Outside Sicily

Among the Italian collections, three *MIBE* 229 coins are recorded from Ravenna.[49] These were likely found locally, but no specific provenance records have been preserved.[50] Additionally, a specimen from the collection of King Vittorio Emanuele may also originate from Italy, though its provenance remains undocumented.[51] So far, I am not aware of any archaeological finds of *MIBE* 229 from Italy.

[47] Prigent 2013, p. 144.
[48] Callegher 2000, pp. 100–101.
[49] Ercolani Cocchi 1983, pp. 72–73.
[50] Ercolani Cocchi 1983, pp. 11–15.
[51] Callegher 2021, p. 99.

An aspect overlooked by V. Prigent is the presence of *MIBE* 229 coins in Balkan collections. The number of specimens from this region is relatively high, though most lack definitive local provenance and are only tentatively attributed to regional finds. Notable holdings include: Croatia: Osijek Archaeological Museum[52] – 1 specimen, Archaeological Museum of Istria, Pula[53] – 1 specimen, Zagreb Archaeological Museum[54] – 13 specimens; Albania: Archaeological Museum of Durrës[55] – 2 specimens; Greece: excavations at the Athenian Agora[56] – 1 specimen. In total, the Balkan collections contain 18 *MIBE* 229 specimens [Fig. 4].

However, the nature of these collections does not support the hypothesis that *MIBE* 229 was minted in the Balkans. These assemblages contain a mix of Byzantine coinage from all known western mints, including Ravenna, Sicily, Rome, Carthage, and Alexandria.[57] This heterogeneous composition suggests that these mints played a role in supplying the monetary circulation of the Balkan provinces. Additionally, these coins may have arrived in the Balkans alongside Byzantine military movements, especially given the high representation of coins from Justinian's reign, a period marked by military campaigns and troop deployments in the region.

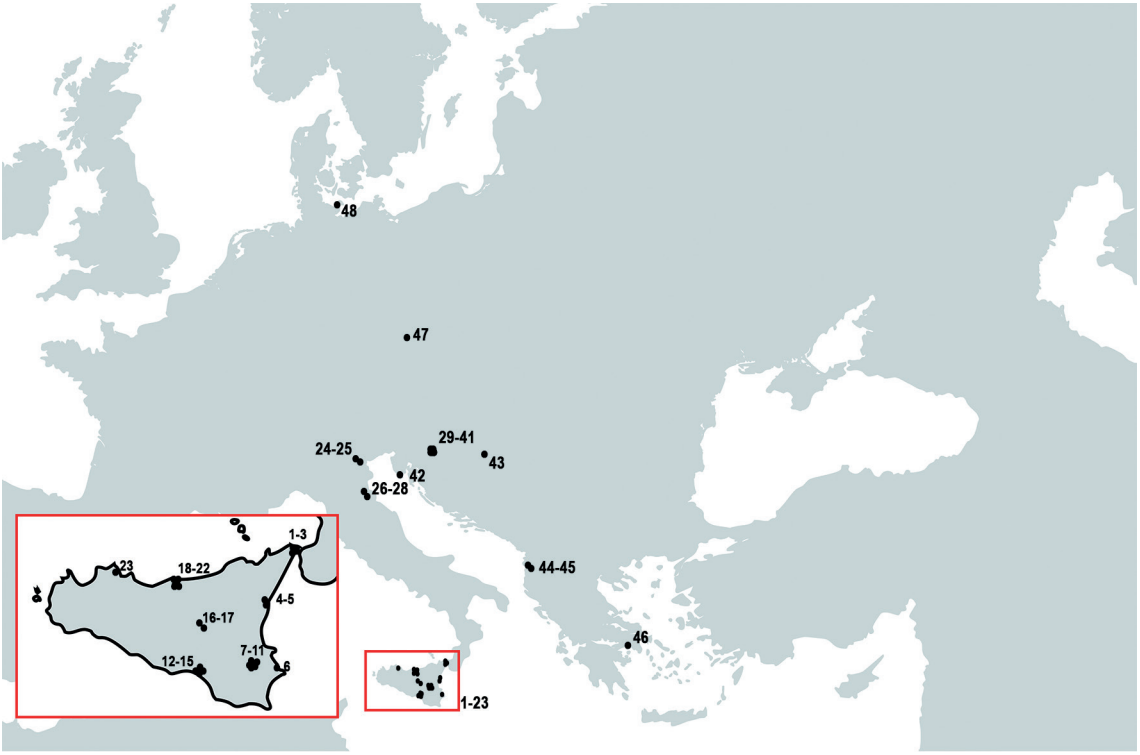

Fig. 4. Finds and collections of local museums mentioned in the text:
1–3 – Baldanza de Messine; 4–5 – Zelantea d'Acireale; 6 – Syracuse; 7–11 – Akrai;
12–15 – Museo Regionale di Gela; 16–17 – Alessi d'Enna; 18–22 – Mandralisca Cefalù;
23 – Palermo; 24–25 – Museo Bottacin; 26–28 – Museo Nazionale di Ravenna;
29–41 – Zagreb Archaeological Museum; 42 – Pula; 43 – Osijek Archaeological Museum;
44–45 – Archaeological Museum of Durrës; 46 – Athenian Agora;
47 – Poděbrady, 48 – Fehmarn (E. Malewicz).

[52] Göricke-Lukić 1992, p. 1155.
[53] Matijašić 1983, p. 224.
[54] Mirnik, Šemrov 1998, pp. 169–170.
[55] Hoti, Myrto 1991, p. 99.
[56] Thompson 1954, p. 68.
[57] Gandila 2016, pp. 133–134, 154–156.

Two *MIBE* 229 coins were found far outside the former Byzantine Empire borders. One in the Czech Republic,[58] and one in Northern Germany.[59] These are isolated finds, making their interpretation difficult due to the lack of contextual information.

The collected information on 47 finds of *MIBE* 229 coins can be divided into four zones: Sicilian – 25 specimens; Italian – 2 specimens; Balkan – 18 specimens; territories beyond the borders of the Byzantine Empire – 2 specimens.

Analysis of the Number of Coins by Regnal Year

As previously mentioned, *MIBE* 229 *dekanummia* were marked with the regnal years of Justinian I. I have collected information on 140 specimens with a legible regnal year and presented this data in a chart, which reveals clear patterns that can be linked to historical events. Among pre-AD 560 issues, the most commonly represented group is that of Regnal Year 29. However, the peak of coin production occurred between AD 560 and 565, encompassing regnal years 34, 35, 36, 37, and 38. It is possible that fluctuations in monetary supply during these periods were influenced not only by economic factors such as circulation saturation or shortages, but also by historical events: the first period of increased coin supply coincides with the end of the Gothic War (AD 554) and the formal establishment of Byzantine rule in Italy through the Pragmatic Sanction of 554.[60] The second peak (late 560s AD) coincides with the cessation of Frankish skirmishes in northern Italy around AD 560, likely contributing to economic stabilisation, which may have resulted in an increased demand for coinage to ensure adequate monetary circulation.[61] These observations suggest that *MIBE* 229 *dekanummia* were not only subject to general economic cycles, but were also influenced by broader geopolitical and military developments in Byzantine Italy [Fig. 5].

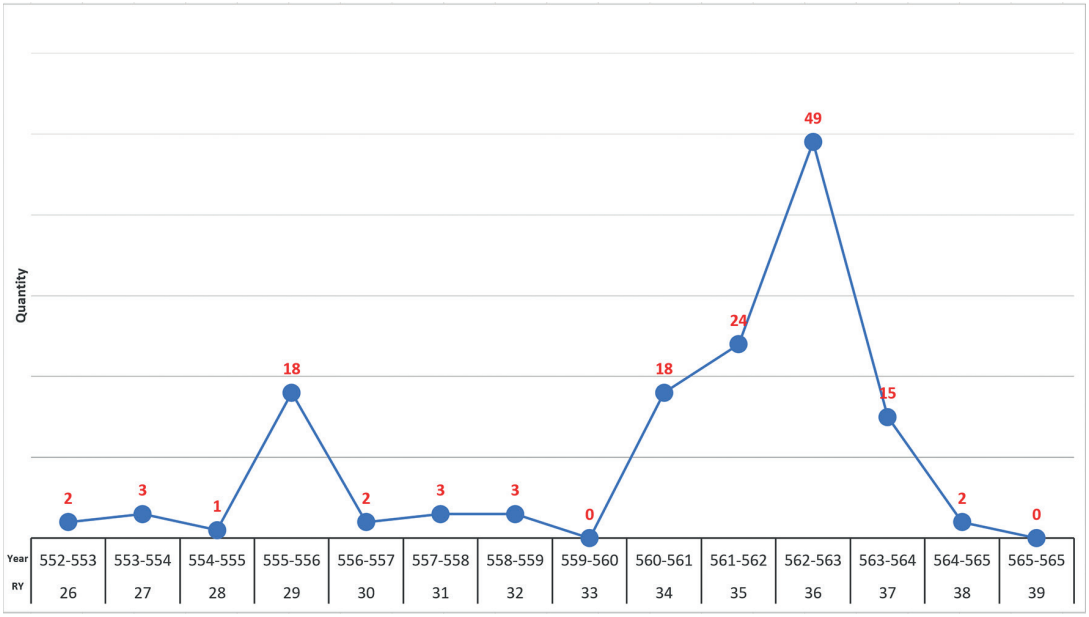

Fig. 5. Distribution of regnal years among 140 specimens of *MIBE* 229 coins. The abbreviation RY designates regnal year (E. Malewicz).

[58] Militký 2013, p. 186.
[59] *FMRD* VIII, p. 83.
[60] Just., *Nov.*, app. VII.
[61] Lin 2021, pp. 403–431.

Chemical composition of *MIBE* 229

As part of this research project, pXRF analyses on coins discovered in Akrai were conducted. This study was inspired by the chemical composition analyses performed by Timothy Padfield and Philip Grierson, published in *Analyses of Byzantine Copper Coins by X-Ray Methods*.[62] The authors observed correlations in elemental composition differences between emissions from different mints. Their conclusions included, among other findings, the presence of tin in Roman issues, along with minor additions of tin and iron, as well as a low nickel content in Italian emissions.[63] The reported research on Sicily was conducted during the 2020 excavation season. The analyses were performed using a S1 Titan 500 spectrometer by Bruker Nano Inc., equipped with an X-ray tube with a rhodium anode. The measurements were taken under the following conditions: excitation current: 40 kV, intensity: 7 µA, titanium filter: 25 µm, measurement time: 30 s. To obtain reliable results, it was necessary to remove the patina, as surface analyses proved to be inaccurate. Qualitative analyses of the patina surface revealed the presence of Pb, Cu, Sn, and Fe: likely post-depositional. Peaks in the 2.3–2.5 keV, 10.32–10.72 keV, and 12.66 keV regions are associated with a higher percentage of lead in the patina [Fig. 6]. These peaks changed significantly after the patina was removed with a diamond cutter [Fig. 7]. Quantitative analyses allowed the observation of changes in lead content from 68–70% before patina removal to 20.4–21% after patina removal. The core composition of *MIBE* 229-type coins was as follows: Cu: 70.59–74.21%; Sn: 3–4; Pb: 20.4–21%.

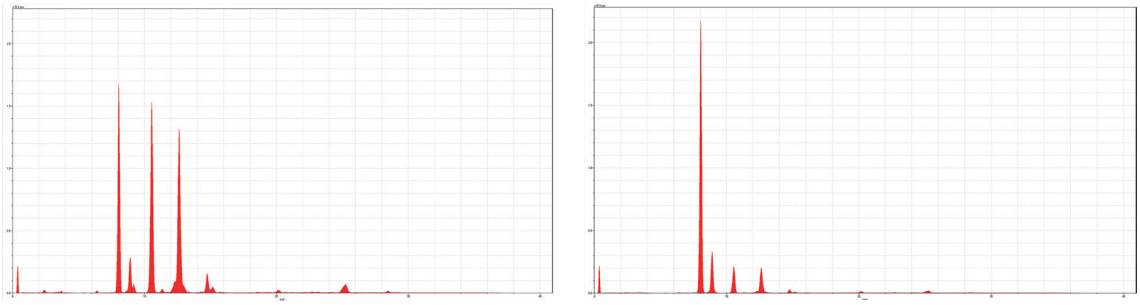

Fig. 6. Spectra obtained using the Artax software by Bruker;
before patina removal (left) and after patina removal (right) (E. Malewicz)

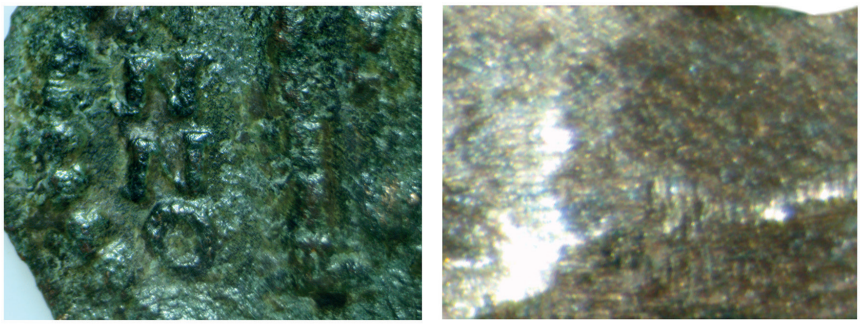

Fig. 7. The patina-covered surface (left) and the edges after the patina had been removed
using a diamond cutter (right) (E. Malewicz)

[62] Padfield, Grierson 1972.
[63] Padfield, Grierson 1972, pp. 229–231.

For later coins of Maurice Tiberius with Sicilian mint marks, the values were very similar. Unfortunately, due to the current lack of an extensive comparative database—especially core composition studies conducted using destructive methods—these results cannot yet be considered definitive proof of the Sicilian origin of this coin type. Overall, the relatively high lead content of approximately 20% supports the hypothesis that these coins were struck using metal obtained from the remelting of Ostrogothic emissions.[64]

Conclusions

The analysis of *MIBE* 229 *dekanummia*, based on stylistic characteristics, weight standards, and distribution patterns, strongly supports their attribution to a Western Byzantine mint. Although earlier studies have primarily linked these coins to Rome or Ravenna, a reevaluation of the existing evidence presents a strong argument for their Sicilian origin. The high concentration of *MIBE* 229 coins in Sicily, particularly in archaeological contexts such as Akrai, indicates that they were likely produced locally rather than imported from the Italian mainland. Moreover, the homogeneity of the Byzantine coin assemblage in Akrai, where the vast majority of finds are of Sicilian origin, further strengthens this hypothesis. Although the precise location of production remains uncertain, the existence of later Byzantine coin issues bearing the mint marks CAT (Catania) and SE/CI/LI/A (Sicily) suggests that a minting facility operated on the island by the late 6th century. Given the available numismatic and archaeological evidence, it seems reasonable to propose that *MIBE* 229 was struck in Catania, making it one of the earliest known bronze coinages of Byzantine Sicily. Further research, particularly metallurgical analyses and comparative studies of coin hoards, will be necessary to confirm this attribution with greater certainty. However, the findings presented in this study represent a significant step toward recognising the role of Sicily as a centre of early Byzantine coin production.

Abbreviations

BNF I	C. Morrisson, *Catalogue des monnaies byzantines de la Bibliothèque Nationale*, vol. I: *D'Anastase I^er^ à Justinien II (491–711)*, Paris 1970.
DOC I	A. R. Bellinger, P. Grierson, *Catalogue of the Byzantine Coins in the Dumbarton Oaks Collection and in the Whittemore Collection*, vol. I: *Anastasius to Maurice (492–602)*, Washington, D.C., 1966.
FMRD VIII	H. Komnick, *Die Fundmünzen der römischen Zeit in Deutschland, Abteilung VIII: Schleswig-Holstein und Hamburg*, Berlin 1994.
Just., *Nov.*	*Corpus Iuris Civilis*, vol. 3, eds. R. Schoell, W. Kroll, Berlin 1872–1895.
MEC I	P. Grierson, M. Blackburn, *Medieval European Coinage*, vol. I: *The Early Middle Ages (5th–10th Centuries)*, Cambridge 1986.
MIB I	W. Hahn, *Moneta Imperii Byzantini*, vol. I: *Von Anastasius bis Justinianus I (491–565)*, Wien 1973.
MIBE	W. Hahn, *Money of the Incipient Byzantine Empire (491–565)*, 2nd ed., Vienna 2013.

[64] The chemical composition analysis of Ostrogothic coins and certain early Byzantine types has been published in: Asolati 2012, pp. 187–230.

MIBEC W. Hahn, *Money of the Incipient Byzantine Empire Continued (Justin II – Revolt of the Heraclii, 565–610)*, Vienna 2009.

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