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Przygotowanie do druku:  
LogoScript Sp. z o.o.  
ul. Dembowskiego 4/54, 02-784 Warszawa  
tel. +48 22 100 62 91  
e-mail: [logoscript@logoscript.pl](mailto:logoscript@logoscript.pl), [www.logoscript.pl](http://www.logoscript.pl)

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Druk i oprawa:  
Agencja Wydawniczo-Poligraficzna GIMPO  
ul. Transportowców 11, 02-858 Warszawa  
tel. +48 501 076 031  
e-mail: [gimpo@poligrafia.waw.pl](mailto:gimpo@poligrafia.waw.pl)

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JAROSŁAW BODZEK

**HELLENISTIC COINS FROM THE JAGIELLONIAN UNIVERSITY  
EXCAVATIONS AT THE HELLENISTIC-ROMAN AGORA  
OF NEA PAPHOS (*PAPHOS AGORA PROJECT 2011–2019*):  
PRELIMINARY OBSERVATIONS<sup>1</sup>**

**ABSTRACT:** The present article is a short and very preliminary report about the Hellenistic coins found during excavations conducted by the team of the Institute of Archaeology, Jagiellonian University at the agora of the ancient Nea Paphos in 2011–2019. The first archaeological research at the agora had been conducted in the late 1960s and 1970s by Kyriakos Nicolaou. The Jagiellonian University team, led by Ewdoksia Papuci-Władyka started to explore the agora area in 2011. There were at least 480 coins and coin flans found during the Polish excavations. Great part of them are minted in the Hellenistic Period. The group consists mainly of Ptolemaic coins (over 67%), but includes also Cypriot bronzes of the *Zeus/Zeus* type (20.5%), coins of Syro-Palestinian region (Seleucid, Hasmonean rulers – over 6%), Macedonian-Antigonid issues (3.8%), the coins from south-eastern Aegean and Asia Minor (1.6%) as well as others. Some preliminary observations concerning chronology and structure of the finds are presented.

**ABSTRAKT:** Niniejszy artykuł jest krótką i bardzo wstępną informacją na temat monet hellenistycznych odkrytych podczas prac wykopaliskowych prowadzonych przez archeologów z Instytutu Archeologii UJ na agorze starożytnego Nea Pafos w latach 2011–2019. Pierwsze badania archeologiczne agory przeprowadził na przełomie lat 60. i 70. XX w. Kyriakos

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<sup>1</sup> The original version of the current paper entitled Hellenistic coins from The Jagiellonian University Excavations at the ancient Agora of Nea Paphos (Paphos Agora Project 2011–2016) had been presented during international conference Numismatica Centroeuroepaea III, held at Bystrzyca Kłodzka on 17–20 of September 2018. I would like to thank professor Ewdoksia Papuci-Władyka for the possibility to work with the coins from Jagiellonian University excavations at the agora of Nea Paphos and for permission to publish them. The Project is funded by the National Science Center, Poland Maestro grant: no. 2014/14/A/Hs3/00283 in 2015–2019 with contributions by the Faculty of History of the Jagiellonian University"

Nicolaou. Zespół archeologów z Uniwersytetu Jagiellońskiego pod kierownictwem Ewdoksji Papuci-Władyka rozpoczął eksplorację terenu agory w 2011 r. Podczas polskich wykopalisk znaleziono co najmniej 480 monet i krążków monetarnych. Znaczna część z nich (co najmniej 180 egzemplarzy) została wybita w okresie hellenistycznym. W skład tej grupy wchodzi głównie monety ptolemejskie (ponad 67%), ale także bite na Cyprze brązy typu *Zeus/Zeus* (20,5%), monety z regionu syro-palestyńskiego (Seleucydzi, Judea – ponad 6%), monety macedońsko-antygonidzkie (3,8%), monety z południowo-wschodniej części basenu Morza Egejskiego i Azji Mniejszej (1,6%) jak i inne. W artykule przedstawiono wstępne obserwacje dotyczące chronologii i struktury znalezisk.

KEYWORDS: Cyprus, Nea Paphos, agora, Hellenistic coins, finds

SŁOWA KLUCZOWE: Cypr, Nea Pafos, agora, monety hellenistyczne, znaleziska

## INTRODUCTION

Thanks to its natural resources, primarily copper and timber, as well as its strategic location the island of Cyprus continued to play an important role in the Hellenistic Age.<sup>2</sup> The history of Hellenistic Cyprus has been strongly connected with the Ptolemaic dynasty. Starting with the end of the penultimate decade of the 4<sup>th</sup> century BCE until the fall of Cleopatra VII in 30 BCE, except for the short periods of Antigonid (306–295 BCE), Seleucid (168 BCE) and Roman rule (58–47 BCE), the island remained under direct control of the Lagids.<sup>3</sup> From the late 3<sup>rd</sup> century BCE the capital of Ptolemaic Cyprus became Nea Paphos. The city was founded at the end of the 4<sup>th</sup> or at the beginning of the 3<sup>rd</sup> centuries BCE and in the later 3<sup>rd</sup> century BCE got the position of the most important center on the island and the site of its governor.<sup>4</sup> Nea Paphos was located on the western part of the island's southern shore, possessed a good artificial harbor and strategic location. After Roman conquest Nea Paphos held its position till the 4<sup>th</sup> century CE, when after the disastrous earthquake in CE 346 it was replaced as the island's capital by Salamis (Constantia).<sup>5</sup>

The heart of almost every ancient Greek city or town was an agora. It was not different in the case of Nea Paphos. The agora is located in the central part of

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<sup>2</sup> Hill 1940; pp. 156–172 and 173–211; Borowicz 2014; cf. Bravo, Wipszycka 1992, pp. 161–165.

<sup>3</sup> Hill 1940, pp. 173–211; Bravo, Wipszycka 1992, p. 152; Borowicz 2014, pp. 155–164; Kapera 2014.

<sup>4</sup> On different views of the origins of Nea Paphos see Mitford 1960, pp. 204–205; Nicolaou 1966; Kapera 1968, p. 140; Daszewski 1988; Młynarczyk 1990, p. 67; Bekker-Nielsen 2000; Balandier 2011; Borowicz 2014, pp. 147–148; Misk 2020, pp. 69–71; there the further literature.

<sup>5</sup> Mitford 1980, p. 1321; Raszewski 2014, p. 230.

the ancient city, to the East of one of probable acropoleis (Fanari Hill) and to the North-East of the famous ancient residential quarter at Maloutena site. It has a rectangular plan limited by porticoes at the South, East and North, so-called Odeon (*Bouleuterion*) to the West and covers ca. 24,800 m<sup>2</sup>.<sup>6</sup>

The pioneering archaeological research at the agora was done by the Cypriot archaeologist Kyriakos Nicolaou in 1968–1978.<sup>7</sup> Nicolaou first recognized the area as an agora, although he dated it to the Roman Period. The new chapter was opened in 2011 when the archaeological expedition of the Jagiellonian University, led by professor E. Papuci-Władyka, started excavations (*Paphos Agora Project* – hereafter PAP).<sup>8</sup> Thanks to the nine years of the interdisciplinary research it was proved that the agora existed in that location already in the Hellenistic period and its correct spatial coverage was established. The excavations, conducted as a part of the PAP, brought to light frequent finds of architectural remains and movable artifacts.

### COINS

Except pottery, the most frequent category of finds at Nea Paphos agora are coins. In total 480 coins and coin flans were found during seasons 2011–2019.<sup>9</sup> Almost all coins from the agora excavations had to undergo conservation measures. The conservation work was made by professor Marcin Biborski from the Laboratory for Archaeometallurgy and Historical Artifacts Restoration of the Institute of Archaeology, Jagiellonian University. Due to a bad state of preservation and/or a wear 187 items cannot be identified at the moment. Of the remaining more or less precisely identified 293 coins 180 (37.5% of all finds) can be assigned to the Hellenistic period (Table 1).<sup>10</sup> This makes the Hellenistic coins the largest group among coin finds from the agora.

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<sup>6</sup> Misk 2020, pp. 292–293.

<sup>7</sup> Nicolaou 1970a, pp. 16–17; Nicolaou 1970b, p. 75; Nicolaou 1970c, p. 395; Nicolaou 1972a; Nicolaou 1973a, pp. 56–57; Nicolaou 1973b, p. 440; Nicolaou 1975a, pp. 21–23, 27, 29–30; Nicolaou 1975b, pp. 130–131; Nicolaou 1976a, pp. 32–33; Nicolaou 1976b, p. 372; Nicolaou 1977a, pp. 41–43; Nicolaou 1977b, pp. 529–530; Nicolaou 1978a, pp. 36–37; Nicolaou 1978b, pp. 534–535; Nicolaou 1979, pp. 36–37; Nicolaou 1980, pp. 70–71.

<sup>8</sup> Papuci-Władyka, Machowski 2016; Papuci-Władyka *et al.* 2018; Papuci-Władyka 2020; Misk 2020.

<sup>9</sup> On some preliminary information about coin finds from agora see Bodzek 2016; Bodzek 2017; Bodzek 2020. Coin finds from Kyriakos Nicolaou's excavations were published by Ino Nicolaou (1990).

<sup>10</sup> In reality, the number of Hellenistic coins is higher. Many of the unidentified pieces found in agora could be assigned to Hellenistic period based on fabric and general look. In the current text we deal only with more or less identified coins.



1<sup>st</sup> century BCE. Such a general “dating” covers all issues traditionally attributed to particular Ptolemaic rulers of the period (starting with Ptolemy IX (101–88 BCE) and ending with Cleopatra VII). It is much safer to use that term, because the attributions of the particular issues to specific rulers are far from certain. At least 74 pieces can be attributed to the group, which is 61% of total Ptolemaic coin finds. The number includes both, well and less detail identified pieces. The most frequent Ptolemaic types from the agora are the issues listed by Svoronos under numbers 1814 (at least 9 exemplars; Fig. 1), 1698 (at least 11 exemplars; Fig. 2) and 1842 (at least 17 pieces), accompanied by other Lagid types represented in minor numbers. The earlier coins, dated to the period of reigns of Ptolemy II to Ptolemy VI (180–146/5 BCE) are less frequent (32 pieces in total). Among them at least 23 pieces are surprisingly dated to the 3<sup>rd</sup> century BCE. However, 15 of them are *Aphrodite-Arsinoe/cornucopia* or *dikeras* type coins, traditionally attributed to the rule of Ptolemy IV (221–204 BCE; Fig. 3). The dating has been recently commented by C.C. Lorber, who pointed out a possibility of much longer time of production of the very type and redated it to 2<sup>nd</sup>–1<sup>st</sup> century BCE.<sup>13</sup> Such an assumption could be supported by the context of at least some finds in the agora. If one accepts such later dating of the discussed type and, following this, exclude it from the group of issues of the 3<sup>rd</sup> century BCE, there will remain only eight coins dated for this period. These are issues of Ptolemy II and Ptolemy III (236–222 BCE). This corresponds well with the similar number of the registered 2<sup>nd</sup>–century issues counting 10 finds. Having in mind that two of them are extraordinary finds of silver teradrachms there would remain again eight finds dated for the period. The chronological structure of finds affects the question of origin of the Ptolemaic coins found in the agora. The dominant group form coins struck in Cypriot mints, first of all Nea Paphos, then Salamis and perhaps also other workshops.<sup>14</sup> To the whole group of the late 2<sup>nd</sup>–1<sup>st</sup> century issues one should add the above mentioned *Aphrodite-Arsinoe/cornucopia-dikeras* type coins which were most probably struck in the Nea Paphos mint.<sup>15</sup> The Alexandrian mint is less frequently represented, mainly by the coins dated to the 3<sup>rd</sup> century BCE. There were no registered coins struck in other regions of the Ptolemaic domain as yet. All the Ptolemaic coin types discovered in the agora have been also registered in other locations in Paphos.<sup>16</sup>

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<sup>13</sup> Cf. Lorber 2018, p. 136. M. Kreuzer (2009, pp. 41–42) attributed the issue to Times of Cleopatra VII. Such attribution was however rejected by O.M. Hoover (2005).

<sup>14</sup> Cf. Bodzek 2020, p. 380.

<sup>15</sup> Cf. Nicolaou 1990, p. 110.

<sup>16</sup> Cf. Bodzek 2020, pp. 379–382.



Fig. 1. Anonymous, AE, late 2<sup>nd</sup>–1<sup>st</sup> century BCE, Paphos Mint; Inv. No. PAP/FR218/2011, photo by M. Iwan, scale 1.5:1



Fig. 2. Late 2<sup>nd</sup>–1<sup>st</sup> century BCE, AE, Paphos Mint; Inv. No. PAP/FR8/2015, photo by R. Słaboński, scale 1.5:1



Fig. 3. Ptolemy IV (221–204 BCE) or 2<sup>nd</sup>–1<sup>st</sup> century BCE, AE, Paphos Mint; Inv. No. PAP/FR59/2014, photo by M. Iwan, scale 1.5:1

The second largest group among the Hellenistic coins consists of anepigraphic bronze pieces with the image of Zeus' head on the obverse and figure of standing Zeus, with a star over his head, holding ears of corn and a scepter on the reverse (Fig. 4). 37 pieces of this coin type were recorded in the agora excavations. The number makes up over 20.5% of all Hellenistic coin finds. However, it should be emphasized that almost half of the coins (16 pieces) came from one find spot, i.e. well S. 173.<sup>17</sup> There is also some confusion as to the attribution and dating of these coins. Some scholars attribute them to the Ptolemaic rule over Cyprus, some

<sup>17</sup> On Well S. 173 cf. Misk 2020, pp. 234–235; Kajzer 2019; Dobosz 2020, p. 235; Kajzer, Marzec 2020, p. 223.

other to the short period of the Roman Republican suzerainty over the island.<sup>18</sup> One way or another, they are certainly related to the Hellenistic period. Indeed, they show significant convergence with Ptolemaic issues from Cyprus in terms of fabric and style. One of the mint probabilities is Paphos itself.<sup>19</sup> The coins of this type are frequently recorded on other sites in Paphos and beyond the city.<sup>20</sup>



Fig. 4. Anonymous, AE, late 2<sup>nd</sup>–1<sup>st</sup> century BCE; Inv. No. PAP/FR217/2011, photo by M. Iwan, scale 1.5:1

As mentioned above there is a group of Macedonian-Antigonid coins among those found at the agora. It should be emphasized here the term “Macedonian-Antigonid” used here is more conventional than literal due to the uncertain attribution to an issuer of some of the coins (see below).<sup>21</sup> The group counts seven pieces. All belong to small bronze issues. The most frequent among them are those minted by Demetrios Poliorcetes (306–283 BCE). Due to the evidence of quite frequent circulation of coins of this type struck in Salamis, noticed in different locations in Paphos as well as in other Cypriot sites, we could guess, despite of their very bad state of preservation, that the exemplars found in the agora were minted in Salamis too.<sup>22</sup> Less frequent are the other coins belonging to the group. These could be generally

<sup>18</sup> The dating range from the 3<sup>rd</sup> till the 2<sup>nd</sup> century BCE; cf. Cox 1959, pp. 16, 107; Lichočka 1985; Lichočka 1998, pp. 122f; Nicolaou 1990, pp. 115–116; Helly 1970, pp. 208f, no. 16; cf. Bodzek 2020, p. 383.

<sup>19</sup> Cf. Nicolaou 1990, pp. 115–116.

<sup>20</sup> Paphos: House of Dionysos: 39 pieces, cf. Nicolaou 1990, pp. 58–62, nos 469–509; Odeon: 2 pieces, cf. Nicolaou 1990, p. 182, nos 10–11; at least 6 exemplars at Maloutena site excavations by Polish mission, cf. Lichočka 1985, p. 184, nos 1–6; Lichočka 1998, p. 122; Curium: 21 pieces — Cox 1959, p. 16, no. 128; one piece found during the exploration of a basilica by the Dumbarton-Oaks expedition — Nicolaou 1990, p. 116; one-during the exploration of the same by the University of Pennsylvania — Nicolaou 1990, p. 116; Salamis: Nicolaou 1990, p. 116; Idalium: Nicolaou 1990, p. 116.

<sup>21</sup> Cf. also Bodzek 2020, pp. 378–379.

<sup>22</sup> On coins of the very type struck in Salamis cf. Newell 1927, p. 25, no. 20, Pl. II, 9–10; Zapiti, Michaelidou 2008, nos 11–12. On their circulation in Cyprus cf. Nicolaou 1990, pp. 8–9, nos 15–20 (Paphos); Callot 2004, p. 14, nos. 17–19 (Amathus, Citium, Salamis). There were of course also coins of this type minted in other mints in circulation on the island; cf. Cox 1959, p. 5, nos 18–20.

dated to years 325–306 BCE. There is one possible Alexander the Great bronze and two anonymous *Macedonian shield with Gorgoneion/helmet* type coins (see below).

The next, slightly more numerous group form “Syro-Palestinian” issues. First of all one should mention here Judaeen coins minted by the rulers of the Hasmonean dynasty.<sup>23</sup> There are at least eight exemplars of Hasmonean coins registered during Polish excavations in the agora, which is a little over 4.4% of all Hellenistic coin finds (Fig. 5). The quite considerable percentage of such finds among Hellenistic coins from the agora is nothing unexpected. Numerous coins struck by Hasmonean rulers are also recorded in the other sites in Paphos as well as in other Cypriote cities. The problem of their presence was addressed by A. Destrooper-Georgiades.<sup>24</sup> One should add that there are known from the agora, but also from other sites quite numerous finds of Judaeen coins struck in the Imperial times.<sup>25</sup> The possible connection between these two groups is not entirely clear. One cannot exclude however that both Hasmonean and later Judaeen coins circulated together in the Imperial period.



Fig. 5. Alexander Jannaeus (103–76 BCE), AE; Inv. No. PAP/FR28/2011, photo by M. Iwan, scale 1.5:1

A minority among the “Syro-Palestinian” group form Seleucid bronzes.<sup>26</sup> There are only three such coins identified with some certainty. All could be dated to the 2<sup>nd</sup> century BCE. One is probably Antiochos III issue of common type *king’s diademed head/Apollo on omphalos* struck in Antioch mint (Fig. 6).<sup>27</sup> Next one belongs to serrate bronze issues. The coin is heavily worn out which makes impossible an attribution to a particular ruler or mint.

The least group of Hellenistic coins from the agora could be labeled as “South-eastern Aegean and Asia Minor”. There are three coins belonging to the group minted in Kos (Fig. 7) and Rhodes as well as by the Lycian League.<sup>28</sup>

<sup>23</sup> Cf. Bodzek 2020, p. 383.

<sup>24</sup> Destrooper-Georgiades 2006.

<sup>25</sup> Bodzek 2020, p. 387.

<sup>26</sup> Cf. Bodzek 2020, p. 383.

<sup>27</sup> Bodzek 2020, Pl. 122, 16.

<sup>28</sup> Cf. SNG Keckman I 702–724 (Rhodes); Ingvaldsen 2002, p. 369, issue XXVI, 1–6 (Cos); Troxell 1982, p. 101, no 72γ var., Pl. 13 (Phellus).

Two first are dated to the 2<sup>nd</sup> century, the last one was minted in the 1<sup>st</sup> century BCE, probably in Phellus. The presence of these issues among the coin finds from agora, confirm contacts of Cyprus with south-eastern Aegean known from other, mainly ceramic material.



Fig. 6. Antiochus III the Great (222–187 BCE)?, AE, denomination C, Antioch on the Orontes Mint?; Inv. No. PAP/FR16/2012, photo by M. Iwan, scale 1.5:1



Fig. 7. Caria, Cos, AE, ca. 170–145; Inv. No PAP/FR 96/2016, photo by R. Słaboński, scale 1.5:1

#### METAL AND DENOMINATIONS

The dominant majority among Hellenistic coins found in the agora are those minted in bronze. During the research in 2011–2014, only two silver Hellenistic coins were found, which is 0.93% of all finds. Both silver coins are Ptolemaic tetradrachms, and represent high-value denominations (Fig. 8).



Fig. 8. Ptolemy VI (180–145 BCE), AR tetradrachm, 180–179 BCE, Salamis Mint; Inv. No. PAP/FR12/2012, photo by M. Iwan, scale 1.5:1

Table 3. Denominations of bronze coins found in the agora of Nea Paphos

	ca. 10 mm	ca. 10–20 mm	20–25 mm	25–30 mm	over 30 mm
Ptolemaic	3	54	50	12	2
<i>Zeus/Zeus</i>		37			
Macedonian- Antigonid		7			
Syro-Palestinian	1	11			
SE Aegean	2	1			
<b>Total</b>	<b>6</b>	<b>110</b>	<b>50</b>	<b>12</b>	<b>2</b>

In the case of bronze coins, the diameters of the most range from slightly more than 10 to ca. 25 mm (cf. Table 3). There are three main denominations visible: the first is ca. 12–14 mm in diameter (mainly Ptolemaic *Aphrodite-Arsinoe III/cornucopia* or *dikeras* type), the second is ca. 15–17 mm in diameter (mainly Ptolemaic Svoronos 484, *Zeus/Zeus* type, Syro-Palestinian and Antigonid-Macedonian coins) and the third is about 22–24 mm in diameter (mainly Ptolemaic Svoronos 1698, 1711, 1814, 1842 and Cox 119). Comparatively few are coins less than ca. 10 mm in diameter but also ca. 25–30 mm and especially over ca. 30 mm in diameter. It means that in the agora smaller (less than 15 mm and less 20 mm in diameter) and middle denominations (ca. 22–24 mm) were in the most common use. It appears also that the foreign coins circulating in one way or another in the area belonged rather to smaller or small denominations.

#### CHRONOLOGICAL STRUCTURE

As was shown above the chronological range of issues represented among agora finds starts with the late 4<sup>th</sup> century BCE and ends with the fall of Cleopatra VII or little later. The question of this final caesura does not raise doubts, but the problem of the oldest coins found in the agora should be addressed here. In one of my earlier publications I stated that the oldest coins found in the discussed area are anonymous bronze of the *Macedonian shield/helmet* type (ca. 315–306 or 306–300 BCE; Fig. 9) and well known bronzes with *helmeted head of the king/prow* minted in ca. 300–295 BCE by Demetrius Poliorcetes (Fig. 10).<sup>29</sup> Most probably both belong to the local Cypriot issues (mint: Salamis).<sup>30</sup> However, a careful examination of the material revealed another interesting example (Fig. 11). A very bad preserved bronze coin (inv. no PAP/FR) can be recognized, basing mainly on the fragmentary survived legend [ΑΛΕΞΑ]ΝΔ[ΡΟΥ], as belonging to the common

<sup>29</sup> Bodzek 2020, pp. 378–379.

<sup>30</sup> Bodzek 2020, pp. 378–379.

Alexander's the Great bronze coin type *Heracles head/bow in bowcase and club*.<sup>31</sup> Such bronze issues, both lifetime and posthumous, were minted in the name of Alexander also in several Cypriote mints, i.e. Amathus, Citium, Curium, Paphos (so called *Palaepaphos*) and Salamis, between 333 and 317 BCE.<sup>32</sup> However, the state of preservation does not allow for the attribution of the coin from the Paphos agora to a specific mint or issue, it is tempting to consider it as a product of one of the Cypriot centers. Perhaps even Paphos (*Palaepaphos*) could be taken into consideration. This strengthens the thesis that the oldest coins circulating in the agora predate the final Ptolemaic conquest and some could even be issued by the rulers of independent Cypriot kingdoms. As was stated above the latest Hellenistic coins from agora can be dated to the reign of Cleopatra VII in case of Ptolemaic coins and even little later in case of exemplars minted in other mints.<sup>33</sup>



Fig. 9. Anonymous (Nikokreon?, Menelaos?), AE, 323–315 or 316–306 BCE, Salamis Mint;  
Inv. No. PAP/FR63/2014, photo by R. Słaboński, scale 1.5:1



Fig. 10. Demetrius I Poliorketes (306–283 BCE), AE, 300–295 BCE, Salamis Mint?;  
Inv. No. PAP/FR42/2011, photo by M. Iwan, scale 1.5:1



Fig. 11. Alexander the Great (336–323), AE, ca. 333–317 BCE?, a Cypriot Mint?;  
Inv. No PAP/FR42/2015, photo by Robert Słaboński, scale 1.5:1

<sup>31</sup> Price 1991, pp. 31–32; cf. Mørkholm 1991, pp. 42–54.

<sup>32</sup> Cf. Price 1991, pp. 383–384, nos 3090–3090A, 3099 (Amathus), pp. 384–386, nos 3111–3111A (Citium), p. 386, nos 3112–3114A (Curium), pp. 388–389, no. 3124 (Paphos), pp. 390–395, nos 3143–3147 (Salamis).

<sup>33</sup> For example RPC I, no. 3903 (Cleopatra VII).

Table 4. Chronological structure of PAP Hellenistic Coin Finds from the seasons 2011–2019

Period	late 4 <sup>th</sup> /early 3 <sup>rd</sup> cent. BCE	3 <sup>rd</sup> cent. BCE	2 <sup>nd</sup> cent. BCE	late 2 <sup>nd</sup> –1 <sup>st</sup> cent. BCE
Macedonian-Antigonid	7			
Ptolemaic		8	10	74 + 15?
<i>Zeus</i> / <i>Zeus</i>				37
Syro-Palestinian			3	8
SE Aegean			2	1

The dominant group among Hellenistic coins assembled from the agora form that dated to the late 2<sup>nd</sup> and 1<sup>st</sup> century BCE.<sup>34</sup> At least 137 such coins were registered, including 89 Ptolemaic, 37 of *Zeus*/*Zeus* type, eight of Hasmonean rulers and three struck in south-east Aegean mints. This makes over 76% of all finds. Such a chronological structure of coin finds clearly indicates the late 2<sup>nd</sup> and 1<sup>st</sup> centuries BCE as a period of intense monetary circulation in the agora. Additionally it is in line with the general dating of significant changes in the functioning of the agora in Nea Paphos.<sup>35</sup> First of all, significant architectural and urban changes took place in the agora in the late Hellenistic period.<sup>36</sup> The southern and eastern porticoes were erected, and the site itself took the form of a *tetrastoon*. Perhaps it was during this period that the agora began to function as a trading market. The intense coin circulation continued in the early Roman Imperial period.<sup>37</sup>

## CONCLUSIONS

The presented observations must be treated as preliminary. First, the work on the material is still ongoing. Secondly, it should be remembered that only 3% of the total area of the agora has been studied so far. It seems, however, that possible changes will concern more detailed arrangements, such as the possible presence of other coins preceding the Ptolemaic conquest (coins minted by the rulers of independent kingdoms of Cyprus), the percentage of individual Ptolemaic issues or the presence of coins minted in non-Cypriot mints. We can, however, as it seems, safely assume that such general findings as the dominance of Ptolemaic coin finds, the chronological and denomination structure of the latter, the significant presence of Hellenistic coins of the *Zeus*/*Zeus* type and those minted

<sup>34</sup> Of course the years of Roman rule between 58 and 47 BCE should be excluded.

<sup>35</sup> On spatial and architectural development of the agora see Miskz 2020.

<sup>36</sup> Miskz 2020, pp. 242–243.

<sup>37</sup> On finds of Roman coins in the agora cf. Bodzek 2020, pp. 383–389.

in Palestine will not change. Such a conclusion is prompted by the analysis of finds from other sites located in the area of ancient Nea Paphos, showing similar characteristics.

#### ABBREVIATIONS

- AJA – American Journal of Archaeology.  
 ARDAC – Annual Report of the Department of Antiquities, Cyprus.  
 BSFN – Bulletin de la Société française de numismatique.  
 RPC I – *Roman Provincial Coinage*, vol. 1, *From the Death of Caesar to Death of Vitellius (44 B.C. – A.D. 69)*, eds M. Amandry, A. Burnett and P.P. Ripolles, London–Paris 1992.  
 SNG Keckman I – U. Westermak and K. Konuk, *Sylloge Nummorum Graecorum. Finland. The Erkki Keckman Collection in the Skopbank, Helsinki*, part I, *Karia*, The Finnish Society of Sciences and Letters, Helsinki 1994.  
 Svoronos – J.N. Svoronos, *Τα νομίσματα του κράτους των Πτολεμαίων*, P.D. Sakellarios, Athens 1904–1908.

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MONETY HELLENISTYCZNE Z BADAŃ UNIWERSYTETU  
JAGIELLOŃSKIEGO NA HELLENISTYCZNO-RZYMSKIEJ AGORZE  
W NEA PAFOS (*PAPHOS AGORA PROJECT* 2011–2019):  
OBSERWACJE WSTĘPNE

(Streszczenie)

Cypr, położona we wschodniej części basenu Morza Śródziemnego wyspa o strategicznej lokalizacji, posiadająca zasoby surowców naturalnych, przede wszystkim miedzi i drewna, podobnie jak w epokach poprzednich odgrywała znaczącą rolę w okresie hellenistycznym. Podporządkowana ok. 310 r. p.n.e. Ptolemeuszowi I, była jedną z najważniejszych jeśli nie najważniejszą zamorską posiadłością Lagidów, w zasadzie aż po kres władzy Kleopatry VII, ostatniej władczyni ptolemejskiego Egiptu. Jednym z najważniejszych ośrodków miejskich na wyspie, pełniącym rolę siedziby gubernatora było w okresie hellenistycznym Nea Pafos. Miasto założone w końcu IV lub w początkach III w. p.n.e., przez Nikoklesa lub Ptolemeusza I zlokalizowane było w zachodniej części południowego wybrzeża Cypru. Od 2011 r. na agorze miasta prowadzone są interdyscyplinarne badania prowadzone przez zespół archeologów z Instytutu Archeologii Uniwersytetu Jagiellońskiego, kierowany przez profesor Ewdoksję Papuci-Władykę. Polskie badania na pafijskiej agorze zostały poprzedzone pracami prowadzonymi od końca lat 60. do początku 70. XX w. przez znanego cypryjskiego archeologa Kyriakosa Nicolaou, który jako pierwszy zidentyfikował badany przez siebie teren jako agorę. Datował ją jednak na okres rzymski. Badania polskie udowodniły, że agora istniała w tym miejscu już w okresie hellenistycznym.

Podczas badań na agorze odsłonięte zostały pozostałości architektoniczne oraz odkryto liczne zabytki ruchome. Wśród tych ostatnich obok ceramiki najliczniejszą grupę stanowią monety. W trakcie kampanii 2011–2019 znaleziono łącznie 480 monet i krążków mennicznych, wśród których w miarę pewnie zidentyfikowano co najmniej 180 egzemplarzy pochodzących z okresu hellenistycznego. Największą grupę wśród tych ostatnich stanowią monety ptolemejskie w liczbie 121 (ponad 67%). Są to w zdecydowanej większości egzemplarze należące do emisji brązów. Jedynie dwie spośród znalezionych monet to srebrne tetradrachmy. Większość ptolemejskich monet odkrytych na agorze w Nea Pafos wybito w okresie od końca II po I w. p.n.e. Jedynie nieliczne egzemplarze można datować na III lub wcześniejsze fazy II w. p.n.e. Zdecydowana większość powstała w mennicach cypryjskich, przede wszystkim w Pafos i Salaminie. Monety ptolemejskie bite poza Cyprzem pochodzą z mennicy w Aleksandrii. Drugą co liczebności grupę stanowią anonimowe monety typu *Zeus/Zeus* zarejestrowane w liczbie 37 egzemplarzy (20,5% wszystkich monet hellenistycznych). Ich precyzyjna atrybucja nie jest na razie ustalona. Nie ulega jednak wątpliwości, że były one bite na Cyprze w okresie hellenistycznym. Kolejne grupy tworzą monety z regionu syro-palestyńskiego (łącznie 11 egzemplarzy – ponad 6%) bite przez hasmonejskich i seleukidzkich władców, monety macedońskie i antygonidzkie (łącznie 7 egzemplarzy – 3,8%) oraz te bite w południowo-wschodniej części basenu Morza Egejskiego (3 egzemplarze – 1,6%). Wszystkie wymienione grupy tworzą monety brązowe. W zdecydowanej większości zostały one wybite w II (raczej w jego 2. połowie)

i I w. p.n.e., co znakomicie współgra z datowaniem monet ptolemejskich. Jedynie monety z grupy macedońskiej i antygonidzkiej datowane są na koniec IV i początki III w. p.n.e. Taka chronologia zarejestrowanych monet sugeruje, że intensywny obieg monetarny na agorze można datować na 2. połowę, a może nawet koniec II i na I w. p.n.e. To z kolei współgra z chronologią przestrzennego i urbanistycznego rozwoju agory w okresie hellenistycznym.

Adres autora/The author's address:

dr hab. Jarosław Bodzek, prof. UJ

Institute of Archaeology

Jagiellonian University in Kraków

Gołębia 11, PL 31-007 Kraków, Poland

jaroslaw.bodzek@uj.edu.pl

ORCID: 0000-0002-4272-4117



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AGATA A. KLUCZEK

## NUMISMATIC EVIDENCE FOR THE DYNASTIC POLICY OF ROMAN EMPERORS, 235–284

**ABSTRACT:** The paper examines how Roman emperors used coins and medallions during the 3<sup>rd</sup>-century crisis to promote the dynastic ideologies and succession policies of the ruling house. Roman numismatics expands our knowledge of the nuances of dynastic politics. The keystone was the emperor; it also concerned the figures of empresses, heirs and ancestors. The analysis of numismatic evidence shows the mechanisms of constructing an image of dynastic unity, harmony in the imperial family, and succession stability in the Roman Empire.

**ABSTRAKT:** W artykule przeanalizowano w jaki sposób podczas kryzysu III w. cesarze rzymscy wykorzystywali monety i medaliony do promowania ideologii dynastycznej i sukcesji rodu rządzącego. Numizmatyka rzymska rozszerza naszą wiedzę o niuansach polityki dynastycznej. Jej zwornikiem był cesarz; a dotyczyło to również postaci cesarzowej, dziedziców i przodków. Analiza świadectw numizmatycznych ukazuje mechanizmy konstruowania wizerunku jedności dynastycznej, harmonii w rodzinie cesarskiej oraz stabilności sukcesji w imperium rzymskim.

**KEYWORDS:** Roman numismatics, 3<sup>rd</sup>-century crisis, 3<sup>rd</sup>-century dynasties, dynastic ideology, policy of succession

**SŁOWA KLUCZOWE:** numizmaty rzymskie, kryzys III w., trzeciowieczne dynastie, ideologia dynastyczna, polityka sukcesyjna

The system of power that operated in the Roman Empire involved a practice, already introduced by Augustus, involving the election of a successor who would be granted imperial power. In this succession-related policy, one can perceive a tendency towards the handing of power to descendants, i.e. within one's family, and thus a solidification of the rule of a dynasty. In addition to the emperor, this system created an important role for the *caesares*, who were sometimes elevated to the rank of co-rulers (*augusti*), as well as for the empresses.

In 235–284 some rulers designated their heirs (cf. fig. 1). These included: Maximinus I (235–238), Philip I (244–249), Decius (249–251), Trebonianus Gallus (251–253), Valerian and Gallienus (253–268), Tetricus I (271–274), the ruler of the *Imperium Galliarum*, and finally Carus (282–283). Only in a few cases did an emperor manage to achieve the basic aim of dynastic policy, which was associated with the transfer of power to the successor and making sure that the latter stayed in power. However, the continuous reign of a single family tended to last for a short time, which is one of the reasons why the years 235–284 are referred to as the “crisis of the third century”.<sup>1</sup> During this period frequent revolts within the army led to the usurpation of imperial power and death of former emperors, preventing the realisation of dynastic plans.

Marietta Horster has interpreted selected coin-related content as an expression of desire for stabilisation within the Empire, despite the vacillating and mutable political reality. This stabilisation was supposed to be brought about and ensured by the reign of a well-established dynasty, which also provided a hope for its continued existence.<sup>2</sup> In the present study I describe the coinage which reflected the succession-related policy in the years of the 3<sup>rd</sup>-century crisis. I disregard the workings and other elements of this policy as well as the stages of the activities of specific emperors which laid the foundation of the assumption of succession.<sup>3</sup> I treat the coins and the medallions as an official medium<sup>4</sup> which served the purpose of the promotion of a dynastic idea (imperial coinage) and reflected the acceptance of this idea within the provinces (provincial coinage). I seek iconographic and lexical models for the presentation of the imperial family in the coinage. Of particular interest are those types and variants which promoted the presence of co-ruling *augusti* and the successors of the *caesares*, thereby indicating the results of succession-related activities and auguring the lasting rule of a dynasty. By way of convention, I refer to them as emissions, types, models or “dynastic” numismatic pieces.

#### THE IMPERIAL FAMILY IN THE NUMISMATIC SOURCES

The ways in which the representatives of the dynasty were presented were determined by a numismatic tradition that reached back a number of centuries. To a certain extent, these forms were also determined by an iconographical community of imperial representation in other propagandistic media, such as monuments

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<sup>1</sup> See, e.g., Kotula 1992; Christol 1997; John, Hartmann, Gerhardt (eds) 2008; Ziółkowski 2011, pp. 111–133.

<sup>2</sup> Horster 2007, pp. 291–309.

<sup>3</sup> On the dynastic policy in the 3<sup>rd</sup>-century crisis, see Kluczek 2000, pp. 23–76. On dynastic propaganda in the 3<sup>rd</sup> century, see: Kotula 1988, pp. 65–96.

<sup>4</sup> See Noreña 2001, p. 147; Noreña 2011, pp. 248–261.

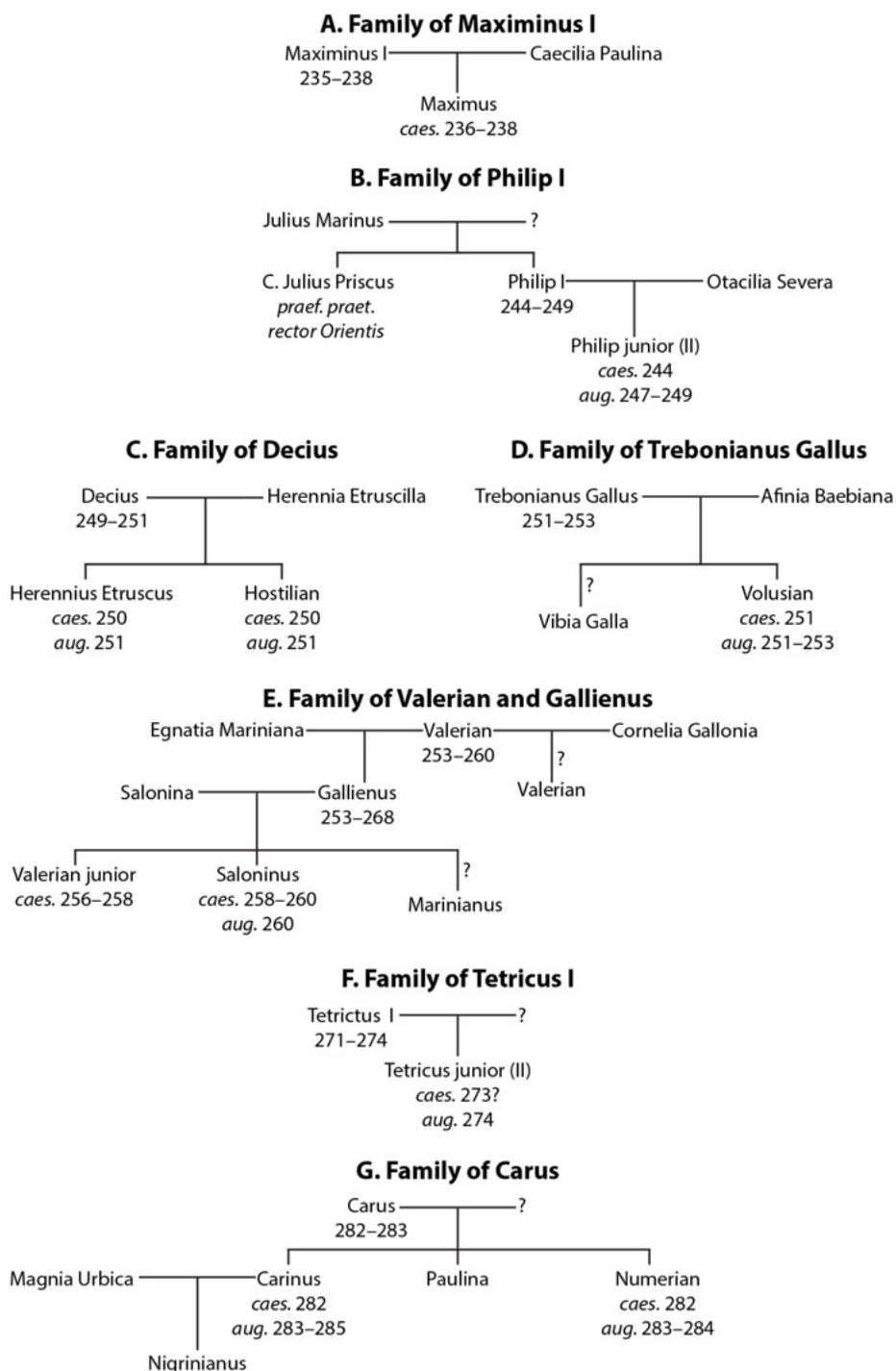


Fig. 1. Roman dynasties, AD 235–284

and bas-reliefs. Existing models were used, albeit with certain adjustments, in order to represent the current dynastic situation. New models were also created.

The obverses, and sometimes reverses of coins and medallions commonly the display heads or busts of the emperor and his family. These representations seem quite repetitive. Nevertheless, they directly indicate the presence of other people at the emperor's side, who were also involved in dynastic policies. Configurations of these representations vary, and include double or triple portraits; two emperors, the emperor and his successor(s), the emperor and the empress, the emperor, and the empress and their descendant, were presented in such a manner.

These representations often feature inscriptions, which define the presence of the co-ruler or empress at the ruler's side with the term *Augustorum* (AVGG), or which provide information about his successor(s) (CAES/CAESS). Information about a dynasty was provided by employing specific slogans. The theme of the *princeps iuventutis*, used to refer to the rulers of a mature age, was of this kind.<sup>5</sup> In this manner, the basic sense of the terms were distorted, creating an illusion of co-rule and the appearances of future permanence.

The inscriptions featured on coins and medallions the represent the figures of the imperial family indicate their positive attitude toward one another (*pietas*), as well as the harmony and unity that prevailed within the dynasty (*concordia*). In many cases these inscriptions replaced the proper names of the individuals represented, which was typical of the 240–50s.

The representations of more than one personage were typical in the coinage of a number of dynasties, most prominently on the medallions, and less frequently in the regular and provincial coinage.<sup>6</sup> However, there are provincial coins that present the facing busts of Maximinus I and Maximus.<sup>7</sup> The double busts of these rulers were equally rare in the numismatic pieces from Rome.<sup>8</sup>

Double or triple portraits are copiously represented in the coinage of Philip I. The reverses of the antoniniani PIETAS AVGG depict the portraits of Philip junior and Otacilia Severa.<sup>9</sup> The bronze medallions include portraits of Otacilia Severa on the obverse, while the reverses of the type PIETAS AVGVSTORVM III ET II COS and PIETAS AVGVSTORVM P M TR P COS featured the busts of both rulers, Philip I and Philip junior.<sup>10</sup> Their busts were also represented on the bronze PIE-

<sup>5</sup> Cf. Castorino 2010, pp. 537–549; Horster 2011, pp. 73–103; Kluczek 2014, pp. 59–71.

<sup>6</sup> Cf. Toynbee 1986, pp. 143–144; Hedlund 2008, pp. 181–183; on the dynasty of Philip I, see: Körner 2002, pp. 106–111; on the dynasty of Valerian I and Gallienus, see: Zaccaria 1978a, pp. 103–138; Geiger 2013, pp. 203–210; Glas 2014, pp. 241–262.

<sup>7</sup> See, e.g., RPC 6, nos 7115–7116 temp. (Tarsus); BMCG Phrygia, p. 144, no. 72 (Cibyra).

<sup>8</sup> MedR 2, p. 86, no. 2, tav. 102.7; MedR 2, p. 86, no. 3, tav. 102.8.

<sup>9</sup> RIC IV/3, Philip I, no. 43.

<sup>10</sup> MedR 2, p. 100, no. 2, tav. 110.3, p. 100, no. 4, tav. 110.4.

TAS AVGVSTORVM coins and medallions,<sup>11</sup> and even on the colonial coins.<sup>12</sup> The silver and bronze CONCORDIA AVGVSTORVM medallions feature the busts of Philip I and Otacilia Severa.<sup>13</sup> The CONCORDIA AVGVSTORVM silver medallions feature triple portraits – Philip I, Philip junior and Otacilia Severa.<sup>14</sup>

The antoniniani of Decius' PIETAS AVGG type, as well as his sestertii of the CONCORDIA AVGG S C type, feature the busts of Herennius Etruscus and Hostilian, the sons of the emperor,<sup>15</sup> whereas the reverses of the antoniniani of Decius and the silver medallions of the CONCORDIA AVGVSTORVM type also depict a bust of Etruscilia set against the busts of Herennius Etruscus and Hostilian.<sup>16</sup> The busts of all of the tree male members of the dynasty are featured on the coins of Herennia Etruscilia from Cremna.<sup>17</sup>

In this respect, the dynastic succession is less impressive. We know of one such case in the imperial coinage. The busts of Trebonianus Gallus and Volusian are featured on the asses of the CONCORDIA AVGVSTORVM type.<sup>18</sup> They are also presented on the provincial coins from Viminacium.<sup>19</sup>

During the reign of Valerian and Gallienus there are double busts of the two emperors (denarii and bronzes CONCORDIA AVGVSTORVM,<sup>20</sup> silver and bronze PIETAS AVGVSTORVM medallions<sup>21</sup>). Busts of Gallienus and Salonina appear on the silver CONCORDIA AVGVSTORVM medallions, while those bearing the inscription PIETAS AVGVSTORVM featured the busts of Valerian and Valerian junior.<sup>22</sup> Images of Gallienus and his son Valerian junior or Saloninus also appear on the silver CONCORDIA AVGVSTORVM medallions.<sup>23</sup> Numerous coins issued in Gallienus' sole reign feature the inscription CONCORDIA AVGG and the facing busts of the emperor and of the empress.<sup>24</sup> The provincial coinage may also furnish

<sup>11</sup> RIC IV/3, Philip I (Otacilia Severa), no. 212; RIC IV/3, Philip I (Philip junior *caes.*), no. 260; MedR 2, p. 99, no. 1, tav. 110.2.

<sup>12</sup> RPC 8, unassigned, ID 27176 (Neapolis).

<sup>13</sup> RIC IV/3, Philip I (Philip junior *caes.*), nos 222, 261.

<sup>14</sup> MedR 2, p. 97, no. 1, tav. 108.10, p. 97, no. 4, pp. 98–99, nos 6–17, tav. 109.1–8.

<sup>15</sup> RIC IV/3, Trajan Decius, nos 32, 131.

<sup>16</sup> RIC IV/3, Trajan Decius, no. 31; MedR 1, p. 49, no. 1, tav. 24.11.

<sup>17</sup> RPC 9, no. 972. Cf. Harl 1987, pp. 40–41 (“a clever innovation”).

<sup>18</sup> RIC IV/3, Trebonianus Gallus, no. 128.

<sup>19</sup> RPC 9, no. 55.

<sup>20</sup> RIC V/1, Valerian and Gallienus, nos 3–7; MedR 2, p. 105, no. 2, tav. 113.2.

<sup>21</sup> MedR 1, p. 51, no. 1, tav. 26.5; MIR 36, nos 324–325.

<sup>22</sup> MIR 36, no. 894.

<sup>23</sup> MedR 1, p. 55, no. 1, tav. 27.10. Their reverses (ADVENTVS AVGG) presented three figures on horseback.

<sup>24</sup> RIC V/1, Gallienus, SR, (and Salonina), nos 1–3, 6. See also RIC V/1, Gallienus, JR, (and Salonina), no. 1; MedR 1, p. 8, no. 1, tav. 3.7, p. 54, no. 1, tav. 27.8.

examples of joint portraits of Valerian and Gallienus,<sup>25</sup> Valerian, Gallienus and Valerian junior,<sup>26</sup> and Gallienus, Salonina and Valerian junior or Saloninus.<sup>27</sup>

Various emissions presented double portraits of Tetricus I and Tetricus junior.<sup>28</sup>

In addition, the coinage of the final dynasty of the 3<sup>rd</sup>-century crisis incorporates double portraits of Carus and Carinus,<sup>29</sup> Carinus and Numerian<sup>30</sup> and the triple portraits of Carus, Carinus and Numerian.<sup>31</sup>

In coin-related legends, kinship and the affiliation of the representatives of the dynasty are not indicated. This omission is particularly salient in reference to the coinage of Gordian III (238–244), for in 238 he was elevated to the rank of *caesar*, and then to the rank of *augustus* due to his rising popularity resulting from his kinship with Gordian I and Gordian II. Obviously, he shares *nomina* (M. Antonius Gordianus) with them, but apart from the former there is no information concerning either the extent of kinship or of family affiliation.<sup>32</sup> As an ideological successor of emperor Trajan, Decius (C. Messius Quintus Decius Valerinus) adopted the *cognomen* Traianus (C. Messius Quintus Traianus Decius) and used it in his coinage.<sup>33</sup> Philip junior had the *cognomen* Severus (M. Iulius Severus Philippus),<sup>34</sup> but the convergences with the Severan dynasty were not emphasised in the coinage. In two of the latter cases the adoption of a new *nomen* is not due to kinship, but exclusively due to ideological reasons. In such a context the following inscriptions on the antoniniani of Philip I are quite striking: DE PIA MATRE PIVS FILIVS, and Philip junior: AVG PATRI AVG MATRI.<sup>35</sup> The terms *pater*, *mater* and *filius* enveloped the imperial family in a mesh, consisting of the emperors Philip I and Philip junior, as well as the empress Otacilia Severa.

<sup>25</sup> See, e.g., BMCG Phrygia, pp. 415–416, nos 32–34, p. 417, no. 42; SNG vA, no. 4012 (Temenothyrae–Sebaste).

<sup>26</sup> See, e.g., BMCG Bithynia, p. 176, nos 148–151 (Nicaea), pp. 191–192, nos 68–72 (Nicomedia); SNG vA, nos 720–721, 859–860; Lindgren, Kovacs 1985, no 181.

<sup>27</sup> See, e.g., Von Aulock 1977, no. 147 (Panemoteichus).

<sup>28</sup> G GK, Tetricus I, nos 56–58.

<sup>29</sup> RIC V/2, Carus and Carinus, nos 135, 138–143, 146; MedR 1, p. 11, no. 1, tav. 4.8; MedR 2, p. 121, no. 1, tav. 122.3.

<sup>30</sup> RIC V/2, Carinus and Numerianus, nos 330–332; MedR 2, p. 123, no. 1, tav. 123.9.

<sup>31</sup> MedR 2, p. 123, no. 1, tav. 123.10.

<sup>32</sup> Gordian III as *divorum Gordd. nepos*: CIL VIII 10431; *nepos divorum Gordd.*: CIL VIII 10330 = ILS 497; *divi Gord. nepos divi Gord. sororis fil.*: CIL VIII 22037; CIL VIII 2365 = 17878; *divi M. Ant. Gord. nepos divi M. Ant. Gord. sororis fil.*: CIL VIII 10079 = 22061; *divi Ant. Gord. nepos divi Ant. Gord. sororis fil.*: CIL VIII 907 = 11169 etc.

<sup>33</sup> RIC IV/3, Trajan Decius, nos 1–49, 51–54, 101–128, 130–131; RPC 9, nos 2, 7–8, 10–23, 39–40, 93–95, 98–100, 224, 400–402, 971, 978, 1221–1222, 1245–1267, 1431–1433, 2048–2073, 2091, 2095–2999, 2175–2180, 2206, 2209–2210, 2215–2116.

<sup>34</sup> AE 1944, no. 53.

<sup>35</sup> RIC IV/3, Philip I, no. 30; RIC IV/3, Philip II, no. 229. Cf. Morelli 2009, pp. 154–155.

The elements of the dynasty also constituted the dead and deified members, *divi* and *divae*.<sup>36</sup> All in all, the number of people involved is not great. The following people were mentioned by name: *augusta*, *caesar*, three emperors, as well as the deceased members of the families who did not bear dynastic titles.

The pleiade of the deified members of 3<sup>rd</sup>-century dynasties is inaugurated by the *augusta* Caecilia Paulina, the wife of Maximinus I. In the first period of his rule the emperor issued the coins DIVA PAVLINA/CONSECRATIO.<sup>37</sup>

In the imperial coinage, consecration issues appeared as late as the reign of Valerian.<sup>38</sup> Among the members of the imperial family, Egnatia Mariniana (DIVAE MARINIANAE), the wife of Valerian, was the first to be honoured in this manner.<sup>39</sup> Subsequent emissions commemorated Valerian junior (Divus Valerianus Caesar), the son of Gallienus, and the grandson of Valerian, who died in 258.<sup>40</sup> The case of Gallienus's son, Saloninus, was different. He died during the turmoil that gripped the Empire in 260, which left Gallienus as the sole figure in power. Numismatic evidence for the deification of Saloninus is scarce and debatable.<sup>41</sup>

The *consecratio* coins also commemorated the members of Carus's dynasty. After his own death during the Persian campaign in 283, coins dedicated to the following were issued: DIVO CARO, DIVO CARO AVG, DIVO CARO PIO, DIVO CARO PARTHICO, DIVO CARO PERS.<sup>42</sup> Other coins commemorated the *divus* Numerianus (died 284), Carus's younger son.<sup>43</sup> The obverse legends of the successive *consecratio* coins contained the name of Nigrinianus (DIVO NIGRI(NI) ANO).<sup>44</sup> The latter was probably a son of Carinus, the grandson of Carus, who died as a small child.

The list of the deified members of 3<sup>rd</sup>-century dynasties is completed by the parents of Philip I. Julius Marinus, the father of the emperor, was commemorated in provincial coins with the inscription ΘΕΩ ΜΑΡΙΝΩ.<sup>45</sup> Certain coins represent Roma,

<sup>36</sup> Cf. Hekster 2015.

<sup>37</sup> RIC IV/2, Maximinus I (Paulina), nos 1–3. Cf. CIL X 5054.

<sup>38</sup> I exclude the coins of the “divi” issued by Decius because I do not classify them – by the criteria indicated – as “dynastic” issues.

<sup>39</sup> RIC V/1, Valerian I (Mariniana), nos 1–12.

<sup>40</sup> RIC V/1, Valerian junior, nos 7–10, 24–28, 31, 35, 41–43.

<sup>41</sup> RIC V/1, Saloninus, no. 15. See also RIC V/1, Quintus Julius Gallienus, no. 1: DIVO CAES Q GALLIENO / CONSECRATIO. The retrospective coin may represent Saloninus or Valerian junior, or another son of Gallienus. Cf. MIR 36, no. 257; Vagi 1999, 1, p. 354.

<sup>42</sup> RIC V/2, Carus, nos 4, 28–30, 47–50, 108–113, 126–127. Cf. Hekster 2015, pp. 96–101.

<sup>43</sup> RIC V/2, Numerianus, nos 424–426.

<sup>44</sup> RIC V/2, Nigrinianus, nos 471–464. See also CIL VI 31380 ([...] *nepoti Cari* [...]). Cf. Gricourt 2000b, p. 31–39; Hedlund 2008, p. 174; Altmayer 2014, pp. 77–78.

<sup>45</sup> BMCG Arabia, p. 42, nos 1–3 (Philippopolis); Spijkerman 1978, pp. 260–261, nos 1–2; Butcher 1986–1987, pl. 25.10. Cf. AE 1928, p. 43 = 1992, no. 1694 (Divo Marino).

who is shown sitting with an eagle in her hand. The eagle carries two figures: Julius Marinus and his wife, the mother of Philip I, whose name remains unknown.<sup>46</sup>

Reverse scenes also featured two or three figures who were a part of the dynasty. The theme of *concordia Augustorum*, illustrated by two figures set against each other, clasping their right hands, was used in the coinage of Gallienus. These depict the *augusta* Salonina as Gallienus's companion.<sup>47</sup> The *dextrarum iunctio* gesture indicated harmony in the ruling family, albeit without the sought-after projection to the future and without indication of the retroactive dynastic continuity. It is possible that Salonina is the figure presented next to Gallienus on the reverse of the medallion promoting *liberalitas*.<sup>48</sup>

In figural scenes, the *caesares* and *augusti (iuniores)* are the most common partners and the companions of the emperor. These figures are individualised by mere details (e.g. *corona radiata/laureata*, *togatus*/in military dress). They commonly assume identical poses and replicate the same gestures, e.g. sitting or standing on a platform in a *liberalitates* scene or *adlocutiones*, or riding on horseback in an *adventus* scene, or riding in a quadriga in a *processus consularis* scene. Their cooperation emphasises their shared attributes, such as a *victoriola*, or their participation in a sacrifice at the *ara*.

Usually the scenes featured two figures, as in the case of the coinage of Maximinus I, Philip I and Tetricus I. They respectively promoted their sons: Maximus, Philip junior, and Tetricus junior. During the reign of Decius, Trebonianus Gallus, Valerian, and Gallienus, as well as Carus, we can identify three people who simultaneously participated in power as *augusti* or *caesares*. In the coinage, however, the representations of three figures were not frequently used, and in this context we might mention that these representations include variants where the empress appears as the third figure next to a pair – *augustus* and *augustus*, or *augustus* and *caesar*.

An interesting example of such this situation appears on the coinage of Decius, who promoted both of his sons, Herennius Etruscus and Hostilian, in his succession policy. He was presented exclusively with one of his sons in a figural scene on the reverse of a coin (LIBERALITAS AVG S C).<sup>49</sup> A representation of three *togati*, i.e. Decius, Herennius Etruscus and Hostilian, appears on provincial coinage, where they are shown sitting in a platform on the *sellae curules*.<sup>50</sup> On the reverses of other coins, however, two *togati* stand next to each other, and indicate the *dextrarum iunctio* gesture. Here the family group is supplemented by empress Herennia Etruscilla.<sup>51</sup> Decius

<sup>46</sup> BMCG Arabia, pp. 42–43, nos 4–10 (Philippopolis); Spijkerman 1978, pp. 260–261, no. 1, and p. 259, n. 8; Butcher 1986–1987, pl. 25.9–10.

<sup>47</sup> RIC V/1, Gallienus, JR, (Salonina), no. 63. See also MedR 2, p. 111, no. 7 (interpreted as Gallienus and Saloninus).

<sup>48</sup> MedR 2, p. 110, no. 3, tav. 115.7. Cf. Balbuza 2019, pp. 15–17.

<sup>49</sup> MedR 3, p. 92, no. 5, tav. 161.3.

<sup>50</sup> RPC 9, nos 1469, 1483 (Anazarbus). Cf. Kluczek 2021, pp. 46, 54–59.

<sup>51</sup> RPC 9, nos 2077, 2082 (Caesarea Maritima).

and Herennius Etruscus died in 251 during the Goth campaign, whereas Hostilian, who was predeceased by his father and brother by a few months, became a sort of a link between the dynasties of Decius and Trebonianus Gallus. In his coinage, Trebonianus Gallus features exclusively in a pair with his son Volusian. The sestertius IMP CAE C VAL HOS MES QVINTVS AVG, bust of Hostilian/QVINTO FELIX S C, Pax standing, merits particular attention. Mattingly interpreted the content of this reverse as an echo of the language of the vows: “May the peace (between the new Emperor, Trebonianus Gallus, and the old dynasty) be happy for Quintus” Hostilian.<sup>52</sup>

Reverse iconography featuring three figures also reflects the dynastic situation in the reign of Valerian and Gallienus, at whose side stand Valerian junior (successively) and Saloninus in the role of *caesares*. Valerian junior was depicted with his father and grandfather, the three riding a quadriga,<sup>53</sup> while Saloninus, his grandfather, and father appear on horseback, led by Victoria and accompanied by soldiers.<sup>54</sup> The three horsemen are preceded by Victoria, and represent Carus and his sons, Carinus and Numerian.<sup>55</sup>

Information of “genealogical” nature may be perceived in the iconographical arrangements of coins and medallions. In certain images the members of the dynasty or the figures who symbolised them are not a part of a single generation, but represent two generations of the ruling *domus*. In this context, we can distinguish representations featured on the emissions of the empresses.<sup>56</sup>

In some representations Salonina appears in the company of children. A group of three children features on the ABVNDANTIA TEMPORVM bronze medallions,<sup>57</sup> while three or two children are shown on the FECVNDITAS AVG (S C), PIETAS AVGG (S C) and PIETAS AVG S C coins.<sup>58</sup> Female figures also appears on the reverses of these coins: personifications of Abundantia, Fecunditas or Pietas, the latter sometimes identified with Salonina herself. Children are also featured in a mythological scene on medallions of the PIETAS FALERI type.<sup>59</sup> We must confront the question of the possible identification of the two and three child protagonists. By

<sup>52</sup> RIC IV/3, Hostilian, no. 222. See: Mattingly 1950, p. 189.

<sup>53</sup> RIC V/1, Valerian I, no. 156.

<sup>54</sup> MedR 1, p. 55, no. 1, tav. 27.10.

<sup>55</sup> MedR 2, p. 123, no. 1, tav. 123.10.

<sup>56</sup> On the values promoted in the coinage, which appeared in the name of empresses, see: Mikocki 1997; Klein 1998; Kaczanowicz 2010, pp. 481–489 (Salonina); Balbuza 2014, pp. 185–195 (Otacilia Severa).

<sup>57</sup> MedR 2, p. 110, no. 1, tav. 115.8. Cf. MIR 36, no. 309.

<sup>58</sup> FECVNDITAS AVG (S C): RIC V/1, Gallienus, JR, (Salonina), nos 15, 26, 45, 51, 57; cf. MIR 36, nos 930–932, 934–935; PIETAS AVGG (S C): RIC V/1, Gallienus, JR, no. 191; RIC V/1, Gallienus, JR, (Salonina), nos 11, 23, 35, 41, 47, 54, 72–74; cf. MedR 3, p. 59, no. 10, tav. 155.14; MIR 36, nos 229, 317A–B, and no. 460 (sole reign of Gallienus); PIETAS AVG S C: RIC V/1, Gallienus, SR, (Salonina), no. 50.

<sup>59</sup> MedR 1, p. 8, no. 1, tav. 3.7, p. 54, no. 1, tav. 27.8; cf. MIR 36, no. 942A.

taking into account the death of the first (258) and second (260) sons of Gallienus, we might assume that either the imperial couple saw the birth of a greater number of children whose names have not been preserved, or – by assuming that the figures of the children allude to actual children – that in some representations living and dead descendants are featured next to each other. I believe that the second option is more plausible. In dynastic propaganda, allusions to the deceased exhibit the attributes and *virtutes* of the living family members.

I do not interpret the content of the coins in a literal way. They are not a chronicle either of political events or – this remark applies above all to the reverses – an album featuring the representations of the members of the family. It is, therefore, just a conjecture that a group of children allude to the numerous children of the imperial couple, to the deceased and the living young representatives of the dynasty. In a similar way, the presence of a child in the numismatic iconography of Herennia Etruscilla's FECVNDITAS AVGG type,<sup>60</sup> as well as the PIETAS AVG N, PVDICITIA AVG S C (which also feature Felicitas in the iconography), and FECVNDITAS TEMPORVM types of Otacilia Severa,<sup>61</sup> may instead be a metaphor of the fertility of the empress and the existence of children.

The presence of two rulers appears in an original form on the colonial coins of Volusian. These depict two cornucopiae joined at base, from which emerge two human heads, one of a young ruler with a *corona laureata* and the other of his father in a *corona radiata*.<sup>62</sup> Similar representations on the bronzes of Gallienus probably allude to the sons of the younger *augustus*.<sup>63</sup> The presence of two rulers and another generation in the dynasty are hereby associated with the ideas of abundance and prosperity (*cornucopiae*).

#### DYNASTIC ROLES: THE POLITICAL, SOCIAL AND THE GEOGRAPHICAL SPHERE OF ACTIVITY OF THE RULERS

The emperor was traditionally presented in the coinage undertaking the actual or symbolic functions that he performed in the Empire. He was a citizen, a consul, a leader and a military leader (*imperator*), a priest (*pontifex maximus*), a protege and the collaborator of the gods (*comes*), a victor and the one who ensured the

<sup>60</sup> RIC IV/3, Trajan Decius (Herennia Etruscilla), no. 135.

<sup>61</sup> RIC IV/3, Philip I (Otacilia Severa), nos 132 (FECVNDITAS TEMPORVM), 133–134 (PIETAS AVG N), 207 (PIETAS AVG S C), 210–211 (PVDICITIA AVG S C).

<sup>62</sup> RPC 9, no. 1269; Krzyżanowska 1970, pp. 76–77, 196 and pl. 32.15 (Antioch, Pisidia). The application of the motif of two confronted heads on the crossed cornucopias in combination with a member of the ruling families, see: Lichocka 2013, pp. 428–445.

<sup>63</sup> SNG vA, no. 4983; Milne 1947, pp. 102 and 107, no. 8; Krzyżanowska 1970, pp. 83, 207 and pl. 37.30–31 (Antioch, Pisidia).

prosperity of the Empire.<sup>64</sup> In many “images” these roles appear as schematics, sometimes elaborate, sometimes conventional, and sometimes in an original form. Each of them may be considered in their functional, spatial, and ideological contexts. The interactions between the emperor and the people of Rome, the provincial communities, the members of the imperial family, the soldiers, the members of the collegia of priests, foreign kings, barbarians etc., provided a set of possibilities and occasions to present the attitudes and gestures of the ruler, which expressed the essence of these relations.

The promotion of a dynasty was carried out by featuring various configurations of the emperor, his co-ruler or successor, and the empress in coin imagery. Sometimes their figures were accompanied by personifications of virtues and ideas. These compositions, which constitute (on various planes of association) the scenery of imperial presence, and which symbolise imperial activities, were commented upon by legends. The inscriptions usually indicate the direction of interpretation, harmonising with or extending the sense of the iconographical message by delineating its semantic field as well and indicating the presence of paired rulers or members of the imperial family by means of the *Augustorum* (AVGG, AVGGG, AVGVSTORVM) formula.

#### SACRIFICES

In sacrificial scenes the basic design of two figures at a small altar can be interpreted as a pair of rulers making offering. They are identified in accordance with the current dynastic situation.

A bronze medallion of Maximinus I bearing the reverse inscription P M TR P III COS P P depicts the emperor and his son Maximus sacrificing at altar. On this medallion Hercules stands behind Maximinus I, crowning him, while Apollo stands next to Maximus.<sup>65</sup> This is an important representation in the coinage of Maximinus I, who is rarely shown making an offering.<sup>66</sup>

The bronze medallions of Philip I, Philip junior, and Otacilia Severa, depict two rulers making an offering at the altar. A temple is visible in the background. The reverses bear the inscription P M TR P III COS P P and SAECVLVM NOVVM.<sup>67</sup> The latter, occasion-related theme (*saeculum novum*), was associated with the celebration of the millennium of Rome in 248, and the commemoration of this anniversary. The reverses show the rulers making an offering before the *templum Romae aeternae et Veneris felicis*, since the anniversary celebrations were focused

<sup>64</sup> Cf., e.g., King 1999, pp. 127–131.

<sup>65</sup> MedR 1, p. 86, no. 2, tav. 102.7.

<sup>66</sup> Cf. MedR 2, p. 86, no. 2. Cf. Scott Ryberg 1955, p. 186.

<sup>67</sup> P M TR P III COS P P: MedR 2, p. 95, no. 7, tav. 107.6, p. 98, no. 6, tav. 109.2; SAECVLVM NOVVM: MedR 2, p. 97, no. 8, tav. 108.9, p. 99, no. 13, tav. 109.6, p. 100, no. 5.

on the worship of the goddess Roma. Provincial coins also depict Philip I and his son sacrificing at an altar.<sup>68</sup>

The FORTVNAE REDVCI-type bronze medallions of Trebonianus Gallus and Volusian, depict two rulers sacrificing at the altar before the temple with a statue of Fortuna.<sup>69</sup> Two rulers sacrificing in front of a temple also appear on a VOTA AVGG-type medallion of Trebonianus Gallus. Each of these emperors are crowned by Victoria, who stands behind them.<sup>70</sup> The return of Gallus from the Gothic War in 252 provided one occasion to celebrate the *vota* and make an offering to Fortuna. This militaristic context is also visible in the representation of another Volusian medallion, the VIRTVS AVGVSTORVM type. On this medallion Volusian makes an offering in honour of *virtus*, in his name and that of his father.<sup>71</sup> Individual issues in the provincial coinage also depict Trebonianus Gallus and Volusian sacrificing together.<sup>72</sup>

The theme of *pietas* (*Augusti, Augustorum*) is an important feature in the coinage of Valerian and Gallienus. The antoniniani of Valerian and Gallienus include examples of the PIETAS AVGG-type, depicting both emperors standing against each other, sacrificing at altar.<sup>73</sup> This is a new scene in Roman coinage illustrating *pietas* (*pietas in sacris*). Concern and responsibility for the Empire are embedded in this imperial *pietas*, while originality is imparted by a symbolic representation of the partnership of the *augusti*. We might perceive a further allegory in it: *pietas mutua*, for *pietas* was an attitude “towards” another person, obliging one to discharge duties towards that person.

The theme of sacrifice by the emperor and his son at the altar appears on the aurei of Tetricus I and Tetricus junior bearing the inscription P M TR P COS III P P VOT X. The details of these coins are of interest: both rulers hold sceptres in their left hands, one of whom also holds a *patera*, while the other holds a *globus* and is crowned by Victoria.<sup>74</sup> These aurei were issued in the last year of the reign of Tetricus I and his son (274), and their vows express a hope for further rule, sym-

<sup>68</sup> RPC 8, unassigned, ID 2424, 2294, 2322, 2435, 2446, 27176 (Neapolis); RPC 8, unassigned, ID 6467 (Heliopolis).

<sup>69</sup> MedR 2, p. 104, no. 2, no. 3, tav. 111.4, p. 103, no. 3, tav. 111.9, p. 103, no. 4, tav. 111.10. Cf. Scott Ryberg 1955, p. 188.

<sup>70</sup> MedR 2, p. 103, no. 6, tav. 111.7.

<sup>71</sup> MedR 2, p. 104, no. 3, tav. 112.3.

<sup>72</sup> RPC 9, nos 2001, 2030 (Tyre), 2139 (Neapolis).

<sup>73</sup> RIC V/1, Valerian I, no. 285; RIC V/1, Gallienus, JR, nos 446–447.

<sup>74</sup> GGK, Tetricus I, nos 59–60; obv. IMP TETRICI AVGG, bust of Tetricus I, facing bust of Tetricus junior. Cf. the bronze coins of Valerian I and Gallienus, with similar iconography: two emperors standing face to face, holding *phiale* over a lighted altar, above, Nike with wings expanded, and holding in each extended hand a wreath over the head of each emperor: BMCG Phrygia, p. 415, no. 32 (Temenothyrae).

bolised by a *globus*, the gesture of crowning. Soon after the production of this coin, Aurelian put an end to the *Imperium Galliarum*.

The antoniniani of Carinus' and Numerian's VOTA PVBLICA type depict both rulers standing and sacrificing at a tripod, with two standards behind.<sup>75</sup> Issued in 284, these coins may have been associated with the elevation of Numerian, who became Carinus's "co-ruler". They may have been the vows *pro salute et reditu* for both emperors, and also for the marriage of Carinus with Magnia Urbica.<sup>76</sup>

### LIBERALITAS

Certain images refer to the emperor's duties towards the citizens. Rulers appear jointly in scenes of *liberalitates* which symbolise imperial grace and generosity toward the people of Rome (*liberalitas*). The basic reverse design in this group consists of a depiction of the members of the imperial family sitting on a *sella*, accompanied by a personification of Liberalitas with a *cornucopiae*, *abacus* or *tessera*, and by a citizen – a beneficiary of *liberalitas*.

These representations are common, and appear in particularly large numbers in the coinage of Philip I and Philip junior, indicating the successive *liberalitates* that were held by them (*liberalitas* I, AD 244, *liberalitas* II, AD 245, *liberalitas* III, AD 248, *liberalitas* IIII, AD 249 (?)).<sup>77</sup>

A single coin type of Decius (LIBERALITAS AVG S C) depicts the emperor and his son Herennius Etruscus.<sup>78</sup> It is likely that these coins refer to the *congiarium* of the early period of this ruler's reign (in 249).

*Liberalitas* was also one of the most popular virtues of Valerian and Gallienus. Two rulers feature in the *liberalitates* scenes on the medallions and the coins of these issuers (*liberalitas* I, AD 253, *liberalitas* II, AD 254 or 255, *liberalitas* III, AD 256).<sup>79</sup> The reverses of the LIBERALITAS AVGG medallions issued for Gallienus and Salonina are an exception case in which a space next to the emperor is occupied by the empress.<sup>80</sup>

<sup>75</sup> RIC V/2, Carinus, nos 315–316; RIC V/2, Numerianus, no. 461.

<sup>76</sup> Cf. Mattingly 1950, p. 191, n. 59; Gricourt 2000a, pp. 55–56.

<sup>77</sup> RIC IV/3, Philip I, nos 179 (*liberalitas* I), 182–183 (*liberalitas* III); RIC IV/3, Philip II, nos 266 (*liberalitas* II), 230, 267 (*liberalitas* III), 245 (*liberalitas* IIII). See also: MedR 2, p. 94, no. 6, tav. 107.5 (motive of *congiarium*). Both rulers are represented on colonial coins, they are sitting opposite Fortuna: RPC 8, unassigned, ID 2415 (Neapolis).

<sup>78</sup> RIC IV/3, Trajan Decius, no. 122 (2ses).

<sup>79</sup> RIC V/1, Valerian and Gallienus, nos 5 (*liberalitas* I), 6 (*liberalitas* II), 7 (*liberalitas* III); RIC V/1, Valerian I, nos 45, 105 (*liberalitas* III); RIC V/1, Gallienus, JR, nos 84, 431 (*liberalitas* III); see also RIC V/1, Valerian I, no. 102; RIC V/1, Gallienus, JR, no. 150; MedR 2, p. 105, no. 4, tav. 112.7.

<sup>80</sup> MedR 2, p. 110, no. 3, tav. 115.7.

*DECURSIO AND ADVENTUS*

Types that symbolise the arrival and departure of rulers in imperial cities replicate two basic designs: rulers on horseback (*decursio*) and rulers on horseback, led by Victoria, with soldiers marching behind them (*adventus*). Both may be described as instances of *adventus*. These medallions and coins become relatively plentiful from the middle of the 3<sup>rd</sup> century onwards.

During Philip I's reign a silver ADVENTVS AVGG-type medallion was issued to mark his return from the war to Rome. It featured the busts of the emperor and Otacilia Severa on the obverse (CONCORDIA AVGG), and a representation of two rulers riding horses.<sup>81</sup> The theme of rulers on horseback also became a staple of provincial coins.<sup>82</sup>

Bronze ADVENTVS AVGG-type pieces of the reign of Trebonianus Gallus and Volusian were issued to mark the arrival of the emperors into Rome in 252. They include both *decursio* and *adventus* types: rulers on horseback,<sup>83</sup> and rulers on horseback, led by Victoria and followed by marching soldiers.<sup>84</sup>

During the reign of Valerian and Gallienus the ADVENTVS AVGG type became more common. The representation of two horsemen, with Victoria and soldiers, appears on medallions of Valerian and Gallienus with PIETAS AVGVSTORVM or CONCORDIA AVGVSTORVM obverses,<sup>85</sup> and on issues of Gallienus and Gallienus and Salonina with CONCORDIA AVGVSTORVM obverses.<sup>86</sup> These emissions were probably associated with the promotion of the rulers and their arrival in Rome in 253, and also emphasised imperial presence and virtues. This image is further replicated by the medallions of Gallienus and Valerian junior (CONCORDIA AVGVSTORVM/ADVENTVS AVGG<sup>87</sup>). Other bronze medallions of Gallienus with a reverse legend ADVENTVS AVGG represent as many as three horsemen led by Victoria, as well as soldiers.<sup>88</sup> Such an extended group is also featured on the reverse of the silver and bronze CONCORDIA AVGVSTORVM/ADVENTVS AVGG medallions. The obverse features two busts: Gallienus and one of his sons, Valerian junior or Saloninus. The identity of the three rulers

<sup>81</sup> MedR 1, p. 49, no. 1, tav. 24.8.

<sup>82</sup> RPC 8, unassigned; ID 70242 and 48697 (Bizya).

<sup>83</sup> MedR 2, p. 103, no. 1, tav. 111.8.

<sup>84</sup> RIC IV/3, Trebonianus Gallus and Volusian, no. 128; MedR 2, p. 102, no. 1, tav. 111.1–2, p. 103, no. 2, p. 104, no. 1.

<sup>85</sup> MedR 2, p. 99, no. 2, tav. 109.9 (wrongly assigned to Philip I and Philip II), p. 105, no. 2, tav. 113.2, p. 105, no. 3, tav. 113.3, p. 106, no. 5, tav. 113.7; MedR 3, p. 52, no. 5, tav. 154.9.

<sup>86</sup> MedR 3, p. 47, no. 3, tav. 153.17 (wrongly assigned to Philip I and Otacilia), p. 59, nos 3, tav. 155.9, 11, 12.

<sup>87</sup> MedR 2, p. 111, no. 2, tav. 116.2.

<sup>88</sup> MedR 2, pp. 106–107, no. 6, tav. 113.8.

represented on the reverse may also be interpreted in various ways: Valerian, Gallienus and Valerian junior or Saloninus.<sup>89</sup>

The bronze medallion with the busts of Carus, Carinus and Numerian on the obverse (IMP CARO AVG CARINO ET NVMERIANO CAESS) replicates the ADVENTVS AVGG type, with a representation of three horsemen, led by Victoria and accompanied by Virtus (?) and soldiers.<sup>90</sup> During the reign of the dynasty of Carus a new iconography of the *adventus* theme was developed. The *aurei* of Carinus and Numerian, of the ADVENTVS AVGG NN type, represent both co-rulers who face each other and who are holding a *victoriola*, whereas Victoria herself crowns them.<sup>91</sup>

The *decursio* model appears on the coinage of Tetricus I. The reverse of the *aureus* of the P M TR P II COS II type represents two horsemen, in which one may perceive the emperor and his son, Tetricus junior.<sup>92</sup>

### ADLOCUTIO

The relationship between the emperor and the soldiers is symbolised by the numismatic pieces of the *adlocutio* group.<sup>93</sup> They depict a commander who makes an allocution to those under his command. During the 3<sup>rd</sup>-century crisis the *adlocutiones* with two rulers appear exclusively in the iconography of medallions.

The medallions of Philip I and Philip junior, Valerian and Gallienus, and Numerian are recalled by the legends ADLOCVTIO AVVG or ADLOCVTIO AVGVSTORVM, and the following scenes recur: the emperors are standing on a platform, they are accompanied by a praetorian prefect, and they usually address an allocution to a group of soldiers standing below.<sup>94</sup> As an exceptional case, Gallienus's medallions additionally represent two captives.<sup>95</sup>

<sup>89</sup> MedR 1, p. 55, no. 1, tav. 27.10; MedR 2, p. 99, no. 3, tav. 109.10 (wrongly assigned to Philip I and his son).

<sup>90</sup> MedR 2, p. 123, no. 1, tav. 123.10.

<sup>91</sup> RIC V/2, Carinus, no. 317; RIC V/2, Numerianus, no. 462.

<sup>92</sup> GGK, Tetricus I, no. 32.

<sup>93</sup> Cf. Hedlund 2008, pp. 103–104 and 232: *adlocutio* as “a demonstration of presence” of the emperor.

<sup>94</sup> Philip I and Philip junior: MedR 2, p. 94, no. 1, tav. 107.1; Valerian and Gallienus: MedR 1, p. 52, no. 1, tav. 26.7; MedR 2, p. 105, no. 1, tav. 113.1, p. 106, no. 3, tav. 113.6; Numerian: MedR 2, p. 122, no. 1, tav. 123.2.

<sup>95</sup> MedR 2, p. 106, nos 1–2, tav. 113.4–5.

## TRIUMPH AND THE *PROCESSUS CONSULARIS*

Celebrations in which rulers participated, such as the *processus consularis* or the *pompa triumphalis*, were symbolised in coinage *inter alia* by the image of a ruler riding a quadriga. Co-rulers or “successors” were sometimes shown riding with the emperor in a vehicle. This was a declaration and a confirmation of dynastic plans. It established a link between the values associated with these celebrations and the hopes for stable rule ensured by the existence of a successor, or alternatively the introduction of a dynastic idea through the nomination of *caesares* or a *co-augustus*.

When Philip junior was elevated to the rank of *augustus* and received his first consulship in 247, the event was commemorated with a bronze medallion (PONTIFEX MAX TR P IIII COS II P P) depicting the father and son in a quadriga to the left being crowned by Victoria.<sup>96</sup> The medallions of the same type (PONTIFEX MAX TR P IIII COS II P P), and of the VICTORIAE AVGVSTORVM type, with the busts of Philip I, Philip junior and Otacilia Severa on the obverse (CONCORDIA AVGVSTORVM), depict the same scene in a frontal perspective on the reverse. These medallions also depict Mars and Virtus marching alongside the vehicle,<sup>97</sup> since they were designed to commemorate the victory over the barbarians. These representations – the emperors in the quadriga, Victoria with a wreath, and the presence of Mars and Virtus – reappear in reference to the successive joint consulship of the Philips (AD 248) in the emissions of the PONTIFEX MAX TR P V COS III P P type.<sup>98</sup> Finally the medallion of Philip I, Philip junior and Otacilia Severa (CONCORDIA AVGVSTORVM) issued in the same year shows a quadriga with Victoria in the carriage, inviting the emperors to board it. Mars appears behind these figures, while two captives are seated nearby. The reverse inscription alludes to the triumph over the barbarians (GERM MAX CARPICI MAX) and the consulships of the emperors (III ET II COS).<sup>99</sup> Interestingly, an example from the colonial coinage depicts both rulers riding in a quadriga, accompanied by a third figure identified as Otacilia Severa.<sup>100</sup>

Bronze coins and medallions of Trebonianus Gallus and Volusian commemorated their joint consulship (AD 252). The reverses of medallions bearing the inscription PONTIF MAX TR P II COS II ET COS depict a vehicle drawn by six horses, facing straight ahead, with two emperors in it. Victoria, who is standing between them, spreads her wings, Mars and Virtus stand next to the horses.<sup>101</sup>

<sup>96</sup> MedR 2, p. 95, no. 8, p. 96, no. 2, tav. 108.4. Cf. also MedR 2, p. 96, no. 5, tav. 108.6.

<sup>97</sup> MedR 2, p. 98, no. 10, tav. 109.4 (PONTIFEX MAX TR P IIII COS II P P); MedR 2, p. 99, no. 17, tav. 109.8 (VICTORIAE AVGVSTORVM).

<sup>98</sup> MedR 1, pp. 6–7, no. 2, tav. 2.4; MedR 2, p. 96, no. 4, tav. 108.5.

<sup>99</sup> MedR 2, p. 97, no. 4, tav. 109.1.

<sup>100</sup> RPC 8, unassigned; ID 2452 and 2491 (Neapolis). Cf. Harl 1984, p. 83, no. 57.

<sup>101</sup> MedR 2, p. 103, no. 6, tav. 112.2, p. 104, no. 7.

A similar representation appears on the PONTIF MAX TR P II COS II S C type asses of Gallus.<sup>102</sup>

During the reign of Valerian and Gallienus the reverse of the medallion of the PONTIF MAX TR P P P type depicts Victoria standing on a quadriga and beckoning two emperors to enter the carriage. Mars and a *ferculum* with captives are nearby.<sup>103</sup> The image of two *augusti* and a *caesar* riding together in a quadriga was put on the reverses of the bronze coins of Valerian's FELICIT AVGVSTORVM S C type.<sup>104</sup> In 257, the year of his fourth consulship and the third consulship of Gallienus, Valerian issued a bronze medallion of the FELICITAS TEMPORVM III ET III COS type, which depicts Victoria carrying a wreath above three rulers.<sup>105</sup> An interesting medallion with the reverse inscription (?) COS [...] MARINIANO dates back to the period of Gallienus's independent rule (AD 267?).<sup>106</sup> It represents three figures riding in a quadriga: the emperor, crowned by Victoria, and her third son (?), to whom a *genius* offers a wreath.

The final piece in this group was issued in 283. It is of the TRIVNFV QVADOR type, representing two rulers riding in a quadriga, with Victoria marching in front of it. A *ferculum* with captives is represented in the background. The medallion with the bust on the obverse and the inscription IMP NVMERIANVS P F AVG commemorated Carinus's victories over the Quadi, but the entire dynasty could enjoy the glory of this triumph.<sup>107</sup>

#### VICTORIA, VIRTUS AND THE BARBARIANS

Various figures (e.g. Victoria, soldiers) and details (e.g. *vexilla*, *aquilae*, *victoriola*) in numismatic iconography provide military and the victory-related contexts for the various scenes that were represented. The point of reference is always the emperor, or rather emperor and his co-ruler. The concept of an emperor-victor, promoted in the coin-related propaganda, was based, among other things, on the image of a Roman confronting a barbarian, who appears in the role of a captive or an enemy.<sup>108</sup>

<sup>102</sup> RIC IV/3, Trebonianus Gallus, no. 98.

<sup>103</sup> MedR 2, p. 105, no. 5, tav. 112.8.

<sup>104</sup> RIC V/1, Valerian I, no. 156.

<sup>105</sup> MedR 2, p. 104, no. 3, tav. 112.6.

<sup>106</sup> MedR 2, p. 107, no. 9, tav. 113.10. Cf. MIR 36, no. 1453. On the place of Marinianus in the Gallienus's dynastic policy cf. Zaccaria 1978b, pp. 64–66; Grandvallet 2006, pp. 133–141; Kluczek 2017, pp. 31–47. The Gallienus' third son – e.g. Manni 1949, pp. 72–73; Holmes 2005, p. 761; Morelli 2009, p. 156; Glas 2014, pp. 66, 243; De Blois 2018, p. 86.

<sup>107</sup> MedR 2, p. 123, no. 11, tav. 123.8.

<sup>108</sup> Cf. Caló Levi 1952; Heitz 2006, pp. 204–206; Kluczek 2009, pp. 233–236, 249–295.

In this group of representations, the rulers are only sporadically depicted in combat. An original representation is featured on the medallions of Numerian (VIRTVS AVGVSTORVM). Two rulers, armed, on horseback, attack six enemies, and are crowned by two flying Victorias.<sup>109</sup> In some respects this representation supplements the message of Numerian's TRIVNFV QVADOR type medallion, which comments on the result of the fight between the Romans and the barbarians.

Earlier on at the same mint (Siscia), coins and medallions summarising Carus's military campaign in 282 were issued in the names of Carus and Carinus. These pieces were as follows: gold multiples of the VICTORIAE AVGVSTT (*sic!*) and VICTORIE (*sic!*) types, in which two Victorias with two captives sitting at their feet are shown holding a shield with an inscription VOTIS X or X, gold aurei of the VICTORIA AVGVSTORVM type with two rulers jointly holding a victoriola, aurei of the VICTORIA AVGG FEL type with an image of Victoria, and aurei of the VICTORIA AVGG type with an image of the emperor being crowned by Victoria in the presence of supplicants.<sup>110</sup> The main theme of this group is the idea of *victoria*, and in particular the co-attribution of glory from victory to Carinus, first the successor, and later the co-ruler of Carus. In addition, the aurei of Numerian – the third member of the family – of the VICTORIA AVGG type replicate the image of the emperor, Victoria, and captives.<sup>111</sup> Notable features include collectivity and the embracing of all rulers in a positive aura, resulting from the glory of victory: the *victoria* of co-rulers was traditionally indivisible. In Rome, antoniniani of Numerian's VND(I)QVE VICTORES type were later produced in 283/284 and 284.<sup>112</sup> They depict the emperor or the emperor and captives. The reverse inscription refers the idea of victory illustrated in such a manner to the Roman emperors.

This is an example of well-developed propaganda, which claimed that *virtus*, incarnated in the emperor and his successor, bore fruit in the form of victory. This trend of propaganda manifested itself to a varying extent, but was present throughout the entire period of the 3<sup>rd</sup>-century crisis. It already appears on the bronze pieces of Maximinus I's VICTORIA AVGVSTORVM (S C) type, which present the emperor and his son, *caesar* Maximus, as victors over the barbarians.<sup>113</sup> The emperor in military dress and the *caesar* in a *toga*, are both holding a small Victoria, with captives sitting at their feet, and a soldier nearby.

The subsequent dynasties of the period 235–284 employed this solution in their coinage only in exceptional cases. Indeed, Philip I issued bronze medallions of the

<sup>109</sup> MedR 1, p. 11, no. 1, tav. 4.7; MedR 2, p. 123, no. 12. Cf. Gricourt 2000a, part. p. 51. Cf. also Hedlund 2008, s. 71–73; Altmayer 2014, pp. 49, 157–158.

<sup>110</sup> See Gricourt 2000a, pp. 48–49. See also: MedR 1, p. 11, no. 1, tav. 4.8 (VICTORIAE AVGVSTT), RIC V/2, Carus, no. 98 (VICTORIA AVGG FEL). Cf. Altmayer 2014, pp. 84–85.

<sup>111</sup> RIC V/2, Numerianus, no. 443.

<sup>112</sup> RIC V/2, Numerianus, nos 422–423. Cf. Gricourt 2000a, pp. 35–37 and 39–41.

<sup>113</sup> MedR 2, p. 86, no. 3, tav. 102.8; RIC IV/2, Maximinus I, no. 89.

VICTORIA AVGVSTORVM type, which depict two rulers holding a *victoriola* in the company of two soldiers.<sup>114</sup> The antoniniani of Philip I's VIRTVS AVGG type show both rulers on horseback.<sup>115</sup> Philip I's coinage also features other "triumph-related" emissions, whose content alludes to military victories. To these specimens we might add the antoniniani of Philip junior's PRINCIPI IVVENT and P M TR P VI COS P P types, which depict a young prince with a barbarian at his feet.<sup>116</sup> The combination of this image with the theme of *princeps iuventutis* is particularly notable. Previously this dynastic title accorded to the "successors to the throne" was not associated with barbarian themes on the imperial coinage.

The personification of Victoria also appears on the medallions of Trebonianus Gallus and Volusian of the ADVENTVS AVGG and VOTA AVGG types.

In the imperial coinage of the middle of the 3<sup>rd</sup> century, we can identify the concepts of *victoria* and *virtus*, but the barbarian theme is not present. This absence is perceptible in the so-called first great crisis (249–253). This may reflect the echoes of defeat in the war against the Goths of 250–251. However, at the same time the provincial mints, which were not numerous, struck coins with barbarian themes, depicting the fight between a Roman on horseback with his captive enemy at the foot of Nike, sometimes below a *tropaion*,<sup>117</sup> or with the barbarian (?) as a supplicant kneeling before Roma.<sup>118</sup>

Emissions presenting the ruler's capacity for victory in this literal manner appear on the imperial coinage as late as the reign of Valerian I and Gallienus. However, in the iconography of this period, there is no depiction of both rulers fighting their enemies or defeating barbarians.

#### LEGITIMISATION OF THE IMPERIAL POWER

An interesting group of representations is formed by coins and medallions that feature the figures of rulers and the gods that sanctioned their reign. This combination touches upon the essence of dynastic policy. While the transfer of power to previously anointed heirs was an aim pursued by rulers with male descendants, during the 3<sup>rd</sup> century the assumption of power was usually achieved by usurpation and the elimination of the previous ruler. In this context, the significance of the promotion of the dynastic idea, the idea of gods choosing a specific emperor, and the divine support that his family enjoyed comes to the fore.

<sup>114</sup> MedR 2, p. 95, no. 10, tav. 107.8.

<sup>115</sup> RIC IV/3, Philip I, no. 10.

<sup>116</sup> RIC IV/3, Philip II, nos 219, 237.

<sup>117</sup> Decius: RPC 9, nos 325, 326, 327 (Nicomedia), 572–574 (Magnesia ad Sipylum), 2057 (Caesarea Maritima), 2256, 2257, 2279 (Alexandria); Herennius Etruscus: RPC 9, nos 2289–2290 (Alexandria), 2084 (Caesarea Maritima).

<sup>118</sup> Volusian: RPC 9, no 1278 (Antiochia).

The asses of Maximinus I (P M TR P II COS P P S C) depict the emperor and a second figure, supposedly *caesar* Maximus, being crowned by Victoria.<sup>119</sup> Bronze medallions, with the obverse MAXIMINVS ET MAXIMVS AVGVSTI GERMANICI, depict portraits of the emperor and the *caesar* facing each other. The reverse P M TR P III COS P P depicts both rulers crowned by Hercules and Apollo, with a female figure with a *globus* in the background (Roma?).<sup>120</sup> With their presence and crowning gestures, the gods express their approval for the *augustus* and *caesar*.

In the coinage of Trebonianus Gallus, Victoria is shown crowning the emperor and his son, who are riding a quadriga (PONTIF MAX TR P II COS II S C) or standing at an altar before a temple (VOTA AVGG).<sup>121</sup>

Images that convey divine sanction toward a pair of rulers were introduced to many coin and medallion reverses during the reign of Carus's dynasty. The idea of *a diis electus* is symbolised either by the gesture of crowning, or the gesture of the offering the rulers a *globus*.

The aurei of Carinus' and Numerian's ADVENTVS AVGG NN type show the rulers holding a *victoriola* and being crowned by Victoria.<sup>122</sup> Gold and bronze medallions of Carinus' VIRTVS AVGVSTOR type show Carus handing the statuette of Victoria to Carinus, with Sol and Hercules stood behind crowning the rulers, or alternatively Carinus and Numerian being crowned by Sol and Hercules.<sup>123</sup>

A more common image depicts a ruler in military dress, standing with a spear or a sceptre in his right hand, receiving a *globus* or a *victoriola* from a figure standing opposite him. This theme appears on the antoniniani of the IOVI CONSER, CLEMENTIA TEMP, VIRTVS AVGG, VIRTVS AVGGG types.<sup>124</sup> These images were employed on the coinage of all three members of the dynasty, while Carinus and Numerian issued these coins both as *caesares*, and as *augusti*. The figure offering the *globus* – a symbol of power – is particularly notable. It may be identified as one of the members of the family – either Carus, Carinus, or Numerian – or alternatively as Jupiter. The ambiguity of this figure suggests that the scene is an expression of divine investiture, either depicting the anointing of the successors

<sup>119</sup> RIC IV/2, Maximinus I, no. 34.

<sup>120</sup> MedR 1, p. 86, no. 2, tav. 102.7. Cf. the sestertii of Caracalla and Geta, with similar reverse iconography: RIC 4.1, Caracalla, nos 459, 508A–C; RIC IV/1, Geta, no. 155.

<sup>121</sup> RIC IV/3, Trebonianus Gallus, no. 98; MedR 2, p. 103, no. 6, tav. 111.7.

<sup>122</sup> RIC V/2, Carinus, no. 317; RIC V/2, Numerianus, no. 462.

<sup>123</sup> MedR 1, p. 10, no. 1, tav. 4.4–5; MedR 2, p. 121, no. 8, tav. 12.29.

<sup>124</sup> IOVI CONSER: RIC V/2, Carinus, no. 314; CLEMENTIA TEMP: RIC V/2, Carus (Carinus *caes.*), no. 202; RIC V/2, Carus (Numerianus *caes.*), no. 372; RIC V/2, Carinus, nos 323–324; RIC V/2, Numerianus, no. 463; VIRTVS AVGG: RIC V/2, Carus, nos 124, 128; RIC V/2, Carus (Carinus *caes.*), nos 206–207, 209; RIC V/2, Carus (Numerianus *caes.*), nos 376–377, 380; RIC V/2, Carinus, nos 325–326, 329; RIC V/2, Numerianus, nos 466, 468, 470; VIRTVS AVGGG: RIC V/2, Carus, no. 125; RIC V/2, Carus (Carinus *caes.*), no. 208; RIC V/2, Carus (Numerianus *caes.*), nos 378–379; RIC V/2, Carinus, nos 314a, 327; RIC V/2, Numerianus, no. 469.

by the founder of the dynasty or the co-operation of the rulers. The essence of this representation is always associated with the problem of the legitimisation of power, placed on the divine or dynastic plane.

### CONCORDIA, FELICITAS AND SPES PUBLICA

The iconographic themes and legends used on coins and medallions project the condition of the Roman state under the reign of a specific dynasty. *Concordia Augustorum*, *pietas Augustorum*, *virtus Augustorum*, *victoria Augustorum* and other values were incorporated into the members of the dynasty, transformed into their specific activity, and were supposed to provide prosperity and internal stability to the Roman Empire, as well as imparting a strong position in relations with neighbouring peoples and states.

In this context we might note the bronze pieces with the busts of Gallienus and Salonina and legend CONCORDIA AVGG on the obverse, and the image of a female figure (Salonina?) and three children in the company of Victoria and the inscription [FELICI]TATIS on the reverse.<sup>125</sup> This type was issued after 260, after Valerian I became a captive of the Persians and the death of *augustus* Saloninus. Gallienus remained in power alone. It is even more interesting that the idea of *felicitas* in a family context was promoted at that time, perhaps by commemorating in this manner the two deceased sons of Gallienus and Salonina, Valerian junior and Saloninus, and by alluding to their third descendant, about whose place in the dynastic plans nothing certain may be said.

An allusion to the prosperity of the Roman Empire is featured in the slogan *Clementia temporum*, which appears on the coins of the members of the last dynasty of the crisis in the 3<sup>rd</sup> century.<sup>126</sup> The presence of a pair of rulers in the iconography was also combined with the idea of *spes*. The denarii of Carus, the aurei of Carus and Carinus, and the denarii of Numerian, of the SPES PVBLICA type, replicate the same iconographic motif: two rulers on horseback raising their right hands.<sup>127</sup>

The theme of *spes (publica)* in the coinage was associated for a long time, although not exclusively, with the younger member of the ruling dynasties.<sup>128</sup>

<sup>125</sup> MIR 36, p. 104 and no. 942C. The coins and medallions in the context of the empress's fertility, cf. Klein 1998, pp. 202–209.

<sup>126</sup> RIC V/2, Carus, no; RIC V/2, Carus (Carinus *caes.*), no. 202; RIC V/2, Carus (Numerianus *caes.*), no. 372; RIC V/2, Carinus, nos 323–324; RIC V/2, Numerianus, no. 462.

<sup>127</sup> RIC V/2, Carus, nos 51–52; RIC V/2, Carus and Carinus, no. 135; RIC V/2, Numerianus, no. 432.

<sup>128</sup> Cf. Perassi 1991, pp. 33–34, 81. The type date from AD 175/176. See, e.g., RIC III, Marcus Aurelius (Commodus), nos 620–621, 1530, 1543. In the 3<sup>rd</sup> century see, e.g., RIC IV/3, Gordian III, no. 201; RIC IV/3, Philip II, nos 121, 259; RIC IV/3, Trajan Decius (Herennius Etruscus *caes.*), no. 149; RIC IV/3, Trajan Decius (Hostilian *caes.*), no. 184; RIC IV/3, Hostilian, no. 206.

This custom is manifested in the central decades of the crisis. Usually these pieces depict a personified Spes.<sup>129</sup> A unique medallion of the SPES PVBLICA type bears the bust of a young prince:<sup>130</sup> it is he who gives hope to the Empire. It is one of the descendants of Gallienus and Salonina: Valerian junior, *caesar* 256–258, Saloninus, *caesar* 258–260, or perhaps Marinianus,<sup>131</sup> while the *antoniniani* of Saloninus of the SPES PVBLICA type depict a *caesar* in military attire standing next to Spes.<sup>132</sup>

## CONCLUSIONS

In the coinage of 235–284 there are numerous coins and medallions whose obverse or reverse inscriptions indicated the presence of two or three emperors, or the presence of *caesar(es)* next to *augustus/augusti*. A less common group consists of pieces bearing inscriptions of this kind with images of a pair of rulers or a family group. In both of these groups, appropriate indications were featured in the iconography and the inscriptions, which contained AVGG/AVGVSTORVM, CAESS etc. Many legends of this kind promoted imperial virtues, *virtutes*, which were incorporated into the figures of *augusti* and *caesares*: *concordia Augustorum*, *felicitas Augustorum*, *liberalitas Augustorum*, *pietas Augustorum*, *victoria Augustorum*, *virtus Augustorum*. A less numerous third group is formed by those numismatic pieces that comment upon images of members of the dynasty with a legend. Apart from the inscriptions with the imperial titles and FELICITAS TEMPORVM III ET III COS and GERM MAX CARPICI MAX III ET II COS, these include the following: CLEMENTIA TEMP, FORTVNAE REDVCI, IOVI CONSER, SAECVLVM NOVVM, SPES PVBLICA, TRIVNFV QVADOR and VOTA PVBLICA. The latter group of numismatic pieces provides the best iconographical testimony to the presence of a dynastic idea in Roman coinage. Their images, not legends, indicated the existence either of co-rulers or successors.

Unique iconographic solutions are featured above all on the reverses of medallions. Few types are characteristic of current coins. This may in turn explain the low popularity of dynastic emissions in provincial coinage. Apart from the double or triple busts of the members of the dynasty on the obverses, there are only few examples of scenes featuring the figures of the members of the dynasty on the reverses of provincial coins.

<sup>129</sup> RIC V/1, Valerian I, nos 122–122a, 257–258; RIC V/1, Gallienus, JR, nos 402–403; RIC V/1, Gallienus, SR, nos 544, 584; RIC V/1, Valerian I and Gallienus (Valerian II *caes.*), no. 52 (Ant); RIC V/1, Valerian I and Gallienus (Saloninus *caes.*), nos 13–14; cf. MIR 36, nos 827, 834, 837, 915, 917, 1401, 1464–1465, 1695.

<sup>130</sup> MedR 3, p. 61, nos 6, tav. 155.17.

<sup>131</sup> Valerian junior, cf. Zaccaria 1978a, pp. 106, 112; MIR 36, no. 866; Saloninus: cf. Toynbee 1986, pp. 163, 201; Mikocki 1997, s. 164; Marinianus, cf. Holmes 2005, p. 761.

<sup>132</sup> RIC V/1, Valerian I and Gallienus (Saloninus *caes.*), no. 36.

The presence of iconographic models and types representing the members of 3<sup>rd</sup>-century dynasties is irregular. Few examples are featured in the coinage of Maximinus I. The emperor and the *caesar* Maximus are presented in various scenes, also as warriors crowned by Victoria. In the first half of the 3<sup>rd</sup>-century crisis, the coinage of Philip I stands out in terms of the quality and the variety of dynastic themes, which involve a wide range of people; not only the ruling *augusti*, but also the *augusta* Otacilia Severa, and even – in provincial coinage – the parents of Philip I. The figures of Philip I and Philip junior were presented above all on the emission from the *liberalitas* group and those with the imperial titles, while other emissions feature military elements, *adlocutio Augustorum*, *victoria Augustorum*, *virtus Augustorum*, and other designs alluding to the entry of the emperors to Rome, *adventus Augustorum*, and to the millennium celebrations, *saeculum novum*. Then, after a period of paucity of dynastic types in the coinage of Decius and his sons (exclusively the *liberalitas* type), the coinage of Trebonianus Gallus and Volusian saw a certain renaissance, clearly perceptible in the medallions. These images promote the occasion-related themes of *fortuna redux*, *vota Augustorum*, *adventus Augustorum*, but also the *virtus Augustorum*. Without a doubt, the coinage of Valerian I and Gallienus is interesting. It is notable above all for the variety of types depicting two or three ruler figures. In various configurations, the figures of the *augusti*, Valerian I and Gallienus, and the *caesar*, i.e. Valerian junior or Saloninus, as well as *augusta* Salonina, illustrate such themes as: *adlocutio Augustorum*, *adventus Augustorum*, *concordia Augustorum*, *felicitas Augustorum*, *felicitas temporum*, *liberalitas Augustorum*, *pietas Augustorum*, *victoria Augustorum*, *virtus Augustorum*. In the coinage of Tetricus I, joint representations are few. The figures of Tetricus I and Tetricus junior appear in scenes depicting the making of an offering or *decursio*. Finally, in the last period of the crisis of the 3<sup>rd</sup> century, the joint representations of Carus and his sons, Carinus and Numerian, appear, in various arrangements, on coins and medallions promoting a vast number of themes: *adlocutio Augustorum*, *vota publica*, *virtus Augustorum*, *clementia temporum*, *adventus Augustorum (nostrorum)*, *spes publica*, most likely also *Iovi conservatori*, as well as *triumfus Quadorum*.

The extent of the presence in the coinage and the quality of these dynastic types and models do not correspond with the length of the reign of each of the seven dynasties. Moreover, one may not establish the popularisation of succession-related practice in the years 235–284. The illustration of various slogans with the figures of two or three rulers, and the promotion of a wider group of family members, living and deceased, depended on the individual dynastic programme of each emperor.

## ABBREVIATIONS

AE –	L'Année Épigraphique, Paris 1888 ff.
BMCG –	<i>A Catalogue of the Greek Coins in the British Museum</i> , eds R.S. Poole et al., London 1873 ff.
CIL –	<i>Corpus Inscriptionum Latinarum</i> , ed. Th. Mommsen et al., Berolini 1863 ff.
GGK –	B. Schulte, <i>Die Goldprägung der gallischen Kaiser von Postumus bis Tetricus</i> , Aarau–Frankfurt a.M.–Salzburg 1983.
MedR –	F. Gnechchi, <i>I medaglioni romani, descritti ed illustrati</i> , vols 1–3, Milano 1912.
MIR –	R. Göbl, <i>Die Münzprägung der Kaiser Valerianus I., Gallienus, Saloninus (253/268), Regalianus (260) und Macrianus, Quietus (260/262)</i> , Wien 2000 (=Moneta Imperii Romani 36).
RIC –	<i>The Roman Imperial Coinage</i> , eds H. Mattingly et al., London 1923–1994.
RPC –	<i>Roman Provincial Coinage</i> [ <a href="http://rpc.ashmus.ox.ac.uk/">http://rpc.ashmus.ox.ac.uk/</a> ].
SNG vA –	<i>Sylloge Nummorum Graecorum Deutschland. Sammlung von Aulock</i> , eds G. Kleiner et al., Berlin 1957–1968.

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NUMIZMATYCZNE ŚWIADECTWA POLITYKI DYNASTYCZNEJ  
CESARZY RZYMSKICH, 235–284

(Streszczenie)

W cesarstwie rzymskim w okresie tzw. kryzysu III w. (235–284) niektórzy władcy starali się, na wzór praktyk zaprowadzonych już przez Augusta, przekazać władzę imperialną sukcesorom wyznaczonym w obrębie własnej rodziny, a tym samym ugruntować rządy dynastii. Desygnowali więc następców, wynosząc synów do rangi cesarów (*caesar*), a nawet przyznawali im status współrządców (*augustus*).

Dziedziców, w osobach swych potomków, wyznaczyli: Maksymin Trak (235–238, [*caesar* Maksymus]), Filip Arab (244–249, [*caesar*, potem *augustus* Filip junior]), Decjusz (249–251, [*caesares*, a potem *augusti* Herenniusz Etrusk i Hostylian]), Trebonian Gall (251–253, [*caesar*, następnie *augustus* Woluzjan), Walerian i Gallien (253–268, [*caesar* Walerian junior, *caesar*, a potem *augustus* Saloninus]), władca *Imperium Galliarum* Tetryk I (271–274, [*caesar*, następnie *augustus* Tetryk junior]), na koniec Karus (282–283, [*caesares*, potem *augusti* Karynus oraz Numerian]). Tylko w niektórych przypadkach udało się zrealizować podstawowy cel polityki dynastycznej, jakim było przekazanie rządów sukcesorowi i utrzymanie się tegoż przy władzy. Kontynuacja rządów każdego takiego rodu trwała jednak krótko. Bunt wojak i uzurpacje władzy cesarskiej, przynoszące śmierć poprzedniemu cesarzowi, bynajmniej nie sprzyjały realizacji planów dynastycznych w pięćdziesięciolecie kryzysu III w.

Treści monet i medalionów, wyemitowanych w mennicach imperialnych lub prowincjonalnych, odzwierciedlały tę personalną politykę sukcesyjną, a także z jednej strony służyły promowaniu idei dynastycznej w imperium, z drugiej zaś odzwierciedlały akceptację takich praktyk dynastycznych. W tym kontekście wśród numizmatów, monet i medalionów, powstałych w latach 235–284, szczególnie interesujące są typy i warianty, które, podając w inskrypcjach formuły AVGG/AVGVSTORVM lub CAES i CAESS, a zwłaszcza mnożąc w ikonografii sylwetki dynastów, lansowały obecność u boku władcy augustów oraz cesarów, zatem symbolicznie wskazywały efekt zabiegów sukcesyjnych i zapowiadały trwanie rządów dynastii. W moim przeglądowym artykule umownie nazywam je emisjami, typami, modelami, bądź numizmatami „dynastycznymi”.

W tak wyodrębnionym zespole najczęściej spotykanym modelem są wspólne wizerunki władców i innych osób wplecionych w politykę dynastyczną. Podwójne lub potrójne wizerunki występują w różnych konfiguracjach. Pokazywani tak byli dwaj władcy, cesarz i jego następca lub następcy, cesarz i cesarzowa, a także para cesarz i cesarzowa wraz z ich potomkiem. Napisy mogą wskazywać pozytywną postawę członków rodziny cesarskiej wobec siebie i innych (*pietas*), określać harmonię i jedność dynastii (*concordia*). Dla numizmatów lat 40–50. III w. charakterystyczne było zastępowanie takimi legendami (*pietas Augustorum*, *concordia Augustorum*) imion własnych prezentowanych osób. Natomiast nie wskazywano pokrewieństwa i filiacji członków dynastii. Ewenementem są napisy na antoniniani Filipa Araba i Filipa juniora, w których padają określenia *pater*, *mater* oraz *filius*; oplotły one siecią członków rodziny cesarskiej, złożonej z Filipów oraz cesarzowej Otacylii Sewery. Ogniwa dynastii stanowili zmarli, a ubóstwieni jej członkowie (*divi/divae*). Wśród nich znaleźli się augusta Cecylia Paulina, żona Maksymina Traka,

cezar Walerian junior, może również jego brat Saloninus, cesarze Karus i Numerian, a także zmarli członkowie rodzin, którzy nie nosili tytułów dynastycznych – Julius Marinus i jego dzisiaj nieznana z imienia małżonka, rodzice Filipa Araba, Egnatia Mariniana, żona Waleriana, Nigrinianus, wnuk Karusa. Zapowiedź dobrej przyszłości dynastii dają wyobrażenia z udziałem sylwetek dzieci, charakterystyczne dla numizmatów z imionami cesarzowych Herenii Etruscylia, żony Decjusza, i Saloniny, żony Galliena. Motyw dziecka nie tylko bowiem sygnalizuje obecność młodszej generacji w rodzinie cesarskiej, jest też przenośnią płodności cesarzowej i spodziewanej prosperity imperium.

Obecność w wyobrażeniach rewersowych monet i medalionów dwóch lub – co ma miejsce rzadziej – trzech sylwetek władców odzwierciedla udział cesarzy oraz cesarów w życiu polityczno-społecznym imperium i jego mieszkańców. Na charakter tej aktywności naprowadzają niekiedy legendy, a przede wszystkim symbolizują ją aranżacje ikonograficzne, zawierające oprócz sylwetek dynastów personifikacje idei i *virtutes*, przedstawicieli obywateli lub, odpowiednio, grupy wojskowych, czasem elementy architektoniczne etc. Pary dynastów występują więc w scenach składania ofiary przy ołtarzu, co objaśniają napisy, które wskazują na „pobożność” władców (*pietas*) oraz na okoliczności takich demonstracji (*saeculum novum, fortunae reduci, vota Augustorum*). Jedynie w mennictwie Decjusza zabrakło takich obrazów pary dynastów-kapłanów. Z kolei na rewersach numizmatów Filipa Araba, Decjusza oraz Waleriana i Galliena pokazano dynastów w scenie *liberalitas*, obrazującej cesarską łaskawość i hojność wobec obywateli Rzymu. W mennictwie Filipów, Treboniana Galla, Waleriana i Galliena, Tetryka I oraz Karusa, Karynusa i Numeriana zaprezentowano przybycie dwójki bądź trójki władców do miasta (*adventus*) oraz motyw konnej parady wojskowej (*decursio*). Relacje cesarza z wojskowymi symbolizują za rządów Filipa Araba, Waleriana i Galliena oraz Numeriana medaliony z grupy *adlocutio*. Takie uroczystości, jak *processus consularis* albo *pompa triumphalis*, symbolizowano wyobrażeniem władców jadących w kwadrydze. Na rewersach numizmatów Filipa Araba, Treboniana Galla, Waleriana i Galliena, Numeriana prezentacja na wozie obok cesarza współwładcy lub „dziedzica tronu” potwierdzała zamiary dynastyczne.

Władcy byli przedstawiani w ich konkretnych funkcjach cywilnych i wojskowych. Ponadto sylwetki bogini Wiktorii, Virtus, Spes, Felicitas, takie atrybuty, jak *victoriola* albo postać barbarzyńcy, lub gest wieńczenia mający wymiar legitymizowania, transmitowały w metaforyczną przestrzeń komunikat o obecności dynastów i rządach dynastii. Numizmaty dawały też bowiem projekcję stanu państwa rzymskiego pod rządami danej dynastii. *Concordia Augustorum, pietas Augustorum, virtus Augustorum, victoria Augustorum* i jeszcze inne wartości wcielone w członków dynastii i kierujące tych działaniami, miały dać cesarstwu pomyślność, stabilizację wewnętrzną, silną pozycję w stosunkach z ludami i państwami sąsiednimi.

Adres autorki/The author's address:  
dr hab. Agata A. Kluczek, prof. UŚ  
Faculty of Humanities, Institute of History  
University of Silesia in Katowice  
Bankowa 11, PL 40-007 Katowice, Poland  
agata.kluczek@us.edu.pl  
ORCID: 0000-0003-0852-0572

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RENATA CIOŁEK

**MONETARY CIRCULATION IN MOESIA. THE CASE  
OF THE COIN FINDS FROM NOVAE (BULGARIA)**

**ABSTRACT:** This article discusses finds of Roman coins made during excavations in Novae (Bulgaria), by the University of Warsaw's Research Center on the Antiquity of Southeastern Europe. Novae is a Roman legionary camp in the province of Moesia, associated mainly with the Legion I *Italica*. However, the camp was built by the Legion VIII *Augusta*. The article analyzes the coin finds from 60 years of excavations at this archaeological site, coming from the area of the so-called sector IV and sector XII. Sector IV is mainly the Legion I military hospital (*valetudinarium*), while Sector XII is referred to as the Legion VIII cohort barracks area. The aim of the article is to present a model of the circulation of Roman coins in the areas of legionary camps on the lower Danube.

**ABSTRAKT:** Artykuł dotyczy znalezisk monet rzymskich dokonanych podczas wykopalisk w Novae (Bułgaria) przez Ośrodek Badań nad Antykiem Europy Południowo-Wschodniej Uniwersytetu Warszawskiego. Novae jest rzymskim obozem legionowym w prowincji Mezja, kojarzonym głównie z Legionem I *Italica*. Obóz został jednak zbudowany przez Legion VIII *Augusta*. W artykule dokonano analizy znalezisk monet z 60 lat wykopalisk na tym stanowisku archeologicznym, pochodzących z terenu tzw. sektora IV oraz sektora XII. Teren sektora IV jest kojarzony głównie ze szpitalem wojskowym (*valetudinarium*) Legionu I, zaś sektor XII określany jest mianem baraków kohort Legionu VIII. Celem artykułu jest przedstawienie schematu obiegu monet rzymskich na terenach obozów legionowych nad dolnym Dunajem.

**KEYWORDS:** Roman coins, coin finds, Novae (Bulgaria), legionary camp, Moesia, Legion I *Italica*, Legion VIII *Augusta*

**SŁOWA KLUCZOWE:** monety rzymskie, znaleziska monet, Novae (Bułgaria), obóz legionowy, Mezja, Legion I *Italica*, Legion VIII *Augusta*

The article examines monetary circulation within the legionary camp at Novae on the lower Danube, and seeks to develop a generalized model of monetary circulation based on the available database.<sup>1</sup> The coins come from excavations conducted in Novae by the Antiquity of Southeastern Europe Research Center at the University of Warsaw (hereafter OBA).<sup>2</sup> The OBA project concerns two sectors of the site: IV and XII. Archaeological testing of other legionary camps on the Danube has been rudimentary at best, undertaken irregularly and discontinuously. The state of research on Roman monetary circulation in Moesia has improved in recent years, but there is still much to be done. The situation in the 1<sup>st</sup> and 2<sup>nd</sup> century has been studied extensively by Evgeni I. Paunov,<sup>3</sup> but the 3<sup>rd</sup> and 4<sup>th</sup> centuries are little known, with just a few publications presenting specific finds from restricted time frames.<sup>4</sup> Research in the Roman army camp at Novae was initiated in 1960, and the University of Warsaw has had a team working there right from the beginning. Other sectors on site are being investigated by an expedition from the Bulgarian Academy of Sciences. The analysis presented here is based on published finds and archival documentation,<sup>5</sup> complemented by the author's own long-term research. Until the end of the 20<sup>th</sup> century, coins were obtained from excavations using the traditional methods of manual excavation and sieving. However, since the beginning of the 21<sup>st</sup> century, excavations have also made use of a metal detector.

The complex stratigraphy of Novae, extensive rebuilding in antiquity, later demolition of ancient structures, conflagrations, earthquakes – all this has made the archaeological and architectural investigations difficult, and with them also the numismatic analyses, which have to take specific archaeological contexts into consideration. The camp at Novae started in the mid-1<sup>st</sup> century AD, when the *Legio VIII Augusta* was transferred to the Danube after taking part in the campaign in Britain in AD 45. The relatively numerous coins of Claudius I are telling proof of the presence of this legion, which was given the task of building an army camp in the territory where Novae was located, which had just then been incorporated into the already vast Roman Empire. Large sums of money were channeled into the

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<sup>2</sup> I am deeply grateful to OBA Director Prof. Piotr Dyczek, as well as Janusz Reclaw and the whole team for help in studying the finds of coins from Novae sectors IV and XII.

<sup>3</sup> Paunov 2015, pp. 145–176; Paunov 2021 (with further reading).

<sup>4</sup> Dimitrov 1980, pp. 199–205; Dimitrov 1983, pp. 290–295; Dimitrov 1998, pp. 99–112; Dimitrov 2008, pp. 512–523.

<sup>5</sup> These are mainly the notes of Prof. Andrzej Kunisz, who participated in the excavations at Novae for many years. I would like to thank Prof. Wiesław Kaczanowicz (University of Silesia, Katowice) for providing access to these materials.

project, and this is well-reflected in the coin pool from Sector XII at Novae.<sup>6</sup> There is otherwise very little clear-cut evidence for the VIII *Augusta* in Novae, because the timber-and-earth camp that they built was replaced with structures of stone by the *Legio I Italica*, which superseded the VIII *Augusta*.<sup>7</sup>

This timber-and-earth complex, located in Sector IV, reflects the complex history of the army camp at Novae. The archaeological features excavated there represent different chronological periods within a timeframe extending from the encampment of the VIII *Augusta* legion through to the medieval period. Initially, a *thermae legionis* was constructed, later replaced by a hospital built in preparation for the Roman wars with the Dacians, and by civil architecture that arose on the ruins of the hospital, even as the army camp continued to function in other parts of Novae.

Exploration of the *valetudinarium* is now finished. This relatively small area has yielded 765 coins of Roman date, spanning the early years of the 1<sup>st</sup> century AD to the beginning of the 7<sup>th</sup> century. The 4<sup>th</sup> century is represented by the highest number of coins, and the 2<sup>nd</sup> and 6<sup>th</sup> centuries by the fewest. The 4<sup>th</sup>-century issues constitute close to half of all registered finds.<sup>8</sup>

1 <sup>st</sup> c.	6.53%
2 <sup>nd</sup> c.	3.8%
3 <sup>rd</sup> c.	31.56%
4 <sup>th</sup> c.	48.15%
6 <sup>th</sup> c.	4.83%

Evidence for the presence of VIII *Augusta* in Sector IV is meagre, but the link between most of the early Imperial coinage from the site and the construction of an army camp by the VIII *Augusta* cannot be doubted. The VIII *Augusta* left Novae to be replaced by another legion in the rule of Nero, hence coins issued before his reign, and possibly also a few from the early part of his rule, could be associated with the wooden fort architecture. This is especially well observed in Sector XII, where the remains of wooden army barracks from this period were discovered (see Table 1).

Coin circulation in different parts of the vast Roman Empire was affected by several different factors that determined how long different coins remained on the market. These factors included the given territory, the coin denomination, the date of issuing, and the issuer themselves (for example, the coins of emperors who suffered *damnatio memoriae* tended to disappear faster). The data for the Danubian provinces is still not clear at all, hence the difficulty in dating specific archaeological features based on the coin assemblage. It is essential to consider the specificity of a given area in every case.

<sup>6</sup> Ciołek 2022.

<sup>7</sup> Dyczek 2015, pp. 169–177; Dyczek 2018, pp. 39–80; Lemke 2018, pp. 74–82; Dyczek 2019, pp. 115–126.

<sup>8</sup> Ciołek, Dyczek 2011, p. 51.

Table 1. Coins from the period through the end of the Julio-Claudian dynasty  
 (the changeover time in Novae)

Issuer	Denominations	Sector IV	Sector VIII	Sector X <sup>9</sup>	Sector XI	Sector XII	Novae	Denominations total	All coins total
Cassander	AE					1		1	1
Marcus Antonius	D			1	2			3	3
Octavian Augustus	D						1	1	5
	As	2				1	1	4	
	Dp								
	S								
Tiberius	As	4		2	2	5	1	14	16
	Dp				2			2	
	S								
Gepaepyris (37–39)	AE	1						1	1
Caligula	Qu						1	1	23
	As	1	1			1	13	16	
	Dp						5	5	
	S			1				1	
Claudius I	As	7	6	4	5	12	10	44	66
	Dp	1			3	1	4	8	
	S	6	1		1	3	3	14	

<sup>9</sup> Genčeva 2002, pp. 111–116.

Issuer	Denominations	Sector IV	Sector VIII	Sector X <sup>9</sup>	Sector XI	Sector XII	Novae	Denominations total	All coins total
Nero	D		1		2		1	4	26
	Qu					1		1	
	As			2	1	2	4	9	
	Dp			1		1	1	3	
	S	1		1	1		6	9	
Julio-Claudian dynasty (unspecified emperor)	As	11				2		13	20
	Dp	1						1	
	S	3				3		6	
<b>Total</b>		<b>37</b>	<b>9</b>	<b>12</b>	<b>18</b>	<b>33</b>	<b>51</b>	<b>161</b>	<b>161</b>

The earliest history of the army camp is evidenced by 161 coins available for study. The bulk of these come from Sector IV, which has been subject to more prolonged investigations than Sector XII – although the latter has yielded coins that bear witness to the earliest phases of construction and operation of the camp on the Lower Danube. The Sector IV coins are for the most part connected with the functioning of a large bath, the *thermae legionis*, built in the early part of the reign of Vespasian.<sup>10</sup> Little remains of the bath that existed in the early stages of the occupation of the *Legio I Italica* at Novae, the ashlar from its walls having been reused in the construction of the hospital. Finds include clay floor tiles from the bath, marked with the stamp of this legion.<sup>11</sup> Thirty-eight coins relate to the Flavian bath. The total absence of Republican coins from the site is proof that there was no substantial occupation earlier in this area, since coins from this period were in circulation with relative frequency during the reign of the Julio-Claudian dynasty. The bath was torn down no later than in the beginning of Trajan's rule as indicated by a set of coins from the dismantling layer. Numismatic dating of this fact is not possible, because the youngest coin from this complex, which could be a dating

<sup>10</sup> Ciołek, Dyczek 2011, pp. 247–250.

<sup>11</sup> Ciołek, Dyczek 2011, pp. 11–15.

find, is too corroded to be identified and in any case, its issue date is hardly the date of the cessation of operations in the legionary bath. The absence of any coins of Hadrian and later in the bath contexts is an indicator that this event could not take place after 138, while had there been more coins of Trajan (there is just one and undated), that would have suggested the dismantling of the bath occurred later in this emperor's reign. Therefore, considering the numismatic evidence, the bath had to be torn down around the year 98 or shortly after that (see Table 2).<sup>12</sup>

Table 2. Coins from the archaeological context of the *thermae legionis*

Octavian Augustus	1 AE	11–12 CE
Tiberius	1 AE	21–22
Gaius	1 AE	3
Claudius I	8 AE	4
Nero	1 AE	6
First half of 1 <sup>st</sup> c.	4 AE	10–64
Vespasian	5 AE	69–79
Domitian	1 AE	85
Flavian dynasty (unspecified emperor)	1 AE	69–96
Nerva	1 AE	96–98
Trajan	1 AE	98–117
1 <sup>st</sup> –2 <sup>nd</sup> c.	6 AE	1 <sup>st</sup> –2 <sup>nd</sup> c.
Turn of 1 <sup>st</sup> c.	1 AE	Turn of 1 <sup>st</sup> c.
1 <sup>st</sup> –2 <sup>nd</sup> c.	1 AE	1 <sup>st</sup> –2 <sup>nd</sup> c.
Unidentified	5 AE	? (presumably 1 <sup>st</sup> c.)
<b>Total</b>	<b>38 AE coins</b> , including 22 asses, 5 dupondii, 4 sestertii	

The army hospital, the *valetudinarium*, is the most important building uncovered in Sector IV. The coin evidence places the construction of this complex in the early years of Trajan's reign, a dating corroborated by historical events, namely the Roman preparations for the Dacian wars and plans to conquer a new province of Dacia. In discussing the hospital, one should also mention an *Asklepeion*, the sanctuary of the healing deities, built in the courtyard of the *valetudinarium*, where a Roman coin was also found.

<sup>12</sup> Ciołek, Dyczek 2011, pp. 248–249.

Accurate documentation has permitted the coin finds from the hospital to be assigned to the different phases of activity at this site, separating the occupation levels from the layer of debris formed after the abandonment of the building. Coins from this latter context offer an important indication of the date when the hospital ceased to serve in its primary role (see Table 3).

Table 3. Coins from the hospital-operation phase and the post-hospital debris layer

Hospital operation layers		Post-hospital debris layers	
Claudius I	as		
Julio-Claudian dynasty (unspecified emperor)	as		
Vespasian	denarius 2 dupondius		
Domitian	as AE provincial		
Nerva	2 AE		
Trajan	subaeratus 3 AE		
Hadrian	denarius subaeratus 7 AE		
Antoninus Pius	subaeratus 6 AE		
Marcus Aurelius	sestertius subaeratus		
Commodus	sestertius AE provincial		
Nerva-Antonine Dynasty (unspecified emperor)	as		
Septimius Severus	4 denarii 6 AE provincial		
Caracalla	3 AE provincial 2 subaerati	Caracalla	AE AE provincial
Geta	denarius 2 AE	Geta	AE provincial
Elagabalus	5 AE provincial		
Severus Alexander	3 denarii 2 AE provincial	Severus Alexander	2 denarii subaeratus

Hospital operation layers		Post-hospital debris layers	
1 <sup>st</sup> –2 <sup>nd</sup> c.	denarius 9 AE	2 <sup>nd</sup> c.	denarius
2 <sup>nd</sup> –3 <sup>rd</sup> c.	2 AE 3 AE provincial	2 <sup>nd</sup> –3 <sup>rd</sup> c.	3 AE provincial
		Maximinus Thrax	AE provincial
		Gordian III	antoninianus 6 AE provincial
		Trebonianus Gallus	AE provincial
		Valerian I	antoninianus
Unidentified	5 AE	Unidentified	2 AE
<b>Total</b>	<b>82 coins</b>	<b>Total</b>	<b>22 coins</b>

The pool of coin finds from the hospital layers, as presented here, confirms the continued use of the building in its medical capacity through the reign of Severus Alexander, although an exact date cannot be established based on a study of the coins. This does not contradict the chronological evidence provided by other finds, which include a marble portrait head of the emperor Maximinus Thrax and a fragment of a marble slab with the designation of the *Legio I Italica Maximina*, the text revealing that the legion had been subjected to *damnatio memoriae* after this emperor's death. Therefore, the *valetudinarium* was closed down in 238.<sup>13</sup>

Provincial issues, which are a specific kind of branding for the provinces of Moesia and Thrace, are a distinctive feature in the general pool of coins from Sectors IV and XII. In the earliest phase of the army camp, bronzes struck in mints located in Rome constituted the most numerous group in Novae. These denominations include asses and, more rarely, dupondii and sestertii, all imported from the mints in Rome. The statistics in favor of local, provincial issues start to improve during the reign of Commodus, and become the predominant denomination by the end of the reign of Gordian III (see Table 4).

An impressive bronze with a bust of Commodus, struck in the Pergamum mint, is one of the first provincial coins.<sup>14</sup> A bronze coin struck at Nicaea in Bithynia, the only example from this mint, is also from this time. They are accompanied by denarii, which are rare on the Danube,<sup>15</sup> but no coins from Rome. This coin structure is typical of the monetary circulation in the two Moesian provinces and Thrace in the first half of the 3<sup>rd</sup> century. A closer look at the provincial coins of the said three provinces is in order at this point.

<sup>13</sup> Ciołek, Dyczek 2011, pp. 18–25.

<sup>14</sup> Ciołek, Dyczek 2011, p. 65, no. 71.

<sup>15</sup> Ciołek, Dyczek 2011, pp. 241–244.

Table 4. Provincial coins from Sectors IV (*italics*) and XII (underlined) of the legionary camp in Novae, presented by mints

Issuer	Mint											Total	
	Viminacium	Niko polis	Hadriano polis	Anchialos	Marciano polis	Perinthos	Dionysopolis	Tomis	Pergamum	Nicaea/Deultum	Amastris/Laodicea		Unidentified
Domitian						<i>1</i>							1
Marcus Aurelius			<u>2</u>										2
Commodus									<i>1</i>				2
Amastris										<i>1</i>			1
Septimius Severus		<i>6</i>		<i>1</i>	<u>1</u>							<i>3</i>	16
Geta		<u>3</u>		<u>1</u>			<i>1</i>					<u>1</u>	5
Caracalla		<i>3</i>			<i>2</i>					<u>1</u>		<i>1</i>	16
		<u>6</u>			<u>1</u>							<u>2</u>	
Maerinus		<i>2</i>											4
		<u>2</u>											
Elagabalus		<i>2</i>			<i>2</i>							<i>1</i>	18
		<i>4</i>			<i>1</i>							<i>2</i>	
Diadumenian		<u>6</u>			<u>2</u>					<u>1</u>			9
Severus Alexander		<u>1</u>			<u>4</u>				<i>1</i>			<i>1</i>	7
Maximinus Thrax												<i>1</i>	1
Gordian III	<u>1</u>	<u>4</u>		<i>1</i>	<i>2</i>			<i>1</i>		<i>1</i>		<i>1</i>	18
Philip I			<u>1</u>		<u>4</u>								0
Herennia Etruscilla	<i>1</i>												1
Trebonianus Gallus	<i>1</i>												1
Trajan Decius													0
Volusianus	<i>1</i>												1
Unidentified												<i>25</i>	33
												<u>8</u>	
<b>Total</b>													<b>136</b>
<b>Total</b>	<u>3</u>	<u>13</u>	<u>2</u>	<u>2</u>	<u>6</u>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<u>3</u>	<i>1</i>	<i>34</i>	<b>68</b>
	<u>1</u>	<u>29</u>	<u>3</u>	<u>1</u>	<u>19</u>					<u>1</u>	<u>1</u>	<u>13</u>	<b>68</b>

The province of Moesia started minting coins in the 2<sup>nd</sup> century, leading up to a peak in coin production in the first half of the 3<sup>rd</sup> century. This growth is reflected in the pool of coins recorded from Sectors IV and XII. Provincial bronzes from the nearest mint at Nikopolis ad Istrum were the most numerous at Novae. The number of Nikopolis coins from the area of the hospital (excavations completed) is only slightly larger than the share observed among the finds of coins from Sector XII after a few years of excavations. Together, they form a group of nearly 50 coins in the corpus of 136 provincial coins known to date. It is also probable that most of the unidentified coins came from this mint.

The Sector XII excavation also yielded a group of at least 25 coins from the mint in Marcianopolis,<sup>16</sup> an increase of 19 above the previously known total. Five of the coins were minted at Hadrianopolis and it appears that coins from that mint did not reach the Lower Danube in any quantity. Other mints were represented by just one or two coins. The preponderance of the two mints, Nikopolis ad Istrum and Marcianopolis, is easily explained by their proximity to Novae. The former mint in particular was very prolific, its minting production peaking in the reign of Septimius Severus and his immediate successors (see Table 4) when the demand for bronze coin far exceeded what the mint in Rome could supply. Provincial mints had to increase their production substantially and their number in the reign of Septimius Severus grew to 365 altogether.<sup>17</sup>

A comparison of the set of provincial coins from the army hospital (Sector IV) and from Sector XII reveals a noticeably lesser differentiation of the latter; indeed, there are practically no other mints represented save for the two mentioned above. The statistics are similar for a hoard of 46 provincial coins published elsewhere,<sup>18</sup> which comprised for the most part pieces from these two mints in a reverse proportion: Marcianopolis (22) and Nikopolis ad Istrum (17); see Table 5. The hoard also contained two coins struck by Anchialos, two from Hadrianopolis and one each from Deultum and Dionysopolis. Interestingly, a Deultum bronze was discovered in Sector XII close to where the hoard was found (Fig. 1). So far, no other coins from Deultum have ever been found at Novae.

The latest provincial coins found in Novae were issued in Viminacium (Fig. 2), which started up operations when the Thracian and Moesian mints closed down.<sup>19</sup> Viminacium was active in 239–255. It is represented at Novae rather symbolically.

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<sup>16</sup> Gerov 1975, pp. 49–72.

<sup>17</sup> Bursche 1992, p. 234.

<sup>18</sup> Ciołek 2019, pp. 79–98.

<sup>19</sup> Orlov 1970; Martin 1991/1992, pp. 214–217; Kos 1992, pp. 209–214.



Fig. 1. Diadumenian, AE, 217–218, Deultum Mint. Novae (Bulgaria), inv. no. 119/16, scale 1.5:1

Table 5. Chronological structure and provenance of coins from the hoard found in Sector XII at Novae

Issuer	Specimens (n)		%	Mint	Coins from a given mint
Hadrian	1		2.08%	Rome	1 pc / 2.08%
Septimius Severus	30	32	66.6%	Marcianopolis	19 pcs / 39.5%
	2 (Julia Domna)			Nicopolis ad Istrum	12 pcs / 25%
				Thracian Anchialos	1 pc / 2.08%
Caracalla	8	9	18.7%	Nicopolis ad Istrum	3 pcs / 6.25%
	1 (Plautilla)			Marcianopolis	2 pcs / 4.1%
				Hadrianopolis	1 pc / 2.08%
				Thracian Anchialos	3 pcs / 6.25%
Macrinus	1		2.08%	Nicopolis ad Istrum	1 pc / 2.08%
Elagabalus	1		2.08%	Nicopolis ad Istrum	1 pc / 2.08%
Severus Alexander	2		4.1%	Marcianopolis	1 pc / 2.08%
				Dionysopolis	1 pc / 2.08%
Maximus Caesar	1		2.08%	Deultum	1 pc / 2.08%
Gordian III	1		2.08%	Hadrianopolis	1 pc / 2.08%
Total	48		100%	7 mints	48 pcs / 100%



Fig. 2. Gordian III, AE, 241–242, Viminacium mint. Novae (Bulgaria), inv.no. 139/13, scale 1.5:1

Minting in the provinces was extremely sensitive to local politics. For example, the visit of Elagabalus in Moesia in 218 is marked in the archaeological record at Novae by a relatively large number of provincial bronzes from the two most important mints in the region. The coins of Gordian III are just as numerous, in both sectors, and this situation can be justified by the imperial army's march east through the Balkans in 241. Most of the Moesian and Thracian mints were phased out in this period, also in connection with contemporaneous political events and the specificity of the monetary system in the second half of the 3<sup>rd</sup> century, which suffered from a rapid and definite debasement of silver antoniniani that led in turn to a devaluation of the bronze coinage. Thus, the maximally devalued antoniniani are the sole coin finds from layers dated to the second half of the 3<sup>rd</sup> century from the two investigated sectors.<sup>20</sup>

The set of finds from the first half of the 3<sup>rd</sup> century indicates beyond doubt that the demand for coins in Novae during this time was filled by the nearby Moesian and Thracian mints to the exclusion of all others. Of these mints, Nikopolis ad Istrum and Marcianopolis dominated the record, the latter second in number after the Nikopolis issues. One should expect many more provincial coins in general, because they were paid out to the soldiers at a time of intensive military activities when the state treasury was short of silver. Hence the quantities of coins struck by Septimius Severus, who fought a particularly fierce battle for the imperial throne with four other contenders, and won thanks to the backing of fifteen legions, including the *I Italica* legion.<sup>21</sup>

Significantly less is known about monetary circulation in Moesia in the 3<sup>rd</sup>–4<sup>th</sup> centuries compared to the earlier periods. A hoard discovered in the ruins of the army headquarters building (*principia*), next to the Chapel of the Standards,

<sup>20</sup> The original designation of the new silver denomination is not known. The *argenteus antoninianus* is attested for the first time in the *Scriptores Historiae Augustae* (SHA 15,8); see Kubitschek 1893, cols 2568–2571.

<sup>21</sup> Ciołek/Kolendo 2008, pp. 225–235.

dates to this period.<sup>22</sup> The identifiable coins from this hoard were from the Balkan mints of the 4<sup>th</sup> century. Many of these coins are rare, even unknown types. The production of these mints made up the core of the monetary mass in circulation in Moesia and Thrace at the close of the 3<sup>rd</sup> and in the 4<sup>th</sup> century. This situation reflects the booming growth of local provincial mints after the monetary reform of Diocletian of 294 (see Table 9). Many of the 3<sup>rd</sup>- and 4<sup>th</sup>-century coin types are unknown, revealing the gaps in studies of the Balkan mints, as well as of the material culture of the 3<sup>rd</sup> and 4<sup>th</sup> centuries in this region. Few hoards are known from former Moesia of this period and even they have not been studied thoroughly. In light of the described state of research, discussion of the monetary circulation in Moesia is not yet possible.

The pool of coins from the two sectors is relatively poor in coins covering the period from the reign of Gordian III to the beginning of Gallienus's rule, which corresponded to a wave of barbarian raids on the northern borders of the Empire, including the Goths who laid siege to the camp at Novae in 250.<sup>23</sup> The sudden rise in coin numbers in 268–282 corresponds to a broad stream of coins, antoniniani struck around the Empire, which reached Novae via Rome. Antoniniani from this period are hardly ever discussed in the literature, hence little more can be said about these coins. An absolute peak in the coinage found at the camp falls in the reigns of Claudius II, Aurelian, Tacitus and Probus. The coefficient of coins per year is more than 15 and 16 during this time, a result unmatched either earlier or later. Even the Constantines are not represented by a larger number of coins per year ( $F^{c/r} = 13.71$ ; see Table 10). In the 14 years between 268 and 282, there is also a considerable diversity of mints striking the coins discovered on site (see Table 8). The majority still come from Rome, but the local mints in Siscia, Serdica and Ticinum grow in importance in Moesia, even as coins struck in Milan and Antioch, and even a single antoninianus from Tripolis appear in the archaeological record. Such a coin structure by mint demonstrates that the pool of coins came in its entirety from Rome rather than being formed on the spot from the pool of coins issued by the local mints.

Generally, 4<sup>th</sup>-century coins form a quantitatively large assemblage, but then they are also generally the most frequently encountered coins all over Europe. They were mass-produced in many imperial mints. Despite appearances, it is not the coins of Constantine the Great that are the most numerous in Novae. Most of the coins come from the reigns of Constantine II, Constans, and Constantius II (see Table 10).

The coins coming from the different legionary structures are of little use for their dating; better evidence is offered, of course, by coins registered in specific archaeological contexts, if their distribution between occupational and

<sup>22</sup> Kunisz 1979, pp. 219–225.

<sup>23</sup> Dimitrov 2005, pp. 79–98; Kolendo 2008, pp. 117–131.

destruction/dismantling layers is known. In the case of the army hospital, it was possible to determine, based on the coins, when the complex was still in use and when it was ultimately deserted. However, finds of coins failed to contribute new data or more precise determinations to the interpretation of the legionary baths and the sanctuary of the healing deities, yielding only a *terminus post quem* that is hardly a serious indicator in the case of these buildings. Therefore, coins can help in the dating of complexes that functioned for a long time, providing that the archaeological documentation is precise, enabling a study of the coin finds from specific layers associated with the “use-life” of a given structure. One should keep in mind the nature of the imperial monetary system and the duration and specificity of the circulation of given denominations depending on the province.

Summing up the data on monetary circulation within the army camp, it should be emphasized that the pool of coins coming from the excavation is a perfect illustration of the camp’s history. The beginnings of the camp correspond to a relatively large number of coins of the Julio-Claudian emperors. Bronzes from the mint in Rome – asses and less frequently sestertii and dupondii – constituted the most numerous group of coins from the earliest phase of the camp. The data for the 1<sup>st</sup>–2<sup>nd</sup> centuries CE from Table 6 and the F coefficient clearly indicate a clear frequency peak in the reign of Claudius I: more than two coins per year in the rule of Claudius, but only 1.4 coins for each year of Vespasian’s rule, Vespasian being the second-ranked emperor in this listing (see Fig. 3). Such a large number of coins issued by Claudius I cannot be attributed to chance, especially as Claudius came nowhere near to the quantities of coin struck by Vespasian, for example.

Denarii and a series of subaerati turned up first in layers post-dating Nero’s reform of 64 CE. They were not present in preceding layers, while the sole denarius of Octavian Augustus, of which there is information, was found out of context. As for the legionary series of the denarii of Mark Anthony, they did not reach Novae until the second half of the 1<sup>st</sup> century CE, perhaps later, because they were still in circulation in Roman territories in the first half of the 3<sup>rd</sup> century. Two quadrantes, one of Nero (Fig. 4) and the other of Trajan (Fig. 5), found in Sector XII, are the first examples of this denomination found in Novae. So far, such low-value bronzes, equal to a quarter of an as, had not been recorded from the camp. Abundant series of these coins were issued through the end of Trajan’s reign.<sup>24</sup> However, excavations in the legionary camp in Novae have demonstrated that denominations smaller than an as were of no significance in this province.

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<sup>24</sup> Mattingly, Sydenham 1986, pp. 293–295.

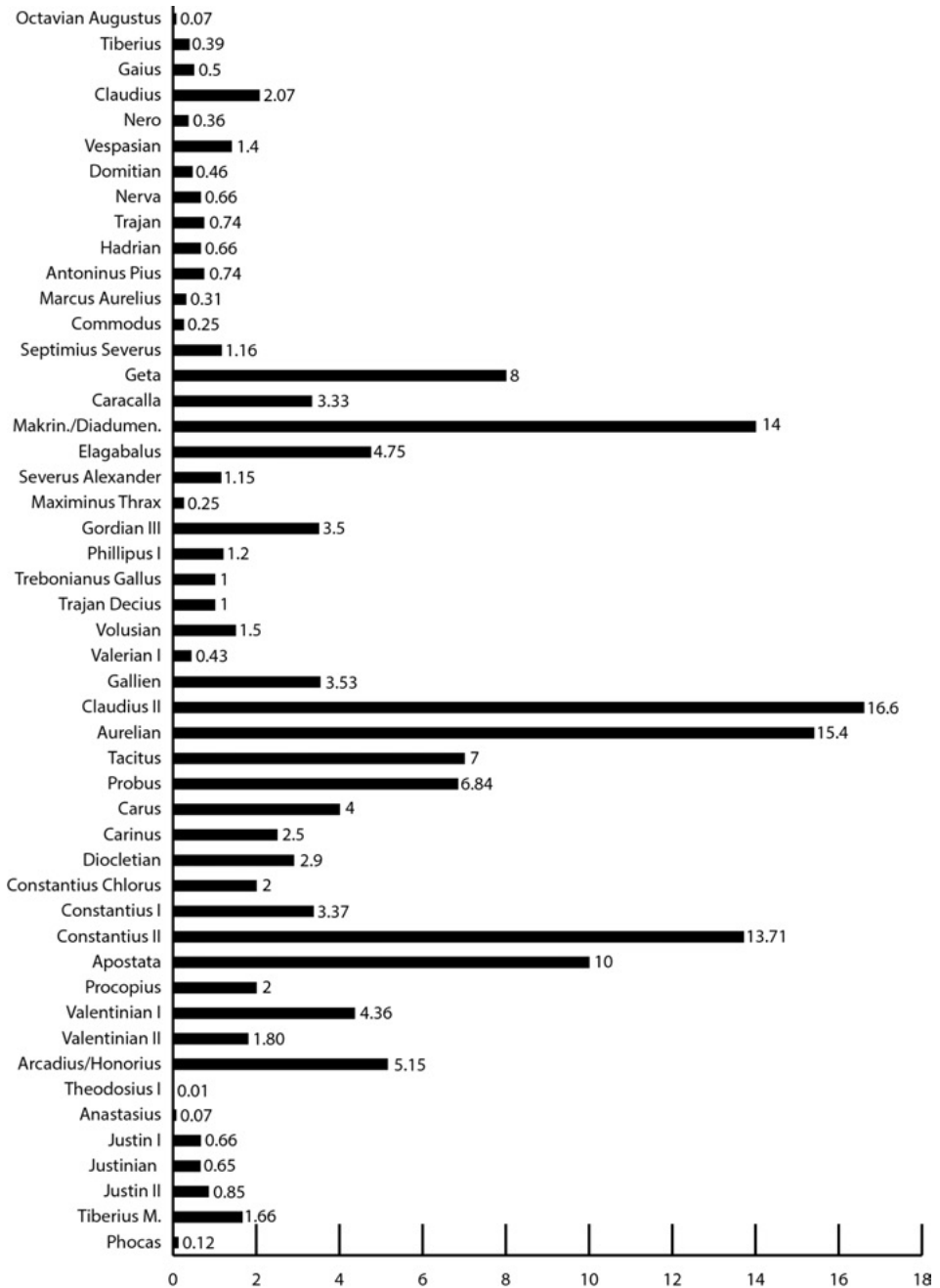


Fig. 3. Share of coins per year (see Tables 6–11)



Fig. 4. Quadrans of Nero, AE, 64, Rome mint. Novae (Bulgaria), inv. no. 150/13, scale 1.5:1



Fig. 5. Quadrans of Trajan, AE, 101–117, Rome mint. Novae (Bulgaria), inv. no. 219/13, scale 1.5:1

Monetary circulation in the Danubian provinces changed radically with the end of the Nerva-Antonine dynasty. The F coefficient in the 1<sup>st</sup> and 2<sup>nd</sup> century CE exceeded 1 only twice (Claudius and Vespasian), whereas in the 3<sup>rd</sup> and 4<sup>th</sup> century CE it never dropped below this value. There is an evident jump in the number of coins in the first half of the 3<sup>rd</sup> century. From the rule of Commodus, the share of provincial coins was on the rise, becoming the prevailing or even dominant denomination practically until the end of the reign of Gordian III (see Table 4). The apogee in Novae was around 218, when the F coefficient reached 14 coins. This can be linked to the presence of the emperor Elagabalus in Moesia that year.<sup>25</sup>

The monetary circulation in Novae in this period is characterized by provincial coinage; not one coin from the central mint in Rome has been registered. The finds from the first half of the 3<sup>rd</sup> century demonstrate that Novae's demand for coin at this time was met by the nearby Moesian and Thracian mints. Denarii are few, leading to the assumption that they were not the main denomination in use at the camp. Gold coins are missing entirely. This coin structure is typical of the circulation of coins in the two Moesias and Thrace in the period up to the first half of the 3<sup>rd</sup> century.

The number of coin finds from the camp at Novae peaked again in 268–282 (see Table 8). Quantitatively, the largest set is that of Gallienus (53 coins), but in truth this was a relatively long reign (253–268), compared to that of Claudius II (268–270) – 33 coins (F = 16.5), or even Aurelian (270–275) – 77 coins, F = 15.4.

<sup>25</sup> Schönert-Geiss 1967, pp. 226–227; Icks 2014, p. 27.

Table 6. Roman coins from Sectors IV (*italics*) and XII (underlined) of the legionary camp in Novae:  
 1<sup>st</sup>-2<sup>nd</sup> centuries (until the end of the Nerva-Antonine reign)

Issuer	Sestertius	Dupondius	As	AE unidentified	Provincial	Denarius	Subaeratus	Total	F <sup>nr</sup>
Cassander				<u>1</u>				1	
Octavian Augustus			2 <u>1</u>					3	0.07
Tiberius			4 <u>5</u>					9	0.39
Gepaepyris				<i>1</i>				1	
Caligula			<i>1</i> <u>1</u>					2	0.5
Claudius I	3 <u>2</u>	<i>1</i> <u>1</u>	7 <u>12</u>					27	<b>2.07</b>
Nero	<i>1</i>	<u>1</u>	2	<u>1Qu</u>				5	0.36
Julio- Claudian Dynasty	3	<i>1</i>	6 <u>2</u>					12	0.18
Vespasian		3	5 <u>4</u>			<i>1</i> <u>1</u>		14	1.4
Domitian	<u>1</u>		<i>1</i> <u>1</u>		<i>1</i>	2	<i>1</i>	7	0.46
Flavian Dynasty			<i>1</i>			<u>1</u>		2	
Nerva	<i>1</i>		<i>1</i>					2	0.66
Trajan	<i>1</i>	3	3	<u>1Qu</u>		4	<i>1</i> <u>1</u>	14	0.74
Hadrian	2 <u>1</u>	<i>1</i>	3 <u>2</u>			<i>1</i> <u>2</u>	<i>1</i> <u>1</u>	14	0.66

Issuer	Sestertertius	Dupondius	As	AE unidentified	Provincial	Denarius	Subaeratus	Total	F <sup>vr</sup>
Trajan/ Hadrian							1	1	
Antoninus Pius	3 3	2 1	2			3	1 2	17	0.74
Marcus Aurelius	1 1			1	1		1 1	6	0.31
Commodus	1				2			3	0.25
Pescenius Niger						1		1	
2nd c. (+Amastris)			1		1			2	
<b>Total</b>	<b>13 12</b>	<b>11 3</b>	<b>34 33</b>	<b>1 4</b>	<b>4 1</b>	<b>2 14</b>	<b>6 5</b>	<b>143</b>	<b>0.75</b>

Table 7. Roman coins from Sectors IV (*italics*) and XII (underlined) of the legionary camp in Novae: from 193 to 235

Issuer	Sestertertius	Dupondius	As	AE unidentified	Provincial	Denarius	Subaeratus	Total	F <sup>vr</sup>
Septimius Severus					10 6	4 1		21	1.16
Geta	1			1	2 3	1		8	8
Caracalla					6 10	1 1	2	20	3.33
Macrinus					2 3			5	14
Diadumenian					9			9	

Issuer	Sestertius	Dupondius	As	AE unidentified	Provincial	Denarius	Subaeratus	Total	F <sup>gr</sup>
Elagabalus					<u>6</u> 13			19	4.75
Severus Alexander					2 <u>5</u>	3 2	3	15	1.15
<b>Total</b>	<b>1</b>			<i>1</i>	<b>28</b> <b>49</b>	<b>9</b> <b>4</b>	<b>5</b>	<b>97</b>	<b>2.31</b>

Table 8. Roman coins from Sectors IV (*italics*) and XII (underlined) of the legionary camp in Novae: from 235 to 311

Issuer	Sestertius	Dupondius	As	AE unidentified	Provincial	Antoninian	Subaeratus	Total	F <sup>gr</sup>
Maximinus Thrax					<i>1</i>			1	0.25
Gordian III					8 <u>11</u>	<i>1</i>	<i>1</i>	21	3.5
Philip I	<u>1</u>				<u>1</u>	2	2	6	1.2
Trebonianus Gallus					<i>1</i>		<i>1</i>	2	1
Trajan Decius					<i>1</i>	<i>1</i>	<i>1</i>	3	1
Volusianus					<i>1</i>		2	3	1.5
Valerian I						2	<i>1</i>	3	0.43
Gallienus						17	36	53	3.53
Claudius II						11	22	33	16.5

Issuer	Sestertius	Dupondius	As	AE unidentified	Provincial	Antoninian	Subaeratus	Total	F <sub>cr</sub>
Aurelianus						27	50	77	15.4
Tacitus							7	7	7
Probus						18	23	41	6.84
Carus						3	1	4	4
Carinus						2	3	5	2.5
Diocletian						3	6	9	
Maximian						1		1	
Herculius									
Galerius Maximianus							6	6	2.90
Unidentified	1					13	10	24	
<b>Total</b>	<b>1</b> <b>1</b>				<b>12</b> <b>12</b>	<b>101</b>	<b>172</b>	<b>299</b>	<b>4.27</b>

Table 9. Roman coins from Sectors IV (*italics*) and XII (underlined) of the legionary camp in Novae: from 294 to 337

Issuer	Follis	Follis fraction or generally AE	Total	F <sup>vr</sup>	
Diocletian	<u>4</u>	6	10	2.90	
Galerius	<u>3</u>	3	6		
Constantius Chlorus	<i>1</i>	<i>1</i>	2	2	
Maximinus	<i>1</i>		1		
Constantine I	<i>17</i> <u>24</u>	<i>5</i> <u>41</u>	87	3.37	
Licinius I	<i>5</i> <u>4</u>	<i>2</i> <u>2</u>	11		
Licinius II	<i>4</i> <u>1</u>	<i>1</i> <u>1</u>	6		
Crispus		<u>1</u>	1		
Delmatius		<u>1</u>	1		
<b>Total</b>	<b><i>28</i> <u>36</u></b>	<b><i>16</i> <u>45</u></b>	<b>125</b>		<b>3.90</b>

Table 10. Roman coins from Sectors IV (*italics*) and XII (*underlined*) of the legionary camp in Novae: from 337 to 455

Issuer	AV	AE2	AE3	AE4	AE unidentified	Total	F <sup>v/r</sup>
Constantine II		3 <u>1</u>	2AR	2 <u>12</u>		20	
Constantius II		9 <u>75</u>	24 <u>41</u>	6 <u>2</u>	3	160	
Constans		3 <u>9</u>	2 <u>18</u>	4	3	39	
Constantius II or Constans		1 <u>1</u>	4	1		7	<b>13.71</b>
Constantius Gallus		2 <u>6</u>	1			9	
Constantine Dynasty		3 <u>7</u>	6 <u>39</u>	1 <u>15</u>	23	94	
Julian Apostate			6	2	1	9	
Jovianus			1			1	<b>10</b>
Procopius		<u>2</u>				2	2
Valentinian I		<u>2</u>	2 <u>6</u>	4		14	
Valens			5 <u>5</u>		1	11	4.36

Issuer	AV	AE2	AE3	AE4	AE unidentified	Total	F <sup>v/r</sup>
Valentinian II		<u>2</u>	<u>3</u> <u>7</u>	<u>10</u>		22	
Valentinian I, Valens or Valentinian II		<i>1</i>		<i>1</i>		13	
Valentinian I, Valens, Valentinian II or Theodosius I			<i>10</i>		<u>1</u>		1.80
Theodosius I		<u>2</u>	<u>4</u> <u>3</u>	<u>3</u> <u>8</u>	<u>1</u>	21	
Gratian		<i>1</i>	<u>2</u>	<i>1</i>		4	
Arcadius		<i>1</i> <u>8</u>	<u>6</u> <u>15</u>	<u>3</u> <u>11</u>		44	
Honorius		<u>1</u>	<u>5</u> <u>2</u>			8	
Arcadius or Honorius	<u>1</u>	<u>1</u>		<i>1</i> <u>9</u>	<i>1</i>	16	5.15
Arcadius, Honorius, Valentinian III or Theodosius II			<i>1</i> <u>2</u>				
Valentinian III				<u>3</u>		3	
Theodosius II			<u>1</u>	<i>1</i> <u>2</u>		4	0.01
Theodosius I or Theodosius II			<i>1</i>		<u>2</u>	3	
<b>Total</b>	<b>1</b>	<b>26</b> <b>115</b>	<b>79</b> <b>143</b> <b>2AR</b>	<b>26</b> <b>76</b>	<b>33</b> <b>3</b>	<b>504</b>	<b>4.46</b>

Table 11. Roman and Byzantine coins from Sectors IV (*italics*) and XII (underlined) of the legionary camp in Novae: from 491 to 610

Issuer	M	K	I	AE	Total	F <sup>er</sup>
Anastasius I	<i>1</i>	<u>1</u>			2	0.07
Justin I	<i>2</i> <u>1</u>	<i>1</i>	<u>1</u>	<u>1</u>	6	0.66
Justinian I	<i>12</i> <u>1</u>	<i>4</i>	<i>4</i> <u>1</u>		22	0.65
Justin II	<i>6</i>	<i>2</i> <u>3</u>			11	0.85
Justinian I or Justin II		<i>2</i>	<i>1</i>		3	
Tiberius Mauritianus		<i>1</i> <u>4</u>			5	1.66
Phocas	<i>1</i>				1	0.12
<b>Total</b>	<i>22</i> <u>2</u>	<i>10</i> <u>8</u>	<i>5</i> <u>2</u>	<u>1</u>	<b>50</b>	<b>0.42</b>

Table 12. Roman coins from Sectors IV (*italics*) and XII (underlined) of the legionary camp in Novae: coins of unidentified issuers

Period	Sestertius	Dupondius	As	AE	Denarius	Subaeratus	Total
1 <sup>st</sup> -2 <sup>nd</sup> – early 3 <sup>rd</sup> c. (to the denarius)	<i>6</i> <u>3</u>	<i>1</i>	<i>9</i>	<i>10</i> <u>3</u>	<i>2</i>	<i>2</i> <u>1</u>	37
3 <sup>rd</sup> c.	<i>1</i>		<u>AE</u>		<i>Antoninianus</i>		51
			<i>27</i> <u>10</u>		<i>13</i>		

	Follis	AE 2	AE3	AE4	AE
4 <sup>th</sup> c.		1	5	3	98 35
5 <sup>th</sup> c.					28 19
Late 4 <sup>th</sup> –5 <sup>th</sup> c.					24 6
Unidentified					67 18
<b>Total</b>					<b>392</b>

Table 13. Roman coins from Sectors IV and XII of the legionary camp in Novae: in terms of metal

Metal	Sector IV		Sector XII		Total	Percentage
	No. of pieces	%	No. of pieces	%		
AV	1	0.06	0	0.00	1	0.06 %
AR	127	8.39	193	12.75	320	21.14%
AE	637	42.07	556	36.73	1193	78.8%
<b>Total</b>	<b>765</b>		<b>749</b>		<b>1514</b>	<b>100%</b>

Table 14. Antoniniani: coins from Sectors IV (*italics*) and XII (underlined) by mint

Issuer	Lugdunum	Milan	Rome	Ticinum	Siscia	Serdica	Cyzicus	Heraklea / Tripolis	Antioch	Asia	Unknown	Total
Gordian III			<i>1</i>									2
			<u>1</u>									
Philip I			<i>1</i>						<i>1</i> (?)			4
			<u>2</u>									
Trebonian Gallus			<u>1</u>									1
Trajan Decius			<i>1</i>						<i>1</i> (?)			3
			<u>1</u>									
Volusianus			<u>2</u>									2
Valerian I	<i>1</i>								<u>1</u>		<i>1</i>	3
Gallien	<i>1</i>	<u>1</u>	<i>8</i> <u>14</u>		<i>2</i> <u>2</u>					<i>1</i>	<i>5</i> <u>19</u>	53
Claudius II		<u>1</u>	<i>5</i> <u>11</u>	<i>1</i> <u>1</u>			<i>1</i>		<u>1</u>		<i>3</i> <u>8</u>	33
Aurelianus	<i>1</i>		<i>1</i>	<i>2</i>	<i>7</i>	<i>3</i>	<i>5</i>		<u>7</u>		<i>8</i>	77
	<u>2</u>		<u>5</u>	<u>1</u>	<u>8</u>	<u>6</u>	<u>5</u>				<u>16</u>	
Tacitus				<u>2</u>		<u>2</u>		<u>11</u>			<u>2</u>	7
Probus			<i>2</i>	<i>1</i>	<i>6</i>	<i>3</i>	<i>2</i>				<i>4</i>	41
			<u>2</u>	<u>3</u>	<u>4</u>	<u>1</u>					<u>13</u>	
Carus			<i>1</i>		<i>1</i>		<u>1</u>				<i>1</i>	4



Slightly fewer coins were recorded for Tacitus (7 coins for not quite one year of rule) and Probus (41 for six years), but even so, there are still far more of them than in any period before or since. The monetary mass was made up of heavily devalued antoniniani, struck in large quantities all over the Empire, and virtually no other denominations were of significance.<sup>26</sup> Aurei were also struck in this period, but they are absent entirely from Novae. From the reign of Gordian III (238–244) until the end of the 3<sup>rd</sup> century the sector yielded 273 coins, giving a rather high coefficient of 4.27 coins per year.

The 4<sup>th</sup>-century coins occur in relatively large quantities at the site (sectors IV and XII). The apogee is not in the reign of Constantine I, but rather Constantius II and Constans, until the end of the Julian the Apostate's rule. The 339 coins recorded from this time give a very high coefficient of 13.71 for the Constantinian period up to the death of Constantine the Great, and 10 per year for the rule of Julian Apostate. The bronzes from Novae come mainly from the Balkan mints: Siscia, Heraclea, Ticinum, but examples from Nikomedia, Thessaloniki, Kyzikos, Sirmium and Constantinople occur as well. Based on studied pool of finds from the legionary camp, it is justified to say that coinage from the mints in the Balkans and Asia Minor prevailed in Moesia at the close of the 3<sup>rd</sup> century and in the 4<sup>th</sup>, at least in the first half of that century. The western mints were represented by a very small quantity of coins.

A temporary increase in the number of coins at Novae is observed at the turn of the 4<sup>th</sup> and in the 5<sup>th</sup> centuries, during the reigns of Arcadius and Honorius, especially for Sector XII (see Table 10). The coefficient for each year of the reigns of the two emperors is 5.15, which is rather high. As for the 5<sup>th</sup> century, the number of coins from this period is symbolic at best.

The study has characterized monetary circulation in the given period as follows:

- in the earliest phase of the history of the army camp, the most numerous denomination group are the bronzes from the mint in Rome, primarily the asses, then the sestertii and dupondii;
- the pool of coins issued by Claudius, which is when the Roman army camp at Novae started to be built, is distinctive;
- from the reign of Septimius Severus the statistics turn over in favor of the provincial coinage, which remain the prevailing denomination until practically the end of the reign of Gordian III;
- coins from the central mint are virtually absent from the camp in the first half of the 3<sup>rd</sup> century;
- provincial issues are characteristic of the monetary circulation in Novae; finds of coins from the first half of the 3<sup>rd</sup> century indicate that Novae's demand for coin in this period was met by the nearby Moesian and Thracian mints to the exclusion of all others;

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<sup>26</sup> Callu 1969, pp. 56–57; Kunisz 1971, pp. 71–77.

- denarii are few among the finds, which proves that they were never a major denomination used at the army camp;
- the antoninianus was the denomination in use throughout the Empire in the second half of the 3<sup>rd</sup> century; the coins in circulation in Moesia came from the Balkan mints: Siscia, Serdica, Ticinum, Kyzikos, and the mint in Rome;
- gold coins are missing entirely;
- this coin structure is typical of the monetary circulation in the two Moesias and Thrace during the first half of the 3<sup>rd</sup> century;
- coins from the 4<sup>th</sup> century appear in Novae in large quantities; based on the pool of coins from the army camp, it is reasonable to conclude that in the 4<sup>th</sup> century issues from the Balkan and Asia Minor mints predominated in the territory of Moesia, while coins from the Western mints reached the province in very small quantities;
- there is a marked increase in the number of coins during the reign of Constantine II and Constans, and in the following period during the reigns of Arcadius and Honorius.

At the present stage of research, it can be assumed that the comments made here regarding the circulation of Roman coins at Novae, based on the pool of finds from Sectors IV and XII, probably also apply to the other legion camps, as well as to other smaller military sites located on the lower Danube.

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## OBIEG PIENIĘŻNY W MEZJI NA PRZYKŁADZIE ZNALEZISK MONET Z NOVAE (BUŁGARIA)

(Streszczenie)

Celem artykułu jest przedstawienie obiegu monet na terenie obozu legionowego w Novae nad dolnym Dunajem oraz próba uogólnienia modelu tegoż obiegu na podstawie dostępnej bazy danych. Chodzi tu o monety pochodzące z wykopalisk w Novae prowadzonych przez Ośrodek Badań nad Antykiem Europy Południowo-Wschodniej (OBA) Uniwersytetu Warszawskiego. Badania prowadzone przez OBA dotyczą odcinka IV oraz XII. Pozostałe obozy legionowe nad dolnym Dunajem są tylko w nieznacznym stopniu przebadane archeologicznie. Wykopaliska prowadzone tam były nieregularnie i nie są kontynuowane. Generalnie stan badań nad obiegiem monet rzymskich w Mezji poprawił się w ostatnich latach, ale nadal jest dużo do zrobienia. O ile bowiem obieg monetarny w I–II w. cieszy się dobrym stanem badań za sprawą Evgenia I. Paunova, to mennictwo III–V w. jest wyjątkowo słabo poznane. Dysponujemy jedynie opracowaniami pewnych znalezisk z niewielkich przedziałów tego okresu. Badania na terenie obozu legionowego w Novae prowadzone są od 1960 r. Od początku uczestniczy w nich Uniwersytet Warszawski. Ponadto swoje

odcinki do badań ma ekspedycja Narodowy Instytut Archeologiczny z Muzeum Bułgarskiej Akademii Nauk (bułg. Национален археологически институт с музей). Przedstawione tu analizy dokonane są na podstawie publikacji znalezisk, archiwaliów oraz własnych, wieloletnich badań autorki.

Historia obozu w Novae zaczyna się w połowie I w. n.e., kiedy to skierowano tutaj Legion VIII *Augusta* po zakończeniu kampanii w Brytanii w 45 r. Wyraźnym śladem po działalności tego legionu są relatywnie licznie znajdowane monety Klaudiusza I. Wysyłano wówczas z Rzymu nad dolny Dunaj dużą ilość pieniędzy. Znajduje to odzwierciedlenie w puli monet znalezionych w Novae. Szczególnie dobrze widoczne jest to w puli monet pochodzącej z terenów badanego obecnie odcinka XII. Ślady pobytu i działalności Legionu VIII *Augusta* są bardzo słabo widoczne, ponieważ po przeniesieniu do Novae Legionu I *Italica* nastąpiła całkowita przebudowa obozu legionowego. Legion VIII budował obóz z drewna, zaś Legion I zastąpił go konstrukcjami kamiennymi.

Puła znalezisk numizmatycznych idealnie odzwierciedla historię tego obozu. Relatywnie duża liczba monet dynastii julijsko-klaudyjskiej wiąże się z początkami tego obozu. W najwcześniejszej historii obozu legionowego w Novae najliczniejszą grupą nominalową są „brązy” z mennicy rzymskiej, przede wszystkim asy, rzadziej sesterce i dupondiusy. Patrząc na zestawienia w tabeli 6 dotyczące okresu I–II w. oraz na współczynnik F określający liczbę monet na rok panowania danego cesarza widzimy wyraźny wzrost liczby monet w okresie panowania Klaudiusza I. Uśredniona liczba monet przypadająca na każdy rok panowania Klaudiusza wynosi ponad 2, podczas gdy dla cesarza Wespazjana, zajmującego drugie miejsce w tych statystykach, 1,4 monety na każdy rok jego panowania (por. Fig. 3). Tak duża liczba monet Klaudiusza I nie może być przypadkiem, tym bardziej, że cesarz ten nie wybijał monet w dużej liczbie, porównywalnej chociażby do Wespazjana.

Po reformie Nerona z 64 r. zaczęły pojawiać się w obozie legionowym denary oraz szereg subaeratów. Co do zasady denary sprzed reformy w Novae nie występują. Mamy informację o znalezieniu denara Oktawiana Augusta, ale jest to znalezisko bezkontekstowe. Natomiast denary Marka Antoniusza serii legionowej z całą pewnością dotarły do Novae w 2. połowie I w. n.e., a może nawet później. Były one bowiem w obiegu na terenie państwa rzymskiego jeszcze nawet w 1. połowie III w. Pewną ciekawostką są dwa kwadransy znalezione na odcinku XII, jeden Nerona, drugi Trajana. Jak dotąd te monety „brązowe” tak niskiej wartości w Novae nie były znajdowane. Kwadransy stanowiły ¼ wartości asa. Wybijane były w większej liczbie do końca panowania Trajana. W tym czasie wybito bardziej obfite serie tych nominalów. Ale jak wykazują wykopaliska w obozie legionowym w Novae, nominały mniejsze niż as nie odgrywały na terenie prowincji jakiegokolwiek znaczącej roli.

Wraz z końcem panowania dynastii Antoninów, zmienił się też diametralnie obraz obiegu monetarnego w prowincjach nad Dunajem. O ile w okresie I–II w. n.e. współczynnik F jedynie dwukrotnie przekroczył 1 (Klaudiusz i Wespazjan), to w okresie III–IV w. nigdy nie spadł poniżej tej granicy. Widać wyraźny skok w liczbie monet w 1. połowie III w. Już od panowania Kommodusa statystyki zaczynają się zmieniać na korzyść monet prowincjonalnych, których liczba rośnie do rangi kategorii przeważającej lub nawet dominującej praktycznie do końca panowania Gordiana III (por. Tabela 4). Apogeum w Novae następuje około 218 r., kiedy współczynnik F osiąga aż 14 monet. Możemy to powiązać z faktem, że właśnie w tym roku w Mezji przebywał cesarz Heliogabal.

Monet z mennicy centralnej dla tego okresu nie odnotowano wcale. Cechą charakterystyczną obiegu monetarnego w Novae są emisje prowincjonalne. Znaleźiska monet z 1. połowy III w. wskazują na to, że zapotrzebowanie na pieniądź w Novae w tym przedziale chronologicznym było zaspakajane wyłącznie przez pobliskie mennice mezyjskie oraz trackie. Denary spotykane są nielicznie, co skłania do przypuszczenia, że to monety prowincjonalne były głównym nominałem pozostającym w użytkowaniu na terenie obozu. Brakuje zupełnie monet złotych. Taka struktura znalezisk jest typowa dla obiegu pieniężnego obydwu Mezji oraz Tracji w okresie do 1. połowy III w.

Kolejny duży skok w liczbie znajdujących na terenie obozu legionowego w Novae monet przypada na lata 268–282 (por. Tabela 8). Najwięcej pod względem ilościowym jest monet Galliena, ale panował on stosunkowo długo w porównaniu z Klaudiuszem II, którego mennictwo reprezentują 33 egzemplarze (16,5 monety na rok panowania!), czy nawet Aurelianem – odpowiednio 77 monet. Masę monetarną w tym czasie tworzyły bardzo zdewaluowane antoniniany, które wybijano w całym Imperium Romanum w dużej liczbie, a inne nominały praktycznie nie miały znaczenia. Wybijano również aureusy, ale tych w Novae brakuje zupełnie. Dla okresu od panowania Gordiana III do końca III w. zarejestrowano na badanym odcinku 273 monety, co daje nam współczynnik dość wysoki, bo 4,27 monety na każdy rok.

Monety z IV w. występują na badanych stanowiskach (odc. IV i odc. XII) w relatywnie dużych liczbach. Przy czym apogeum w IV w. nie przypada wcale na czas rządów Konstantina I, a raczej Konstancjusza II, Konstansa, aż po koniec panowania Juliana Apostaty. Brązy odkryte w Novae pochodzą głównie z mennic bałkańskich, Siscji, Heraklei, Ticinum, ale zdarzają się też z Nikomedii, Thessaloniki, Kyzikos, Sirmium i z Konstantynopola. Na podstawie puli znalezisk z obozu legionowego dostępnej do tych badań, uzasadniony jest wniosek, że u schyłku III i w IV w., a przynajmniej w jego 1. połowie, przewagę na terenach Mezji miały produkty mennic bałkańskich i małoazjatyckich, natomiast z mennic zachodnich docierały w bardzo małej liczbie. Przejściową zwyżkę liczby monet w Novae obserwujemy na przełomie IV i V w., za panowania Arkadiusza i Honoriusza. Szczególny wzrost wystąpił podczas badań na odcinku XII (por. Tabela 10).

Przeprowadzone analizy wskazują na następujące cechy obiegu monetarnego na badanym obszarze:

- w najwcześniejszej historii obozu legionowego najliczniejszą grupą nominałową są brązy z mennicy rzymskiej, przede wszystkim asy, następnie sesterce i dupondiusy;
- pod względem liczby wyróżnia się pula monet Klaudiusza, za rządów którego nastąpiła budowa obozu w Novae;
- od panowania Septymiusza Sewera statystyki zaczynają się zmieniać na korzyść monet prowincjonalnych, których liczba rośnie do rangi kategorii przeważającej praktycznie do końca panowania Gordiana III;
- dla 1. połowy III w. monet z mennicy centralnej nie odnotowano właściwie wcale;
- cechą charakterystyczną obiegu monet w Novae jest obecność pieniądza prowincjonalnego; znaleźiska monet z 1. połowy III w. wskazują, że zapotrzebowanie na pieniądź w Novae w tym przedziale czasowym zaspakajane było wyłącznie przez pobliskie mennice mezyjskie oraz trackie;
- denary spotykane są nielicznie, co wskazuje, że nie były one głównym nominałem użytowanym na terenie obozu;

- w 2. połowie III w. nominałem obowiązującym w całym Cesarstwie był antoninian; w Mezji obiegały antoniniany z mennic bałkańskich: Siscja, Serdica, Ticinum, Kyzikos oraz z mennicy w Rzymie;
- brakuje monet złotych;
- zaobserwowana struktura monet jest typowa dla obiegu monetarnego obydwu Mezji oraz Tracji w okresie do 1. połowy III w.;
- monety z IV w. występują w Novae w dużych liczbach; na podstawie puli monet z obozu legionowego w Novae uzasadniony będzie wniosek, że w IV w., przewagę na terenach Mezji miały emisje z mennic bałkańskich i małoazjatyckich, zaś z mennic zachodnich docierały w bardzo małej liczbie;
- widoczny jest wyraźny wzrost liczby monet w okresie panowania Konstantyna II – Konstancjusza II – Konstansa oraz w późniejszym okresie za panowania Arkadiusza i Honoriusza.

Na obecnym etapie badań można przyjąć, że przedstawione tutaj uwagi, dotyczące obiegu monet rzymskich w Novae, sformułowane na podstawie puli znalezisk z odcinka IV i XII, odnoszą się również do pozostałych obozów legionowych, a także do innych mniejszych obiektów wojskowych usytuowanych w dolnym odcinku biegu Dunaju.

Adres autorki/The author's address:

dr hab. Renata Ciołek, prof. UW

Faculty of Archaeology

University of Warsaw

Krakowskie Przedmieście 26/28, PL 00-927 Warsaw, Poland

renataciolek@uw.edu.pl

ORCID: 0000-0002-1001-0726

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JENS CHRISTIAN MOESGAARD<sup>1</sup>

**WHAT DO “KNOWN KNOWNS” TEACH US ABOUT  
“KNOWN UNKNOWNNS” AND “UNKNOWN UNKNOWNNS”?  
REFLECTIONS ON OUR KNOWLEDGE OF EARLY  
MEDIEVAL/VIKING AGE COINAGE AND CURRENCY**

**ABSTRACT:** The aim of this paper is to make us aware of the limits of the numismatic documentation of Northern and Eastern Europe during the Early Middle Ages/the Viking Age. The sheer mass of material – almost 900,000 coins are recorded from finds along with numerous non-monetary silver artefacts – may induce us to think that everything is documented already, but at a closer scrutiny, this turns out to be wrong. Some regions and periods and some find categories are well covered by the material, others not. The paper presents a series of cases where a new find, a new technology (e.g. metal detector), a new methodological approach (e.g. die studies) or simply a more detailed study of the material brought new and unexpected insights. Some of the cases concern the coin production, others the coin circulation. Going beyond numismatics seen in isolation, the results inform us about the economic, political and social structures of the past society and thus highlight the contribution of numismatics to the study of history. In turn, these knowledge break-throughs open new paths of research and, significantly, make us aware of potential similar parallel cases of not yet recognized insights. This will help us to guide future research. In some cases, it would even be safe to extrapolate from the specific innovative case study to more general assumptions. In particular, the paper highlights danger of drawing conclusions from absence of evidence. Several examples are presented where the supposed lack of finds or of coin production turned out to be the result of inadequate research methods or technologies for finding the material in the ground. In other cases, the hazard of the discovery of a hoard changed the situation from absence or scarcity to abundance overnight. If conclusions are to be draw from absence of evidence, a minimum requirement would be to check that adequate research methods have been applied in order to ascertain that the absence is real and not the result of present day factors.

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<sup>1</sup> I am grateful to Simon Coupland for language checking.

**ABSTRAKT:** Celem niniejszego artykułu jest dyskusja nad ograniczeniami rozpoznania numizmatycznego Europy Północnej i Wschodniej we wczesnym średniowieczu/okresie wikingim. Sam ogrom materiału – ze znalezisk pochodzi prawie 900 tysięcy monet oraz srebra niemonetarne – może skłaniać do przekonania, że wszystko jest już udokumentowane. Jednak głębsza refleksja pokazuje, że jest to przekonanie błędne. Niektóre regiony, okresy bądź kategorie znalezisk są dobrze rozpoznane, jednak stan rozpoznania innych pozostawia wiele do życzenia. Artykuł przedstawia serię przypadków, w których nowe znalezisko, nowa technologia (np. wykrywacz metalu), nowe podejście metodologiczne (np. badania połączeń stempli) lub po prostu bardziej szczegółowe badanie materiału przyniosły nowe i nieoczekiwane spostrzeżenia. Niektóre przytoczone przypadki dotyczą etapu produkcji, zaś inne etapu obiegu monet. Wykraczając poza numizmatykę widzianą jako samodzielną dyscyplinę, wyniki informują nas o ekonomicznych, politycznych i społecznych strukturach dawnego społeczeństwa, a tym samym podkreślają wkład numizmatyki w badanie historii. W efekcie nowe ustalenia otwierają nowe ścieżki badawcze i co istotne, uświadamiają nam istnienie potencjalnie podobnych przypadków w nierozpoznanych jeszcze obszarach. Pomagają również w planowaniu przyszłych badań. W niektórych przypadkach można nawet przeprowadzić ekstrapolację wyników konkretnego studium przypadku na bardziej ogólne założenia. Artykuł w szczególności zwraca uwagę na niebezpieczeństwo wyciągania wniosków wynikających z braku dowodów. Przedstawiono kilka przykładów, w których rzekomy brak znalezisk lub produkcji monet okazał się wynikiem nieodpowiednich metod badawczych lub technologii poszukiwania materiału w ziemi. W innych przypadkach, odkrycie skarbu zmieniało z dnia na dzień obraz z braku lub niedostatku źródeł na ich obfitość. Jeżeli wnioski mają być wyciągane z braku dowodów, minimalnym wymogiem byłoby sprawdzenie czy zastosowano odpowiednie metody badawcze w celu upewnienia się, że brak jest rzeczywisty, a nie jest wynikiem innych czynników.

**KEYWORDS:** Early Middle Ages, Viking Age, Northern and Eastern Europe, coin finds, research methods

**SŁOWA KLUCZOWE:** wczesne średniowiecze, okres wikingim, Europa Północna i Wschodnia, znaleziska monet, metody badawcze

When we study the coinage and currency of the Early Middle Ages, we rely on the material available. Written sources are extremely scarce, so the coins themselves and, when known, their find spots and find circumstances constitute our evidence. The Northern and Eastern European finds from the 9<sup>th</sup>–12<sup>th</sup> centuries are extraordinary rich. Approximately 900,000 coins are recorded as well as much non-monetary silver. Islamic, German and English coins are the largest groups within this material. For many periods, the northern and eastern finds are much richer than what is known from the home countries of the coins. Of course, the emerging local coinages of the North and the East are also documented by the finds.<sup>2</sup>

<sup>2</sup> Jonsson 2015, p. 53.

However, the mere richness of the Northern and Eastern European finds may mislead us to think – often unconsciously – that everything is already documented. But this is false. We need to be aware of the limits of the material. This becomes clear looking at the English coinage, that thanks to the efforts of several generations of numismatists is one of the best studied from this period. The bulk of the English coins in the northern and eastern hoards are from the period ca. 980 to ca. 1050.<sup>3</sup> A few examples will illustrate how this biases the available study material. Of the six recorded specimens of the die combination “Harvey 1239” (one of the 434 die combinations of the coins of Cnut the Great (1016–1035), listed by Yvonne Harvey for the mint of Winchester), only one is kept in London (without recorded find-spot), and two are in Stockholm and one each in Copenhagen, Oslo and Tallinn. On the contrary, if we look at earlier or later coins, “Harvey 3” of Alfred (871–899) and “Harvey 2093” of William the Conqueror (1066–1087) are only known by two specimens each. All four are kept in English collections and three of them derive from English finds.<sup>4</sup> Significantly, just one hoard buried ca. 1068, namely the Chew Valley hoard discovered in 2019, more than tripled the number of known specimens both of Harold II’s *PAX*-type and of William the Conqueror’s *Profile/Cross Fleury* type and added several mints and moneyers to the record of these two types.<sup>5</sup>

The aim of this article is through a number of examples to warn against biases and problems of representativeness of the material. The first part will deal with “coinage”, i.e. the production of coins (the issuing power’s perspective), followed by some examples illustrating the “currency”, i.e. the circulation of coins (the coin users’ perspective). The article will present both well-established classical examples and recently gained results. The examples concern major breakthroughs in the research which have led to a better understanding. At the same time, they demonstrate what we did not know before. In each case, we will focus on which factors – more finds, new methods, etc. – made the new insights possible. Hopefully, this will make us aware of avoiding pitfalls when we work from the available evidence. To paraphrase former US Secretary of Defence Donald Rumsfeld: by looking at “known knowns”, we may be able to determine some “known unknowns” and not less importantly be conscious of the possible existence of “unknown unknowns”.

#### COINAGE

Several hundred thousand German coins are recorded in the East and the North. Like the English coins, the import of German coins took off in the last decades of the 10<sup>th</sup> century. Before that, finds are rare.<sup>6</sup> This implies that the

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<sup>3</sup> Jonsson 1986.

<sup>4</sup> Harvey 2012.

<sup>5</sup> Williams 2021.

<sup>6</sup> Suchodolski 1990.

number of recorded specimens of coins is much lower for most mints for the early-mid 10<sup>th</sup> century than for the late 10<sup>th</sup>–11<sup>th</sup> centuries. This has naturally led to the assumption that coin production was low until a supposed massive and spectacular take off that was thought to have happened simultaneously with the increased export of coins. This may be true for some coinages, like the massive Otto-Adelheid issues struck near the rich silver mines in the Harz region. However, the die study of the Dortmund mint conducted at the Museum of Münster showed that the number of dies employed in the 10<sup>th</sup> century was probably not much lower than for the 11<sup>th</sup> century. There were just more specimens known per die for the 11<sup>th</sup> century than for the preceding one. We may assume that we do not know all the 10<sup>th</sup> century dies yet. Consequently, the increase in the number of recorded specimens does not reflect a sudden and massive increase in production, but just a better survival rate thanks to the Northern and Eastern finds.<sup>7</sup> This will probably also be true for other coinages. This is of course a very important insight if we want to understand monetary history. It was made possible by applying a new method – die studies – to the already existing material. The study only concerned one mint (Dortmund), but it opens up the possibility that this may also be true for other mints. Die studies revealing the number of dies used for a coinage is a much better guide to judge the size of the issue than the number of surviving specimens. Indeed, different coinages have different survival rates, which are determined by a number of phenomena. All attempts to establish a generally valid estimation of the ratio between the original number of coins produced and the number surviving today are doomed to fail.

The beginning of the Danish coinage is a much-debated issue. There are now good arguments that the coinage was inaugurated in the emporium of Ribe in south-west Jutland as early as the 8<sup>th</sup> century, although some scholars still stick to the traditional attribution to Frisia. The argument in favour of Ribe is the corpus of 280 coins, predominantly of the *Wodan/Monster* type (225 ex.), found singly in a series of excavations in Ribe. There were two pre-conditions of these finds. First the identification of the site of the earliest Ribe that occurred in the 1970s. Second the systematic sieving of the soil from the excavations – without this painstaking work, these small coins would probably never have been found.<sup>8</sup>

These coins are now also turning up in significant numbers in metal detector surveys at Gross Strömkendorf near Wismar in Mecklenburg-Vorpommern, which is thought to be the emporium of Reric mentioned in the Frankish annals as under the control of the Danish king.<sup>9</sup> Were they produced at both places or at yet another place under royal control and distributed from there to the king's emporia?<sup>10</sup>

<sup>7</sup> Ilisch 1981, p. 140.

<sup>8</sup> Feveile 2006; updated list Feveile 2019, p. 37.

<sup>9</sup> Wiechmann 2021.

<sup>10</sup> Søvnsø 2018.

In the debate over whether this coinage was controlled by the king or the merchants themselves, this new find situation provides evidence in favour of the king. This also raises the question whether they would turn up in large numbers at a third emporium, Åhus in Scania, if the site was metal-detected? A few specimens were indeed found there in excavations and limited metal detector surveys in the 1980s and 1990s<sup>11</sup> and experience at the later emporia of Haithabu and Kaupang shows that the systematic use of metal detectors multiplies the number of finds significantly compared to older excavations.<sup>12</sup> Would that potentially provide indirect evidence that Åhus was under control of the Danish king, like Reric and Ribe?

Curiously, the few specimens struck from one single obverse die carrying the name and the title of King Sweyn Forkbeard (ca. 987–1014) have gained quasi-iconic status as the first Danish coinage, because they are the first to mention a king explicitly. It is very likely that the kingdom of Denmark already existed from the late Iron Age.<sup>13</sup> Although they are well-studied, the 9<sup>th</sup>–10<sup>th</sup> anonymous “civic” coinages of Ribe and Haithabu (present north Germany, then Denmark) are often forgotten, probably in part because they are often labelled “Nordic” rather than “Danish” in the literature.<sup>14</sup> Words are of importance in how we see things.

The Sweyn Forkbeard coins imitate the English *CRVX* type (ca. 991–997) and are thought to be contemporary with the prototype. In the traditional story of Danish coinage, they are considered a short-lived attempt without an aftermath. Cnut the Great (1016 in England, 1018 in Denmark–1035) received the honour of having started the real Danish coinage, almost from scratch, allegedly with the help of experts called in from his other kingdom, England.<sup>15</sup> Nevertheless, the existence of a substantial Scandinavian imitative coinage of the late 10<sup>th</sup>–early 11<sup>th</sup> centuries was well-known. They imitate contemporary English coins, sometimes very closely, but often summarily, and they frequently combine obverses and reverses from different English type, apparently at random. Most of them carry more or less blundered legends. The overall impression is a rather confused coinage. The place of production was not known, with the notable exception of a minority mentioning the mint of Sigtuna in Sweden. These coins were simply ignored when studying the early Danish coinage.

A generation ago, several scholars – most prominently Brita Malmer (1925–2013) – undertook large-scale die studies of the imitative coinage. Anonymous coins were linked to the few with mint-names in large die-chains, and it could be argued that major portions of the imitative coinage originated in Lund (present day south Sweden, then east Denmark) from ca. 995 on (whereas others are from

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<sup>11</sup> Callmer 1984; LUHM 30193.

<sup>12</sup> Hilberg 2016; Blackburn 2008.

<sup>13</sup> Olsen 1999.

<sup>14</sup> Malmer 1966.

<sup>15</sup> Bendixen 1967, pp. 18–22.

Sigtuna in central Sweden and some probably from minor mints). The gap between Sweyn's and Cnut's coinages was filled in. Coinage on a substantial scale was more or less continuous during the whole period. The origin of this organized Danish coinage could not be attributed to Cnut and his official English experts – Cnut just continued and refined the already existing coinage.<sup>16</sup> These new insights came about simply by studying in depth already existing, but largely overlooked material. This is likely to happen concerning other coinages, too. Indeed, a similar picture – yet very different in its details – is now emerging in Poland by a closer study of the local 11<sup>th</sup> century imitations of mainly German coins.<sup>17</sup>

Some coinages are almost invisible in the find material as the following example will demonstrate. For a long time it was considered to be a well-established fact that the thriving city of Schleswig had no coinage from when it was founded ca. 1070 until ca. 1150. Neither Peter Hauberg (1844–1928), in his still popular handbooks of early medieval Danish coins,<sup>18</sup> nor the following generations of numismatists were able to identify types attributable to this mint. It was thought that Schleswig was a nodal point of silver trade between the East and the West and that abundant foreign coins were sufficient for the city's needs for currency.<sup>19</sup>

The first challenge to this assumption could have made when it was recognized that one of the types attributed by Hauberg to Schleswig's predecessor Haithabu probably made up a substantial, homogenous parcel (at least 52 examples) within the Swedish Venngarn hoard, buried after 1079.<sup>20</sup> The logical implication was that the type was struck shortly before the burial of the hoard – i.e. after the shift from Haithabu to Schleswig – although one could not fully exclude the possibility that the parcel was a left-over group of coins, already old at the time of the burial. But the time was not yet ripe for the identification of the mint which produced this issue – that had to wait for the new discoveries in Schleswig discussed below. Later, Ivar Leimus and Mauri Kuidsoo had the good fortune to discover a legible specimen of yet another coin type hitherto attributed to Utrecht (Netherlands). It read Sweyn on the obverse and Schleswig on the reverse, and the type must be from the last years of King Sweyn Estridsen (1047–1074/1076), after the founding of Schleswig ca. 1070.<sup>21</sup>

But the real breakthrough came when it was decided in 2007 to use metal detectors and partial sieving of the soil during a small-scale excavation at Hafengang 11 in Schleswig. The result was astonishing. Seventy-three coins from the late 11<sup>th</sup>–early 12<sup>th</sup> centuries were discovered. Twenty-two of them formed a small hoard and the remaining 51 were single finds. At excavations conducted nearby without metal de-

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<sup>16</sup> Malmer 1997.

<sup>17</sup> E.g. Bogucki 2012.

<sup>18</sup> Hauberg 1900; Hauberg 1906.

<sup>19</sup> Radtke 2002.

<sup>20</sup> Jonsson 2007.

<sup>21</sup> Leimus, Kuidsoo 2017.

tecting – at Plessenstrasse 83/3 in 1970–1977 and Schild in 1971–1980 – only 12 and 6 11<sup>th</sup>–12<sup>th</sup>-century coins were found respectively, even though the excavated areas were several times larger than at Hafengang 11. The use of metal detectors really makes a difference and shows how many finds were probably overlooked during former excavations.

The bulk of the coins from the new excavation were of a series of coin types with blundered legends. Most of the types were well known from former excavations in Schleswig, but formerly only recorded in small numbers. For various reasons some of them had been attributed to Ribe, Roskilde or Norway, while others remained unattributed. The attribution to Roskilde of one of the types had been made by Hauberg on a very optimistic reading of a few malformed letters of the reverse legend.<sup>22</sup> The attribution to Ribe of another type was made by myself, based on the geographical distribution of the few finds known before the Hafengang excavation.<sup>23</sup> The attribution to Norway of a third type was based on a vague typological and stylistic resemblance.<sup>24</sup> Thanks to the new finds from Hafengang 11, the sheer concentration of finds made it clear that they must all be local issues from Schleswig. The gap was filled.<sup>25</sup>

How come this was not recognized earlier? After all, these coin types were already known before the excavation of Hafengang 11. Several factors are responsible. First, the coins are anonymous. They have either blundered legends, badly struck legends or legends which are hard to interpret. In order to identify the place of production, find provenances were needed. Apart from the earliest types that appear in a few Swedish and Estonian hoards, these coin types only circulated within a very limited area near Schleswig. If no methods suited for finding coins (such as sieving of the soil or metal detecting) were employed, they would just remain undiscovered in the soil. Within Schleswig itself, the Hafengang excavation made it clear that they far outnumber the few coins from other mints. It strongly indicates that they were meant for a managed local currency where the king banned circulation of foreign coins. No metal analysis has been undertaken, but visual inspection shows that they were heavily debased. They probably circulated at a face value superior to their silver value. This made it unprofitable to export them, and their low intrinsic value probably meant that they were not desirable for people outside Schleswig. In summary, inadequate excavation methods and features linked to the nature of this particular coinage made it invisible until finally metal detecting at an excavation revealed it. Similar features may exist for other hitherto unrecognized issues – Ribe? Odense? – and we should be careful not to draw overhasty conclusions on the absence of evidence.

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<sup>22</sup> Hauberg 1900, no. Niels 4.

<sup>23</sup> Moesgaard 2007.

<sup>24</sup> G. Hatz 2001, nos 25, 46.

<sup>25</sup> Moesgaard, Hilberg, Schimmer 2017.

Another example is the *Face/forward-looking Deer* penny in the 9<sup>th</sup> century Danish coinage. Until the late 1990s, it was only known by one specimen, which came to play an important role in the debate between Brita Malmer and Michael Metcalf on whether there were one or several mints producing the “Nordic” coinage of the 9<sup>th</sup> century. Malmer claimed that this coin was the iconographic link between two major series of the coinage (*Carolus-Dorestad* imitations and *Face/backward-looking Deer*), proving that all were struck at the same mint, presumably Haithabu. Metcalf suggested that it was just a marginal imitative issue made by an unofficial mint. Both proved to be wrong, because new specimens came to light thanks to metal detection. First a specimen from Uppåkra, Scania, Sweden, turned up in 1999 during a university-led detector survey, and then from 2011, private detectorists just kept finding new specimens as single finds all over Denmark and southern Norway, culminating with the Damhus hoard near Ribe found in 2018 and containing more than 258 specimens. All these new finds showed that the type was an official coinage of the mint of Ribe, and that they were circulating within a managed local currency to the exclusion of foreign coins. This coinage is from a period in the first half of the 9<sup>th</sup> century, which is a period with relatively few hoards. This is probably why it was not fully documented before the introduction of the metal detector, which is very suited to finding the formerly scarce single finds.<sup>26</sup>

A quick look at Northern France can illuminate our inquiry, even though it is outside our main investigation area. As late as 1959, Lucien Musset wrote that numismatics would not be of much help for the study of 10<sup>th</sup>–11<sup>th</sup> century Norman economic history, because so few coins were recorded.<sup>27</sup> On 3 July 1963 everything changed. That day the Fécamp hoard (département Seine-Maritime) was discovered with its more than 8,500 coins, buried ca. 980/985. The publication of the hoard by Françoise Dumas revealed its richness. Almost three quarters of the coins were from the local Norman mint of Rouen. One hitherto completely unknown Norman type was found, with more than 2,782 specimens. Another type hitherto only known from a drawing published in 1790 was represented by more than 3,239 specimens.<sup>28</sup> Florian Mazel summarizes the importance of this hoard in his recent synthesis of the history of France from 888 to 1180: it “has revolutionized our knowledge of the monetary circulation of the late 10<sup>th</sup> century, the more so in that it comes from a region that had severely suffered from the Scandinavian raids and had been considered lacking in dynamism [...] The hoard thus reflects a Norman economy that was much more monetized than we imagined. It also gives us a methodological lesson: the scarcity of evidence from the 10<sup>th</sup> century should not be over-interpreted in support of the idea of a monetary contraction”.<sup>29</sup>

<sup>26</sup> Moesgaard 2018; Feveile 2021.

<sup>27</sup> Musset 1959, p. 285

<sup>28</sup> Dumas 1971.

<sup>29</sup> Mazel 2014, pp. 652–653 (my translation).

But the Fécamp hoard is not the only Northern French hoard from the 10<sup>th</sup>–11<sup>th</sup> centuries to have changed our understanding overnight. Maffliers (département Val-d’Oise) brought to light several hitherto unknown or extremely rare coin types from Paris, Saint-Denis and Senlis.<sup>30</sup> The “Loiret” hoard revealed new types from a string of mints in the middle Loire region.<sup>31</sup> The Cuts hoard (département Oise) contained unpublished types from Paris, Soissons, Laon, Quentovic, Saint-Quentin et Arras.<sup>32</sup> Turning to neighbouring Belgium, the Ciney-Dinant hoard revealed a hitherto unappreciated, but very active mint in the Liège-Maastricht area.<sup>33</sup> All these hoards showed well-organized and substantial coinages in places where the impression before the discovery of the relevant hoard had been that of scarce, sporadic or disorganized coinages. Well beyond numismatics, this has huge implications on how we see the economic and organizational landscape of the post-Carolingian/early Feudal period. We should really take Mazel’s words quoted above to heart and be careful not to draw too firm conclusions from an absence of evidence, recognising that the discovery of a single hoard can produce an abundance of evidence.

This picture strongly differs from that of the preceding century, and lessons are to be learnt from this difference. The discovery of a Carolingian hoard rarely leads to such a radical revision of our knowledge as the examples we just saw from the 10<sup>th</sup> century. This is due to a fundamental change in the currency that becomes apparent from a study of the hoards. In the mid- to late-9<sup>th</sup> century, the empire-wide currency where coins circulated freely from the Pyrenees to the Elbe gradually gave way to a much more divided monetary landscape of regional currency pools with little exchange between them. This implies that a newly discovered hoard from the first half of the 9<sup>th</sup> century would probably bring relatively few completely new coin types. Indeed, the hoard is drawn from a homogeneous currency covering a huge geographical zone, as is already documented by a series of former finds. On the contrary, a hoard from the 10<sup>th</sup> century is likely to be the first to be documented from its regional currency pool. Previously discovered hoards from the same time would most probably derive from other local currency pools and thus document other coinages.

This also implies that a corpus of a Carolingian coin type would usually consist of coins from a string of different hoards.<sup>34</sup> This makes it likely that this corpus is representative of the whole issue. By contrast, a corpus of a 10<sup>th</sup>-century coin type would often be either very small, if no substantial hoard has been found, or strongly biased by coins deriving from one single hoard. This in turn means that

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<sup>30</sup> Foucray 2017.

<sup>31</sup> Achache, Bompaire, Castelas 2017.

<sup>32</sup> Foucray, Bompaire, Kind 2017.

<sup>33</sup> Dengis 2021.

<sup>34</sup> See e.g. Moesgaard 2014a.

we most likely know only a portion of the relevant issue. Consequently, our current vision of the 10<sup>th</sup>-century coinage is much less complete than our vision of that of the preceding century. This situation is aggravated by the fact that metal detecting is restricted in France (and Wallonia), depriving us of the potential string of single finds and small hoards that would probably substantiate the corpora of recorded specimens, as they do in Denmark, England and other countries with more liberal legislation on metal detecting.

Finally, one may ask why these coins were not exported to the North and the East as were English and German coins, among them coins from Lotharingia and Frisia, neither of which is far from France? After all, as we saw above, this is why many German coinages are well-known. Indeed, this absence of export seem securely documented, as very few coins from France are present in the substantial hoard material and no almost new finds have occurred in the last generation, despite intensive metal detecting.<sup>35</sup> Maybe the reason is the lack of interest in these coinages in the North and the East, as they were debased compared to the better contemporary English and German coinages. Whereas the latter often contained 85–95% silver, the French coinages of the 10<sup>th</sup> century were at an ever declining 60–75% standard.<sup>36</sup>

A final example will illustrate the question of the quality of the documentation of the evidence at our disposal. As stated above, almost 900,000 coins are on record from Northern and Eastern Europe – but far from all of them are fully documented. Some of them are kept in public collections. Consequently, they are freely available for renewed inspection by scholars and they must be considered to be fully documented. Some coins have, however, been melted down. Yet others have been spread among collectors and have lost their find spot information. Some of these have never been reported and are thus not even included in the record. Others are documented in museum or university archives and collection inventories as well as in publications in journals, in newspaper articles or in books on local history, coin auction catalogues, etc. The quality of this information varies a lot. At best, the coins are illustrated and described in detail including weight, diameter, die axis, etc. At worst, the coins are mentioned without any details, and we do not even know the country of origin or their date with any degree of precision.

This of course causes problems. Investigations requiring a very detailed scrutiny of the coins can only be conducted on part of the material, simply because the relevant details are not documented for all specimens. The 10<sup>th</sup>-century coins with the name of the Cologne mint found in the North and East constitutes a good example of this. These coins make up a very substantial part of the first waves of German coins exported to the North and the East. The obvious conclusion would

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<sup>35</sup> Hatz 1989; Potin 1965.

<sup>36</sup> Dumas 1971, pp. 40–45 and ongoing research by Guillaume Sarah, cf. Moesgaard, Sarah, Bompaire 2018.

be that Cologne played a major part in the trade. However, Peter Ilisch has been able to show that a large part of the coins with the name of Cologne are in fact imitations from Frisia. They cannot be recognized by the design of the coin, which is closely imitated, but they differ by their lower weight, smaller diameter and (sometimes) coarser style.<sup>37</sup> These features can easily be examined on specimens available for study in museum collections. But for the coins that are only documented in archives or publications, the relevant information may not have been noted – more so because these very common coins rarely attracted much more attention than a simple mention of their presence. This means that we cannot know whether the coins from these hoards were genuine Cologne coins or imitations. We thus have to exclude these hoards from analysis of the relative importance of the imitations versus the prototype, as well as from the study of the chronology and the geography of the spread of these two coinages. The evidence at our disposal is thus limited and our vision is restricted. Nonetheless, this phenomenon is highly important for the understanding of the beginning of the export of German coins to the North and the East. This is an important lesson to be learnt: details that seem irrelevant at one stage of research may turn out to be of the utmost importance in the light of later research. This is a strong argument for saving hoards intact for museum collections.

#### CURRENCY

Let us now turn to the currency, that is not coin production, but coin circulation. More widely, we will also look at how coins were used.

The extreme richness of the Northern and Eastern finds sometimes leads to mis-interpretations. The coin finds in the German core lands are very few and small, in sharp contrast to the numerous finds in the North and the East. This led to the theory of the “Fernhandelspfennig” (the long-distance-trade penny) formulated by Walter Hävernick in the 1950s. This theory postulated that the purpose of German coin production in the 10<sup>th</sup>–11<sup>th</sup> centuries was not to fulfil the local need for coins. These coins were solely meant for export. The inner German economy did not use coins.<sup>38</sup>

This theory provoked objections, e.g. by Wolfgang Hess who put forward written evidence for coin circulation.<sup>39</sup> But it was not until Peter Ilisch started to collect information about metal detector finds in Westphalia that unambiguous proof came that coins did circulate widely.<sup>40</sup> The number of finds exploded after the introduction of the metal detector as a means of finding metal archaeological artefacts.

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<sup>37</sup> Ilisch 2007.

<sup>38</sup> Hävernick 1956.

<sup>39</sup> Hess 1993, see also, among others Ilisch 1981.

<sup>40</sup> Ilisch 2016.

The majority of the detector finds were single finds, probably lost accidentally during everyday coin use. The evidence from the Netherlands confirmed this picture, but for the neighbouring regions of Germany no similar explosion in the number of recorded finds occurred – simply because no one was around to do the painstaking work of recording the detector finds. This revolution of our knowledge of the inner German currency came about thanks to new finds. These finds only came to light because a new efficient tool for finding – the metal detector – was introduced.

The metal detector has also changed our view of the currency in the Scandinavia. First and foremost, it has brought to light the importance of single finds. Before the introduction of the metal detector into archaeology in the late 1970s, the hoard and to a lesser degree the grave find were the predominant find categories, leaving us with the impression that the role of coins and other silver artefacts in Viking society was passive hoarding for economic and cultic reasons rather than active circulation. The use of metal detectors during excavation, but in Denmark even more by private individuals, changed this picture. I have looked at the finds from 30 parishes around the cities of Sorø and Ringsted on the island of Zealand, Denmark. Before metal detecting, no single finds of Viking coins were known. The first turned up in 1985, the next in 1993 and then two in 2001.<sup>41</sup> From 2010, the numbers exploded. During the decade 2010–2020, 59 single finds of Viking coins were recorded plus 11 more that still need confirmation.<sup>42</sup> There are by now finds from a total of 28 different sites from 18 out of the 30 parishes. Most sites have yielded between one and four coins, but one stands out with 22 coins. Most of the sites are settlements. All the finds were made by metal detector. Only 2 coins derive from an excavation, the remainder are found by private individuals.

Single finds from settlements most likely represent loss from small scale transactions (silver by weight according to the habit in the East and the North) within everyday life. The figures quoted above show that this active circulation of coins was much more widespread than hitherto imagined, not only in the number of finds but, significantly, also in the number of sites. This active circulation involved large parts of society. In order to reach this conclusion, we need finds in numbers. The metal detector provides us with this accumulated evidence that we would not have known of otherwise.

Other examples also show the importance of the detector. Archaeological excavations traditionally only examine the undisturbed remains under the plough layer.

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<sup>41</sup> The Royal Collection of Coins and Medals, Copenhagen, inv. FP 4386, 6601.2, 6602. Museum of West Zealand, inv. AMK 1991 024x103.

<sup>42</sup> The Royal Collection of Coins and Medals, Copenhagen, inv. FP 9014.14, 9479.32&34–35, 9490.4, 9512.3, 9516.8, 9597.1, 9605.19, 9610.46, 9631.17, 9734.1, 9871.8, 10325, 11426.13–14, 11612.9, 11071.16, 11812.57, 11928.1, 12195, 12879.1&16, 12901.1–2, 12960.2, 13834, 13867.1–2, 15414.17–18, 15553.27. Museum of West Zealand, inv. MVE 3031x23, 3110x7&17, 3436x9, 3480, 3399x13, 25, 50, 65, 120, 138, 185, 296, 300, 304–308, 316, 559, 598, 628, 633, 635, 683, 711, 714–715, 3521x4-5&35, SVM 2004 061x47, 1219x131&143, 1478x102&245, 1543x1.

The plough has repeatedly turned over the topsoil, destroying the archaeological layers. However, the artefacts from these disturbed layers are still preserved in the plough layer, and they inform us about the activity and chronology of the site. Often an ordinary rescue excavation has limited resources in manpower and time, and the examination of the plough soil is not a top priority. Here the metal detector may help. Two Viking coins were found in stratigraphy at each of the two sites of Vester Egesborg and Kirke Hyllinge at Zealand, Denmark – but by detecting the plough soil 33 and 19 additional coins were found respectively!<sup>43</sup> Numbers matter – the picture we get of the intensity of coin use on a site is not the same if we have two or some twenty plus coins. Thus, the metal detector did not just bring “more of the same”, but a completely new picture of Viking coin use.

Another important aspect is the chronology of a site. The classical example is Haithabu, the important Viking emporium in present day northern Germany. Traditionally, the lack of finds from the 11<sup>th</sup> century led archaeologists to suggest that the decline of the site occurred already in the late 10<sup>th</sup> century. But then metal detecting in the plough soil brought to light numerous coins and other artefacts from the 11<sup>th</sup> century. They derive from the archaeological layers of the latest phases of the settlement that had been destroyed by the plough and thus do not appear during traditional excavations. The new picture that has emerged is that the city thrived right up to when it was abandoned in the second half of the 11<sup>th</sup> century.<sup>44</sup>

The metal detector has also allowed us to see more clearly the importation of certain coinages. Before the introduction of the metal detector, ten Carolingian pre-900 coins were recorded in present day Denmark, against three minted in 10<sup>th</sup>-century ducal Normandy. The figures were low, and the difference between the two groups not very marked. Now, more than 200 Carolingian coins can be added to the record,<sup>45</sup> but not a single Norman coin.<sup>46</sup> The importance of the former and the marginal role of the latter is thus confirmed beyond doubt. The lack of Norman coins may seem astonishing, because Normandy was a Viking colony that maintained relations with the motherland for at least a century after it was founded in 911. This may be due to the fact that the Normans struck coins according to contemporary Frankish practice, which among other things adopted a low silver content of ca. 60–75% that would not have been desirable for the Vikings in Scandinavia, who looked for good silver, cf. above.<sup>47</sup>

The multiplication of find spots provided new knowledge about coin use. As already stated above, before the metal detector, only 10 pre-900 Carolingian

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<sup>43</sup> Aarsleff 2006. At Vester Egesborg, two coins are duplicates (Aarsleff 2=18, 9=17) due to double numbering at the museum.

<sup>44</sup> Hilberg 2016.

<sup>45</sup> Latest catalogue: Garipzanov 2008. Latest surveys: Coupland 2011, Moesgaard 2015b.

<sup>46</sup> Moesgaard 2014b, p. 184.

<sup>47</sup> Moesgaard, Sarah, Bompaire 2018.

coins were recorded in Denmark. Five derived from hoards, and four from unknown circumstances. Only one was a secure single find. Then from the 1980s on, the number of finds increased. They were predominantly single finds from settlements, many of which were elite sites. Most of the coins were pierced and turned into jewellery. This made me suggest that they were prestige artefacts, probably imported not via trade but as gifts from Frankish diplomats and missionaries.<sup>48</sup> But in 2008, the spectacular site of Havsmarken on the east coast of the small island of Ærø south of Funen was discovered by the metal detectorist Steen Agersø. This completely unknown site has turned out to be one of the most prolific Viking sites, and was clearly a place of call point and a coastal market. Up till now, some 70 Carolingian coins and more than 200 dirhams have been found in a context that is clearly commercial. So I had to revise my theory that these coins were not used in commerce in the North.<sup>49</sup> This is an inherent feature of archaeology, that new finds can overturn even the best theory. We build our ideas on current evidence that is bound to change, either to substantiate our theories or to reject them.

One must, however, be aware of the limits of the metal detector. A metal detector would not catch coins that are too small, too thin or too light. Sieving the soil, as was done in the 8<sup>th</sup> century layers at Ribe, cf. above, is much more suited to such finds. However, detectors are getting better and more sensitive, and will catch items today that earlier generations of detectors would have missed. The small thin pennies of Harald Bluetooth (king of Denmark ca. 958–before 987) with a cross motif can serve as an example. They are thin and only weigh 0.20–0.35 g. They break easily, and then become even harder to find. Our present corpus of specimens predominantly derive from hoards. They are rare as single finds – only 12 are recorded in present day Denmark and Schleswig-Holstein. But significantly, the rate of discovery has risen over the last two decades due to better metal detectors (three specimens) and sieving of the soil in excavations (seven specimens).<sup>50</sup> This implies that this coin type is probably under-represented among the single finds due to its thinness and small size. It would be an error to conclude from the low number of finds that this type did not circulate and were predominantly used for passive hoarding. We may assume that it is rather the result of a low survival rate and our inadequate methods of finding them. Future finds will show whether this assumption is right.

The success of metal detecting also has its pitfalls. The intensity of detecting is not the same everywhere, creating clusters of finds that reflect today's research activity rather than the realities of former times. This may be true on a micro-level

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<sup>48</sup> Moesgaard 2013 (written 2006).

<sup>49</sup> Moesgaard, Uldum 2010.

<sup>50</sup> Moesgaard 2015a, pp. 30–32, 89, 235–241.

within a site or a parish.<sup>51</sup> But it is also a problem on a macro-level between regions. The problem becomes particularly acute if one wants to compare countries with different legislations on metal detecting. Take for instance Sweden and Denmark. In Denmark, metal detecting is legal everywhere except on scheduled monuments. You need to have the permission of the land owner, and it is good practice not to survey unploughed lands where the risk of destroying preserved archaeological layers is great. The declaration of the finds is obligatory, and the State may claim the finds against a reward to the finder. In Sweden, private metal detecting is restricted and you need to apply for a permission to detect, and you have to define the search area etc. beforehand. The result is that the number of finds has exploded in Denmark. If we take a rather small group of finds, namely Carolingian pre-900 coins, Ildar Garipzanov published a catalogue of the Scandinavian finds in 2008. He knew 65 specimens (half of them from the Häljarp hoard) found in present-day Sweden against 31 in present-day Denmark (which was already a marked increase compared to the 10 specimens recorded by 1975 before detecting).<sup>52</sup> Since 2008, almost 200 additional coins (a third of them from the prolific site of Havsmarken on the island of Ærø<sup>53</sup>) have been found in Denmark against a mere three new finds in Sweden!

This of course makes comparisons between Denmark and Sweden very difficult. Can we extrapolate that Carolingian finds would turn up in Sweden at the same rate as in Denmark if metal detecting was set free in Sweden? Well, at the present state of research, the patterns of use in Viking-Age Denmark (including the now Swedish provinces of Scania and Halland and the Oslo Fjord area in present day Norway) and Sweden seem different: settlement finds and a few hoards in Denmark and grave finds and hoards in Sweden.<sup>54</sup> Is this difference real, or is the absence of settlement finds in Sweden just a result of the restrictive detector rules? It is difficult to know. Indeed, marked regional differences in coin use do exist, as demonstrated convincingly by Tuukka Talvio's thesis on Viking Age Finland.<sup>55</sup> Consequently, we have to accept that on the present evidence we cannot resolve this question.

Regarding one region, however, we may use the Danish "known knowns" to extrapolate to "known unknowns". That is the region of Scania in present day southern Sweden. This region is historically Danish, and the presence of an Osfrid of Scania at the Danish court in the early 9<sup>th</sup> century indicates that it was already the case by then.<sup>56</sup> The find pattern of Carolingian coins is like present day Denmark, as opposed

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<sup>51</sup> Paulsson 1999 gives a brilliant analysis of this problem.

<sup>52</sup> Garipzanov 2008.

<sup>53</sup> Moesgaard, Uldum 2010 + later finds.

<sup>54</sup> Moesgaard 2015b.

<sup>55</sup> Talvio 2002.

<sup>56</sup> Olsen 1999.

to the rest of Sweden: coins from settlements and hoards, but not from graves.<sup>57</sup> If we look at the number of find spots (not the number of coins) of pre-900 Carolingian coins compared to the Danish island of Funen, we get interesting results. Before the metal detector, there were none on Funen, but four in Scania.<sup>58</sup> The – probably correct – conclusion would be, that Carolingian coins were more widespread in Scania than in Funen. If we look at the figures today, 40 years after the introduction of the detector, four new sites have appeared in Scania<sup>59</sup>, against no less than 13 at Funen.<sup>60</sup> It would be wrong to conclude that Funen was the more important place, or that coin use was more decentralised at Funen. It is much more likely that more finds would turn up in Scania if metal detecting was increased. This should warn us against drawing rapid comparative conclusions without looking carefully at the find conditions of the finds and the research history, but also encourage us to look for possibilities to extrapolate when the evidence is manifestly incomplete.

The Danish and Swedish experiences thus differ considerably. As we have seen, active private metal detecting has led to an explosive increase in the number of finds as well as of new sites in Denmark compared to Sweden. In one area, however, I think that Sweden is surpassing Denmark.<sup>61</sup> That is metal detecting by professional archaeologists. Many private detectorists have a tendency to concentrate on prolific sites for the pleasure of finding. Professionals do the surveys more systematically and also record an absence of finds.<sup>62</sup> In parts of Sweden, a best practice for metal detecting during excavations has been developed, including mapping carefully the detected areas and the intensity of detection.<sup>63</sup> This information is reported in detail in the excavation report. This of course concerns a much smaller number of sites than the widespread private detector activity in Denmark, but these sites deliver high quality information that can be compared one-to-one from site to site without the usual need for methodological reservations regarding bias and representativeness. If for instance a site has delivered no coins, a quick look in the report will immediately reveal whether the absence is due to a lack of detecting or whether it is a true reflection of the absence of coins at that particular site. We

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<sup>57</sup> Moesgaard 2015b.

<sup>58</sup> Fru Alstad, ca. 1850, Åkarp 1866, Häljarp 1905, Råbyhemmer 1927.

<sup>59</sup> Archaeologically controlled detector surveys at Uppåkra from 1999 and Ravlunda Maletofte from 2000. Excavation at Räng Sand 2004. Vikhem.

<sup>60</sup> Gudme from 1983, Havsmarken/Gravendal, Ærø from 2008, Hjulby from 2009, Solløkkegård from 2011, Eske Vest, Ærø from 2011, Broholm Vest from 2012, Voldtofte Vest from 2012, Damgård from 2012, Ålykke from 2014, Bregninge, Ærø from 2014, Kallehave Syd, Ærø from 2014, Krogrisgård from 2015, Schelenborg from 2015.

<sup>61</sup> Of course, there is awareness of this problem in Denmark too, see for instance Abramsson, Henriksen 2021.

<sup>62</sup> Paulsson 1999.

<sup>63</sup> Lindberg, Lingström 2016.

would also avoid the recurrent discussion over whether a coin is a real single find or a stray from a hoard. These sites will consequently form high-quality reference material for the bulk of less well-documented sites.

Turning from single finds to hoards, Majvor Östergren's thesis from 1989 was a major step forward.<sup>64</sup> The bulk of Viking Age hoards are found away from present day habitations, and formerly scholars considered that they were buried on purpose out of sight from dwellings in order to keep them secret. It was imagined that the owner found a large stone or an old tree as a landmark to be able to locate the hoard again. Östergren systematically examined hoard locations on the world's most Viking-hoard-rich place, namely the Swedish island of Gotland in the Baltic Sea. She found out that most hoards come from the archaeological remains of abandoned farms. Thus, the hoards were not hidden far from the inhabited areas but within them. This opened up entirely new perspectives on hoarding. For instance, a hoard within a house would have been easily accessible, and thus does not necessarily represent carefully hidden away savings but rather the household's current liquid assets. Jonsson and Östergren later demonstrated that looking at how the coins lie within the container reveals a lot about the process of accumulating the wealth contained in a hoard.<sup>65</sup> Dealing with another period and geographical zone (late medieval and renaissance northern France), Thibault Cardon has shown how to refine even further the interpretation of hoards by looking in detail at their archaeological context (when this is available), which reveals their degree of accessibility and the haste with which they were hidden.<sup>66</sup>

Östergren's observation on the link between habitations and hoards has also been confirmed outside Gotland. Renewed excavations on the find spots of the Danish Viking Age hoards of Enner<sup>67</sup> and Randlev<sup>68</sup> have shown that they were buried within settlements, not far outside as thought when they were found in the mid-19<sup>th</sup>–early 20<sup>th</sup> century. New hoards regularly turn up during excavations of settlements, such as Viggbyholm, Täby, Sweden.<sup>69</sup> But there are likewise examples of the opposite case – at the find spot of the Holløse hoard, for example, no trace of houses or other settlement remains was found during the excavation.<sup>70</sup>

No overall survey of all Viking hoards has been attempted regarding this question, but in her thesis, Gitte Ingvardson systematically checked the find spots of hoards on the Danish island of Bornholm. Among the ca. 100 known hoards, 33 have sufficiently precise information on the find circumstances to allow for an

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<sup>64</sup> Östergren 1989.

<sup>65</sup> Jonsson, Östergren 1990.

<sup>66</sup> Cardon 2021, pp. 166–210.

<sup>67</sup> Kristiansen 2006.

<sup>68</sup> Jeppesen 2003.

<sup>69</sup> <https://arkeologerna.com/vikingatida-silverskatt-funnen-i-tabby/> (access 25.04.2022).

<sup>70</sup> Langsted, Moesgaard 2017.

interpretation of the find spot. 16 derive from the core of settlements, nine from the edge of settlements, four more vaguely from settlements without precision and only four from outside settlements. Even considering that hoards outside settlements may be under-represented because harder to find, the link between hoards and settlements seems confirmed.<sup>71</sup>

What made these new insights possible? The simple fact that archaeologists started to take interest in hoards and numismatists in archaeology. The find spots were excavated and hoards seen not in numismatic isolation, but in context. The added value of taking the archaeological context into consideration when interpreting a hoard turned out to be immense. There is still a huge potential in following this path, both during future excavation, but also through surveys of old material, as has been done for Bornholm and Gotland.

### CONCLUSION

The preceding pages present how scholars established a series of new “known knowns”. Various features made these new ground-breaking insights possible. Sometimes, it was the sheer coincidence of the discovery of a hoard that brought up new material. But sometimes, new methods of searching like metal detecting or sieving the soil changed the find pattern, bringing to light new categories of finds. In these cases, the decision whether or not to favour these methods strongly influences the number and the nature of the finds. Comparing find corpora from places with different search strategies will sometimes enable us to suggest more or less secure “known unknowns” – provided that the comparison is made between places that in other respects are comparable.

In other cases, the new insights came about simply when a scholar had the opportunity to go through the material in detail. The material may be huge, and from mere lack of time it has not always benefitted from the attention it deserves and which is necessary to release its potentials. As demonstrated above, new knowledge also arises by applying new methods to the already existing material, like die studies or systematic comparisons of weight, diameter and style. It may also be multi-disciplinary approaches like using the archaeological record. This often creates an opportunity for recognising a wide range of “known unknowns” and guessing at potential “unknown unknowns”.

The existence of numerous “unknown unknowns” is demonstrated by the unexpected breakthroughs in our knowledge presented above. This suggests that many “unknown unknowns” still exist and wait to be discovered. This should strongly warn us against drawing conclusions from a simple absence of evidence, unless we are completely certain that this absence is real, if for instance adequate methods of finding have been applied without result. It just takes the discovery of a hoard or a new site to change the evidence completely overnight.

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<sup>71</sup> Ingvardson 2020, pp. 12, 162–171.

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## CZEGO „ZNANE WIADOME” UCZĄ NAS O „ZNANYCH NIEWIADOMYCH” I „NIEZNANYCH NIEWIADOMYCH”? REFLEKSJE NAD NASZĄ WIEDZĄ O WCZESNÓŚREDNIOWIECZNYM/WIKIŃSKIM MENNICTWIE I OBIEGU MONETARNYM

(Streszczenie)

Celem niniejszego artykułu jest dyskusja nad ograniczeniami rozpoznania numizmatycznego Europy Północnej i Wschodniej we wczesnym średniowieczu/ okresie wikińskim. Sam ogrom materiału – ze znalezisk pochodzi prawie 900 tysięcy monet oraz srebra niemonetarnego – może skłaniać do przekonania, że wszystko jest już udokumentowane. Jednak głębsza refleksja pokazuje, że jest to przekonanie błędne. Niektóre regiony, okresy bądź kategorie znalezisk są dobrze rozpoznane, jednak stan rozpoznania innych pozostawia wiele do życzenia. Artykuł przedstawia serię przypadków, w których nowe znalezisko, nowa technologia (np. wykrywacz metalu), nowe podejście metodologiczne (np. badania połączeń stempli) lub po prostu bardziej szczegółowe badanie materiału przyniosły nowe i nieoczekiwane spostrzeżenia.

Jeśli chodzi o produkcję monet, dawniej uważano, że w Niemczech w X w. była ona niewielka ilościowo. Jeśli jednak spojrzeć się na liczbę rozpoznanych stempli, a nie odkrytych egzemplarzy denarów, to okaże się, że niewielka liczba monet z X w. (rzadkich w znaleziskach północnych i wschodnich) jest spowodowana ich szybszym obiegiem i wycofywaniem z rynków, niż monet z XI w., licznie reprezentowanych w znaleziskach na północy i wschodzie Europy.

Przesiewanie ziemi z wykopalisk w VIII-wiecznym Ribe dało wystarczającą liczbę znalezisk, aby wykazać, że prawdopodobnie tam wybijano anonimowe sceattas typu *Wodan/Monster*. Zastosowanie wykrywaczy metali podczas niedawnych wykopalisk w Szlezwiku doprowadziło do licznych odkryć, dzięki którym udało się wykazać, że niektóre, dotychczas rzadkie i nieokreślone, enigmatyczne monety są lokalnymi wyrobami ze Szlezwiku z końca XI w. Badania łańcuchów połączeń stempli wcześniej nieokreślonych zbarbaryzowanych naśladownictw monet angielskich z końca X i początku XI w. wykazały, że są to spójne grupy monet, które można przypisać mennicom w Lund i Sigtunie. Bliższa analiza znalezionych w Skandynawii monet w typie kolońskim z X w. wykazała, że większość z nich to naśladownictwa fryzyjskie, a nie oficjalna emisja kolońska, co znacznie zmienia naszą wizję organizacji szlaków handlowych w tym czasie. Opuszczając Skandynawię i patrząc na północną Francję w X–XI w., zobaczyliśmy, że rzadko spotykane lub nawet nieznanne typy monet mogą pojawić się w dużych ilościach wraz z odkryciem nowego skarbu. To często całkowicie zmienia nasze postrzeganie danego mennictwa – ze sporadycznego i słabo zorganizowanego w rozwinięte, dobrze kontrolowane. Powyższe przykłady pokazują nam, że nasza wiedza o produkcji menniczej jest fragmentaryczna.

W artykule przedstawiono również kilka przykładów dotyczących obiegu monet. Niewielka liczba znalezisk monet z X–XI w. w Niemczech doprowadziła do postawienia hipotezy, że monety niemieckie nie były bite na potrzeby lokalnego obiegu, a jedynie na eksport na północ i wschód. Jednak zastosowanie wykrywaczy metali doprowadziło do zwielokrotnienia znalezisk i wykazało, że monety obiegały również lokalnie w Niemczech. Podobnie w Skandynawii, używanie wykrywaczy metali ujawniło liczne znaleziska

pojedyncze. Są to prawdopodobnie przypadkowe zguby z aktywnego obiegu w handlu. Jest to jasną wskazówką, że wikingowie nie tylko ukrywali swoje bogactwo w depozytach, jak można by sądzić, rejestrując tylko skarby. Również sam charakter znalezisk może wiele powiedzieć o sposobie wykorzystania monet. Na przykład znaleziska na placach targowych pokazują, że monety były w obiegu jako środek płatniczy (przyjmowany według wagi, ponieważ wikingowie używali monet według wartości metalu, a nie ich pierwotnej wartości nominalnej). Intensywność wykorzystywania wykrywaczy metali jest znacznie wyższa w Danii niż w Szwecji, stąd zjawisko to jest mniej udokumentowane w Szwecji. Można jednak zakładać, że liczba znalezisk wzrosłaby również w Szwecji (przynajmniej w regionach, które w innych aspektach są podobne do Danii), gdyby zintensyfikowano używanie wykrywaczy metali.

Konfrontując miejsca odkryć skarbów z kontekstem archeologicznym, udało się wykazać, że skarby nie zawsze były ukrywane w odległych, niezamieszkałych miejscach. Bardzo często odnajdywane są bezpośrednio na osadach lub nawet w domach. Oznacza to, że skarby niekoniecznie były ukrywane tak, aby właściciel nie miał do nich dostępu. Wręcz przeciwnie, sugeruje to, że skarby mogły być bieżącymi zasobami gospodarstwa domowego, do którego często sięgano, aby pobrać trochę pieniędzy w celu zapłaty lub dodać kilka ostatnio zarobionych monet. Podsumowując, znaleziska te wskazują na bardziej aktywne używanie monet i mniej pasywne gromadzenie niż dotychczas sądzono.

Wykraczając poza numizmatykę widzianą jako samodzielny dyscyplinę, wyniki informują nas o ekonomicznych, politycznych i społecznych strukturach dawnego społeczeństwa, a tym samym podkreślają wkład numizmatyki w badanie historii. W efekcie nowe ustalenia otwierają nowe ścieżki badawcze i co istotne, uświadamiają nam istnienie potencjalnie podobnych przypadków w nierozpoznanych jeszcze obszarach. Pomagają również w planowaniu przyszłych badań. W niektórych przypadkach można nawet przeprowadzić ekstrapolację wyników konkretnego studium przypadku na bardziej ogólne założenia. Artykuł w szczególności zwraca uwagę na niebezpieczeństwo wyciągania wniosków wynikających z braku dowodów. Przedstawiono kilka przykładów, w których rzekomy brak znalezisk lub produkcji monet okazał się wynikiem nieodpowiednich metod badawczych lub technologii poszukiwania materiału w ziemi. W innych przypadkach, odkrycie skarbu zmieniało z dnia na dzień obraz z braku lub niedostatku źródeł na ich obfitość. Jeżeli wnioski mają być wyciągane z braku dowodów, minimalnym wymogiem byłoby sprawdzenie, czy zastosowano odpowiednie metody badawcze w celu upewnienia się, że brak jest rzeczywisty, a nie stanowi wypadkowej innych czynników.

Adres autora/The author's address:

prof. Jens Christian Moesgaard

Department of Archaeology and Classical Studies

Stockholm University

SE 106 91 Stockholm, Sweden

jens.christian.moesgaard@ark.su.se

ORCID: 0000-0003-0333-5503



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EWELINA MIŚTA-JAKUBOWSKA

**MICROANALYSIS OF EARLY MEDIEVAL ARCHAEOLOGICAL  
OBJECTS MADE OF SILVER ALLOY**

**ABSTRACT:** Modern archaeological research uses physico-chemical methods to answer questions beyond the scope of the conventional historian's workshop. This applies to research on the borderline of fields, including material research into the elemental and isotopic composition of artefacts. The results of such analyses make it possible to address issues relating to the distribution of raw materials and the technology of artefact production. The paper discusses the SEM-EDS and LA-ICP-QMS micro-analysis methodology, addressing the limitations that result from the specification of techniques and the state of preservation of archaeological artefacts due to corrosion processes and conservation treatment. We present the preliminary results of technological research and provenance study of early medieval objects made of silver alloys, considered by typological group, i.e. coins, cake, and jewellery. Two hundred objects were analysed, revealing clear evidence for the use of remelted dirhams as the main source of raw material. The results of the research allowed for a material description of the phenomenon of the existence of cores in cross denarii, distinguishing two types of cores: based on copper and brass. In the case of jewellery, the research provided evidence for technological distinction, indicating the use of copper-based solders, as well as tin- and lead-based solders, which have analogies in goldsmithing material from the Czech Republic. Recipes based on the marked composition are described in ancient sources. Silver cakes, on the other hand, can be divided into three extraction groups related to the degree of purification of the raw material. The preliminary results indicate that these objects were made of Asian dirhams and native lead, perhaps as an additive in the cupellation process.

**ABSTRAKT:** We współczesnych badaniach zabytków archeologicznych metody fizykochemiczne wykorzystywane są w celu udzielenia odpowiedzi na pytania wykraczające poza obszar zainteresowań konwencjonalnego warsztatu historyka. Dotyczy to badań na pograniczu dziedzin, w tym badań materiałowych pozwalających na określenie składu pierwiastkowego i izotopowego zabytków. Wyniki takich analiz pozwalają na przybliżenie zagadnień dotyczących dystrybucji surowców oraz technologii wykonania zabytków. W pracy przedstawiono propozycję metodyki mikro-analizy SEM-EDS i LA-ICP-QMS uwzględniając jej ograniczenia wynikające ze specyfikacji technik, jak i stanu zachowania zabytków będącego efektem

procesów korozyjnych i złej konserwacji. Przedstawiono wstępne wyniki badań technologicznych i proveniencji wczesnośredniowiecznych zabytków wykonanych ze stopów srebra uwzględniając podział na grupy typologiczne to jest monety, placki srebrne i ozdoby. W sumie analizie poddano 200 obiektów wskazując jako główne źródło surowca przetop z dirhamów. Wyniki badań pozwoliły na materiałowy opis zjawiska istnienia rdzeni w denarach krzyżowych wyróżniając dwa rodzaje rdzeni: na bazie miedzi i mosiądzu. W przypadku ozdób umożliwiły ich rozróżnienie technologiczne wskazując na użycie lutowania opartego o związki miedzi ale też cyny i ołowiu, co ma swoje analogie w materiale złotniczym z terenu Czech. Receptury bazujące na oznaczonym składzie są opisane w źródłach antycznych. Placki srebrne natomiast można podzielić na trzy grupy ekstrakcyjne związane ze stopniem oczyszczenia kruszcza. Wstępne wyniki wskazują, iż obiekty te zostały wykonane z kruszcza azjatyckiego przy udziale ołowiu rodzimego, być może jako dodatku w procesie kupelacji.

**KEYWORDS:** Early Medieval silver, micro-analysis, provenance and technological study, archaeometallurgy

**SŁOWA KLUCZOWE:** wczesnośredniowieczne srebro, mikroanaliza, badania proveniencji złożowej i technologicznej, archeometalurgia

## 1. INTRODUCTION

The early Middle Ages was a period of state formation across continental Europe. In Poland, this process is associated with the Piasts, a Slavonic dynasty that created a new Polish state. Owing to a shortage of written sources describing the activities of the Piasts, archeology is the primary source of research material for this period. Other than ceramics, much of our evidence for this period takes the form of silver coins, bars, and ornaments, which are represented in hundreds of hoards. The custom of hoards came to Piast Poland from Scandinavia in the middle of the 10<sup>th</sup> century, where the tradition of depositing precious metal objects was already old in the Viking Age (beginning of the 8<sup>th</sup> to 12<sup>th</sup> centuries), and where the number of discovered hoards is very high: more than 800 hoards are known from the small island of Gotland alone. Eastern Europe belonged to the same “hoarding zone”, where numerous hoards of silver, and sometimes gold, are associated with the Swedish colonization from the middle of the 8<sup>th</sup> century onwards. Early medieval hoards are also known from the West Slavic territories of Poland and Połabie, but are otherwise rare. These hoards have mainly been of interest to numismatists, but have sometimes also interested archaeologists as collections of jewellery, most often divided into larger or smaller pieces. These collections of jewellery have been ordered using typological methods,<sup>1</sup> and have also very occasionally been subjected to physicochemical tests,<sup>2</sup> which have generally been too simplistic for their results to offer significant insights

<sup>1</sup> Jakimowicz 1933; Kóčka-Krenz 1993.

<sup>2</sup> E.g. Zoll-Adamikowa, Dekówna, Nosek 1999; Duczko 1985; Koziarowska 2000.

into the period of study. However, analysis of the chemical composition of hoarded objects, including elemental and isotopic analysis, allows us to not only study the origins of their raw material, but also to define their technological basis, distinguishing the activities of workshops, including goldsmiths. Comparing specific objects and their chemical compositions helps to create a comprehensive historical perspective. The results of material research into archaeological objects allows us to reconstruct the processes that the artifact was subject to, both technological and secondary – depositional. By selecting appropriate reference materials, including geological and technological groups, they enable the analysis of the origin of the raw material and thus, thanks to the knowledge of the historical use of the deposit or technology, the relative dating of objects. Due to the heterogeneity of the raw material, which result from the processes that the artifact was subject to, it is important in archaeometallurgical research to maintain appropriate measurement statistics. This allows for a more detailed analysis of raw material variability, which result from material changes in the artifact. Study of cultural and art objects requires non-destructive procedures. Surface tests are often used, the results of which are the product of technological and post-deposit processes to which the object was subjected. Despite this, the results obtained in this way sometimes are useful in technological study of producing the artifact.<sup>3</sup> In study of the origin of the raw geological material isotope analyzes are used,<sup>4</sup> where tests are carried out on samples taken from the object, or where the object surface is analyzed using micro-sampling (in the laser ablation process).<sup>5</sup> When testing the elemental composition of the surface, as a supplement to the research of geological provenance, the data obtained should be related to reference samples consisting of alloy samples aged in laboratory-controlled conditions (or simulated by programs), on which destructive tests can be performed. However, such reference materials are still lacking. In view of this situation, it seems optimal to examine of artifacts in cross-section, in order to capture the chemical composition and structure changes of the objects resulting from their technological production. Unfortunately, due to the destructive nature of the process, this is not always possible. For this reason, technological and raw material inference based on the results of non-destructive analyzes for archaeological objects characterized by a high degree of material heterogeneity is difficult, and is useful as a preliminary diagnosis only in cases where it is possible to analyze a large group of artifacts and maintain the appropriate measurement statistics per object. Despite the many variables that should be taken into

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<sup>3</sup> E.g. Scrivano *et al.* 2013; Scrivano *et al.* 2017a; Scrivano *et al.* 2017b; Ontalba Salamanca *et al.* 1998; Šmit *et al.* 2000; Demortier *et al.* 1999; Ashkenazi *et al.* 2017; Mišta-Jakubowska *et al.* 2019; Mišta-Jakubowska *et al.* 2019a; Mišta-Jakubowska *et al.* 2019b; Mišta-Jakubowska *et al.* 2019c.

<sup>4</sup> E.g. Chamberlain, Gale 1980; Gale 1979; Baker, Stos, Waight 2006; Balcaen, Moens, Vanhaecke 2010; Pernicka 2014; Stos-Gale, Gale 2009.

<sup>5</sup> Mišta-Jakubowska *et al.* 2019a.

account when analyzing the results of physicochemical studies, these specialized analyzes are an inseparable element of archaeological research.

The aim of this research was to examine the raw material and technological provenance of a large series of silver artifacts from selected Polish hoards, and to attempt to characterise the differences between them that result from a specific craft workshop.<sup>6</sup>

## 2. METHODOLOGY

### 2.1. Studied objects

The paper presents the selected results of research into the micro-scale elemental composition of a large group of early medieval artifacts made of silver alloy from selected Polish hoards. The selected objects were tested using lead isotope ratio analysis (LIA) and related to ores using published data. The results were analyzed on the basis of typological group: coins, silver cakes, and jewellery. The examined collection included:

1. coins of various types and varieties, including three coins from a private collection – 109 in total. Varieties and numbers of the studied coins from museum collections: Palatine Sieciech's denarii (1095–1100 A.D.) – 20 objects (Słuszków hoard), Otto and Adelaide's denarii (10<sup>th</sup>/11<sup>th</sup> c.) – 24 objects (Słuszków hoard), dirhams (mid-10<sup>th</sup> c.) – 10 objects (from aš-Šāš, Ma'din and Andaraba mints) (Zalesie and Obra Nowa hoards), cross denarii of different varieties of CNP (48 objects) (Słuszków hoard). Three cross denarii came from private collections, and it was therefore possible to conduct invasive tests on them. Cross-section cuts were made on two of them. This allowed for the study of the variability in elemental composition across their entire volume (no LIA tests were performed for them).
2. jewellery and jewellery fragments – 58 pieces in total; from Kalisz-Rajsków (17 pieces) and Słuszków (5 pieces) hoards, Obra Nowa (28 pieces), Stojkowo (8 pieces).
3. “raw” silver objects, silver cakes – 19 objects (from Kalisz-Dobrzec and Jastrzębniki hoards).

### 2.2. Laboratory tests

Scanning Electron Microscopy with X-ray microanalysis (SEM-EDS) was used to determine the elemental composition of the objects. This used the standard-less method for semi-quantitative analysis,<sup>7</sup> where at least 3 measurements were made

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<sup>6</sup> Miśta-Jakubowska *et al.* 2019a; Miśta-Jakubowska *et al.* 2019c; Miśta-Jakubowska *et al.* 2020; Miśta-Jakubowska 2020.

<sup>7</sup> Trincavelli, Limandri, Bonetto 2014.

for one object, differentiating its surface into technological areas and maintaining the given measurement statistics/area.<sup>8</sup> Inductively Coupled Plasma Mass Spectrometry with Laser Ablation (LA-ICP-QMS) was used for LIA.<sup>9</sup> The series of numerical data obtained from the measurements of elemental and LIA was subjected to multivariate statistical analysis using the following models: kernel density estimation (KDE),<sup>10</sup> and principal components analysis (PCA).<sup>11</sup>

### 3. RESULTS AND DISCUSSION

#### 3.1. Introduction

Modern archeology uses physiochemical techniques. Due to their non-destructive nature, techniques using X-rays (mainly XRF, EDS) are very popular in material testing. They make it possible to obtain information on the elemental composition of the tested surface layer only.<sup>12</sup> If a museum object made of silver alloy (after conservation) is analyzed in its entirety, without destructive preparation, the inference about the technology or origin of the object may be subject to significant error. The analyzed surface is changed in relation to the original alloy by corrosion and conservation processes.<sup>13</sup> For example, preservation with edetic acid (EDTA) solution (disodium edetate) leaches most of the alloying elements into the EDTA chelating solution.<sup>14</sup> However, it may happen that the state of preservation of objects (their surface) after conservation allows for preliminary semi-quantitative differentiation of the elemental composition in the *a priori* typological groups and within the micro areas of the object (using the SEM-EDS technique) that have a different method of manufacture (as shown below). The characteristics obtained in this way are, however, relative and helpful in archaeometallurgical research, but do not carry full geological ore deposit information through the elemental composition. When the isotopic data of geological deposits that contribute to the raw material are similar or even the same, research into deposit origin based on LIA analyzes also seems to be burdened with significant inference error (see Fig. 7: a, some of European ores). Another drawback of the LIA technique is that objects dating to the Middle Ages are the product of numerous remeltings and foreign technological additions based on lead alloys and copper (also in a form with the

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<sup>8</sup> Mišta-Jakubowska 2020.

<sup>9</sup> Mišta-Jakubowska *et al.* 2019a; Mišta-Jakubowska *et al.* 2019c; Mišta-Jakubowska *et al.* 2020.

<sup>10</sup> Baxter 2003; Baxter 2016; Żabiński *et al.* 2020.

<sup>11</sup> Baxter 2003; Baxter 2018; Żabiński *et al.* 2020.

<sup>12</sup> Gójska *et al.* 2019.

<sup>13</sup> See the phenomenon of silver enrichments: e.g. Linke, Schreiner 2000.

<sup>14</sup> E.g. Costa 2001; Żołędziowski, Mišta-Jakubowska, Czech-Błońska 2021.

addition of lead).<sup>15</sup> The addition of copper in a silver alloy above 2.6% is considered to be an intentional improvement of the properties of the alloy.<sup>16</sup> In addition, jewellery made with the filigree and granulation techniques are soldered with copper compounds<sup>17</sup> as well as lead.<sup>18</sup> A proposal for the development of LIA results, taking into account isotopic heterogeneities as a technological effect (also with the addition of foreign lead), has been previously presented in four papers.<sup>19</sup> Unfortunately, this method is still underdeveloped; due to the use of insufficient measurement statistics that could, through the use of the KDE model,<sup>20</sup> eliminate spreads in numerical results that result from mass interference occurring in mass spectrometry undertaken with a low-resolution quadrupole analyser. Nevertheless, the preliminary results of LIA research using the QMS technique reveal isotopic heterogeneities of silver found in the Polish hoards dated to 10<sup>th</sup>–11<sup>th</sup> centuries (see Fig. 7:b). Despite the fact that the methodology of LIA determination is already well-established in the literature on the subject,<sup>21</sup> in the light of the results obtained for some of the tested objects, it still seems to be methodologically inexhaustible and lacking in a so-called “a golden mean for everything”. Selected results of the analyses are presented below.

### 3.2. Coins

The studied groups of coins, despite having undergone conservation processes, differ in their elemental composition (surface analysis). This is shown in the diagrams in Figs 1:a, b, where Fig. 1:b also contains data obtained for the surface of the cross denarius from the private collection prior to conservation (mechanically cleaned of loose dirt, rinsed in water and acetone).

In the case of museum coins, the surface data does not indicate the initial composition of the mint alloy. This composition is altered by conservation process, which effectively cause silver enrichments (see in Fig. 5:c).<sup>22</sup> Assuming that the nature of the conservation process was similar for all coins, an initial attempt can be made to differentiate objects in typological groups. The results of the analysis of the surface composition of coins presented graphically in Fig. 1 show that:

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<sup>15</sup> Miśta-Jakubowska *et al.* 2020.

<sup>16</sup> Askhenazi *et al.* 2017.

<sup>17</sup> Miśta-Jakubowska *et al.* 2019a.

<sup>18</sup> Miśta-Jakubowska *et al.* 2021; Figs 12a, 13a.

<sup>19</sup> Miśta-Jakubowska *et al.* 2019a; Miśta-Jakubowska *et al.* 2019c; Miśta-Jakubowska *et al.* 2020; Miśta-Jakubowska 2020.

<sup>20</sup> E.g. Baxter 2003.

<sup>21</sup> E.g. Merkel 2016.

<sup>22</sup> E.g. Beck *et al.* 2004.

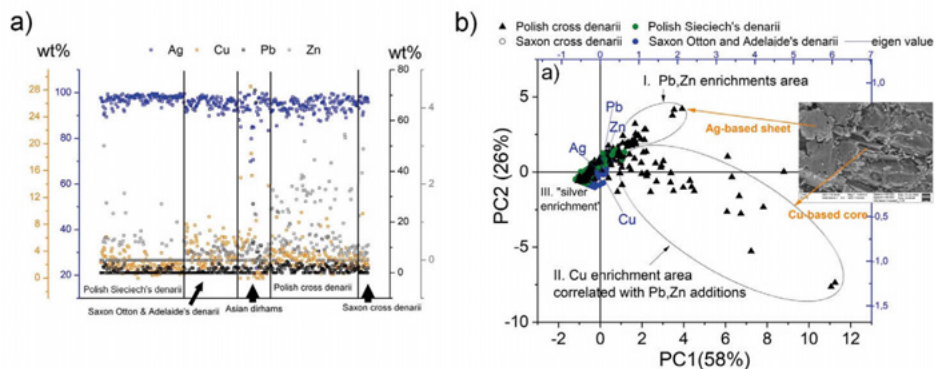


Fig. 1. Coins. Elemental composition results (presented in wt% normalized to 100) for silver (Ag), copper (Cu), lead (Pb) and zinc (Zn) obtained by SEM-EDS technique for surface of the objects: a – 2d diagram for museum coins; b – PCA (correlation) diagram for museum coins include results obtained for cross denarius from private collection (SEM image of the coin's surface presents on the right side of the diagram b). Raw numerical data obtained from EDS analysis are available in Author

1. Otto and Adelaide's denarii contain more copper in the alloy than the Sieciech's coins;
2. Asian dirhams are characterized by a significant degree of heterogeneity in the composition on the micro scale (see Fig. 1:a). This is due to the poor degree of mixing of the initial alloy material, hence local precipitation in the form of copper (Cu) and lead (Pb) enrichment (see Fig. 2:a). Fig. 2 shows the surface morphology of the dirham (Fig. 2:a) in association with the surface morphology of the cross denarius (Fig. 2:b, c);

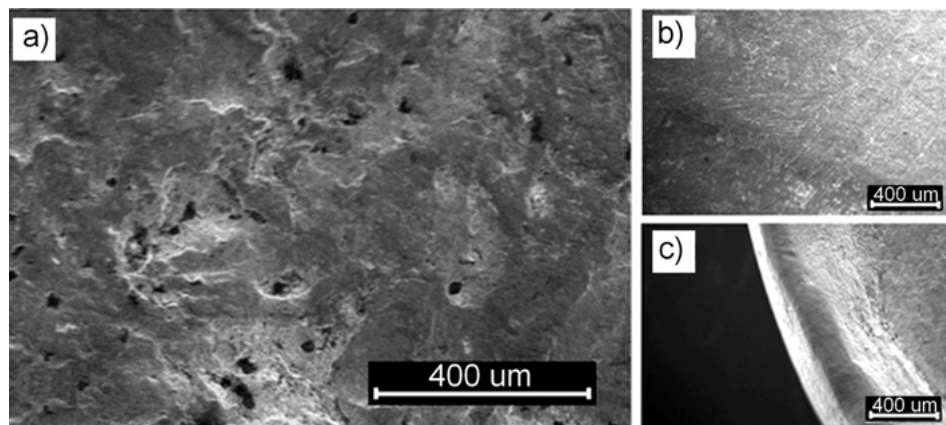


Fig. 2. SEM-SE images of the coins surface obtained for: a – dirham; b – middle part of the cross denarius; c – the rolled up edge of the cross denarius. Bad degree of raw material mixing in dirhams is shown in relation to cross denarii

3. The surface of Palatine Sieciech's coins is characterized by silver enrichment, which in seems to be related to the phenomenon of silver enrichment caused by conservation – the examined series of coins was very “shiny”. Nevertheless, a slight local zinc enrichment (up to 2 wt.%) is also noted here, but only for one coin from the series analyzed. The research on the Sieciech's coin series published by Kędzierski<sup>23</sup> indicates a significant share of zinc (av. 11.7 wt%) and copper (av. 40.8 wt%) in the monetary alloy (the composition of the alloy is marked below the silver enrichments layer as a result of microdestructive tests).
4. Cross denarius of younger CNP varieties<sup>24</sup> show enrichment in copper, zinc and slightly lead on the surface. This is due to the existence of copper alloy coin cores (pure copper: see Fig. 7 and copper-zinc alloy see Fig. 5). The results indicating a similar technological characteristic were obtained by Kędzierski<sup>25</sup> in the case of the CNP 858 and 813 varieties, and may therefore indicate some technological similarities between Sieciech's coins and the cross denarii.

SEM analyzes of the surface of cross denarii allowed for the registration of micro-corrosion loss sizes up to 400 microns presented in Fig. 3.

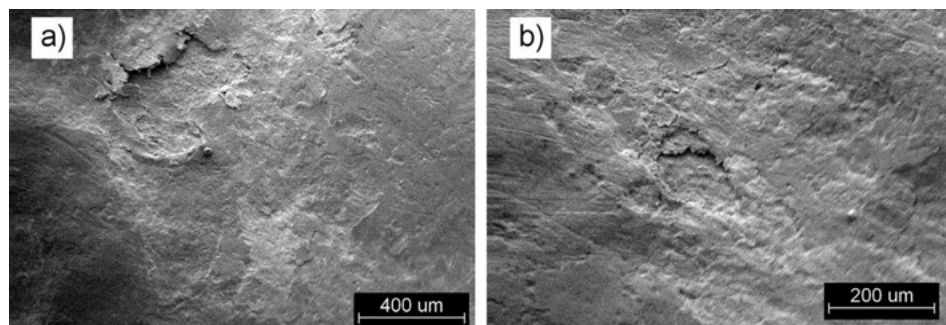


Fig. 3. Examples of SEM-SE images of cross denarii surface with visible coin's core in the corrosion loss: a – larger with diameter 400 microns and b – smaller – over 200 microns.

The surface changes are not detectable by naked eyes

As shown in Fig. 4 below, a copper alloy core is noticeable inside the corrosion loss cavities. An exemplary cross-section of a core coin shows the optical image in Fig. 5 (image obtained from a private collection coin).

<sup>23</sup> Kędzierski 1998.

<sup>24</sup> Gumowski 1939.

<sup>25</sup> Kędzierski 1998.

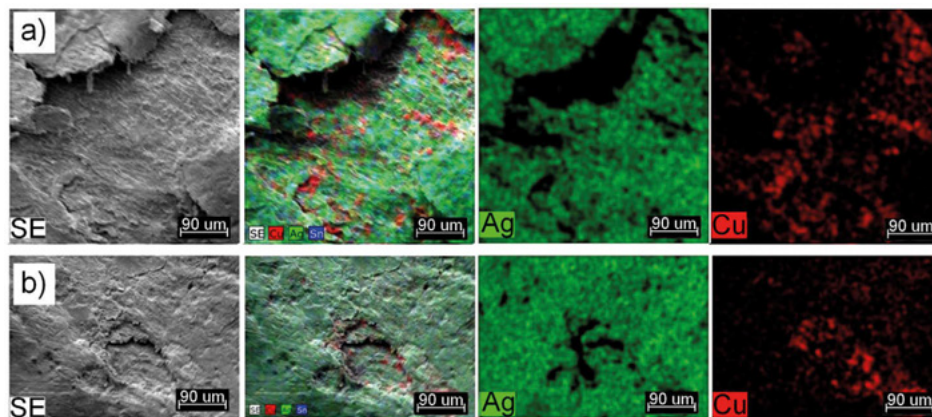


Fig. 4. SEM-EDS elements distribution maps.  
The core in cross denarii visible in a corrosion loss cavity

On the basis of SEM imaging in the studied series of cross denarii from the museum, the cores were selected as follows (due to the small size of the corrosion loss cavities, they could not be noticed during the analysis):

1. for the CNP 858 variant – 20 coins were analyzed, of which four turned out to be core: 20/4 (20%),
2. for the CNP 860 variant – 8/2 (25%),
3. for the CNP 813 variant – 10/5 (50%),
4. for the CNP 851–860/848 variant – 7/0, no core,
5. for Saxon cross denarii – 4/0, no core.

The phenomenon of the existence of cores in cross denarii is known and so far interpreted as a kind of forgery.<sup>26</sup> However, the scale of this phenomenon and its technological context are still unrecognized. The results of destructive analyzes of cross denarii from private collections reveal the technological diversity of these forgeries.<sup>27</sup> Figs 5–7 present the preliminary results of research on technologically different core crosses.

Fig. 5 shows the results of a microscopic analysis of a cross-section of a cross denarius (see Fig. 5:a) showing some kind of material anomaly indicating the existence of a specific thin brass-based core.

The above microscopic image shows a thick (approximately 20 microns) layer of silver enrichments (see Figs 5:b, c), suggesting that the coin has undergone a conservation process. The inside of the coin, the potential core, is in the shape of a teardrop (see Figs 5:A–C). The core composition is in average value (in wt%): silver (Ag) – 47.8, copper (Cu) – 42.7, lead (Pb) – 1.8, zinc (Zn) – 7.7, with the silver enriched outer layer: in average value (in wt%): Ag – 90.5, Cu – 3.1, Pb – 2.5, Zn – 3.9.

<sup>26</sup> Bogucki 2008.

<sup>27</sup> Bogucki 2008.

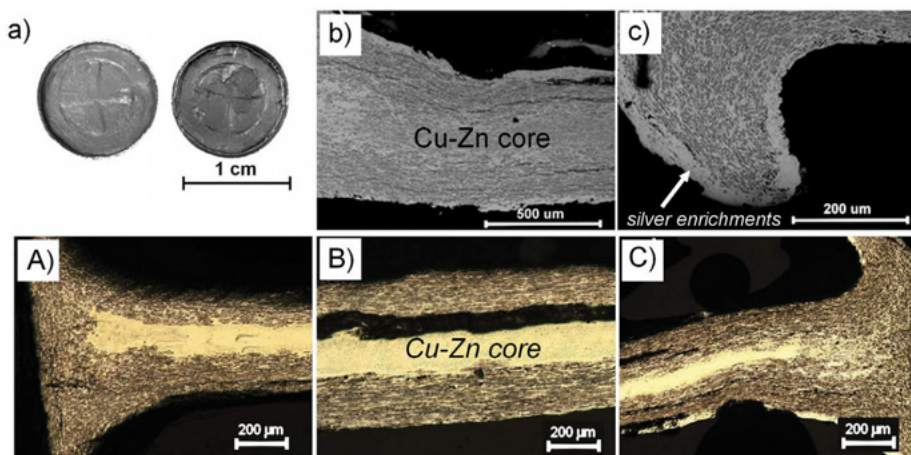


Fig. 5. Results of microscope analysis of cross-section of the cross denarius from private collection: a – photo of the coin; b – SEM-BSE image of middle part; c – SEM-BSE image of rolled up edge; A-C – LOM image of whole cross-section

The arrangement of the layers in the central part of the coin shown in Figs 5:B, b is puzzling. It looks as if the coin was made using the plating technique, in which a thin silver sheet, about 200 microns thick, was placed on the core and vaulted in the thermal process with the inside of the coin.

Fig. 6 shows the results of a cross-section test of a cross denarius without a core (Fig. 6:a). In this case, the composition of the silver enrichment layer, i.e. the surface (see Figs 6: b, c) is in average value (in wt%): Ag – 96.6, Cu – 2.2, Pb – 1.2, Zn <0.1.

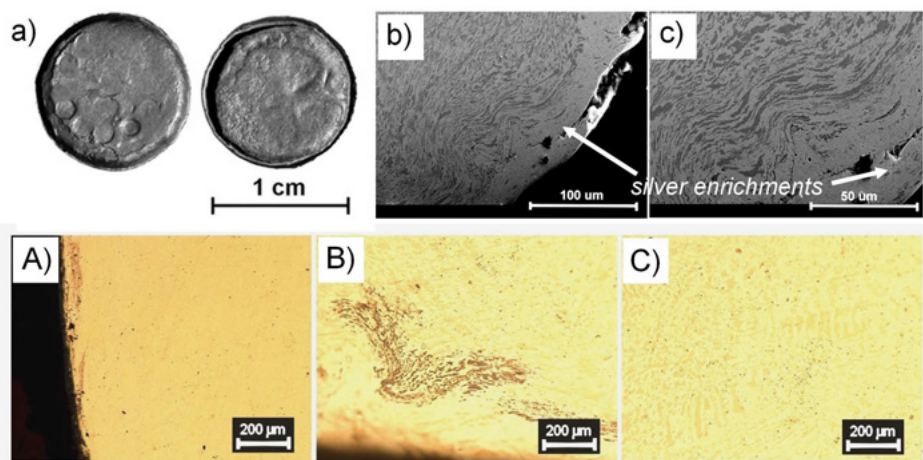


Fig. 6. Results of microscope analysis of cross-section of the cross denarius from private collection: a – photo of the coin; b and c – SEM-BSE images of rolled up edge; A-C – LOM images of cross-section

The composition in the center of the coin corresponds to the mint alloy and is in average value (in wt%): Ag – 62.4, Cu – 35.3, Pb – 2.4, Zn <0.1.

What differentiates the above coins from the private collection is the increased addition of zinc in the silver alloy in the case of the core coin. This regularity is also shown in Fig. 1 for a museum cross denarius.

The zinc content in the silver alloy probably comes from the use of silver-bearing deposits rich in sphalerite (ZnS) for monetary production.<sup>28</sup> Such deposits are found in the Czech Republic (Příbram, Kutná Hora) and in the Olkusz region. The Rammelsberg deposits also contain sphalerite but much less. Therefore, it is difficult to distinguish the deposit origin on the basis of zinc content alone. It would seem helpful to identify the origin based on LIA. Attempts have been made and published<sup>29</sup> and indicate the use of mainly Asian silver remelted from dirhams (see Fig. 7:a). The LIA data presented in Fig. 7:a show that there are no significant differences in provenance of the raw material in the studied varieties of coins. All coins with folded edges are minted using Asian raw material. Why, then, the increased content of zinc or lead in them in relation to dirhams? Perhaps the answer to this question lies within the coins, beyond the reach of surface analyzes. This topic is, therefore, still open, and needs to be pursued, as there is no comprehensive answer for where the raw material used in cross denarii came from. We know that the silver is largely Asian, but the source of potential raw material for the cores is still unknown.

Furthermore, in LIA study of medieval objects, it is necessary to consider the potential remelting factor, i.e. the presence in the alloy of foreign lead added during the cupellation process, or the addition of lead-rich copper.<sup>30</sup> The sampling process for LIA seems to be capable of averaging these technological heterogeneities. This, in turn, can lead to incorrect deposit matching.

Fig. 7:b shows the lead isotope ratio scatter obtained for a series of silver cakes (from Kalisz-Dobrzec hoard), that could be a semi-finished monetary product, in comparison to the spread for one cake (obtained by KDE modelling). The spread of the results obtained for one cake indicates its isotopic heterogeneity resulting from the use of different silver.

As previously shown,<sup>31</sup> silver cakes as a group have slightly different lead isotope ratio signatures to coins.

However, some silver cakes and Polish coins discussed in this paper may have been augmented with Asian silver from dirham melting (in total 36 coins). Some of the silver cake results are situated in the Silesia and Kraków Upland deposits area (3 objects) and other European ores (Fig. 7).

<sup>28</sup> Chabrzyk, Młodecka 2013.

<sup>29</sup> Miśta-Jakubowska *et al.* 2019c.

<sup>30</sup> Miśta-Jakubowska *et al.* 2020.

<sup>31</sup> Miśta-Jakubowska 2020; Miśta-Jakubowska *et al.* 2019c.

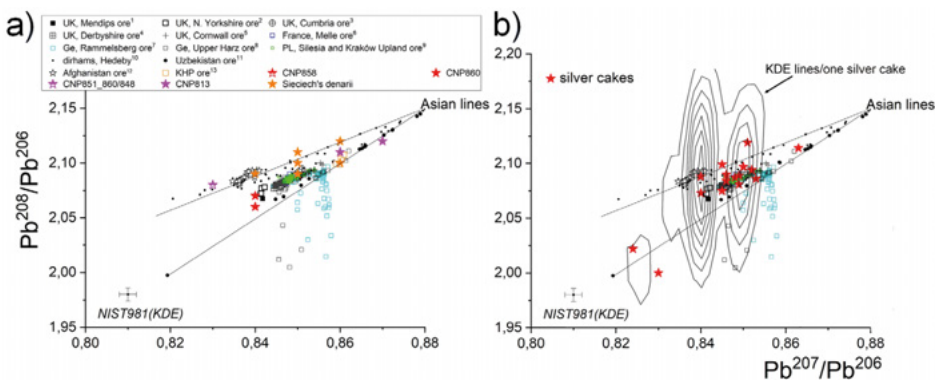


Fig. 7. Lead isotope data (LI) presented as a 2D diagram of the  $Pb^{208}/Pb^{206}$  and  $Pb^{207}/Pb^{206}$  in relation to deposits from Poland, Czech Republic, Germany, Great Britain, France, Afghanistan, Uzbekistan and dirhams as reference material for Asian deposits from the settlement in Hedeby:<sup>32</sup> a) for cross denarii and Palatine Sieciech's denarii; b) silver cakes from Kalisz presenting results spread obtained for one of them (recalculated by KDE model) in comparison with ore data from a)

In view of the above, the origin of silver used in early medieval production, and not only in the period of the 10<sup>th</sup>–12<sup>th</sup> centuries, remains an open topic requiring the continued study of a larger series of test objects. The problem of poorly-separated deposits using just two lead isotope ratios cannot be avoided here (see Fig. 7). Perhaps this will be explained by specialized analyzes using other equipment for isotope measurements,<sup>33</sup> which is expensive and requires sampling. However, sampling seems to lead to the averaging of the result, and the loss of information concerning possible re-melts. In general, the usefulness of lead isotope analyzes for provenance study, in cases where silver was used in remelting and as an addition to the starting alloy, seems complicated. Another method is trace analysis, which allows for the determination of elements that may be a tracer of a given deposit (but in the case of coins after conservation process, this analysis also requires sampling). However, trace analysis also seems to be imperfect, even if a sample is taken. This is due to the fact that there are no references to deposits (or the data are not completed), and the objects could undergo compositional transformations during heat treatment in relation to these deposits.

A different technological view on the problem of cross denarii was provided by the results of the surface analysis of another coin from the private collection presented in Fig. 8. The previously described private (see Figs 5, 6) and museum cross denarii had already been subjected to conservation processes, so their surface composition was depleted. The coin shown in Fig. 8:c consists of a pure copper core

<sup>32</sup> Rohl 1996; Téreygeol, Hoelzl, Horn 2005; Zartman, Pawlowska, Rubinowski 1979; Church, Vaughn 1992; Lehmann 2011; Hatz *et al.* 1991; Merkel 2016; Ettler *et al.* 2015.

<sup>33</sup> High-resolution mass spectrometry according to Pernicka 2020: research being in progress.

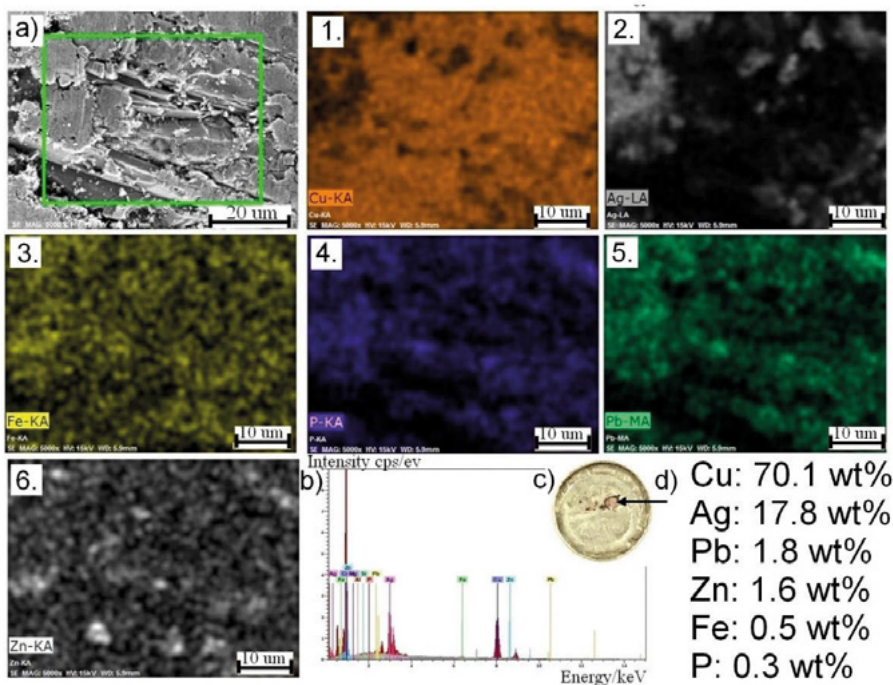


Fig. 8. SEM-EDS results of cross denarius (private collection) surface before conservation process: a – SEM-SE image of analysed microareas with visible core; 1–6 – elements distribution maps in area a; b – EDS spectra obtained from area a; c – studied coin; d – semi-quantitative results

(Figs 8:1, 2, b, d) while the silver alloy of the cladding contains iron (Fe) (Figs 8:3, b, d), phosphorus (P) (Figs 8:1, 2, b, d), lead (Pb) (Figs 8:5, b, d), and zinc (Zn) (Figs 8: 6, b, d) additives. The content of lead, zinc, iron and phosphorus in silver may be related to the process of purifying litharge (PbO-X) with iron compounds.<sup>34</sup> The most desirable initial monetary silver is silver with a purity of 97–98%, and as you can see, cross denarii are a highly contaminated product (Fig. 8:d).

Comparing the results obtained for coins from the private collection, a hypothesis arises concerning the connection between the local production of coins and the existence of specific types of core and silver cladding compositions. The current results of LIA (calculated by use of LDA model) obtained for the cross denarii, the coins of Palatine Sieciech, and the Saxon denarii do not differentiate their deposit origin, reflecting a significant addition of Asian raw material in their production (see Fig. 7:a).<sup>35</sup>

<sup>34</sup> Karbowniczek, Suliga 2005; Karbowniczek *et. al.* 2006, pp. 36–40.

<sup>35</sup> Miśta-Jakubowska *et al.* 2019c.

In the case of cross denarii, an important aspect of their minting technology and is the increased content of zinc and lead in their alloy<sup>36</sup>, as well as accompanying elements such as iron and phosphorus that may be related to silver and lead metallurgy, more specifically the metallurgical process consisting of:

1. purification of galenic litharge by reduction with iron compounds;<sup>37</sup>
2. use of iron-rich deposits, which are sometimes found in sphalerite related with silver-bearing ores. Silver deposits containing significant amounts of iron (approximately 2%) are found in the Czech Republic<sup>38</sup> but also in Poland (Olkusz area: these are poor in silver). The ores mined at Rammelsberg (Otto and Adelaide's denarii have less zinc, see Fig. 1) have a small amount of iron.

This again introduces ambiguities to the inference about origin of the cross denarii. However, considering that the preferred monetary alloy should be pure (97–98% Ag), the degree of contamination of the cross denarii alloy indicates rather the use of raw material (not re-melted), and, looking at the scale of minting of these coins, it would rather suggest the use of local raw material (i.e. Olkusz; while the use of Asian deposits may be typical for some of the cross denarii, this is only a hypothesis). Perhaps there is a moment of raw material transformation, when Asian raw material ran out and local raw materials began to be used for coinage? However, this has not yet been captured. Relevant to this issue are the analytical from the so-called “Hoard of the Steelworker” found on the metallurgical settlement in Dąbrowa Górnicza-Łosień.<sup>39</sup> These results indicate the use of local ores in the production of objects from the hoard: the lack of bismuth eliminates the Harz deposits, while the lack of selenium eliminates the Czech deposits. In the collection of the analyzed coins, which mainly date to the beginning of the 12<sup>th</sup> century, only the 11<sup>th</sup>-century cross denarius has a significant content of copper, zinc and lead.<sup>40</sup> Silver cakes from this hoard are characterized by a significant amount of lead, with traces of copper and zinc. Similar results were obtained for the silver cakes from the Kalisz-Dobrzec hoard (see Fig. 9 below). In this study,<sup>41</sup> the composition characteristics were used to develop a hypothesis about their non-local origin, possibly from copper-containing polymetallic deposits like those found in Silesia. However, LIA of some silver cakes from Kalisz-Dobrzec reveal the addition of ore from the Olkusz region.<sup>42</sup> Perhaps the silver purification process in the 12<sup>th</sup> century was so advanced that it allowed the removal of impurities to a large extent (Figs 9, 10).

<sup>36</sup> Chabrzyk, Młodecka 2013; Bogucki 2008.

<sup>37</sup> Karbowniczek, Suliga 2005; Karbowniczek *et al.* 2006, pp. 36–40; Rozmus, Suliga 2012.

<sup>38</sup> Lead, iron and phosphorus: Štefan, Zavřel, Taibl 2020.

<sup>39</sup> Garbacz-Klempka *et al.* 2013.

<sup>40</sup> Garbacz-Klempka *et al.* 2013; Fig. 21.

<sup>41</sup> Garbacz-Klempka *et al.* 2013.

<sup>42</sup> Mišta-Jakubowska *et al.* 2019c; see Fig. 7: c.

On the other hand, in the 11<sup>th</sup> century, when cross denarii functioned, the process of obtaining silver was not perfected. And perhaps it was dictated by the need for “fast” and “economical” (using copper alloys as the coin core) monetary production, also using the local raw material (Fig. 7:b) obtained from Pb-Zn-rich ores, and the purification of this silver using iron compounds (see Fig. 7:c). The content of low-melting zinc and lead in the silver alloy could improve plasticity and lower the melting point of the silver cladding, thus accelerating the minting process. Due to their chemical characteristics,<sup>43</sup> Palatine Sieciech’s denarii could be minted in a technology similar to that of cross denarius, using poorly refined silver, possibly with inclusion of cleaning waste (litharge) as an addition to the initial mint alloy. The above-mentioned hypotheses can direct not only the future direction of archaeometallurgy research on the cross denarii, but also for early medieval silver in general. The function of lead in early medieval metallurgy seems to be important. To bring the issue closer, it is necessary to examine a large series of artifacts, preferably before their conservation process. Only the newly discovered hoards and artifacts offer such opportunities, including the Słuszków II hoard, consisting mainly of ca. 6,500 cross denarii and silver cakes.<sup>44</sup>

### 3.3. Silver cakes

The results of the microanalysis of the surface of silver cakes from the Kalisz-Dobrzec hoard are consistent with the results obtained from the Dąbrowa Górnicza-Łosień settlement.<sup>45</sup> These are objects with a very low copper and zinc content. They are characterized by an increased lead content in micro-areas (up to 6wt% on the cross-section and up to 70 wt% on the surface). Depending on the lead content and its surface adhesion, the 19 tested objects from Kalisz-Dobrzec can be divided into:

1. silver cakes with micro-precipitation of lead (up to 70.2 wt% / 5 objects) in the form of oxide “cloud” structures called I<sup>st</sup> group (see Fig. 9:a);
2. silver cakes with no micro-precipitates of lead, but with an increased content above 4 wt% (up to 14.8 wt%) in surface, called II<sup>nd</sup> group /6 objects (see Fig. 9:b);
3. silver cakes without micro-precipitations, with a lead content on the surface below 3.9 wt% / 8 objects, called III<sup>rd</sup> group (see Fig. 9:b).

<sup>43</sup> Kędziński 1998.

<sup>44</sup> *Odnaleziono kolejną część skarbu ze Słuszkowa. Tysiące średniowiecznym monet i złote pierścienie w polu kukurydzy*: [www.national-geographic.pl/artukul/odnaleziono-kolejna-czesc-skarbu-ze-sluszkowa-tysiace-sredniowiecznym-monet-i-zlote-pierscienie-w-polu-kukurydzy](http://www.national-geographic.pl/artukul/odnaleziono-kolejna-czesc-skarbu-ze-sluszkowa-tysiace-sredniowiecznym-monet-i-zlote-pierscienie-w-polu-kukurydzy), access 29.07.2021.

<sup>45</sup> Garbacz-Klempka *et al.* 2013.

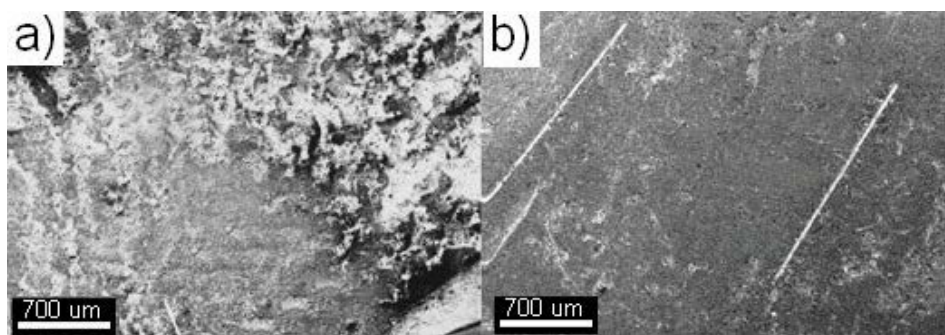


Fig. 9. Examples of SEM-SE images of silver cakes (Kalisz-Dobrzec hoard): a – I<sup>st</sup> group with cloudy-shape lead oxide micro-precipitations; b – II<sup>nd</sup> and III<sup>rd</sup> groups characterized by lack of micro-precipitations of lead oxide

Fig. 10 shows the selected results of X-ray microanalysis (SEM-EDS) obtained from a series of objects.

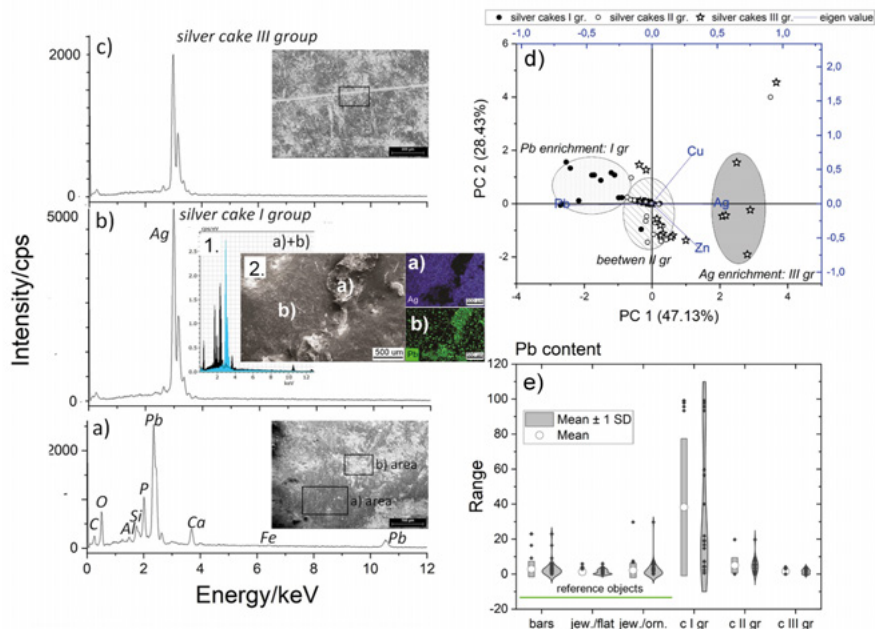


Fig. 10. Results of SEM-EDS study of micro-regions of silver cakes from Kalisz-Dobrzec hoard. EDS spectra obtained for surface of the I<sup>st</sup> group: a – area with lead micro-precipitation visible in SEM images; b – silver enriched microregion. The studied areas are marked in SEM image (b2) and in SEM from diagram a; b1 – comparisons of EDS spectra of different I<sup>st</sup> group microregions; d – PCA (correlation) diagram of silver (Ag), copper (Cu), zinc (Zn) and lead (Pb) content in separated silver cakes groups; e – lead content presented as a range of variation and mean value in silver cake groups in comparison to reference silver objects (bars, jewelleryes – with surface ornament/orn. and without ornament/flat from Stojkowo hoard)

Lead precipitation on the surface (see Figs 10:a, b) indicates that the silver cakes are a product of silver refining<sup>46</sup>, as can be seen in Fig. 7 mainly from Asian dirhams (maybe by use of lead from Olkusz areas). The silver purification process took place in a vessel called a “cupel”, hence the addition of calcium, alkali, iron (from clay) and phosphorus (from iron clay substance or from bone meal – a substance that absorbs the removed impurities in the form of oxide) in the areas of lead precipitations (the objects were not well surface cleaned after cupellation process), see Fig. 10:a. First group contains uncleaned microregions (Fig. 10:a) and silver-enriched microregions (Fig. 10:a). The remaining groups are characterized by a significant degree of cleaning of the surface from litharge compounds (Fig. 10:c). The division into three groups presented above (Fig. 3) seems to suggest that we are dealing with three groups with a different degree of surface cleaning after the cupellation process, ranging from the product with the highest degree of purification (III<sup>rd</sup> group) to the product with the lowest degree (I<sup>st</sup> group). The division by the degree of purification is well presented in the PCA diagram (see Fig. 10:d), where II<sup>nd</sup> group appears compositionally between the extreme groups with the minimum (I<sup>st</sup>) and the maximum degree of purification (III<sup>rd</sup>). Fig. 10:e shows a summary of the lead content results (as a range of variability and as an average value) obtained from the silver cakes groups in relation to other silver items. The diagram shows that the I<sup>st</sup> group stands out significantly in the presented set of artifacts.

### 3.4. Silver jewellery

Jewellery made using filigree and granulation are a separate analytical problem. During microanalysis, three technological areas related to the soldering process were distinguished: the base surface (the first area) is the base on which the ornament (i.e. granulate, filigree is the second area) was attached by soldering (the third area – the soldering area). Recipes for making chemical solder are described in historical sources, including the early 12<sup>th</sup> century receipts of Theophilus Presbyter, the early 3<sup>rd</sup> century Leyden Papyrus X and the 1<sup>st</sup> century natural philosopher Pliny the Elder.<sup>47</sup> The analytical results reveal the use of these recipes both in jewellery typologically assigned to the Slavic horizon and in those characteristic of the Kievan Rus.<sup>48</sup>

Fig. 11 shows the results of compositional analysis obtained for the series of analyzed jewellery. As can be seen, the area of soldering with granulation and filigree (Figs 12:b, c, e) is characterized by a significant degree of oxidation and copper enrichment. This is consistent with the solder recipes shown in the histori-

<sup>46</sup> E.g. Agricola 1950; Tylecote 1992; Merkel 2016; L'Héritier *et al.* 2015; Hawthorne, Smith 1979.

<sup>47</sup> Pliny 1929; Duczko 1985; Hawthorne, Smith 1979; Stawicki 1987.

<sup>48</sup> Miśta-Jakubowska *et al.* 2021.

cal sources, based mainly on copper compounds, also in the oxidized form. Scandinavian jewellery with flat ornament/stamps (see Fig. 12:d) fall between the areas typical of solder and base. This is due to the addition of lead and zinc in their alloy, as shown in the PCA (correlation) diagram in Fig. 12.

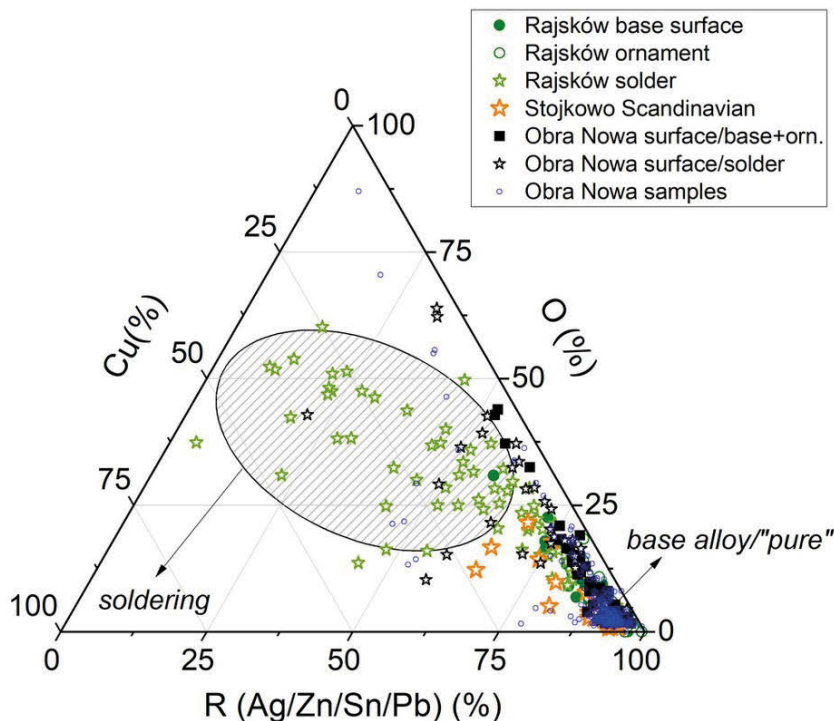


Fig. 11. Jewellery. EDS results presented as a ternary diagram of copper (Cu), oxygen (O) and other elements R (silver: Ag, zinc: Zn, tin: Sn, lead: Pb) content in jewellery from the Kalisz-Rajsków, Stojkowo and Obra Nowa hoards. In the case of objects made with granulation and filigree, the division into technological areas is taken into account (base surface, ornament, solder), Scandinavian objects are flat or stamped (flat ornament). The samples (elements that had fallen off spontaneously) from jewellery from Obra Nowa were also examined (base alloy/"pure") (see Fig. 12: f)

Fig. 12 shows the results of the principal component analysis (correlation PCA), i.e. the content of lead, zinc, silver, copper, tin with oxygen degree obtained for the series of jewellery and their fragments with differential surface morphology.

In the diagram of Fig. 12:a, two areas relating to the soldering process are distinguished, i.e. the oxidation area enriched in copper and tin and the area enriched

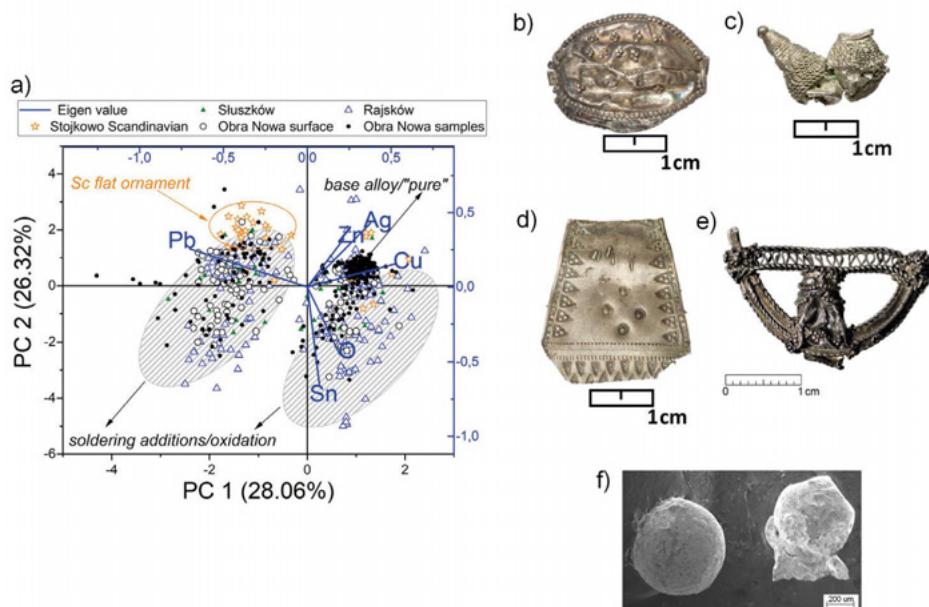


Fig. 12. Jewellery: a – EDS results presented as a PCA (correlation) diagram of silver (Ag), copper (Cu), zinc (Zn), lead (Pb), tin (Sn), oxide (O) obtained from different types of jewellery and their samples from Obra Nowa hoard. Examples of studied artifacts: b – bead from Słuszków hoard (West Slavic type); c – fragment of the earring from Kalisz-Rajsków hoard (West Slavic type); d – fragment of Scandinavian jewellery from Stojkowo hoard; e – fragment of the earring from Obra Nowa hoard (West Slavic type); f – SEM-SE image of the samples fallen off spontaneously from objects from Obra Nowa

in lead. For the samples from Obra Nowa, these two types of soldering were recorded and shown below in Fig. 13.

The first type of soldering identified is lead-based (Fig. 13:a). The additions of phosphorus, calcium, alkali and possibly strontium indicate the use of a recipe variant: “Carefully clean the lead with tar and bitumen, unless you take tin; mix cadmium and litharge in equal parts with lead. Stir until it solidifies. It can be used as natural asem”.<sup>49</sup> Carbonized and temperature-modified remains of tar and bitumen from the soldering process are recognized in EDS spectrum as carbon (C).<sup>50</sup> However, in order to discover where this coal-based substance comes from, other analytical tools are needed.<sup>51</sup> A similar characteristic of soldering was noted by the Czechs, but they interpret it differently as deposit additives.<sup>52</sup>

<sup>49</sup> Leyden Papyrus X, Recipe 11: Stawicki 1987; Demortier *et al.* 1999.

<sup>50</sup> Hoffman, Davidson 1965, p. 46.

<sup>51</sup> Miśta-Jakubowska *et al.* 2021.

<sup>52</sup> Kolářová, Děd, Ottenwelter 2014.

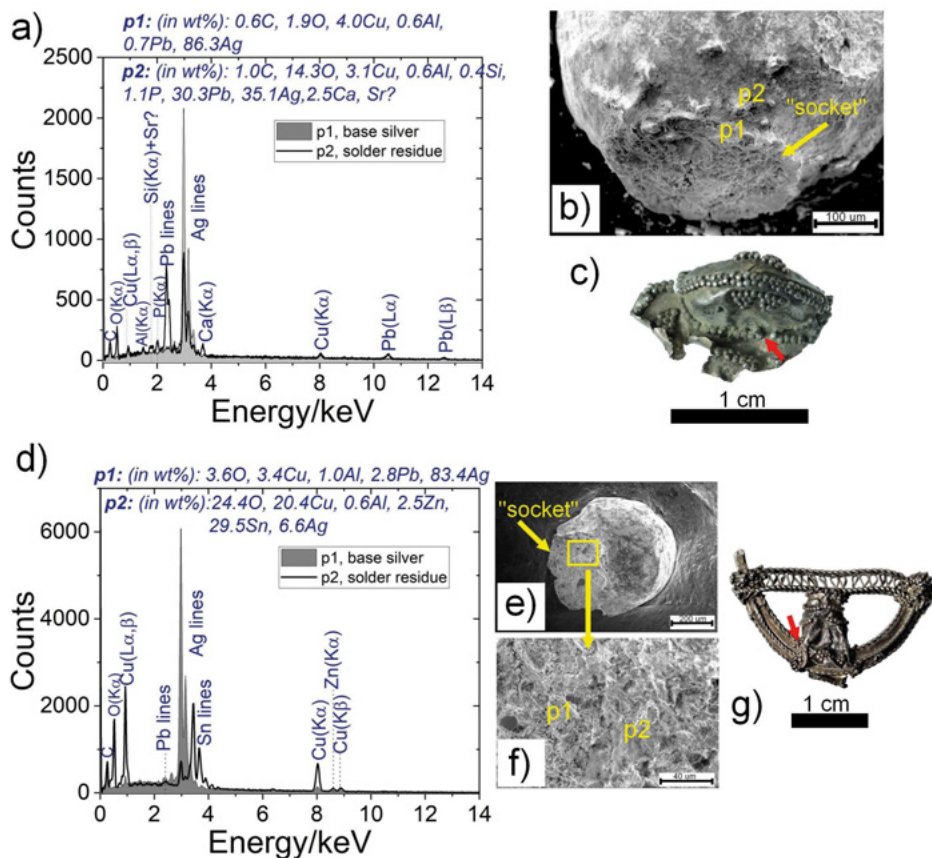


Fig. 13. Jewellery. SEM-EDS results (a, d) obtained for samples (granules presented in b, e respectively obtained from fragments of jewellery (c, g); b, e, f – micro-areas of EDS sampling of the “socket” area of the granules

The second type of soldering is based on tin and copper (Fig. 13:b), although lead additives are here possibly due to the spill of the solder onto the surface of the jewellery.<sup>53</sup> Several similar recipes are described in sources.<sup>54</sup>

#### 4. CONCLUSIONS

This study has identified the problems and benefits of using microanalysis in the study of archaeological material, specifically technologically different silver alloys. Elemental composition tests with the use of non-destructive techniques

<sup>53</sup> Duczko 1985; Miśta-Jakubowska *et al.* 2019a.

<sup>54</sup> Including Recipes 8, 18 from Leyden Papyrus X; Stawicki 1987.

(EDS, XRF) allow only for the preliminary identification of the material (unless it has been significantly changed by conservation), and is primarily technological rather than geological. The comprehensive description of the technological workshop for heterogeneous artifacts is possible primarily by sampling at different technological locations. In the case of artifacts made of alloys with different visual characteristics, it seems intuitive; for objects made of silver alloys, however, such important details may be omitted during the macroanalysis.

The study of the geological provenance of archaeological objects seems to be still a complicated matter, despite the availability of measurement tools of various specifications. The results of lead isotope analyzes are unambiguous when dealing with historically recognized artifacts for which the knowledge of the deposits used in a given period is almost certain. In the case of artifacts from the 10<sup>th</sup>–12<sup>th</sup> centuries (and even earlier and later) from Poland and other territory, where at that time territorial and commercial mobility is significant and historical data – including information on the exploited deposits – may be incomplete, provenance study is difficult. Moreover, the melting and technological factors related to the processing of silver, copper and lead ores should be taken into account in such studies.

Nevertheless, the presented results of studies on a series of early medieval silver items indicate the existence of a relationship between the metallurgy and goldsmiths of that time and the Czech region,<sup>55</sup> while goldsmithing additionally linked to workshops at Kievan Rus.<sup>56</sup> The functional contribution of Polish metallurgical centers also seems to be significant, and here the settlement in Dąbrowa Górnicza-Łosień should also be considered as a supplier of both silver and lead (separately) from the 10<sup>th</sup> century, when the phenomenon of depositing hoards still functions, with numerous cross denarii and jewellery. The research results so far are only an introduction to a broader study of archaeological material relating to the functioning of early medieval silver, lead and also tin (associated with the presence of objects made of lead) metallurgy in Poland.

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<sup>55</sup> Štefan, Zavřel, Taibl 2020; Mišta-Jakubowska *et al.* 2019a; Kolářová, Děd, Ottenwelter 2014.

<sup>56</sup> Mišta-Jakubowska *et al.* 2021.

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## MIKROANALIZA WZESNOŚREDNIOWIECZNYCH ZABYTEKÓW ARCHEOLOGICZNYCH WYKONANYCH ZE STOPU SREBRA

(Streszczenie)

Aby udzielić odpowiedzi na pytania spoza obszaru zainteresowania konwencjonalnego warsztatu historyka, nowoczesne badania archeologiczne korzystają z metod fizykochemicznych. Dotyczy to m.in. badań archeometalurgicznych, czyli badań materiałowych zabytków archeologicznych wykonanych ze stopów metali opartych na określaniu m.in. ich składu pierwiastkowego i izotopowego. Wyniki takich analiz z reguły umożliwiają badanie proveniencji geologicznej oraz przybliżanie techniki wykonania zabytku w oparciu o interpretację wyników analiz metalurgicznych rozpatrywanych w odniesieniu do danych historycznych i geochemicznych. Praca przedstawia propozycję metodologii i wstępne wyniki prac badawczych nad srebrem wczesnośredniowiecznym pochodzącym ze skarbów z terenu Polski. W projekcie przeanalizowano około 200 obiektów z ośmiu skarbów, przy czym w niniejszej pracy, w celu pokazania metody opracowania danych, przedstawiono wybrane wyniki. Mikroinwazyjna technika spektrometrii mas w plazmie indukcyjnie sprzężonej z ablacją laserową (LA-ICP-QMS) została użyta do oznaczenia stosunków izotopowych ołowiu w zabytkach. Uzyskane dane uwzględniające niejednorodność obiektów opracowano przy użyciu modelowania statystycznego (KDE: jądrowy estymator gęstości) próbując zmniejszyć dla zastosowanej statystyki pomiarowej 40 punktów/obiekt w ten sposób błąd oznaczeń wynikający ze specyfikacji techniki. Wyniki porównano z danymi złożowymi przeprowadzając analizę proveniencyjną. Badania proveniencji pokazały, iż dominującym źródłem kruszcza jest zastosowanie przetopu azjatyckich dirhamów. Niemniej ze względu na ograniczenia techniki LA-ICP-QMS badania te muszą zostać zweryfikowane z użyciem techniki o lepszej rozdzielczości masowej wymagającej pobierania próbek (badania obecnie są prowadzone we współpracy z laboratorium geochemicznym w USA). Wstępne wyniki badań izotopowych dla poszczególnych grup technologicznych zabytków, tj. monet, ozdób i srebra surowego wsparto analizą zmienności składu pierwiastkowego w mikroobszarach wykonaną przy użyciu elektronowej mikroskopii skaningowej z mikroanalizą rentgenowską (SEM-EDS). Wyniki badań pozwoliły na opis materiałowy zjawiska istnienia rdzeni w monetach typu denary krzyżowe wyróżniając w nich dwie odmiany rdzenia tj. na bazie miedzi i mosiądzu z innym układem geometrycznym. Denary krzyżowe ze względu na ich masowe bicie w zestawieniu z istnieniem w nich rdzeni i znacznym udziałem w ich produkcji srebra źle oczyszczonego, wydają się być produktem szybkiego pozyskiwania srebra ze złóż galenowo-sfalerytowych, choć analizy izotopowe wskazują na pochodzenie srebra z przetopu dirhamów. Wobec tego pochodzenie kruszcza użytego w ich produkcji wydaje się nadal niejasne, być może sprawa wymaga wstępnego różnicowania monet w zależności od ich technologii wykonania i wymaga prowadzenia badań na większą skalę na licznej grupie badawczej. Grupa analizowanych placków srebrnych pokazuje zróżnicowanie ich na stopnie oczyszczania przy użyciu obcego ołowiu. Przy czym dominującym nośnikiem kruszcza są tutaj również dirhamy natomiast pochodzenie ołowiu kupelacyjnego można wiązać z użyciem złóż z terenu Wyżyny Śląskiej i Krakowa.

Adres autorki/The author's address:

dr Ewelina Miśta-Jakubowska

National Centre for Nuclear Research

Andrzeja Sołtana 7, PL 05-400 Otwock, Poland

Ewelina.Mista@ncbj.gov.pl

ORCID: 0000-0002-0053-8711



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DARIUSZ ADAMCZYK

**SYMBOLISCHE KOMMUNIKATION, TRANSKONTINENTALE  
HANDELSNETZWERKE, RAUBÖKONOMIE: KONTEXTE UND  
KONSTELLATIONEN DER SILBERZIRKULATION UND -REDIS-  
TRIBUTION ZU ZEITEN BOLESŁAWS DES TAPFEREN**

**ABSTRACT:** The reign of Bolesław I the Brave has for many years been very popular among historians and numismatists. The political history of his rule is at the centre of the research of the first one, and the history of his coinage of the latter. On the other hand, much less attention is paid to the fiscal and prestigious-symbolic contexts of the circulation of bullion, which at the turn of the 10<sup>th</sup> and 11<sup>th</sup> centuries consisted almost exclusively of imported coins and silver in a non-monetary form, mainly jewellery. This raises many questions: how did access to luxury goods affected the exercise of power? What equivalents and under what circumstances were foreign coins purchased? How did the desire to take control of the silver distribution networks between Meissen, Prague and Kiev in the first decades of the 11<sup>th</sup> century directed Bolesław's expansion? Methodologically, the article combines the analysis of the hoards with the interpretation of written sources.

**ABSTRAKT:** Panowanie Bolesława Chrobrego cieszy się od wielu lat dużym zainteresowaniem zarówno historyków, jak i numizmatyków. W centrum badań tych pierwszych znajdują się dzieje polityczne jego władztwa, tych drugich jego mennictwo. Zdecydowanie mniej uwagi natomiast poświęca się fiskalnym i prestiżowo-symbolicznym kontekstom obiegu kruszcu, który na przełomie X i XI w. składał się niemal wyłącznie z importowanych monet oraz srebra w postaci niemonetarnej, głównie biżuterii. To rodzi wiele pytań: jak dostęp do towarów luksusowych wpływał na sprawowanie władzy? Za jakie ekwiwalenty i w jakich okolicznościach nabywano obce monety? Jak chęć przejęcia kontroli nad sieciami dystrybucji srebra między Miśnią, Pragą a Kijowem w pierwszych dekadach XI stulecia kierunkowała ekspansję Bolesława? Metodologicznie artykuł łączy analizę skarbów z interpretacją źródeł pisanych.

**KEYWORDS:** coins, jewellery, expansion of early states

**SŁOWA KLUCZOWE:** monety, biżuteria, ekspansja wczesnych państw

Die Geschichte der piastischen Monarchie unter Bolesław dem Tapferen (992–1025) erfreut sich seit vielen Jahren großen Forschungsinteresses. Der Fokus liegt hierbei grundsätzlich entweder auf den politischen, militärischen, diplomatischen und kirchlichen Konstellationen<sup>1</sup> oder auf der Analyse der einheimischen Münzprägung des ersten Königs von *Polonia*.<sup>2</sup> Weitaus weniger Aufmerksamkeit wird hingegen der Kontextualisierung der Zirkulation und Verteilung der importierten Münzen und von nicht-monetärem Silber in Form von Schmuck, Barren oder Gusskuchen geschenkt.<sup>3</sup> Dies überrascht ein wenig angesichts der Tatsache, dass in der Währungslandschaft jener Zeit im östlichen Europa fremde Produkte überwogen: Allein der Anteil geprägten Edelmetalls in dem Schatzfund von Lisówek bei Słubice (*tpq* nach 1014) übersteigt um mehr als das Zehnfache die Zahl der unter Bolesław I. emittierten, bislang bekannten Denare. Dazu mehr später.

Das fiskalisch-administrative System der Piasten beschränkte sich im frühen 11. Jahrhundert auf das personale Geflecht der Dynasten und funktionierte auf zwei Ebenen: die eine beruhte auf den Einnahmen von Abgaben in Naturalien, deren Zweck darin bestand, die Alltagsbedürfnisse der Elite zu befriedigen und/oder Warenäquivalente für hochwertige Importe zu beziehen. Belastet wurden – zumindest anhand von späteren, aus dem 13. Jahrhundert stammenden Quellen – die einzelnen Dörfer oder Siedlungsgefülle, die *opola/osady*. Kollektive Abgaben entrichteten die Siedelgemeinschaften je einen Ochsen und oder eine Kuh. Zudem wurden Sonderabgaben für die Nutzung des Waldes (vermutlich *narzaz*) sowie für die Nutzung der Gewässer geleistet. Individuell zahlten die Bewohner des piastischen Reiches eine Steuer in Form von Getreide, Honig oder Fellen auf das einzelne Zugtier (*powołowe*) oder den einzelnen Hof (*podworowe*).<sup>4</sup> Letztere konnten auch auf den Burgwallmärkten gegen Silbermünzen eingetauscht werden. Darunter befanden sich die Marder- und Fuchsfelle<sup>5</sup>, überdies Eichhörnchen.<sup>6</sup> Jagdsiedlungen wie *Bobrowniki* (von Biberwärtern)<sup>7</sup> bei Łekno deuten ebenfalls zum Teil kommerzielle Funktionen an; nur am Rande ergibt sich, dass aus Tarnowo Pałuckie, knapp 3 km von Łekno entfernt, ein nach 1005 deponierter Schatz von Schmuckstücken und gut 800 Münzen (hauptsächlich Dirhems) stammt, die womöglich ein Produkt des Handels mit Biberpelzen waren.<sup>8</sup> Im Zusammenhang mit

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<sup>1</sup> Zu neueren Publikationen siehe Strzelczyk 1996; Urbańczyk 2017. Zu Einzelaspekten siehe jüngst Kollinger 2014.

<sup>2</sup> Bogucki, Magiera 2015; Garbaczewski 2015; Suchodolski 2019; Suchodolski 2021b.

<sup>3</sup> Im Hinblick auf Schmuck neulich Duczek 2018.

<sup>4</sup> Grundsätzlich Modzelewski 1975.

<sup>5</sup> *Kodeks dyplomatyczny Wielkopolski*, Nr. 7.

<sup>6</sup> In Höhe von vier Fellen vom Hof. *Kodeks dyplomatyczny klasztoru tynieckiego*, Nr. 1.

<sup>7</sup> Samsonowicz 1991, Karte auf S. 331.

<sup>8</sup> Wenn nicht anderweitig ausgewiesen, werden die im Text genannten Funde anhand ihrer Fundortnamen in den Inventaren zitiert. FMP I 2017.

der Übergabe der Burg Saalfeld samt dem gesamten Zubehör sowie des Eigentums in Orla an den erzbischöflichen Vogt Christian durch Richeza (Gattin Mieszko II.) nach 1057 wird der Honig- und Wachszehnt erwähnt.<sup>9</sup> Es erscheint ziemlich wahrscheinlich, dass die im piastischen Einflussbereich lebenden Bevölkerungsgruppen über derartige Walderzeugnisse verfügten, die sie bei den Sachsen gegen Denare eintauschen konnten.

Die zweite Ebene umfasste den Kreislauf von elitären Gütern, die wiederum zwei Funktionen erfüllten: Einerseits dienten sie der Entlohnung der Gefolgsleute; andererseits fungierten sie als Transmissionsriemen der symbolischen Kommunikation zwischen dem Herrscher und seinem Umfeld. Der Bericht des Ibrahim ibn Jaqub in der Al-Bekri-Version weist ausdrücklich darauf hin, dass Tribute und Abgaben in Gestalt von Edelmetallen an Bolesławs Vater, Mieszko I. (ca. 960?–992), entrichtet wurden.<sup>10</sup> Bei welchen Bevölkerungsgruppen diese eingesammelt werden konnten, habe ich an anderer Stelle ausführlich geschildert.<sup>11</sup> Hier sei lediglich angemerkt, dass im frühen 12. Jahrhundert pomoranische Herzöge den Piasten einen Tribut in Höhe von 300 Mark Silber jährlich zahlten.<sup>12</sup> Das entsprach gut 60 kg Silber, stellte also damals das Äquivalent von etwa 48.000 Denaren dar, für die man im Schnitt 250 bis 350 männliche bzw. weibliche Sklaven erwerben konnte. Wenn diese Angaben auch für das frühe 11. Jahrhundert zugetroffen haben und wenn Bolesław der Tapfere seine angeblich aus mindestens 16.900 Kriegerern bestehende Gefolgschaft gänzlich und einzig mit der in Pommern erhobenen „Silbersteuer“ entlohnt hätte, dann wären pro Kopf jährlich knapp 2,5 Denare je 1,5 g angefallen – eine Summe, die nicht einmal einen gewöhnlichen Krieger, von den *comites* ganz zu schweigen, beeindruck hätte. Man wird kaum davon ausgehen können, dass die Gemeinschaften in Masowien, Schlesien oder Klempolen einen wesentlich höheren Tribut in Form von Edelmetallen zu zahlen vermochten. Der Bedarf an Silber überstieg gewiss das Angebot.

Die Konsolidierung von Herrschaft an der Wende vom 10. zum 11. Jahrhundert bezog sich auf weite Teile Ost- und Nordeuropas und ging mit den Expansionsbestrebungen der Piasten ebenso wie der Skandinavier und der Kiever Rus' einher. Die von Sven Gabelbart und Knut dem Großen, Bolesław I. dem Tapferen oder Vladimir dem Großen zu dieser Zeit vorgenommenen Versuche, ihre Machtbereiche auszuweiten, erforderten eine systematische Eintreibung von Abgaben, die die Bildung von Großreichen zuerst bedingten und zugleich wesentlich ausmachten. Denn der Herrscher benötigte Mittel, um seine Krieger entlohnen zu können. Die Krieger wiederum garantierten neue Einnahmen, mit denen sie selbst finanziert

<sup>9</sup> *Regesten* 1987, Nr. 740, S. 293.

<sup>10</sup> *Relacja Ibrahima Ibn Ja'kuba* 1946, S. 50; Zaborski 2008, S. 41 und Kommentar auf S. 43–51.

<sup>11</sup> Adamczyk 2020, S. 65–66.

<sup>12</sup> Herbord 2005, II/30, S. 394–395.

wurden. Auf diese Weise entstand ein Rückkopplungsmechanismus, der die Logik der Expansion verkörperte. Folglich legten die Dänen den Angelsachsen Tribute in Form von Silber auf und beherrschten teilweise das Nordseeimperium zwischen Dublin und Lund; Vladimir I. brachte verschiedene Stämme zwischen Litauen, Ostpolen und dem Okaraum unter seine Kontrolle; schließlich verleibte Bolesław I. der Tapfere das Milzener Land und die Lausitz im Westen, Mähren und die Slowakei im Süden sowie die Červinischen Burgen im Osten in die piastischen Netzwerke ein. Die Besetzungen Prags und Kievs hingegen blieben Episoden.

Dabei setzten sich die von den Piasten, den Dänen und den Rus' errichteten (See)Imperien aus lose verknüpften, bunten Herrschafts- und Handelsgeflechten zusammen, die über zentrale Burgwälle und/oder kommerzielle Knotenpunkte zusammengehalten wurden.<sup>13</sup> Diese Orte fungierten als Sammelstellen für Abgaben, Tribute, „Geschenke“ der benachbarten Völker, für Handels- und Beutegut. Sie stellten also regionale „Verteilungsmaschinen“ von Edelmetallen, Luxusgütern und Sklaven dar. Parallel ließ die Notwendigkeit, Gefolgsleute entlohnen und das Prinzip der gesellschaftlichen Reziprozität manifestieren zu müssen, die Nachfrage nach Silber stärker als je zuvor steigen.

#### DIE EDELMETALLE ZUR SCHAU STELLEN UND VERTEILEN: SILBER ALS TRANSMISSIONSRIEMEN DER SYMBOLISCHEN KOMMUNIKATION ZWISCHEN DEM HERRSCHER UND SEINEN GEFOLGSLEUTEN

Die primäre Aufgabe des Herrschers bestand darin, seine Gefolgsleute mit kostbaren und wertvollen Gütern zu beschenken: teuren Waffen, schicken Stoffen, Edelmetallen in Form von Münzen wie Schmuckstücken. Die Gaben aus dem Schatz „dienten dem König zur Herstellung des Konsenses mit der Kriegergefolgschaft“, und „der Schatz ermöglichte auf diese Weise die ständig notwendige Reproduktion der Königs- und Fürstenherrschaft durch die Redistribution der aus der königlichen Stellung gewonnenen Ressourcen, die Schaffung symbolischen Kapitals und die Beteiligung der Krieger am Erfolg des Königtums“.<sup>14</sup> Die Verfügung über Silber stellte Führungsqualitäten unter Beweis und verbesserte die Stellung seines Besitzers gegenüber Konkurrenten. Die neuen Dynasten konnten mit Silber sich Ruhm und guten Ruf verschaffen und neue Gefolgsleute gewinnen. Die Logik, Edelmetalle anzuhäufen, sie zur Schau zu stellen und zu verteilen, um so viele Klienten wie möglich an sich zu binden, infolgedessen Prestige und Autorität weiter zu steigern, war demnach für die Machtsicherung und -konsolidierung von zentraler Bedeutung.<sup>15</sup>

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<sup>13</sup> Zur Verflechtung kommerzieller, fiskalischer und politischer Motive beim Geldumlauf siehe Adamczyk 2013.

<sup>14</sup> Hardt 2004, S. 302.

<sup>15</sup> Grundsätzlich Adamczyk 2014b; Adamczyk 2018.

Die Kultur der Zurschaustellung von Luxusgütern und die dadurch erzeugte Kommunikation der herrschaftlichen Symbolik demonstrieren jene Passagen aus den Sagas, die den Herrscher als „Herrn der Ringe“ erscheinen lassen: So zog König Hakon (930–960) „[...] einen Goldring vom Arm, der eine Mark wog, und gab ihn Höskuld, und ein Schwert gab er ihm als zweites Kleinod, das auf eine halbe Mark Goldes zu stehen kam. Höskuld dankte dem Könige für die Gaben und für alle die Ehre, die er ihm erwiesen hatte“.<sup>16</sup>

Diese Passage aus der „Laxdoela saga“ verdeutlicht die Praxis der Verteilung von kostbaren Gütern und legt nahe, dass jenes Textfragment aus der Chronik des Gallus Anonymus, in dem den Gefolgsleuten und Kriegern zurzeit von Bolesławs Herrschaft nachgesagt wird, goldene Halsringe und Armreife im Überfluss zu besitzen, den Frauen des Hofes wiederum, dass sie das Gewicht ihres Schmuckes kaum tragen können, nicht unbedingt der Ironie des unbekanntenen Autors geschuldet sein wird. Sie spiegelt eher das Selbstverständnis der Elite wider.<sup>17</sup> Thietmar von Merseburg, der Zeitgenosse Bolesławs des Tapferen, kommentiert sein Treffen mit Otto III. in Gnesen im Jahr 1000 wie folgt<sup>18</sup>:

„Jede Schilderung der prächtigen Aufnahme des Caesars durch ihn und des Geleits durch sein Land bis nach Gnesen wäre unsagbar unglaublich [...] Nach Regelung aller Fragen ehrte der Herzog den Kaiser durch reiche Geschenke und – das erfreute ihn am meisten – 300 gepanzerte Krieger.“

Damit wollte der Piasten-Herzog in erster Linie nicht den jungen Kaiser ehren, sondern sein eigenes Gefolge, die *comites* wie die *nobiles*, beeindrucken.<sup>19</sup> Die Großzügigkeit des Herrschers wurde ja von aktuellen und potenziellen Klienten genauestens beobachtet. Diese Logik bildet die in der Nestorchronik übermittelte Geschichte von Igor und Svenel'd ab: „In diesem Jahr sagte die Gefolgschaft zu Igor: Die Jungmannen des Svenel'd sind reichlich versehen mit Waffen und Kleidung; wir aber sind bloß. Ziehe, Fürst, mit uns auf Tribut, so wirst du Gewinn haben und wir.“<sup>20</sup>

Die Bereitschaft des Herzogs, Luxuswaren zu erlangen und zu verteilen, konnte die Machtkonstellationen innerhalb des Reiches beeinflussen und die Koordinaten der Herrschaftsausübung verschieben. Denn: „Wenn den Herrscher das Glück verlässt, dann wird er unbrauchbar für die Gemeinschaft und verliert die Berechtigung, sie zu regieren, sodass er abgesetzt werden kann.“<sup>21</sup> So erging es dem böhmischen Herzog Boleslav III., der seiner Pflicht zur „Freigiebigkeit“ nicht mehr nachgehen

<sup>16</sup> *Laxdoela saga* 1995, S. 91.

<sup>17</sup> *Gallus Anonymus* 1978, I/12, S. 69. Zur vermeintlichen Ironie in der Textpassage siehe Althoff 2002, S. 302–306. Althoffs Thesen diskutiert kurz Curta 2013, S. 122–123.

<sup>18</sup> Thietmar 1974, IV/45–46, S. 160–163.

<sup>19</sup> Vercamer 2010.

<sup>20</sup> *Die Nestorchronik* 2001, S. 66.

<sup>21</sup> Matla 2015, S. 278.

konnte.<sup>22</sup> Der Herrscher verlor seine Legitimität, wenn er nicht imstande war, die Redistribution des Reichtums zu gewährleisten.

Zur Machtsymbolik gehörten auch jene einheimischen Denare, die die Herrschaft Bolesławs manifestieren sollten. Etliche von ihnen trugen die Inschrift DVX INCLITVS, PRINCES POLONIE oder *REX* und sollten somit die herausgehobene Stellung des Herzogs demonstrieren. Andere wiederum gelten als Nachprägungen von verschiedenen Münzsorten, die teilweise miteinander kombiniert wurden. Hierzu zählen in erster Linie die Otto-Adelheid-Pfennige, die angelsächsischen Ethelred-Pennys, aber auch bayerische und böhmische Denare.<sup>23</sup> Sie dienten vermutlich der Entlohnung der Krieger. Wenn wir annehmen, dass Bolesław den Kern seiner multiethnischen (angeblich aus mindestens 16.900<sup>24</sup> Männern bestehenden) Gefolgschaft zumindest teilweise mit Edelmetallen beschenkte (wie nach Ibrahim ibn Jaqub sein Vater Mieszko I.), dann muss der Bedarf an Münzen enorm gewesen sein. Wir sollten im Auge behalten, dass die allermeisten Denare vermutlich in den 1000er und 1010er Jahren, während der Kriege mit Heinrich II., geschlagen wurden. Die unterkomplexe Organisation des Münzwesens lässt freilich auf einen geringen Ausstoß schließen<sup>25</sup>, sodass die Nachfrage nach Geldstücken kaum befriedigt werden konnte.

Der Umlauf von Silber im piastischen Reich war an der Schwelle zum 11. Jahrhundert wesentlich durch Prestige geprägt. Bereits die ältesten aus Großpolen stammenden Schätze enthielten neben Münzen Schmuck (Kalisz-Piwonice 934/935, Dębicz 936/937, Ochle 938/939, Obra I 941–943, Gościejewice 942/943).<sup>26</sup> Die Anzahl von Ohr- und Schläfenringen, Arm- und Halsbändern, Kaptorgen, grundsätzlich nichtmonetären Edelmetallstücken stieg deutlich in Horten aus den 970er und 980er Jahren (z. B. Obrzycko 973, Zalesie 976, Kąpiel um 983, Obra II 985, Dzierżnica II 980/981–989/990).<sup>27</sup> Der wohl spektakulärste Fund (aus Dzierżnica bei Giecz, wo sich zu jener Zeit ein wichtiger Burgwall befand) umfasste 15,6 kg Silber, darunter etwa 1.020 Schmuck-, Barren- bzw. Gusskuchenstücke. Somit stellte er einen beachtlichen Reichtum dar, der wohl von Mieszko I. selbst oder einem seiner engsten Gefolgsleute deponiert wurde.<sup>28</sup> Dieser Trend zur Thesaurierung von Edelmetallen setzte sich in den 990er bis 1010er Jahren fort. Zu den wichtigsten Horten mit Rohsilberelementen gehören in chronologischer Reihenfolge folgen-

<sup>22</sup> Matla 2015, S. 280–281.

<sup>23</sup> Bogucki, Magiera 2015; Suchodolski 2019.

<sup>24</sup> Diese von Gallus Anonymus genannten Zahlen kommentiert Bogacki 2007, S. 178–180.

<sup>25</sup> Suchodolski 2019, besonders S. 213–214.

<sup>26</sup> FMP I 2017. Der Hort von Kalisz-Piwonice wird als Kalisz V-Szałe (Piwonice) ausgewiesen.

<sup>27</sup> FMP I 2017.

<sup>28</sup> Adamczyk 2022.

de Depots: Kąty 992–995, Kalisz-Rajsków 996–999, Murczyn 999, Jarocin 1004, Gniezno-Osiniec 1005, Tarnowo Pałuckie 1005, Pomorsko 1006, Ulejno 1006, Poznań IV 1012, Lisówek 1014, Gniezno III–Umgebung 999–1015, Kalisz I–Majków 1016, Kinno–Skubarczewo 1017, Janków Drugi I 1018, Stary Dworek 1018, Modlica 1019/1020, Leszno–Umgebung 1021.<sup>29</sup> Es fällt auf, dass Schätze in verschiedenen Teilen Zentralpolens begegnen – sowohl dem Kerngebiet der piastischen Herrschaft mit Gnesen und Posen als auch an ihren Rändern (im Westen beispielsweise an der heutigen deutsch-polnischen Grenze bei Słubice). Schmuck enthielten zudem mehrere Hortfunde in Masowien, Schlesien, Kleinpolen und Pommern.<sup>30</sup> Etliche von ihnen fungierten sicherlich als Rohstoffdepots für Goldschmiede.

Eine weitere wichtige Erkenntnis aus der Analyse der Funde ist die Tatsache, dass mehrere Rohsilberstücke in zerhackter Form vorliegen. Für diesen Sachverhalt lassen sich verschiedene Konfigurationen anführen, die bereits an anderer Stelle diskutiert wurden.<sup>31</sup> Hier soll lediglich hervorgehoben werden, dass Produktion und Umlauf von Schmuck vorwiegend der symbolischen Kommunikation auf elitärer Ebene dienten. Unter diesem Begriff verstehen wir Handlungen, die die Aufnahme und/oder Aufrechterhaltung gesellschaftlicher Interaktionen gewährleisten, indem Edelmetalle zur Schau gestellt und Gaben verteilt wurden. Die Redistribution von Gaben erscheint als Bekundung und Absicherung von Freundschaft, die der Herrscher in letzter Instanz durch die Zerteilung wertvoller Güter garantieren konnte. Auf diese Weise wurden diese der Zirkulation entzogen und ihr Prestigecharakter beibehalten. Ein zweites „Leben“ erhielten sie eventuell als Rohstoff für die erneute Anfertigung von Schmuck.<sup>32</sup>

Die Edelmetalle in zerhackter wie vollständiger Gestalt fungierten folglich als Transmissionsriemen der symbolischen Kommunikation zwischen dem Herzog und seinen Gefolgsleuten. Wer gute Krieger anzuwerben, also sie zu verpflegen und entsprechend zu entlohnen<sup>33</sup> wusste, der konnte den benachbarten Stämmen Tribute auferlegen und somit seinen Machtbereich erweitern. Damit trug das Silber zur Festigung der Herrschaft der neuen Eliten bei.

Wenn die Machtmechanik der Piasten im frühen 11. Jahrhundert von deren Fähigkeit abhing, sich Zugang zu Luxusgütern zu verschaffen und zu sichern, muss die Frage nach der politischen Ökonomie gestellt und beantwortet werden: Wie gelangten die Dynasten an Edelmetalle?

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<sup>29</sup> FMP I 2017.

<sup>30</sup> Adamczyk 2020, S. 203–206, 208.

<sup>31</sup> Adamczyk 2022.

<sup>32</sup> Adamczyk 2022.

<sup>33</sup> Siehe *Relacja* 1946, S. 50.

## GEOÖKONOMIE UND GEOPOLITIK: SILBERSTRÖME UND HANDELSNETZWERKE ZWISCHEN MEISSEN, PRAG UND KIEV

Die Herrschaft Bolesławs des Tapferen fiel zeitlich mit der Transformation der transkontinentalen Netzwerke im westlichen Eurasien zusammen. Im 10. Jahrhundert kam der Löwenanteil der Münzmasse im östlichen Europa aus dem Reich der Samaniden. Die Silberminen Usbekistans arbeiteten auf Hochtouren, um die Märkte vom Ural im Nordosten bis in den keltischen Rand im Westen zu bedienen. Die piastischen Herrschaftszentren – in Ermangelung einheimischer Rohstoffquellen und der Kompetenzen, Denare selbst massenhaft zu emittieren – schlossen sich also an eine Interaktionsökumene an, die weite Teile des westlichen Eurasiens umfasste. In dieser Zeit versorgten sich die Piasten mit arabischen Münzen, den sog. Dirhems, entweder über den Fernhandel oder über Tribute und Abgaben, die sie verschiedenen Bevölkerungsgruppen in Großpolen, Pommern oder Masowien auferlegten.<sup>34</sup> Das Streben nach Edelmetallen beeinflusste somit die Expansionsdynamik der frühen Piasten-Herrschaft auf doppelte Weise: zum einen indem die Elite die über Silber verfügenden Stämme direkt zu „besteuern“ versuchte; zum zweiten indem sie ihnen Abgaben in Form von Naturalien abpresste bzw. Sklaven erbeutete, die dann als Warenäquivalente gegen Edelmetalle eingetauscht werden konnten. Dabei gelang es den Piasten, durch die Unterwerfung der benachbarten Räume, Pommern im Norden, Masowien im Osten sowie Schlesien und Kleinpolen im Süden, den Zugriff auf die Dirhemverteilungsnetzwerke der Wolliner, der Kiever Rus’ und der Böhmen zu erlangen.<sup>35</sup>

Die Integrationswirkung der arabischen Silberströme funktionierte nach dem Prinzip der „kommunizierenden Gefäße“. Folgerichtig: Als der Zufluss von Dirhems um 980 zu schrumpfen begann, wurde automatisch die politische Ökonomie der frühen Reiche beeinflusst. Die Dynasten waren gezwungen, neue Kontakte zu knüpfen. In die von den Piasten beherrschten Gebiete gelangten Denare aus dem römisch-deutschen Reich in größeren Mengen bereits in den 970er Jahren, wovon z. B. der Hort von Obrzycko (um 973) zeugt. Sie stammten zum großen Teil aus Bayern und spiegelten womöglich die Annäherung zwischen Mieszko I. und Heinrich dem Zänker seit etwa 974 wider. Ein Politikwechsel hin zu freundlicheren Beziehungen mit den Ottonen erfolgte um 985 und könnte nicht zuletzt in dem Bestreben begründet gewesen sein, den Zusammenbruch der arabischen Münzströme durch die Ankurbelung sächsischer Pfennigimporte zu kompensieren, die seit 983/985 massenweise geprägt wurden.<sup>36</sup>

<sup>34</sup> Adamczyk 2018.

<sup>35</sup> Adamczyk 2014a.

<sup>36</sup> Ilisch 2015.

An der Schwelle zum 11. Jahrhundert vollzog sich die endgültige Umorientierung der Richtung der Silberströme<sup>37</sup>, die sich leicht am Inhalt größerer Schatzfundes aus Großpolen verfolgen lässt, welche zumindest ansatzweise die Struktur des Münzstocks abbilden. Der oben bereits erwähnte Hort Dzierznica II enthielt knapp 21.000 meist zerhackte Münzen, von denen Dirhems rund 96 Prozent ausmachten; darunter befand sich die zwischen 980/981 und 989/990 geprägte Schlussmünze. In dem Fund von Kalisz-Rajsków, dessen Deponierung in die Anfangsjahre Bolesławs I. Herrschaft fiel, betrug der Anteil arabischer Emissionen noch etwa 66 Prozent. Ähnlich wie in Dzierznica stammen die jüngsten Dirhems aus der Zeit um 980. Die Zahl der Pfennige aus dem römisch-deutschen Reich stieg in Kalisz-Rajsków auf 17 Prozent (Tabelle 1).

Tabelle 1. Die geografische Struktur des Schatzfundes von Kalisz-Rajsków (nach 996–999)

Herkunftsregion	Zahl der Münzen	Prozentanteil
Römisch-deutsches Reich	744 (darunter 272 Kreuzdenare)	17
England und Skandinavien	140	3
Imitationen	11	>1
Kalifat	2.820	66
Böhmen	269	6
Piastisches Reich	1	>1
Andere	9	>1
Unbestimmt	280	6
<b>Insgesamt</b>	<b>4.274</b>	<b>100</b>

Schließlich stellten Dirhems in dem Depot von Lisówek lediglich gut ein Prozent des Münzstocks dar, obgleich unter ihnen interessanterweise einige ganz „frische“, nach 1000 geschlagene Exemplare der Marwaniden und der Uqayliden auftauchten. Dieser Schatz bestand schon zu 88 Prozent aus westlichen Denaren (Tabelle 2).

Der Fundort bei Słubice, im Siedlungsraum der Lebuser, deutet auf eine wichtige Transitfunktion zwischen Magdeburg und Posen hin. Bei näherem Hinsehen erscheint das Bild komplexer. Gewiss strömten die Otto-Adelheid-Pfennige und die Kreuzdenare aus bzw. über Magdeburg nach Lebus ein. Pfennige aus den verschiedenen Regionen der heutigen Niederlande (vor allem Friesland), Belgien und den Rheingebieten konnten hingegen über die Nordseehäfen das Emporium von Haithabu erreicht haben, um dann – unter Hinzuziehung der angelsächsischen und skandinavischen Münzen – nach Wollin und Stettin verfrachtet zu werden. Von dort gelangten sie zum mittleren Oderlauf. Bayerische und böhmische Gepräge dürften

<sup>37</sup> Adamczyk 2007; Adamczyk 2012.

Tabelle 2. Die geografische Struktur des Schatzfundes von Lisówek (nach 1014)

Herkunftsregion	Zahl der Münzen	Prozentanteil
Römisch-deutsches Reich	4.410 (darunter 526 Kreuzdenare)	88
England und Skandinavien	128	2,5
Imitationen	95	2
Kalifat	80	>1
Böhmen	63	>1
Piastisches Reich	12	<1
Andere	9	<1
Unbestimmt	200	4
<b>Insgesamt</b>	<b>4.998</b>	<b>100</b>

wiederum aus dem Süden geflossen sein. Die erwähnten Dirhems ebenso wie jene von Bolesław dem Tapferen emittierten Denare kamen höchstwahrscheinlich direkt aus Großpolen (womöglich zusammen mit den westslawischen Silberstücken, die als Imitationen deutscher Münzen gelten). Den Inhalt des Lisówek-Hortes runden zum Teil fragmentierte Hals- und Armreife, Ohr- und Schläfenringe, darüber hinaus Barren bzw. Gusskuchen ab. Das Silber im Wert von etwa 50 Mark gehörte vermutlich einem lokalen Häuptling, der seinen Reichtum aus der strategischen Lage als Dreh- und Angelpunkt zwischen West und Ost bezog und mit den Piasten engste Kontakte unterhielt (wenn nicht deren „Statthalter“ in dieser Region war).

Die Knüpfung kommerzieller Beziehungsgeflechte mit den östlichen Reichsgebieten begünstigte der Ausbau des Siedlungsnetzes im Hinterland von Posen, das sich entlang der Warthe und ihrer Zuflüsse konzentrierte. Die Siedlungen an der Kopla schlossen sich an den Weg von Posen zu der wichtigen Wasserstelle an der Warthe bei Śrem und dann nach Schlesien an; jene an der Bogdanka ermöglichten Zugang zu der Straße von Posen über Bytyń – wo eine Grabanlage mit Sporen gefunden wurde, was auf die Anwesenheit von Kriegeren hindeutet – nach Westen, von wo der Weg nach Lebus oder Pommern führte. Mit der Route nach Westen hing vermutlich ebenfalls die Existenz der Siedlungen am Junikowski-Bach sowie dem Fluss Wirynka zusammen, von denen über Niepruszewo (hier sind wieder Funde der Kriegerelite bezeugt), Zbąszyn und Krosno die Lausitz, das Milzener Land oder Meißen erreicht werden konnten.<sup>38</sup>

Im Jahr 1002 eroberte Bolesław der Tapfere das Milzener Land, die Lausitz sowie Meißen und brachte somit einen wichtigen Münzzuflussweg aus dem Reich nach Schlesien und Großpolen unter seine Kontrolle. Um die Burg Meißen in seiner Gewalt zu behalten, war Bolesław bereit, eine stattliche Summe zu bieten.<sup>39</sup> Unter

<sup>38</sup> Kurnatowska 2004, S. 74–75, S. 78–79.

<sup>39</sup> Thietmar 1974, V/16–18, S. 210–211.

Heinrich II. – möglicherweise nach ca. 1015 – wurde in der Meißen-Oberlausitz-Region, vermutlich in Meißen, mit der Ausprägung neuer Randpfenniggruppen begonnen.<sup>40</sup> Wer diese Region kontrollierte, konnte also nicht nur die Einnahmen aus dem Transithandel beziehen und Steuern in Form von Silber eintreiben, sondern auch die Prägung von Münzen kontrollieren. Auf diese Weise verzahnte sich die Geopolitik mit der Geoökonomie.

Bereits vor knapp 20 Jahren hat der deutsche Archäologe Joachim Henning erkannt, dass sich die Kriege zwischen Bolesław dem Tapferen und Heinrich II. von 1002 bis 1018 grundsätzlich auf die Achse Meißen–Bautzen–Görlitz–Breslau konzentrierten. Ihm zufolge „[...] wird alles mögliche in Bewegung gesetzt, um neuen Zugriff auf Orte entlang jenes bedeutenden europäischen Verkehrsweges zu gewinnen bzw. den alten Zugriff darauf zu behaupten, der das Rheinland über Erfurt, Meißen und das Milzenerland mit Kraków und Kiev sowie Mittelasien verbindet“.<sup>41</sup> Wenn Henning von einer „Neuverteilung des Zugriffs auf die sich entfaltende Wirtschafts- und Handelsszene im Osten“ als dem entscheidenden Bewegungsmotiv für den Krieg 1002–1018 spricht, ist ihm zuzustimmen, obgleich ausgerechnet der Ausfall der östlichen Flanke der Handelsroute zwischen dem Rheinland und Mittelasien eine Umorientierung der Silberströme nach Mitteleuropa bewirkt hat. Bolesław rang also um Meißen und das Milzener Land, weil er neue Einnahmequellen gewinnen und den Verlust des Dirhemeinbruchs durch den Zugriff auf die sächsischen Silberquellen ersetzen wollte. Es handelte sich folgerichtig nicht ausschließlich um die Kontrolle der Transitwege, sondern um das Recht, Abgaben in Form von Silber eintreiben zu dürfen.

Einen ebenso geopolitischen wie geoökonomischen Aspekt wies Bolesławs Ausgriff an der südlichen Flanke seines Reiches auf. Ibrahim ibn Jaqub berichtet um 965:

„Die Rus’ und Saqaliba [Slawen] reisen nach Prag von Krakau mit Waren, während aus dem Land der Türken [Magyaren, Chasaren?] Muslime, Juden und Türken kommen, die Waren und al-mathaqil al-marqktija [Edelmetallstücke, die nach Gewicht gehandelt wurden] dorthin einführen und Sklaven, Zinn und verschiedene Felle ausführen.“<sup>42</sup>

Prag lag entlang der Ost-West-Transitmagistrale, die Kiev über Mitteleuropa mit al-Andalus (Arabisch-Spanien) verband. Sie streifte wahrscheinlich Libice, den 60 km östlich von Prag gelegenen Sitz von Adalberts Vater Slavnik, welchen Brun von Querfurt als ein *Haus voller Gold und Silber* bezeichnet.<sup>43</sup> Unter Heinrich II. (1002–1024), vielleicht zwischen 1002 und 1008, wurden vermutlich in Mainz oder im Maasgebiet die Imitationen iberisch-umayyadischer Münzen nach-

<sup>40</sup> Kilger 2000, S. 103.

<sup>41</sup> Henning 2004, S. 180.

<sup>42</sup> *Relacja* 1946, S. 49 und Kommentar auf S. 75–76.

<sup>43</sup> *Bruns von Querfurt* 2005, I, S. 70–71.

geprägt.<sup>44</sup> Womöglich sollten sie den Sklavenhandel bedienen, der östlich der Elbe seinen Anfang nahm und über Prag abgewickelt wurde.<sup>45</sup> Die Funde umayyadischer Dirhems wie ihrer „deutschen“ Imitationen sind jedoch äußerst selten. Ein Exemplar Hišām II. al-Muʿyyads (976–1009) wurde im Schatz von Stary Dworek bei Meseritz (Międzyrzecz; *tpq* 1018), knapp 80 km östlich des Fundortes des oben erwähnten Lisówek-Hortes, registriert; eine weitere Münze stammt aus Wielowieś bei Krotoszyn (*tpq* 1027) im südlichen Großpolen.<sup>46</sup> Hinzu kommt, dass iberische Dirhems nach Ostmitteleuropa über den muslimischen Osten eingeströmt sein können.<sup>47</sup> Aus dieser Perspektive hat die begrenzte Emission der iberisch-umayyadischen Dirhem-Nachprägungen das Ziel verfehlt, den Austausch entlang der Karawanenroute zwischen Prag, Mainz und Cordoba zu beleben.

Dessen ungeachtet ist Bolesławs Feldzug nach Prag im Jahr 1003 nicht zuletzt als ein Versuch zu deuten, die Zollgebühren anzuzapfen. Die Ereignisse um 1003 markierten zugleich die letzte Phase im Zerfallsprozess des Přemyslidenreiches. Der Machtverlust ging unter anderem auf die Abnahme der Bedeutung der über Prag führenden Handelsrouten zurück, weil den Dynasten dadurch wichtige Einnahmen abhandengekommen waren.<sup>48</sup> Wenn der Kollaps des Přemyslidenreiches tatsächlich mit den Handelsverschiebungen und folglich sinkenden Zollgebühren zusammenhing und wenn Bolesławs Expansion nach Böhmen in dem Bestreben, die Einnahmen aus dem Transit zu erheben, begründet war, dann muss der Piastenherrscher einem massiven Irrtum aufgesessen sein.

Der vermeintliche Reichtum Prags schlägt sich kaum im archäologischen Material nieder.<sup>49</sup> Nichtsdestotrotz bleibt unumstritten, dass das böhmische Münzwesen in den 980er und 990er Jahren einen robusten Umfang erreichte und sich grundsätzlich (wenn nicht ausschließlich) in dieser Stadt konzentrierte.<sup>50</sup> Durch die Besetzung Prags konnte Bolesław auf die Produktion von hiesigen Denaren zugreifen. Bereits im Jahr 1004 wurde er jedoch aus der Stadt verjagt, und die Přemysliden erlangten das Kerngebiet ihres Reiches wieder.

Wie im vorangegangenen Unterkapitel geschildert, gehörte die Verteilung von Luxusgütern zu den primären Aufgaben des Herrschers. Hier liegt womöglich ei-

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<sup>44</sup> Hatz, Linder Welin 1968.

<sup>45</sup> Mainz lag ebenfalls entlang der Karawanenroute. Dort sah Ibrahim ibn Jaqub (übermittelt in der Qazwini-Version) Gewürze (Pfeffer, Ingwer, Nelken, Narde, Kostwurz und Galanga) sowie Dirhems aus dem Samanidenreich, die 913/914 und 914/915 in Samarkand geprägt worden waren. Jacob 1927, S. 31.

<sup>46</sup> Stary Dworek: FMP I 2017, Nr. 239, Münznummer 19; Wielowieś: FMP I 2017, Nr. 263, Münznummer 2.

<sup>47</sup> Mikołajczyk 1988.

<sup>48</sup> Třeščík 2001, S. 441.

<sup>49</sup> Polanský 2007, Karte auf S. 129 und S. 149.

<sup>50</sup> Polanský 2007, S. 132. Grundsätzlich Lukas, Videman 2021.

ner der Gründe, warum in umkämpften Gebieten Silber als Bestechungsinstrument eingesetzt wurde. In Cortnitz (Bautzen), knapp 100 km östlich von Meißen, wurde in der Nähe einer slawischen Wallanlage ein Schatzfund entdeckt, dessen Zusammensetzung der Struktur der Horte im piastischen Raum entspricht. Er enthielt ca. 1.400 Münzen, überwiegend in zerteilter Form, ferner 161 Schmuckbruchstücke (darunter etliche mit Analogien zu Großpolen) und sechs Silberbarren. Die Prägungen stammen aus Zentralasien und dem Nahen Osten, dem römisch-deutschen Reich (unter Einbeziehung der sog. Kreuzdenare), außerdem aus Böhmen, Dänemark und England. Die Schlussmünze lässt sich nicht mit letzter Sicherheit bestimmen, vorsichtige Annahmen erlauben aber die Zeit um 1018.<sup>51</sup> Der Fundort liegt im Milzener Land, das 1013 im Frieden von Merseburg Bolesław dem Tapferen zufiel, dessen Herrschaft über dieses Gebiet fünf Jahre später im Frieden von Bautzen bestätigt wurde.

500 km südöstlich von Cortnitz begegnen wir jenem Ort, in dem man einen weiteren Schatz fand. Unter den 2.079 Münzen und Münzfragmenten des Depots von Kelč (Mähren) befanden sich 1.223 arabische Dirhems und knapp 800 europäische Denare. Der Hort beinhaltete zudem 306 Bruchteile von Schmuck. Die Schlussmünze wurde um 1002 geprägt.<sup>52</sup> Der hohe Fragmentierungsgrad sowie die Tatsache, dass Bolesław der Tapfere Mähren nach seiner Prager Expedition unter eigene Kontrolle brachte, legen nahe, den Kelč-Hort dem piastischen Netzwerk zuzuordnen. Überdies ist zu beachten, dass in Tschechien Schätze von Dirhems, besonders in zerteilter Form, kaum auftreten.<sup>53</sup> Gut 100 km südwestlich von Kelč legten Archäologen eine Marktsiedlung frei, die im ausgehenden 10. Jahrhundert entstanden sein muss. Dafür sprechen vier bayerische Denare aus der Zeit von 955 bis 982, eine böhmische bzw. mährische Emission geprägt um 990–995 und zehn ungarische Münzen Stephans I. (997–1038). Die Lage von Kostice im Grenzgebiet zwischen der Ostmark, Ungarn und Mähren sowie die hier gemachten Funde, darunter Kugelzonengewichte und Fragmente von Klappwaagen, bestätigen mit Nachdruck die kommerziellen Funktionen entlang der Transitwege von Ost nach West wie von Nord nach Süd.<sup>54</sup>

Aus dem oben zitierten Bericht von Ibrahim ibn Jaqub geht hervor, dass die Handelsrouten zwischen Kiev und Prag durch Ungarn bzw. Kleinpolen verliefen. Archäologische Funde lassen gelegentlich durchblicken, in welcher Form Wohlstand auf dieser Ost-West-Achse entstand. Knapp 80 km östlich von Krakau legten Forscher auf einem frühmittelalterlichen Burgwall in Zawada Lanckorońska ein

<sup>51</sup> Holstein, Friedland 2008.

<sup>52</sup> Novák 2010.

<sup>53</sup> Knapp 50 km südwestlich von Kelč wurde ein weiterer Schatzfund von Dirhems, Denaren und Schmuckfragmenten gemacht. Die Schlussmünze des Hortes von Kojetín lässt sich in die Zeit nach 991 datieren. Vgl. Novak *et al.* 2016.

<sup>54</sup> Videman, Macháček 2013, S. 854.

Depot frei, das 49 Glasperlen und 30 silberne Ohringe bzw. Hohlperlen enthielt. Sie weisen Parallelen zu den aus Gnezdovo, Trnovec und Břeclav-Pohansko bekannten Typen auf und spiegeln somit kulturelle Kontakte mit dem Bereich der Rus' ebenso wie dem mährischen Raum wider.<sup>55</sup> Der Schatzfund von Zawada Lanckorońska wird vorsichtig in die erste Hälfte/Mitte des 10. Jahrhunderts datiert.<sup>56</sup> Rund 50 km östlich von Zawada existierte in Trzcinica im 9.–11. Jahrhundert ein weiterer slawischer Burgwall, innerhalb dessen ein Hort von Münzen und Rohsilber aus der Zeit nach 1018 entdeckt wurde.<sup>57</sup> Er umfasste Emissionen aus West- und Ostmitteleuropa<sup>58</sup>, denen 313 Gusskuchen und 35 Schmuckstücke aus Silber wie Gold beigefügt wurden. 304 Teile waren zerhackt. Unter den Ohrringen befanden sich vier Stücke vom Typ Zawada. Schließlich sind zwei Horte aus der Ortschaft Perespa zu beachten. Sie wurden bei Czeremo, gut 220 km nordöstlich von Trzcinica in der Nähe einer der Červinischen Burgen, gefunden. Sie setzten sich aus Schmuckstücken zusammen, die Parallelen – analog zu dem Fund von Zawada – mit verschiedenen Regionen Europas, darunter Rus', Mähren/Böhmen, Ungarn sowie Österreich, illustrieren.<sup>59</sup> Demnach wären zwei Varianten der transkontinentalen Routen entlang der Ost-West-Achse archäologisch belegt: die südliche über Trzcinica und die nördliche über die Červinischen Burgen.

Der Inhalt aller drei Schatzfunde spiegelt nicht nur die Tatsache wider, dass die lokalen Eliten ihren Reichtum aus der Kontrolle eines Abschnitts des Transithandels zwischen Ost und West speisten, sondern indiziert überdies die Zirkulation von Schmuckstilen, die über den Tausch von Gaben und Geschenken erfolgt sein dürfte.

Die Handelsnetzwerke verknüpften das Piastenreich mit Osteuropa. Bolesław der Tapfere kam 1018 nach Kiev jedoch als Krieger, nicht als Fernhändler. Kiev gehörte im frühen 11. Jahrhundert zu den wichtigsten Herrschafts- und Handelszentren Osteuropas. Und auch wenn Thietmars von Merseburg Hinweis auf die 400 dort damals stehenden Kirchen ein wenig übertrieben sein mag, bestand doch die Stadtbevölkerung aus Skandinaviern und „Einwanderern“ aus allen Regionen der Rus'.<sup>60</sup> Die Kontrolle über Kiev ermöglichte nicht nur Zugriff auf hohe Einnahmen aus Tributen und Zollgebühren, sondern ebenso Zugang zu Handelsrouten,

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<sup>55</sup> Zoll-Adamikowa, Dekówna, Nosek 1999.

<sup>56</sup> FMP IV 2013, Nr. 116.

<sup>57</sup> FMP IV 2013, Nr. 101.

<sup>58</sup> Die Ausstellung von Funden aus Trzcinica im hiesigen Museum zeigt jedoch Dirhems, die als Teil des Schatzes ausgewiesen werden.

<sup>59</sup> Wołoszyn *et al.* 2016, S. 86–87. Stanisław Suchodolski verdanke ich den Hinweis auf etliche Schatzfunde aus Wolhynien, welche die Route zwischen Kiev und den Červinischen Burgen säumen (Stargorod, *tpq* 976; Samovola, *tpq* 1011; Linev, *tpq* 1018; Falemyči, *tpq* 1025). Suchodolski 2021a, S. 106. Grundsätzlich Mikhelson, Trost'ianskii 2019.

<sup>60</sup> Thietmar 1974, VIII/32, S. 474–475.

die nach Konstantinopel führten. Das Ziel war also allemal verlockend. Bolesław nahm die Stadt ein und ließ Gallus Anonymus zufolge dann zehn Monate lang Geld nach Polen schicken.<sup>61</sup> Der geflohene Jaroslav kehrte allerdings schon 1019 mit den angeworbenen Varägern zurück, besiegte den Piastenherzog und vertrieb ihn samt dem Thronprätendenten Svjatopelk. Der Feldzug von 1018 war Bolesławs zweite Intervention in der Rus' nach jener von 1013.<sup>62</sup> Im Endeffekt gelang es dem Piasten nicht, Kiev zu halten, er brachte immerhin die Červinischen Burgen und damit einen Ausschnitt der Ost-West-Karawanenstraße unter seine Kontrolle. Ein numismatisches Relikt des Raubzuges nach Kiev besteht aus piastischen Denaren mit Inschriften in kyrillischer Schrift.<sup>63</sup>

Meißen, Prag und Kiev markieren sowohl die wichtigsten Orte der sich über den gesamten Kontinent erstreckenden Fernhandelsrouten als auch die verschiedenen Etappen der piastischen Expansion im Zeitraum von 1002 bis 1018. Die Reichweite dieser Aktivität ist beeindruckend: Zwischen Meißen und Kiev liegen etwa 1.300 km. Die Chronologie und die Struktur der an dieser südlichen Flanke der Silberverteilungsnetzwerke lokalisierten Funde lassen somit Verbindungen mit den oben geschilderten Ereignissen der ersten zwei Jahrzehnte des 11. Jahrhunderts erkennen.

#### RAUBÖKONOMIE UND GEWALTMÄRKTE

Die Strategie Bolesławs des Tapferen, die große Entfernung Zentralpolens von transkontinentalen Handelsrouten, in diesem Sinne die strukturelle Schwäche des piastischen Reiches, zu kompensieren, ist gescheitert. Weder Meißen noch Prag, geschweige denn Kiev konnten gehalten werden. Parallel zu den Versuchen, Abgaben und Transitgebühren aus der Kontrolle der Karawanenwege zu etablieren und zu stabilisieren, betätigte die piastische Monarchie sich intensiv als kommerzieller „Unternehmer“ und speiste selbst Waren in die Handelsnetze ein. Das wirft wiederum die Frage auf, wie die Münzäquivalente in Form von Fellen und Sklaven erlangt werden konnten.

Das piastische Reich wies einen prädatatorischen Charakter auf. Die Kriegereliten machten Beute in Gestalt von Menschen, Vieh oder Fellen, um sie dann teilweise gegen Silber und Luxusgüter einzutauschen. Der aus der Soziologie entlehnte und von der Frühneuzeit-Forschung weiterentwickelte Begriff der Gewaltmärkte bringt diese Logik auf den Punkt:

„Unter Gewaltmärkten verstehe ich als Bürgerkriege, Kriegsherrensysteeme oder Räubertum bezeichnete Konflikte, bei denen unter der Oberfläche weltanschauli-

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<sup>61</sup> *Gallus Anonymus* 1978, I/7, S. 61.

<sup>62</sup> Thietmar 1974, VI/91–92, S. 340–341.

<sup>63</sup> Garbaczewski 2015.

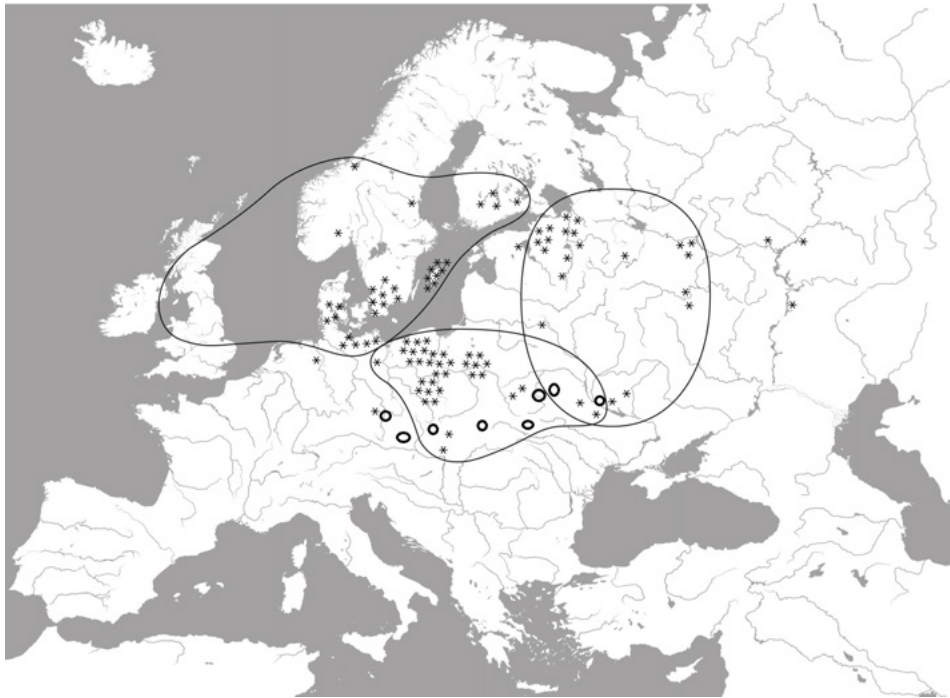


Abb. 1. Transkontinentale Netzwerke und Großreichsbildungen um das Jahr 1000 (anhand von Karte 9 bei Adamczyk 2020, S. 93) (Sternchen: Schatzfunde von Dirhems und/oder westeuropäischen Denaren; Kreise: größere Funde von Münzen und Schmuck entlang der Karawanenstraße)

cher und machtpolitischer Ziele oder vorgeblich traditionell bestimmter Kampfverpflichtungen das ökonomische Motiv des materiellen Profits dominiert.”<sup>64</sup>

Auf Gewaltmärkten wurden demnach Güter angeboten, die mittels Raub, Erpressung und/oder Geiselnahme erworben worden waren. Dabei erfüllten Beutezüge zwei Funktionen: Zum einen ermöglichen sie es den Angreifern, an Güter zu kommen, die sonst hätten erhandelt werden müssen – das konnten je nach Region Edelmetalle und Luxuswaren, aber auch Pelze oder Vieh sein. Zum anderen stellte ein Überfall auf die benachbarten Gemeinschaften eine wichtige Quelle dar, Menschen zu verschleppen, die dann entweder in einer dünn bevölkerten Region angesiedelt oder auf den Fernhandelsmärkten verkauft werden konnten. Für Entführte, die zu den mächtigen Adelsgeschlechtern gehörten, wurde Lösegeld verlangt. Thietmar von Merseburg deutet diese alternativen „Erwerbsmöglichkeiten“ im Westen an. Ihm zufolge machten die „Polen“ bei einem Raubzug ins Reich im Jahr 1003 gewaltige Beute und mindestens 3.000 Gefangene.<sup>65</sup> 1004 überfiel

<sup>64</sup> Lang 2014, S. 58; Elwert 1997, S. 87–88.

<sup>65</sup> Thietmar 1974, V/36–38, S. 232–233.

und verwüstete Bolesław Bayern.<sup>66</sup> Acht Jahre später plünderte er Lebusa aus.<sup>67</sup> Schlussendlich wurden 1017 auf seinen Befehl hin aus dem Gebiet zwischen Elbe und Mulde mehr als 1.000 Menschen fortgeschleppt.<sup>68</sup> Wenn für jede der insgesamt 4.000 entführten Personen im Schnitt eine Mark Lösegeld gezahlt worden wäre, dann kommen wir auf knapp eine Tonne Silber.

In die Fußstapfen des Vaters trat Mieszko II. Im Frühjahr 1028 fiel er in Sachsen ein, verwüstete das Land und tötete oder entführte Teile der Bevölkerung.<sup>69</sup> Zwei Jahre später führte der Piastenkönig im Januar auf die Nachricht vom Tode des Markgrafen Thietmar ein Heer gegen die Ostfranken, wobei er durch etliche Reichsaristokraten unterstützt wurde.<sup>70</sup> Damals sollen zwischen Elbe und Saale viele Dörfer niedergebrannt und zahlreiche Bewohner (darunter Bischof Luizo von Brandenburg) gefangen genommen worden sein.<sup>71</sup> Freilich kehrte ein Teil der Beute ins Reich zurück – wie im Jahr 1013 als Bolesław mit seinem Sohn Mieszko zwecks Aussöhnung bei Heinrich II. mit reichen Geschenken eintraf, Vasall des Königs wurde und ihm eidlich Treue gelobte.<sup>72</sup> Ebenfalls die von Mieszko II. in Sachsen gemachten Gefangenen mussten an Konrad I. übergeben werden.<sup>73</sup>

Entführung und Raub als Fortsetzung der Politik mit anderen Mitteln setzte Bolesław in Osteuropa ein. In Kiev „[...] nahm [er] wertvolle Habe mit und die Bojaren des Jarosláv und seine Schwestern [...] Und eine Menge Leute führte er mit sich [...].“<sup>74</sup>

Es liegt auf der Hand, dass die fortgeschafften Menschen teils angesiedelt, teils gegen Lösegeld freigekauft oder einfach in Richtung Süden ausgeführt wurden. Den Sklavenhandel bestätigen weitere Quellen. Bei einem Überfall auf Przemyśl, der um 1018 stattgefunden haben wird, versklavten die Angreifer Knaben und verkauften sie in Prag an einen Juden aus Byzanz.<sup>75</sup> Cosmas von Prag berichtet, dass nach der Vertreibung der Polen aus Mähren viele von ihnen gefangen genommen und, je hundert in Ketten gefesselt, nach Ungarn verschleppt wurden.<sup>76</sup> Letztendlich berichtet die „S. Adalberti Vita“ vom Freikauf christlicher Sklaven. Der Einstrom der ältesten, womöglich zwischen 992 und 995 in Prag geschlagenen

<sup>66</sup> Thietmar 1974, VI/1–3, S. 244–245.

<sup>67</sup> Thietmar 1974, VI/78–80, S. 326–327; VI/80, S. 328–329.

<sup>68</sup> Thietmar 1974, VII 64–66, S. 427.

<sup>69</sup> *Regesten* 1987, Nr. 580, S. 135.

<sup>70</sup> Gerard Labuda geht von lediglich einem Feldzug Mieszkos II. aus. Labuda 1992, S. 69–70.

<sup>71</sup> *Regesten* 1987, Nr. 590, 145.

<sup>72</sup> Thietmar 1974, VI/89–91, S. 338–339.

<sup>73</sup> *Regesten* 1987, Nr. 599, S. 153.

<sup>74</sup> *Die Nestorchronik* 2001, S. 178.

<sup>75</sup> *Źródła* 1956, 36–37.

<sup>76</sup> Cosmas 1923, I/40, S. 75.

Bischofsdenare Ostmitteleuropas nach Polen ließe sich folglich als Transfer von Lösegeldern interpretieren.<sup>77</sup>

Dabei gelang es Bolesław dem Tapferen nicht, die Ressourcenabschöpfung auf regelmäßiger Basis zu „externalisieren“ – so wie das Beispiel der Skandinavier nahelegt, die allein im Zeitraum von 991 bis 1018 in England knapp 260.000 Pfund Silber erpresst haben.<sup>78</sup> Im Gegenteil: Der Raubzug des Přemyslidenherzogs Břetislav nach Großpolen um 1038/1039 bewirkte im Verein mit der sog. Heidenreaktion, dass das Piastenreich wie ein Kartenhaus zerfiel.

Fassen wir zusammen: Die in der zweiten Hälfte des 10. Jahrhunderts errichteten und um das Jahr 1000 ausgebauten Herrschaftsstrukturen stützten sich auf drei fiskalische Elemente: Tribute und Abgaben, die von der Bevölkerung Großpolens und den benachbarten Provinzen in Naturalien und Silber eingesammelt wurden; Raub- und Beutezüge, die nicht zuletzt dem Sklavenerwerb dienten; sowie schließlich den Handel mit Waldprodukten und Menschen, die über Tribute und Abgaben eingetrieben wurden bzw. aus Plünderungsexpeditionen stammten. Doch die Handlungsoptionen für den Sklavenraub nahmen proportional zur Verdichtung der Herrschaftsbildung und Christianisierung im gesamten ostmitteleuropäischen Raum ab. Die Beutezüge im Westen, wie sie noch Mieszko II. unternahm, versprachen allenfalls kurzfristigen Erfolg. Dies deutet darauf hin, dass das Herrschaftssystem der Piasten in den bisherigen Formen den Zenit überschritten hat. Aus dieser Perspektive stellte die ambitionierte Expansion Bolesławs des Tapferen zwischen 1002 und 1018 einen Versuch dar, den Zugriff auf die Fernhandelsnetzwerke entlang der Karawanenstraße zwischen Kiev, Prag und Meißen zu erlangen und somit die materiellen Grundlagen seiner Herrschaft auszuweiten.

In der bisherigen Forschung wurden die Kontakte zwischen den Piasten und den Ottonen unter politischen, dynastischen, diplomatischen, kirchlichen Aspekten betrachtet, jedoch kaum in kommerziellen und fiskalischen Zusammenhängen systematisch kontextualisiert. Genauso wenig fragten Historiker nach den Quellen der zahlreichen Silberfunde in Zentralpolen, welche überdies die an der Wende des 10. und 11. Jahrhunderts stattfindende Umorientierung der Handelsströme von Ost nach West widerspiegeln.<sup>79</sup> Gleichwohl kann die hier vorgenommene handelsgeschichtliche Interpretierung politischer Ereignisse im frühen 11. Jahrhundert neue Sichtweisen erschließen und zukünftigen Analysen der transkontinentalen Beziehungsgeflechte frische Impulse verleihen.

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<sup>77</sup> So die These von Stanisław Suchodolski 2019, S. 215–216 (hier Hinweis auf die Quelle). Freilich ist die Zahl der in Polen gefundenen „Adalbert-Denare“ überschaubar und liegt zurzeit bei gerade zehn Exemplaren.

<sup>78</sup> Adamezyk 2014, S. 201.

<sup>79</sup> Vgl. z. B. Pleszczyński 2008 oder den Sammelband Polen und Deutschland vor 1000 Jahren. Die Berliner Tagung über den „Akt von Gnesen“, hrsg. v. M. Borgolte (wie Althoff 2002).

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## KOMUNIKACJA SYMBOLICZNA, TRANSKONTYNENTALNE SIECI HANDLOWE, EKONOMIA ŁUPU. KONTEKSTY I KONSTELACJE OBIEGU I REDYSTRYBUCJI SREBRA W CZASACH BOLESŁAWA CHROBREGO

(Streszczenie)

Panowanie Bolesława Chrobrego cieszy się od wielu lat dużym zainteresowaniem zarówno historyków, jak i numizmatyków. W centrum badań tych pierwszych znajdują się dzieje polityczne jego władztwa, a tych drugich jego mennictwo. Zdecydowanie mniej uwagi natomiast poświęca się fiskalnym i prestiżowo-symbolicznym kontekstom obiegu kruszcza, który na przełomie X i XI w. składał się niemal wyłącznie z importowanych monet oraz srebra w postaci niemonetarnej, głównie biżuterii. To rodzi wiele pytań: dlaczego dostęp do towarów luksusowych wpływał na sprawowanie władzy? Jak chęć przejścia kontroli nad sieciami handlu dalekosiężnego między Miśnią, Pragą a Kijowem w pierwszych dekadach XI stulecia warunkowała ekspansję Bolesława? Za jakie ekwiwalenty i w jakich okolicznościach nabywano obce monety?

Artykuł składa się z trzech części. W pierwszej autor analizuje logikę działania władcy na poziomie symbolicznym i komunikacyjnym, którego kluczowym elementem było „nagradzanie” elit kruszczem, zarówno w postaci monet, jak i w formie biżuterii. Dary ze skarbu „materializowały” więzi łączące władcę z jego drużyną, tworząc swoistego rodzaju symboliczny kapitał, który wojownikom pozwalał utożsamiać się z jego sukcesami. Przedmioty luksusowe były zarazem atrybutem bogactwa, wysokiej pozycji społecznej, władzy. Ich demonstracja i dystrybucja wzmacniały status księcia/króla na szczycie piramidy rządzącej elity. Dzięki tak uzyskanemu prestiżowi podnosił on reputację i pozyskiwał nowych klientów, a tym samym utwierdzał swój autorytet. Ostentacyjne okazywanie bogactwa (jak w opisie tzw. zjazdu gnieźnieńskiego u Thietmara z Merseburga) i dzielenie się nim były wręcz obowiązkiem władcy i należały do głównych mechanizmów kultury politycznej zapewniającej rządzącemu legitymację.

Nie ulega wątpliwości, że do najważniejszych materialnych świadectw manifestacji i prestiżu elit należał kruszec w formie niemonetarnej, przede wszystkim w postaci biżuterii. W co najmniej 17 depozytach z obszaru Wielkopolski znaleziono bransolety, naszyjniki, zausznice lub kaptorgi. Niewątpliwie funkcje manifestacyjne spełniały także niektóre wybijane przez Bolesława Chrobrego monety, zwłaszcza te z napisami DVX INCLITVS, PRINCES POLONIE, REX czy GNEZDVN CIVITAS. Jednak w porównaniu do przytłaczającej masy cyrkulującego srebra w postaci importów i biżuterii mogły one odnosić się wyłącznie do bardzo wąskiego kręgu władcy, w którym i tak zapewne pokaźna grupa nie rozumiała powyższych napisów.

W jaki sposób elity piastowskie uzyskiwały dostęp do kruszcza? Jedną z kluczowych metod polegała na opanowaniu głównych węzłów handlu transkontynentalnego przebiegającego równoleżnikowo od Miśni przez Pragę do Kijowa, co jest przedmiotem drugiej części artykułu. Na przełomie X i XI w. doszło do reorientacji strumienia srebra ze Wschodu na Zachód. Ostatnie dirhemy napłynęły pod koniec stulecia, a zastąpiły je teraz produkty europejskich mennic, zwłaszcza niemieckich. Tym istotniejsza okazała się próba zdobycia Miśni i Łużyc, dzięki którym Bolesław Chrobry mógł „podpiąć” się pod jeden ze szlaków eksportu fenigów z obszarów Cesarstwa. W przypadku Pragi dochodziła intratna

możliwość czerpania zysków z kontroli produkcji tamtejszych denarów, która ok. 1000 r. osiągnęła spore rozmiary i przerastała zdecydowanie skromną emisję Piastów. Niektóre skarby zdeponowane na początku XI stulecia na zachodnich i południowych obrzeżach domeny Piastów (np. Cortnitz i Kelč) zawierają z kolei strukturę typową dla Wielkopolski, co sugeruje, że miejscowe elity mogły być „nagradzane” za okazanie przychylności Bolesławowi.

Geoeconomiczne i geopolityczne plany opanowania głównych osi transkontynentalnego handlu powiodły się częściowo. Okupacja Kijowa i Pragi nie trwała dłużej niż rok, a Miśnia na podstawie ustaleń pokoju budziszyńskiego z 1018 r. pozostała częścią Rzeszy. Bolesław utrzymał w swoim posiadaniu natomiast Miłsko, Łużyce, Morawy i Grody Czerwieńskie.

Ekspansja Chrobrego związana była także z obsługą „rynków przemocy” (G. Elwert), o czym mówi trzecia i ostatnia część artykułu. Pod tym pojęciem z dziedziny etnologii rozumiemy działania, które pod pretekstem politycznych czy dynastycznych interesów dążyły do grabieży i zdobycia łupu: albo bezpośrednio w kruszczach lub innych dobrach, albo w formie porwanych ludzi. Thietmar kilkakrotnie informuje o wyprawach rabunkowych Bolesława. W 1003 r. miał on uprowadzić 3000, a w czasie ekspedycji w 1017 r. 1000 jeńców. Jeśli za każdą z tych 4000 osób otrzymał przeciętnie jedną markę srebra, to byłaby to równowartość prawie tony srebra. Gospodarka oparta na grabieży i łupie stanowiła kontynuację polityki innymi metodami także na Wschodzie. Jeśli wierzyć autorowi *Powieści dorocznej* pod 1018 r. Bolesław Chrobry uprowadził ze sobą możnowładców i siostry Jarosława Mądrego oraz „mnóstwo ludzi”. Jak pokazują inne źródła z tego okresu, niektórych jeńców sprzedawano na targach jako niewolników.

Podobną politykę prowadził na początku swego panowania następca Bolesława, Mieszko II. Przesilenie i czasowy rozpad państwa był tego negatywnym skutkiem.

Adres autora/The author's address:

dr. hab. Dariusz Adamczyk

Deutsches Historisches Institut Warschau

Pałac Karnickich

Aleje Ujazdowskie 39, PL 00-540 Warsaw, Poland

adamczyk@dhi.waw.pl

ORCID: 0000-0001-5917-5532

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STANISŁAW SUCHODOLSKI

**A NEW/OLD COIN TYPE OF BOLESŁAW I THE BRAVE,  
AND A HOARD THAT WAS NOT THERE**

**ABSTRACT:** The starting point for this text was the publication of a coin, assigned to Bolesław I the Brave (992–1025), Prince of Poland, with the name BOLEZLAV and a two-side representation of a chapel (Grossmanová, Matejko-Peterka, Kašparová 2018; Fig. 4). It is currently stored in the Moravian Museum in Brno. This coin has been known in the literature since the mid-19<sup>th</sup> century (Cappe 1850). Former researchers assigned it either to Boleslav III in the Bohemia (Cappe 1850; Hanka 1856) or to Bolesław I the Brave in Poland (Stronczyński 1884; Fiala 1895; Gumowski 1939). Newer researchers ignored it completely, suspecting that it was some kind of imitation or contemporary falsification. However, its authenticity is supported by the fact that it was originally in the collection of H. Dannenberg. Finally, the matter was decided by the publication in the auction catalogue (Warszawskie Centrum Numizmatyczne, Auction no. 67, item 132) of a coin minted on one side with the same die as the coin from Brno (Fig. 5). This allows us to postulate the existence of a new fourth die-chain in the coinage of Bolesław I the Brave (Fig. 6).

**ABSTRAKT:** Punktem wyjścia do napisania tego tekstu była publikacja przypisanej Bolesławowi Chrobremu (992–1025), księciu Polski, monety z imieniem BOLEZLAV i obustronnym przedstawieniem kaplicy (Grossmanová, Matejko-Peterka, Kašparová 2018; Fig. 4). Jest ona obecnie przechowywana w Muzeum Ziemi Morawskiej w Brnie. Moneta ta znana była w literaturze już od połowy XIX w. (Cappe 1850). Starsi badacze przydzielali ją bądź Bolesławowi III w Czechach (Cappe 1850; Hanka 1856), bądź Bolesławowi Chrobremu w Polsce (Stronczyński 1884; Fiala 1895; Gumowski 1939). Nowsi badacze w ogóle ją ignorowali, podejrzewając, że jest jakimś nieokreślonym naśladownictwem lub nowożytnym falsyfikatem. Za jej autentycznością przemawia jednak fakt, że pierwotnie była ona w kolekcji H. Dannenberga. A ostatecznie sprawę przesądziła publikacja w katalogu aukcyjnym (Warszawskie Centrum Numizmatyczne, aukcja 67, obiekt 132) monety, której jedna strona została wybita tym samym stemplem co i moneta z Brna (Fig. 5). Pozwoliło to postulować istnienie nowego, już czwartego łańcucha powiązań stempli monet Bolesława Chrobrego (Fig. 6).

**KEYWORDS:** Poland, 10<sup>th</sup>/11<sup>th</sup> centuries, Bolesław I the Brave, coin dies, imitation of coin dies, die-chains

**SŁOWA KLUCZOWE:** Polska, X/XI w., Bolesław Chrobry, stemple mennicze, naśladowanie stempli, łańcuch połączeń stempli

The appearance of a new type among the oldest Polish coins issued by Bolesław I the Brave (992–1025) does not happen often. However, all indications suggest that we are dealing with it now. This is due to a unique specimen, which underwent a turbulent fate after its discovery in the first half of the 19<sup>th</sup> century.

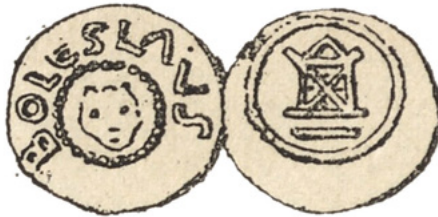


Fig. 1. Bolesław I the Brave's denarius according to K. Stronczyński (1884, type no. 12); scale 1.5:1

This specimen is a unique coin with Bolesław's name and an illegible image referred to as a chapel or a head on one side and a representation of a chapel on the other. It is one of the most mysterious specimens included in the corpus of the oldest Polish coins. It was first described as a coin of Bolesław I the Brave by Kazimierz Stronczyński, but only in his later works<sup>1</sup> (Fig. 1). He did not see the original and the drawing was taken, supposedly, from the work of Heinrich Cappe.<sup>2</sup> It was previously published in 1850 as a Czech coin of Boleslav III (999–1002, 1003). The basis of this attribution was the name BOLEZLAV, which is clearly legible around the image of the chapel. Only Václav Hanka accepted Cappe's view<sup>3</sup> (Fig. 2). Eduard Fiala, on the other hand, described this coin first as "Handelsmünze mit Otto-Adelheid-Typus",<sup>4</sup> and then assigned it to Bolesław I the Brave.<sup>5</sup> Subsequent Czech researchers (Josef Smolík, Viktor Katz, František Cach, Jan Šmerda) showed no interest in this specimen. Following Stronczyński, it was recognized as a Polish coin by Marian Gumowski<sup>6</sup> (Fig. 3). However, in his last work, this author no longer maintained such an attribution.<sup>7</sup> It was also not mentioned by any of the Polish authors writing after the World War II (Zygmunt Zakrzewski, Ryszard Kiersnowski, Stanisław

<sup>1</sup> Stronczyński 1884, p. 22, no. 12.

<sup>2</sup> Cappe 1850, p. 101, no. 33. Gumowski however (CNP, p. 35, footnote 1) quotes *Mitteilungen I*, 1846, p. 42, where Cappe mentions another type of Bolesław I the Brave's coin – Str. 13\* = CNP 24.

<sup>3</sup> Hanka 1856, p. 142, no. 18, tab. VII, 18 (Boleslav III).

<sup>4</sup> Fiala 1891, no. 327.

<sup>5</sup> Fiala 1895, p. 262, no. 398 (without illustration).

<sup>6</sup> Gumowski 1939, p. 33n., no. 27.

<sup>7</sup> Gumowski 1960.

Suchodolski<sup>8</sup>). This coin, whose original was unknown, was considered the product of Cappe's imagination.



Fig. 2. Boleslav III's Czech denarius according to V. Hanka (1856, no. 18); scale 1.5:1



Fig. 3. Bolesław I the Brave's denarius according to M. Gumowski (1939, CNP 27); scale 1.5:1

The disappearance of the coin from both the Czech and later Polish literature, i.e. its total non-existence, is explained by its suspicious form of type that could not be verified. The situation totally changed in the 1970s, when the original coin described by Cappe was found in the collection of the Moravian Museum in Brno. The work on this relic was facilitated by documentation received from Prague and Brno<sup>9</sup> (Fig. 4).

A description of the coin can be made on the basis of this information. Unfortunately, the image of the obverse is illegible. It shows only two parallel lines, the lower one shorter than the upper one, located off-center near the edge. Perpendicular to them, on both sides, are two further lines running parallel to the center of the field, which are very poorly marked. These may be a schematic outline of the stairs and side walls of the chapel. There are barely visible traces of two roof tops at the top. The inner circle made of thick pearls. Around the edge there is an inscription which, though not very clear, can be undoubtedly read as: BOLEZLAV...

<sup>8</sup> In the work of 1967, I placed it in the section *Coins attributed to Mieszko I and II and Bolesław I the Brave* (Suchodolski 1967, p. 125).

<sup>9</sup> František Cach was the first who informed me that the coin was in his collection and is currently stored in Brno (in a letter dated 13 November 1969). I also got a picture of it from him. I owe the plaster cast to prof. Jiří Sejbal, and a perfectly faithful galvanic copy to Dr. Jan Šmerda.



Fig. 4. Bolesław I the Brave's denarius in the collection of Moravian Museum in Brno (courtesy of D. Grossmannová); scale 1.5:1

The upper part of the letters B, E and Z (inverted) are invisible. The remaining part of the legend is also invisible, which represents about half of the total.

On the reverse, in a continuous circle, there is a Saxon-type chapel with balls at the end of the side arches. Inside the chapel there are two lines running diagonally, which cross in the middle. Four points were placed between the arms of this cross. The bottom of the chapel is not very legible because of the large rectangle placed inside it, which extends to the right beyond the outline of the building. In the ring, only the letter D with backwards-extended horizontal lines is visible in the inscription.<sup>10</sup>

The dies are therefore quite mysterious, as they appear to contain architectural motifs on both sides. There is certainly no head, which Hanka drew more from expectation than poorly-visible realities. I do not know any closer analogies to the dies presented here. Most likely, they are a modified and simplified reflection of the Saxon patterns – the denarii of Otto and Adelaide, and perhaps also *Sachsenpfennige* of type II (Hatz III, 4c; CNP 428, 429, 454). On these last coins, the letter D is also analogous, the only one that is legible in the ring of the reverse. However, one should also mention here a similar motif of a chapel filled with the sign ·X· between two points on the later coin of Archbishop Pilgrim (1022–1036) and King Konrad (1024–1027) from the mint in Andernach (Dbg 447, Hävernick 726). A particularly noteworthy feature is the internal circle made of thick pearls, appearing only on the obverse. It does not appear on the denarii of Otto and Adelaide. Most often, however, it can be found on *Sachsenpfennige* of type I from the end of the 10<sup>th</sup> century (CNP 324, 355, 358, 364 and others).

The name of Bolesław arouses particular interest on the obverse. It is spelled *Bolezlav*, a form used in Bohemia. Occasionally, however, it also occurs in Poland. Not only its iconography, but also the “style”, i.e. the way the die is made, and the epigraphy, speak against the Czech origin of the coin. It draws the attention that some letters seem to be made not with punches, but with a burin.

<sup>10</sup> Cappe read the legends a little more boldly: BOLEZLAVS D... and ...A.A.D (inverted). He also had no doubt that the chapels were on both sides (cf. above footnote 2).

The incomplete coin legend begs the question of what the continuation of the ruler's name actually was. First of all, we would expect a title. However, judging from the free space, it would have to be longer than a conventional *dux*. It could also contain other content, e.g. the name of the town or the name of the moneyer.

Despite the great diversity of Polish coins during the reign of Bolesław I the Brave, the discussed coin clearly stands out. It is not necessarily more primitive, but was evidently made in a different way. For example, none of the previously known Polish coins from the 10<sup>th</sup>/11<sup>th</sup> centuries has an internal circle made of disconnected pearls.<sup>11</sup> Therefore, the question arises whether the specimen is authentic or whether it was made in the first half of the 19<sup>th</sup> century, or maybe even earlier.

Here, we need to consider both the origin of the coin and its subsequent fate. In 1850, in addition to the description of the oldest Czech coins, Cappe lists the Bolesław coin among eight specimens that Hermann Dannenberg kindly lent him for research. At the beginning of this text, however, Cappe informs us that the addition of 43 new items was possible thanks to the discovery from the previous year (i.e. 1849) of a new hoard near Gdańsk.<sup>12</sup> Unfortunately, we don't know what treasure he had in mind. In their inventory of early medieval hoards from Pomerania, T. and R. Kiersnowski include it under the name "Gdańsk – vicinity II", and date it back to 1004.<sup>13</sup> It is interesting, however, that they exclude from this hoard the eight coins which Dannenberg made available. The authors of the new inventory did the same, including this hoard under the name "Gdańsk – Umgebung I".<sup>14</sup> However, no one except Cappe mentions this discovery. This raises the suspicion that it is, in fact, some other treasure, but known by a different name.

The key to solving this puzzle seems to be the information about the use of coins from Dannenberg. Unlike previous researchers, I believe that these coins were part of this hoard. It is easy to guess which find is it after reading the bibliography of Hermann Dannenberg's works. In 1848, he published a study of the hoard found "in the previous year" in Słupsk.<sup>15</sup> It was hidden between ca. 992 and 996 or not much later (lack of Otto III's imperial coins), and it contained, among others, several dozen Czech coins of Boleslav II (972–999; but lack of late Aethelred type). Among them, several can be matched to the specimens described by Cappe. The matter seems simple – Dannenberg, as we know, was not only an excellent researcher of coins, but also their collector.<sup>16</sup> He included in his collection some coins, mainly German, from the described hoard, but probably also others

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<sup>11</sup> Suchodolski 1967.

<sup>12</sup> Cappe 1850, p. 103 and 96.

<sup>13</sup> PSW II, no. 37, p. 45.

<sup>14</sup> FMP II, no. 61, p. 193.

<sup>15</sup> Dannenberg 1848, pp. 96–109 (Reed. B. Kluge, Leipzig 1984); PSW II, 153; FMP II, 185 (incorrect year of finding – 1837 instead of 1847).

<sup>16</sup> Cf. Kluge 1984, pp. VIII–XVII.

that interested him. Whether a specimen with the name BOLEZLAV was also present among them, of course, is unknown. However, this seems plausible. In 1848, the twenty-four-year-old Dannenberg had been a collector for a long time, but only a novice researcher: the monograph of the Słupsk hoard was his scientific debut. It was also his first opportunity to access more coins from the 10<sup>th</sup> century. Admittedly, an important fact speaks against our conjecture: there is no mention of the examined coin in the published description of the hoard content. However, we must bear in mind that, out of approximately 3000 coins, only around a hundred were described, most only as coin types. Moreover, Saxon coins in the name of Otto and Adelaide and their imitations were the basic composition of the hoard from Słupsk.

Six years after Cappe's publication, Hanka<sup>17</sup> wrote about the coin with the image of the chapel and the name of Boleslav, but he did not even mention the previous author. The coin was then stored in the collection of the "museum". However, it was probably not a museum in Brno, but *Vlastenecké Museum* in Prague, the predecessor of the National Museum in which Hanka worked since 1829.<sup>18</sup> It is notable that in Hanka's description the chapel appears not on both, but only on one side. On the other side, according to the description, there is supposed to be a bust, but the attached drawing shows a blurred outline of a head (Fig. 2). This begs the question of whether this is the same specimen that was in the possession of Dannenberg and was described by Cappe, or whether it is a new specimen.

In the latter case, further questions are raised concerning the origin of the coin. Hanka does not give this information, only describing its current place of storage in the museum. However, he does mention the coins he used from foreign collections, which included the collection of Hermann Dannenberg.<sup>19</sup> While this coin does not appear in this context, we are made aware of Hanka's contacts with Dannenberg, acting on behalf of the museum. It is therefore possible that Hanka had previously bought some specimens from Dannenberg. The identity of both specimens is to a greater extent evidenced by the similarity of the legends, and it is particularly meaningful that on the side with a clearly outlined chapel, only the backwritten letter D is clearly legible. Therefore, the suspicion that this rather unusual specimen was produced by Hanka himself should be dismissed at once. It is known that he was the creator of historical texts of Czech literature, which he miraculously discovered. There are also suspicions – true or not – that he was involved in the falsifying of coins.<sup>20</sup>

<sup>17</sup> Cf. footnote 3.

<sup>18</sup> Such an opinion was expressed by Dagmar Grossmannová from the Moravian Museum in Brno (in a letter of 26 May 2021). Dr Luboš Polanský, on the other hand, did not reply to my question on this issue, which was sent twice.

<sup>19</sup> Hanka 1856, p. 143.

<sup>20</sup> Cf. Fiala 1895, p. 12n. ("Hanka did not hesitate to include in his descriptions and among his ideas also numerous falsifications closely related to then popular Killian, whose friend he was"); V. Křižová

Careful viewing of the original currently stored in the museum in Brno, as well as faithful copies, did not provide arguments for the modern production of the coin (Fig. 4). Its authenticity is supported by the presence of small incisions on the surface, the so-called pecks, which have been ignored almost until recent times. The illegibility of large batches of images and legends also seems to confirm the medieval origin of the relic. If someone tried to fabricate it before the middle of the nineteenth century, he would probably try to put some attractive inscriptions and images on it.

Therefore, I assume that the specimen is authentic and that it was made in Poland during the reign of Bolesław I the Brave. The place of its production cannot be determined even roughly, although Greater Poland seems to be the most likely source. However, some provincial centre, in which it was even more difficult to start a mint than in larger centres, may be taken into consideration. We do not know when it was produced: the chronology of patterns could suggest that it was made at the turn of the 10<sup>th</sup> and 11<sup>th</sup> centuries, or even in the second half of the reign of the Bolesław I the Brave, or on the contrary at its very beginning, if the coin actually came from the hoard found in Słupsk (*tpq* approx. 992–996).

The coin is evidently a hybrid: on both sides it has the image of a chapel, typical for the reverse of denarii with the names of Otto and Adelaide. However, this should normally be complemented with a representation of a cross with letters or points between the ends of the arms. I do not know any other coin from that time with a bifacial image of a sacred building. Since the dies have been mixed, we might suppose that at least two pairs were originally made, with chapels on one side and with crosses on the other. They should be based on the denarii of Otto and Adelaide.<sup>21</sup>

However, one more objection can be raised here. Even an authentic coin from the time of Bolesław I the Brave did not have to be made in his official mint, although his name, meticulously reproduced, could indicate this. One of the numerous workshops of a semi-official or even unofficial nature, with a completely unrecognized status, may also be considered.

The renewed interest in this coin was due to the recent publication of Polish coins, medals and banknotes from Czech museum collections. It was put on the first place on the list from the Moravian Museum in Brno as an unpublished Polish denarius of Bolesław I the Brave with a representation of a sword (sic!) and a chapel.<sup>22</sup>

This fact was vividly commented on by Borys Paszkiewicz in an extensive review published in *Wiadomości Numizmatyczne*.<sup>23</sup> Paszkiewicz agrees with the opinion of the author, Dagmar Grossmannová, that we are dealing here with a Pol-

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(1970, pp. 44–48), rehabilitates Hanka, releasing him from the charge of falsifying the said coins.

<sup>21</sup> Cf. Hatz 1961; Hatz *et al.* 1991.

<sup>22</sup> Grossmannová, Matejko-Peterka, Kašparová 2018, p. 10.

<sup>23</sup> Paszkiewicz 2020.

ish coin of Bolesław I the Brave. At the same time, however, he rightly corrects the identification of the representation on the obverse – it is not a sword, but “vague outlines of a four-sided figure with a short additional step”, i.e. the second church structure. He also supplements the description of the coin with very important information, that is about the presence of a number of incisions on the surface, so-called pecks. This proves the circulation of the coin in the Middle Ages, and thus its authenticity. Another addition concerns – contrary to the author’s opinion – earlier publications of this extraordinary specimen. Therefore, the works of Cappe from 1850, Stronczyński from 1884 and Gumowski from 1939 were mentioned. However, the Czech works were omitted: Hanka’s from 1856 and Fiala’s from 1891 and 1895.

In this context, the triangle of works by Cappe (the first publication of the description of the coin), Hanka (its first picture) and Stronczyński (including it in the orbit of the interests of Polish numismatics) seems to be particularly important to us. It can even be guessed that Stronczyński used the publications of both authors mentioned earlier. Namely, he took the description from Cappe, to whom he refers, and the image from Hanka, who he does not mention at all. But only Hanka, using the unique specimen kept in Prague, drew its picture. Cappe’s text was not illustrated, and on the obverse the author saw not the head, but the chapel again. This leads to the same conclusion as Borys Paszkiewicz: namely, when Stronczyński wrote his work 30 years later, his memory failed him.

Summing up our considerations, we can conclude that it is not possible to fully explain the problems relating to the origin of this coin, the place and time of its creation, and even its fate after its discovery. How did it happen that the coin stored in the museum (Prague) was in the possession of a private collector (F. Cach)? Nevertheless, when examining the history of Polish coins in the 10<sup>th</sup>/11<sup>th</sup> century, it clearly should not be ignored. Thanks to this coin, our field of vision has been expanded: it is clear that atypical specimens and the possibility of extraordinary circumstances at the time of their creation, as well as complicated fates after discovery, should be considered.

But this is not the end of the story. In 2016, at the 67<sup>th</sup> auction of the Warszawskie Centrum Numizmatyczne, a fairly homogeneous group of four coins imitating Saxon denarii with the names of Otto and Adelaide appeared (nos 129–132).<sup>24</sup> Their character and patina seem to suggest that they come from one hoard. Subsequent inquiries confirmed this conjecture. The coins were part of a large hoard found before 2015 in the Łomża district, perhaps in the vicinity of Wizna. This collection contained a large number of coins from the turn of the 10<sup>th</sup> and 11<sup>th</sup> centuries, especially from the first quarter of the 11<sup>th</sup> century, including Polish coins. It was hidden after 1034.

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<sup>24</sup> Warszawskie Centrum Numizmatyczne, Auction no. 67, 26 November 2016.

Among these imitations, specimen no. 132 is distinguished (Fig. 5). On one side, it has the image of a chapel and a barbarized legend. The other side was minted with the same die as the coin discussed here, currently stored at the Moravian Museum in Brno. The new coin is better preserved than it and thanks to this we can get to know part of the completely barbarized legend: ...IIIΘIIII~IC...



Fig. 5. Denarius offered at Auction no. 67 of WCN, item no. 132; scale 1.5:1

However, there are two further benefits of the new discovery. Firstly, we learn that the mint workshop where this coin was minted used more than one die at the same time. Thanks to the unplanned connection of two of them, we receive an image of a small die-chain. We might suppose that it was originally larger, because the new coin, like the previous one, is a hybrid of two reverses. So probably both still had their obverse dies, presumably with an image of the cross. Between its arms, we might expect to see the more-or-less distorted letters O-D-D-O. The basis for these assumptions are analogies in the form of the three related imitations mentioned above (nos 129–131). These coins show features of the die that are not found elsewhere, which can be recognized on the examined coins of Bolesław I the Brave. They include, for example, the finishes on the headbands with marbles at the roof of the chapel (nos 131 and 132), and the sign or pseudo-letter O with a point in the middle (nos 129 and 132).

In this way, we can obtain information about the use of another, fourth, set of interrelated dies-chains in Bolesław I the Brave's coinage. In the light of the currently available materials, we can guess that it consisted of at least six dies, of which we so far know only three (cf. Chain 4 – Fig. 6).

Thanks to the new discovery, we can obtain some new information about the chronology of the examined coin. As already mentioned, the four coins offered at Auction 67 probably come from one find, and show a certain homogeneity in terms of style and method of die-production. They belong to a large group of imitations of Saxon denarii with the names of King Otto III and his grandmother Empress Adelaide, which were minted on a massive scale between 983 and ca. 1040 at Goslar and other mints.<sup>25</sup> “Our” imitations were created, it seems, in the middle period, i.e. at the turn of the 10<sup>th</sup> and 11<sup>th</sup> centuries or at the beginning of the 11<sup>th</sup> century.

<sup>25</sup> Cf. footnote 21 and Bogucki 2012.

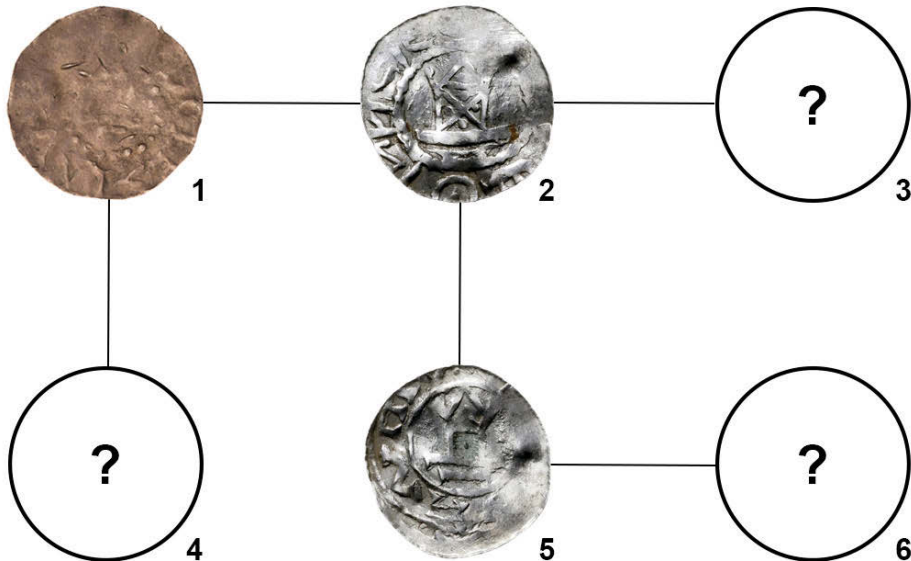


Fig. 6. The fourth die-chain of the coins of Bolesław I the Brave: 1/2 coin in Brno (two reverse sides); 2/3 alleged coin, minted using the missing obverse; 1/4 alleged coin, minted using the other, missing obverse; 2/5 coin from Auction 67 of WCN (two reverse sides); 5/6 alleged coin, minted using the missing obverse

This is also supported by, among other things, the presence of an internal ring of thick pearls on one side, which is quite often found in the second half of the 10<sup>th</sup> century, and later in fact no longer appears. Dr. Peter Ilisch, a great connoisseur of such coins, hypothetically dates them to around the year 1000.<sup>26</sup>

This suggests that the analogies with much later coins from Andernach, which show the sign X in the chapel (from 1024–1027, because they could be minted later with an unchanged die), are probably coincidental. Otherwise, we would have to assume that the Brno coin in the name of Bolesław, which was once in the possession of Dannenberg, was minted after the death of Bolesław I the Brave in 1025. This is barely possible. However, if this coin was part of the hoard from Słupsk (*tpq* 992–996?), it would not be impossible, although it is also not most likely. It is also necessary to consider its poor state of preservation, and the presence of numerous pecks on the surface and incisions on the edge. Even if this coin was minted at the turn of the centuries, it ended in the ground a dozen, if not several dozens, of years later after a long circulation.

And finally, information that seems obvious, but which is worth recalling. Thanks to the combination of the dies with a coin of unquestioned authenticity

<sup>26</sup> In a letter dated 9 August 2021, he writes: *Eine Datierung ist sicher schwierig und kann nicht ganz präzise sein. Um 1000? Viel später kann es nach meiner Meinung kaum sein.*

(no. 132), we obtained an absolute certainty that our coin, currently stored in the museum in Brno, has an origin in the early Middle Ages.

We can therefore make a final summary on the basis of this new information. We are dealing with a previously unknown minting workshop operating in the state of Bolesław I the Brave at the very end of the 10<sup>th</sup> or at the beginning of the 11<sup>th</sup> century. It used at least a few pairs of dies. They imitated the most popular coins used at that time with the names of Otto and Adelaide. They were therefore similar to the already known, maybe slightly older, group of coins with the legend of АЯСАHLAT and the head of the ruler (types III and IV). These, however, were made by other, more experienced engravers and moneyers, i.e. from another mint. Nevertheless, it seems that a similar, lower weight standard was applied to the production of coins of both groups (coins of new type weigh 1.245 and 1.27 g, while additional coins in the Auction 67 offer: 0.89, 1.07 and 1.24 g). This standard was in force in Poland at the beginning of the reign of Bolesław I the Brave.

Last but not least, the hoard allegedly discovered before 1850 in the vicinity of Gdańsk, and deposited after 1004, must be definitively removed from the inventory of early medieval coins discovered in Pomerania. This is undoubtedly a hoard found in 1847 in the vicinity of Słupsk. As we can see, the term “vicinity of Gdańsk” can be understood differently depending on the distance between this place and the location of the author of these words.<sup>27</sup>

#### ABBREVIATIONS

CNP –	Gumowski 1939.
Dbg –	H. Dannenberg, <i>Die deutschen Münzen der sächsischen und fränkischen Kaiserzeit</i> , vol. I, Berlin 1876 (reprint Aalen 1967).
Hatz –	V. Hatz, <i>Zur Frage der Otto-Adelheid-Pfennige. Versuche einer Systematisierung auf Grund des schwedischen Fundmaterials</i> , Commentationes de nummis saeculorum IX–XI in Suecia repertis I, Stockholm 1961, pp. 105–144.
Hävernich –	W. Hävernich, <i>Die Münzen von Köln vom Beginn der Prägung bis 1304</i> , Köln 1935.
PSW II –	T. i R. Kiersnowscy, <i>Wczesnośredniowieczne skarby srebrne z Pomorza. Materiały</i> , Warszawa-Wrocław 1959 (= <i>Polskie skarby wczesnośredniowieczne. Inwentarze</i> , vol. II).
Str. –	Stronczyński 1884.
WCN –	Warszawskie Centrum Numizmatyczne.
WN –	Wiadomości Numizmatyczne, Warszawa.

<sup>27</sup> Cf. footnotes 12–14.

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## NOWY/STARY TYP MONET BOLESŁAWA CHROBREGO I SKARB, KTÓREGO NIE BYŁO

(Streszczenie)

Punktem wyjścia do napisania tego tekstu była publikacja przypisanej Bolesławowi Chrobremu (992–1025) monety z imieniem BOLEZLAV i obustronnym przedstawieniem kaplicy (Grossmannová, Matejko-Peterka, Kašparová 2018; Fig. 4). Jest ona obecnie przechowywana w Muzeum Ziemi Morawskiej w Brnie. Moneta ta znana była w literaturze już od połowy XIX w. (Cappe 1850). Starsi badacze przydzielali ją bądź Bolesławowi III w Czechach (Cappe 1850; Hanka 1856), bądź Bolesławowi Chrobremu w Polsce (Stronczyński 1884; Fiala 1895; Gumowski 1939). Nowsi badacze w ogóle ją ignorowali, podejrzewając, że jest jakimś nieokreślonym naśladownictwem lub nowożytnym falsyfikatem. Jej autentyczność została jednak przesądzona dzięki publikacji w katalogu aukcyjnym (WCN, aukcja 67, obiekt 132) monety, której jedna strona została wybita tym samym stemplem, co i moneta z Brna (Fig. 5). Strony odwrotne są odmienne. Ciekawe jednak, że wszystkie cztery stemple obu monet noszą przedstawienia kaplicy, a więc rewersu. Pozwoliło to postulować istnienie nowego łańcucha powiązań stempli monet Bolesława Chrobrego. Zostały w nim uwzględnione również nieznanne dotychczas stemple awersowe, zapewne z wyobrażeniem krzyża (Fig. 6). Chodzi tu bowiem o naśladowanie saskich monet z końca X w. – tzw. typu Ottona i Adelajdy.

Odmienny problem stanowi pochodzenie monety przechowywanej obecnie w Brnie, a pierwotnie będącej w posiadaniu Dannenberga. Tekst Cappego (1850) sugeruje, że mogła ona wchodzić w skład skarbu znalezionego w okolicy Gdańska w 1849 r. Skarb ten został uwzględniony w obu inwentarzach znalezisk monet wczesnośredniowiecznych z Pomorza (PSW II, 17 i FMP II, 61). Autor niniejszego tekstu sugeruje jednak, że takiego skarbu nie było, a Cappe pod określeniem „okolice Gdańska” rozumiał Słupsk i że chodziło mu o skarb odkryty w tej miejscowości w 1847 r. (Dannenberga 1848; FMP II, 185). Nie znaczy to jednak, że omawiana moneta na pewno pochodziła z tego skarbu (*tpq* ok. 990). Co prawda mogła ona powstać już w tym czasie, ale ślady intensywnego obiegu (liczne *pecksy*) wskazują, że trafiła do ziemi dużo później.

Styl wykonania wszystkich trzech, znanych dotychczas stempli, które wchodziły w skład łańcucha 4, jest mocno uproszczony. Pod tym względem wyróżniają się one od innych, znanych dotychczas monet Bolesława Chrobrego, a w dodatku nie są z nimi połączone w tych samych łańcuchach. Z tego powodu autor przypuszcza, że monety z łańcucha 4 powstały w jakimś innym, może prowincjonalnym, warsztacie mennicznym. Tym niemniej, był on czynny zapewne również w Wielkopolsce.

Adres autora/The author's address:

prof. dr hab. Stanisław Suchodolski, em.

Institute of Archaeology and Ethnology

Polish Academy of Sciences

Al. Solidarności 105, PL 00–140 Warsaw, Poland

suchodol7@gmail.com

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MATEUSZ BOGUCKI

## NEW TYPES OF THE OLDEST POLISH COINS

**ABSTRACT:** This article presents discoveries of new types of coins that can be assigned to the oldest Polish coinage. In case of the PRINCES POLONIE die-chain, it was possible to identify one new die, in an extremely barbaric style, which once again shows that there is no uniform style to the oldest Polish coins and that there was chaos in Bolesław I the Brave's coinage. In the case of the second – .VIDV die-chain as many as seven new dies have been revealed. Detailed analysis shows that the coins produced with these dies were not necessarily produced at the same time, and that production could have lasted up to several years. The newly revealed dies do not solve the problem of the attribution of denarii with the .VIDV inscription, but their ascription to the coinage of Bolesław I the Brave or Mieszko II is very likely.

**ABSTRAKT:** Artykuł prezentuje odkrycia monet nowych typów, które można przypisać do najstarszego mennictwa polskiego. W przypadku łańcucha połączeń stempli PRINCES POLONIE udało się zidentyfikować jeden nowy stempel, w niezwykle zbarbaryzowanym stylu, co po raz kolejny ukazuje, że nie istnieje jednolity styl najdawniejszych monet polskich oraz, że w mennictwie Bolesława Chrobrego panował chaos. W przypadku drugiego łańcucha połączeń stempli – .VIDV ujawniono aż siedem nowych tłoków. Ich szczegółowa analiza wskazuje, że monety wybijane tymi stemplami nie musiały być produkowane w jednym czasie, lecz nawet przez kilkanaście lat. Nowo ujawnione stemple nie rozwiązały problemu atrybucji denarów z legendą .VIDV, lecz ich przynależność do mennictwa Bolesława Chrobrego lub Mieszka II jest bardzo prawdopodobna.

**KEYWORDS:** early medieval period, Polish coinage, imitations

**SŁOWA KLUCZOWE:** wczesne średniowiecze, mennictwo polskie, naśladownictwa

Extending the catalogue of the oldest Polish coins through meticulous analyses of die-chains<sup>1</sup> is a tradition that spans more than one hundred years.<sup>2</sup> Recent years have brought a number of new discoveries.<sup>3</sup> They broaden our knowledge of the oldest Polish coinage, its size, production details, and organization, and emphasize some of its earliest characteristics.

#### PRINCES POLONIE DIE-CHAIN

At the 29<sup>th</sup> auction of Antykwariat Numizmatyczny Michał Niemczyk, two coins were offered for sale under the number 4429, described as “Fancy imitations of Otto and Adelaide”.<sup>4</sup> This description is true in essence, but can be significantly expanded. The first of the coins is a Pomeranian imitation in the *Lupow* type, dated to the second half of the 11<sup>th</sup> century (Fig. 1).<sup>5</sup>



Fig. 1. Pomeranian imitation of the *Lupow* type. 1.15 mm; 0.55 g. Scale 1.5:1 (Antykwariat Numizmatyczny M. Niemczyk 29.4429)

Much more interesting is the second coin, which thanks to the analysis of die-chains can be identified as a denarius of Bolesław I the Brave (Fig. 2) from the PRINCES POLONIE die-chain.<sup>6</sup> While one of the dies has been previously identified in use at Bolesław I the Brave’s mint,<sup>7</sup> the other was still undefined. Diameter 19 mm, weight 1.46 g.

<sup>1</sup> About the method see Suchodolski 2012, pp. 69–88.

<sup>2</sup> Zakrzewski 1904, pp. 1–7; Zakrzewski 1922, pp. 45–56; Zakrzewski 1939, pp. 136–141; Zakrzewski 1948, pp. 370–377; Zakrzewski 1956, pp. 211–237.

<sup>3</sup> Bogucki 2006, pp. 181–192; Bogucki 2008, pp. 77–89; Ilisch, Suchodolski 2003, pp. 97–104; Jonsson, Suchodolski 2009, pp. 29–40; Bogucki, Magiera 2015a, pp. 115–128; Suchodolski 2022.

<sup>4</sup> <https://aukcjamonet.pl/product/42553/niemcy-saksonia-fantazyjne-nasladownictwo-otto-na-i-adelajdy-zestaw-2-sztuk>.

<sup>5</sup> Cf. Bogucki, Magiera 2015b, pp. 119–128; FMP II.136:320.

<sup>6</sup> The current state of knowledge appears in Bogucki, Magiera 2015a, pp. 115–128; Suchodolski 2015, pp. 67–94; Suchodolski 2019, pp. 193–219.

<sup>7</sup> Bogucki 2006, pp. 181–192.

Av.:<sup>8</sup> in the center, a slender chapel topped with a cross, whose arms are finished with pellets. Vertical lines on its sides. Continuous ring, along the edge there is a blundered inscription **VIDVIVCLITIA**

Rv.: in the center, a schematic chapel with two points in the middle, a ring with loosely scattered points, a blundered inscription in the edge **HI/////VE//**



Fig. 2. Bolesław I the Brave's denarius. 19 mm; 1.46 g. Scale 1.5:1  
(Antykwarjat Numizmatyczny M. Niemczyk 29.4429)

Assessment of the material collected and published in the *Frühmittelalterliche Münzfunde aus Polen* (FMP) series shows that the coin struck with a new type of die has hitherto occurred only once – in the hoard from Kujawy I (*tpq* 1027), published in 1921 by Wiktor Wittyg (Fig. 3). This 0.5 g coin, struck on one side, was originally attributed by Wittyg to Sweden,<sup>9</sup> but was described as an imitation of the *Otto and Adelaide* type by the authors of the latest inventories.<sup>10</sup> Though schematic, the figure published in W. Wittyg's publication leaves no doubt that the coins from the Kuyavian hoard and M. Niemczyk auction were both struck from the same reverse die. It is worth emphasizing here that hoard from Kujawy I also contained regular coins of Bolesław I the Brave and Mieszko II, as well as imitations with the inscription .VIDV and +JIVA.<sup>11</sup>



Fig. 3. Uniface denarius of Bolesław I the Brave from the hoard from Kujawy I. Scale 1.5:1  
(Wittyg 1921; FMP III.215:502)

<sup>8</sup> In case of such coins, the terms obverse and reverse are just conventional.

<sup>9</sup> Wittyg 1921, p. 36, no. 109, Tabl. 2:XIX.

<sup>10</sup> FMP III.215:502.

<sup>11</sup> FMP III.215:481–486.

Recognition of two specimens adds new detail to the reconstruction of the newly disclosed die type (Fig. 4). It depicts a very schematic chapel with a mixed-up circumferential legend consisting of the letters HIE /// VEVU. At first glance, one can see the great clumsiness of the engraver of the die, who led the line of the chapel unevenly, correcting it in several places. The lines of the chapel, as well as the clumsily presented letters, either do not touch or are dragged out of their correct position. The most distinctive feature of the die in question is the inner circle, which is made of large, loosely scattered dots struck on the die with a triangular or half-round punch. Even their layout is not regular – some of the struck dots are chaotic (e.g. a point instead of a line to close the right wall of the chapel, or a single point on the left side under the chapel), without justification in the imitated pattern.

To sum up, the newly discovered die used in Bolesław I the Brave's coinage is a very loose interpretation of a motif popular in early medieval coinage, most notably in German coinage, featuring a chapel and a circumferential legend. Owing to the very low technical skills of the die engraver, it is not possible to more closely identify the design prototype. It was probably based on the most popular denarii of *Otto and Adelaide* type, but it could equally have been Bavarian, Franconian or even a cross denarius.



Fig. 4. Reconstruction of the newly discovered die of Bolesław I the Brave's coins  
(drawn by M. Bogucki)

The newly disclosed die is a part of a constantly expanding die-chain centred on the *PRINCES POLONIE* type, which is combined with a number of imitations of the *Otto and Adelaide* type, Saxon, Cologne, Bavarian denarii and, finally, with the imitation of the Vladivoj's denarius (Fig. 5).<sup>12</sup> This chain currently consists of 14 dies. However, considering that the dies were originally produced in pairs, it can be assumed that four further dies are waiting to be discovered. Above all, the Czech-type reverse is missing, which would be a pair for the die with the name

<sup>12</sup> Ilisch 2005, pp. 191–196; Bogucki 2006, pp. 181–192; Bogucki 2010, pp. 172–192; Bogucki 2011, pp. 1382–1391; Bogucki, Magiera 2015a, pp. 115–128.

of Vladivoj (no. 4), the reverse in the *Otto and Adelaide* type (no. 8), the Bavarian-type obverse (no. 16), and the other side of the die presented above (no. 18).

The discovery of a new die does not affect the established chronology of the entire die-chain, which should be placed in the first and second decades of the 11<sup>th</sup> century, reflecting results from the analysis of the dies and their images as well as from finds evidence: the coins included in this die-chain were discovered in the early hoards from Tarnowo Pałuckie (*tpq* 1005),<sup>13</sup> Ulejno (*tpq* 1006),<sup>14</sup> Przyborów (*tpq* 1010),<sup>15</sup> Lisówek (*tpq* 1014).<sup>16</sup> Of course, not all dies need to be in simultaneous use, because the PRINCES POLONIE chain is linear, i.e. different fragments of this die-chain could be created in different workshops, at different times and only at some stage of production the dies could have been mixed. Undoubtedly, the oldest is its left side, where the primary PRINCES POLONIE dies (ca. 1005) were combined with the die with the name of Vladivoj as well as technically well-made dies in the *Otto and Adelaide*, Cologne and Bavarian types (numbers 1a, 2a, 9–15). The right side of the die-chain, consisting of the repaired PRINCES POLONIE dies and the barbaric imitations of the Otto and Adelaide's denarii (numbers 1b, 2b, 5–7, 17), is younger, and probably dates to the second decade of the 11<sup>th</sup> century.<sup>17</sup>

#### VIDV DIE-CHAIN

Denarii with the legend .VIDV and their twin denarii with the legend +JIVA are the subject of an extensive literature.<sup>18</sup> Here we will concentrate on coins with the inscription .VIDV. At present, there are about 50 known specimens of this type, 26 of which come from 22 finds, including 20 coins from 16 Polish finds (from ca. 1010), one denarius in a Ukrainian hoard (after 1024), three coins in three Scandinavian hoards (after 1035), two coins in two Czech finds (after 1050)<sup>19</sup> and about 25 further coins without provenance in public and private collections.

So far, three dies from this chain have been published (nos 1–3), which will not be discussed in detail below. However, studies conducted on imitation coinage in Poland have led to the disclosure of a number of further coins, which significantly expand this die-chain and put issues related to their origin in a whole new perspective.

<sup>13</sup> FMP I.252:565.

<sup>14</sup> FMP I.260:495.

<sup>15</sup> FMP I.204:508–509.

<sup>16</sup> FMP I.134:4070–4074.

<sup>17</sup> Bogucki, Magiera 2015a, pp. 116–120.

<sup>18</sup> Ilisch 1994, pp. 65–70; Bogucki 2012a, pp. 114–117; Bogucki 2012b, pp. 95–98; Lukas 2020, pp. 231–243.

<sup>19</sup> For the current list of finds, see Lukas 2020, pp. 236–239.

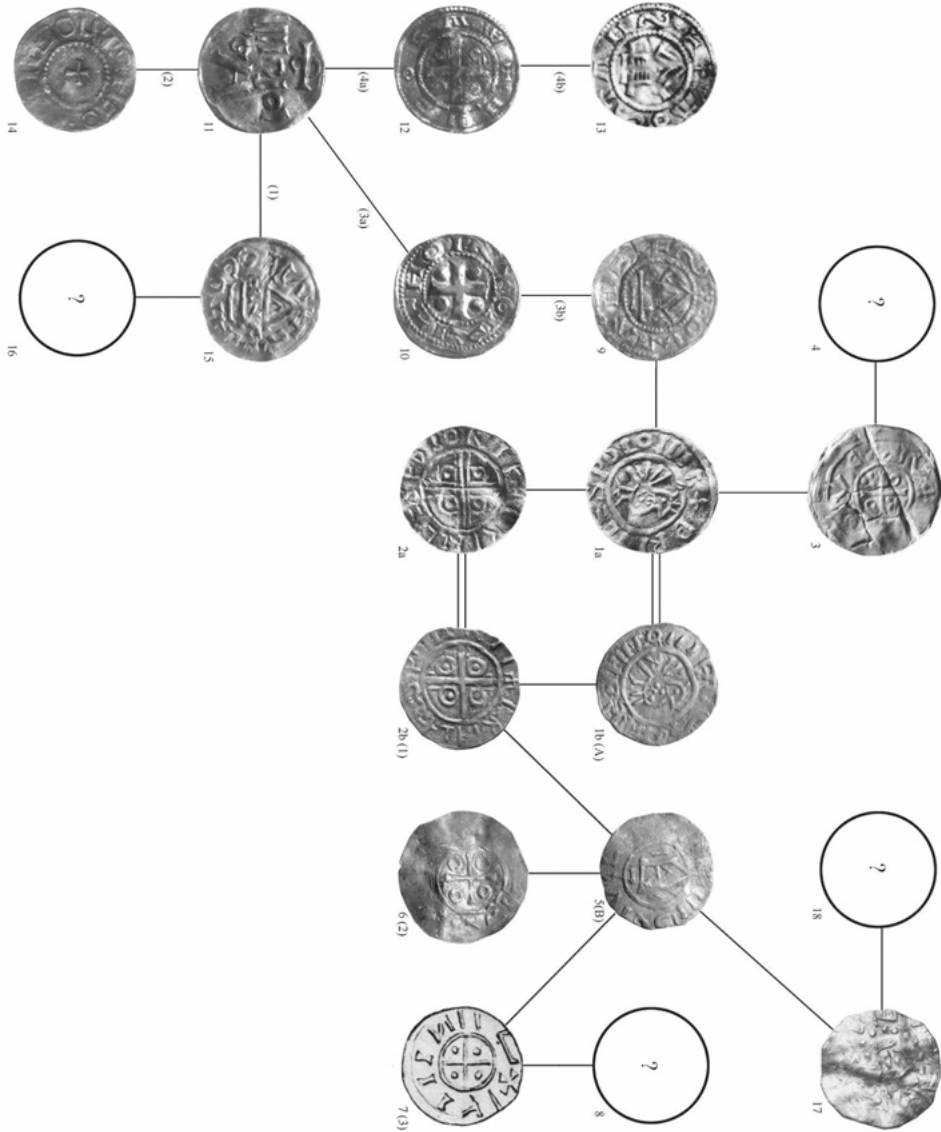


Fig. 5. Die-chain of Bolesław I the Brave's coins with the *PRINCES POLONIE* type  
(drawn by M. Bogucki)

The key coins for the extension of the die-chain turned out to be two denarii, offered for sale in various years by the Warszawskie Centrum Numizmatyczne (hereinafter WCN), which on one side have a chapel in a Bavarian type with an inscription .VIDV under the roof, and on the other side a cross with the letters D, O and three points between the cross-arms:

1.4 – WCN 60.114 (0.7 g);<sup>20</sup> WCN 173913 (1.34 g)<sup>21</sup>

1. Av.: chapel in Bavarian type with inscription .VIDV under the roof; along the edge the blundered legend DIV o SD ovo US

4. Rv.: in the center, a cross with extended ends of arms, between its arms O / three points / D / three points, beaded inner circle; along the edge the blundered inscription SS/HOCIXAIVI X



Fig. 6.a–b .VIDV/Cach 74 type denarii. Scale 1.5:1 (photo WCN)

The reverse of this coin has been known in numismatic literature since the middle of the 19<sup>th</sup> century, where it has been combined with an obverse with a Bavarian-type chapel. Until now, this type was attributed to the Czech Bolesław I (Cach 74, Šmerda 121). It should be noted, however, that J. Smolik initially believed that this was the denarius of Bolesław I the Brave,<sup>22</sup> before both F. Cach and J. Smerda re-attributed this coin to the Czech Bolesław I. The design of this die is formally similar to reverse no. 3, with a cross and three letters D and three points between the arms. However, these are undoubtedly two different dies. Type 4.5 is currently known from four complete specimens. Interestingly, most of them seem to come from Polish finds, although the only certain example is known from a single find from Wiślica. Attention is drawn to the relatively high weight of Hanka's and Wiślica's copies.

4.5 – Cach 74, Šmerda 121 (1.91 g);<sup>23</sup> Wiślica I (2.25 g?);<sup>24</sup> PDA e-Auction 17, no. 23 (1.36 g); Historical Museum in Moscow<sup>25</sup>

Av.: as no. 4

<sup>20</sup> Warszawskie Centrum Numizmatyczne, Auction 60 (24.04.2015), no. 114 (<https://wcn.pl/auctions/60/114>).

<sup>21</sup> Warszawskie Centrum Numizmatyczne, internet Auction: <https://wcn.pl/archive/173913> (28.03.2019).

<sup>22</sup> Smolik 1899, p. 113.

<sup>23</sup> Hanka 1855, p. 329, no. 18, tab. III.18; Smolik 1899, no. 515, tabl. VII–166; Cach 1970, no. 74; Šmerda 1996, no. 121.

<sup>24</sup> FMP IV.B.106:2.

<sup>25</sup> Jacek Magiera's documentation.

5. Rv.: in the center, a chapel with VV under the top, peak beams with crossbars, in a ring the blundered inscription +SCVOVIUO

Another coin expanding the .VIDV die-chain is a denarius, which may have been found “near” the Warta River in the vicinity of Gorzów Wielkopolski. Unfortunately, the coin is only known from poor-quality photographs.<sup>26</sup> However, there is no doubt that in addition to the Bavarian-type reverse described above, a strongly stylized chapel inspired by the *Otto and Adelaide* type was struck on the obverse. It is worth noting that this chapel imitates slightly younger variants, where the roof is disproportionately large in relation to the structure itself, while the internal beaming comes out of the roof structure. This coin is also characterized by its high weight.



Fig. 7. Cach 74 type denarii. Scale ca. 1.5:1: a – Cach 74; b – Wiślica; c – PDA 17, no. 23; d – Historical Museum in Moscow (fot. J. Magiera)

5.6 – Gorzów Wielkopolski – near Warta? (2.28 g)

6. Av.: chapel with widened roof, point in the center and  $\Delta\Delta$  on the sides, linear inner circle, along the edge ///EOD///

Rv.: as no. 5

The Bavarian-type reverse is combined with another imitation of the *Otto and Adelaide* type, this time the obverse with a cross and the ODO between the arms.

<sup>26</sup> I obtained information about this coin from prof. Borys Paszkiewicz, who I would like to thank.



Fig. 8. *Otto-Adelaide/Cach 74* denier. Gorzów Wielkopolski – vicinity. Scale 1.5:1

The die was made by an unskilled engraver – the letters are unevenly scattered, and the inner circle is made with little precision using many simple cuts. There are a number of missed burin strokes and scratches on the die's surface. Like the previous specimens, this coin is characterised by its high weight.

5.7 – WCN 178660 (2.07 g)<sup>27</sup>

Av.: as no. 5

7. Rv.: equal armed cross with wedge-expanding arms, between them the letters ODOD, dashed inner circle. The letters of the inscription are barely visible along the edge



Fig. 9. *Otto-Adelaide/Cach 74* denier. Scale 1.5:1 (photo WCN)

The no. 4 die, with the cross and the letters D, O and three dots between the arms, is connected to another die. This time it is the reverse of the Anglo-Saxon Æthelred II *Helmet* type. This coin comes from the Łupawa hoard, and has been published in the SCBI series as part of the collection of the Berlin Coin Cabinet. The prototype is dated to the years 1003–1009.

4.8 – Łupawa – FMP II.136:769; SCBI 36:1122<sup>28</sup> (1.31 g)

Av.: as no. 4

8. Rv.: Long Cross with arms ended with three semicircles. Under the cross, there is a square box with chequering, on the corners three dots were placed. The inscription along the edge is separated by the ends of the cross NIO – A// – //+ – GIE

<sup>27</sup> <https://wcn.pl/archive/178660> (25.04.2019).

<sup>28</sup> SCBI 36:1122.



Fig. 10. Cach 74/*Long Cross* denier. Łupawa hoard. Scale 1.5:1 (SCBI 36:1122)

Another connection is represented by a coin of unknown origin, offered for sale by the Warszawskie Centrum Numizmatyczne. This time, the coin imitates the reverses of the Anglo-Saxon Æthelred II *Helmet* type from the years 1003–1009. A characteristic feature of the new *Helmet* type die is the use of square punches to strike dots on the corners of the chequered field.

8.9 – WCN 172648 (1.34 g)<sup>29</sup>

Av.: as no. 8

9. Rv.: Long Cross with arms ended with three semicircles. Under the cross, there is a square box with chequering, on the corners three dots were placed. The lower fragments of the inscription are poorly visible in the ring



Fig. 11. *Long Cross* / *Long Cross* denier. Scale 1.5:1 (photo WCN)

The last die recognized so far from the discussed die-chain is a denarius offered by the Warszawskie Centrum Numizmatyczne, which is based on *Pointed Helmet* type coins of Cnut (1023–1029), or rather on Danish coins of the same ruler combining the features of the *Pointed Helmet* and *Short Cross* types (1030–1035/6) – e.g. in the mint in Lund, Roskilde, Viborg (e.g. Hauberg 10–11; 25–26, 50).<sup>30</sup> The appearance of this die is particularly important, as it shows that at least some of the coins included in the die-chain were created in the 20s of the 11<sup>th</sup> century, rather at the end of this decade or even at the beginning of the next one.

8.10 – WCN 184806<sup>31</sup>

Av.: as no. 8

<sup>29</sup> <https://wcn.pl/archive/172648> (24.01.2019).

<sup>30</sup> Hauberg 1965.

<sup>31</sup> <https://wcn.pl/archive/184806> (22.08.2019).

10. Rv.: Short Cross with a point in the center, in the linear circle. In the two fields between the arms, one dot, in the next field, two dots, in the last one three dots. Along the edge, the blundered inscription + UΛ∩OΕΙΩ∩∩∩



Fig. 12. Long Cross / Short Cross denier. Scale 1.5:1 (photo WCN)

The die-chain can be divided into three separate groups, for which the central connecting point is die no. 4. The first group consists of dies nos 1–3, i.e. *.VIDV* type with reverses in two variants. The second group consists of dies nos 5–7, where, as in the first group, Saxon and Bavarian type patterns are concentrated. What distinguishes it from the first group, however, is metrology – the coins from the second group are much heavier. While *.VIDV* type group is dominated by coins in the range of 1–1.5 g, the weight of denarii from the second group oscillates around 2 grams. However, the third group with dies nos 8–10, which are based on Anglo-Saxon or rather Danish types, is completely different.

Differences between individual groups are also visible in the context of their chronology. The first – *.VIDV* group is well dated by finds, many of which date back to before 1020: Ulejno, Środa Wielkopolska county, *tpq* 1006;<sup>32</sup> Poland – unknown location, *tpq* 1012 – National Museum in Warsaw;<sup>33</sup> Goszczynno/Sierpów II/Łęczyca II, *tpq* 1016;<sup>34</sup> Poznań XXI – surroundings, *tpq* 1017.<sup>35</sup> However, the third group is much later, and is based on Cnut's coins from 1023–1029 and possibly even later ones.

The observed differences in the metrology and chronology of individual groups of coins and the linear nature of the die-chain suggest that either the workshop striking these coins operated for a relatively long time, for about 15–20 years, or that there was a temporary suspension of production and its subsequent reactivation (however, there were no traces of corrosion and repairs on the available copies, as in the case of PRINCES POLONIE or AREAHLAT dies), or that there was a movement of dies (probably no. 4) between an older workshop to a younger

<sup>32</sup> FMP I.260.496.

<sup>33</sup> Ilisch 1994, p. 65; Bogucki 2012a, p. 115.

<sup>34</sup> FMP III.38.45–46.

<sup>35</sup> FMP I.201.23.

one. As we know, the transport of dies between mints was not something unusual in the early Middle Ages.<sup>36</sup>

Regardless of the interpretation adopted, the example discussed here clearly shows that in the case of die chains, it is not possible to automatically assume “unity of place, time and action”, but that it is necessary to consider each case separately. However, there is no great doubt that we are dealing with coins produced at the territory of the first Piasts’s state. Which ruler these coins were minted for remains an open question. So far, I have been in favour of assigning denarii of type *.VIDV* (and their twin ones *+JIVA*) to Bolesław I the Brave’s coinage. The discovery of a relatively late die from the 20s, and perhaps even the 30s of the 11<sup>th</sup> century, also requires us to consider the candidacy of Mieszko II, and the early production of type *.VIDV* put next to the coins with the name of Mieszko minted for him as the heir to the throne while Bolesław I the Brave was still alive. In this context, however, it should be noted that so far coins in Mieszko’s name have never been combined with the denarii attributed to the Bolesław I the Brave. Only in the DVX INCLITUS die-chain does a die resembling the type 2 denarii of Mieszko II appear.<sup>37</sup> The lack of connections between the coins with names of Bolesław and Mieszko is a clear indication that the heir to the throne had a separate mint workshop. Stanisław Suchodolski located it in Giecz.<sup>38</sup>

Therefore, to whom we should attribute coins from the *.VIDV* die-chain, and where were they struck? Taking into account the imitative nature of this coinage, its broad chronology overlapping the reign of both the father and the son, copying commonly recognized patterns, and the general chaos prevailing in the oldest Polish coinage, it is easy to assume that the change of ruler did not significantly affect what coins were produced by mints operating on ad-hoc basis. It can therefore be assumed that denarii with a *.VIDV* inscription were produced both for Bolesław I the Brave and Mieszko II or only for the latter, initially as coins of the heir to the throne, later for an independent ruler. Whether they were minted at Giecz (it is worth recalling that one specimen of *.VIDV* type coin was found in the grave no. 13/07 at the local cemetery<sup>39</sup>) or another center cannot presently be determined, although, as the latest finds show, everything is possible, and new findings and disclosed coins can help in determining this issue.

We should also not rule out the possibility that denarii with the *.VIDV* inscription, as well as similar coins with the *+JIVA* inscription, were not produced in

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<sup>36</sup> Becker 1985, pp. 175–178; Blackburn 1985, pp. 101–124; Bogucki, Magiera 2015b, pp. 121–128.

<sup>37</sup> Bogucki, Magiera 2015a, pp. 120–123.

<sup>38</sup> Suchodolski 2015, pp. 83–85.

<sup>39</sup> FMP I.43.39.

the mint of the supreme ruler, but were instead a product made at the request of one of the magnates. However, it would have to be a man from the very top of the elite, because the scale of denarii production with a *.VIDV* and *+JIVA* types is very similar to the scale of production of coins attributed to Bolesław I the Brave and Mieszko II.

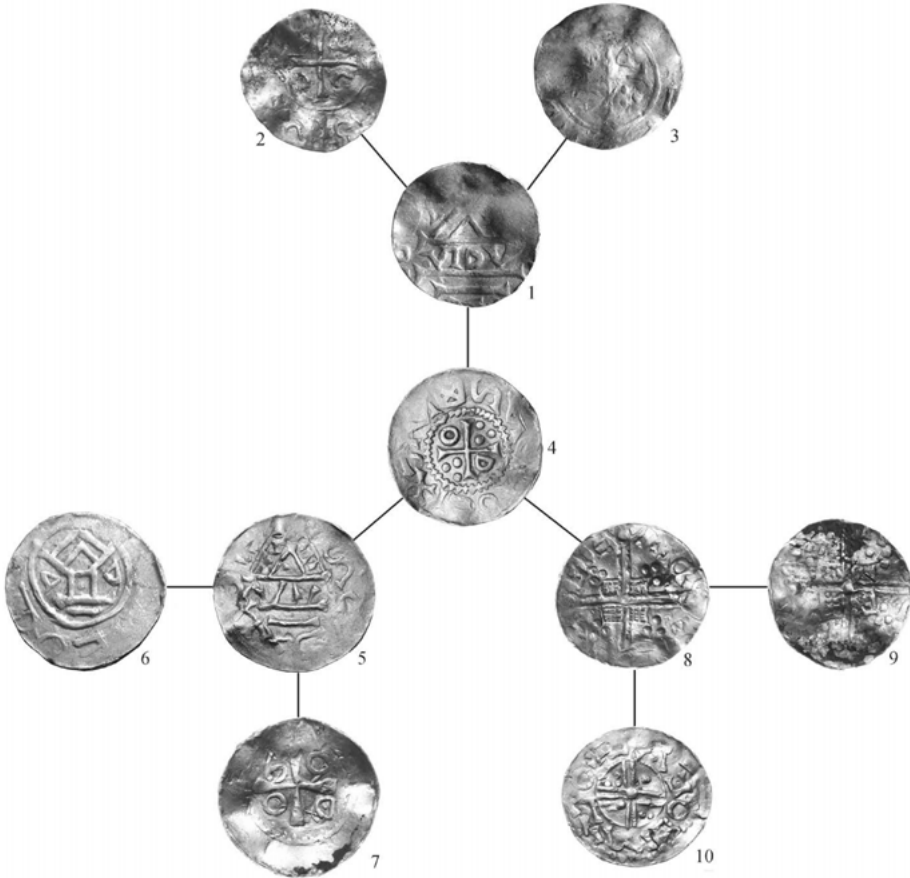


Fig. 13. Die-chain of *.VIDV* type (drawn by M. Bogucki)

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## NOWE TYPY NAJSTARSZYCH MONET POLSKICH

(Streszczenie)

W artykule zaprezentowano odkrycia monet nowych typów, które można przypisać do najstarszego mennictwa polskiego. Wchodzą one w skład dwóch różnych łańcuchów połączeń stempli. W przypadku łańcucha połączeń stempli PRINCES POLONIE udało się zidentyfikować jeden nowy stempel, w niezwykle zbarbaryzowanym stylu, przedstawiający zdeformowaną kapliczkę. Moneta wybita tym samym stemplem została wcześniej odnaleziona w skarbie z Kujaw, ukrytym po 1027 r. Odkrycie nowego stempla nie wpływa znacząco na ustaloną dotychczas chronologię monet z tego łańcucha – aktualne pozostaje datowanie monet na lata około 1005–1015. Natomiast duża różnorodność stylistyczna stempli z tego łańcucha – od precyzyjnie wykonanych po zupełnie barbarzyńskie, po raz kolejny ukazuje, że nie istnieje jednolity styl najdawniejszych monet polskich oraz, że w mennictwie Bolesława Chrobrego panował chaos.

W przypadku drugiego łańcucha połączeń stempli – .VIDV ujawniono aż siedem nowych stempli. Znajdują się tam tłoki wzorowane na monetach czeskich, bawarskich, saskich, anglosaskich i duńskich. Ich szczegółowa analiza wskazuje, że monety produkowane tymi stemplami nie musiały być produkowane w jednym czasie, lecz że produkcja mogła trwać nawet kilkanaście lat. Monety z tego łańcucha można podzielić na trzy osobne grupy, dla których punktem centralnym, łączącym je wszystkie jest stempel nr 4. Grupa pierwsza to stemple 1–3, czyli typ .VIDV z rewersami w dwóch odmianach. Grupa druga to stemple 5–7, gdzie skupiają się wzory w typie saskim i bawarskim, jednak od grupy pierwszej różnią się metrologią – są o wiele cięższe. Grupa trzecia to stemple nr 8–10, które wzorowane są na typach anglosaskich bądź raczej duńskich. Wyraźne są też różnice chronologiczne. O ile grupa pierwsza – .VIDV, jest dobrze datowana znaleziskami, z których szereg pochodzi z lat 1006–1017, to druga grupa pochodzi już z lat 20. XI w., wzorowana jest bowiem na monetach Knuta z lat 1023–1029, a być może i późniejszych.

Nowo ujawnione stemple nie rozwiązały problemu atrybucji denarów z legendą .VIDV, lecz ich przynależność do mennictwa Bolesława Chrobrego lub Mieszka II jest bardzo prawdopodobna.

Adres autora/The author's address:

dr hab. Mateusz Bogucki, prof. IAE PAN

Institute of Archaeology and Ethnology

Polish Academy of Sciences

Al. Solidarności 105, PL 00–140 Warsaw, Poland

matbogu@yahoo.com, mbogucki@iaepan.edu.pl

ORCID: 0000-0001-8810-8785



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GRZEGORZ ŚNIEŻKO

## **NOT ONLY OVERSTRIKES. RECYCLING OF THE OLDEST POLISH BRACTEATE DIES**

**ABSTRACT:** This article concerns the discovery of traces on coins that demonstrate the recycling of dies used to strike Bolesław III Wrymouth's bracteates. They are the oldest Polish coins made using this technique. These allow us to establish the relative chronology of coins of both types and to provide evidence of a common mint origin, contributing to the wider discussion over the nature of the issue of bracteates. Thanks to this, it can be shown that as long as a coin with traces of an older design remains unique, it is equally possible to interpret it as either an overstrike or a secondary use of a die with newly engraved content.

**ABSTRAKT:** Tekst dotyczy odkrycia na monetach śladów dowodzących recyklingu stempli do wybijania brakteatów Bolesława Krzywoustego. Są one najstarszym polskim pieniądzem jednostronnym. Pozwoliło ono na ustalenie chronologii względnej monet obu typów oraz dostarczyło argumentów za ich powstaniem w tej samej mennicy. W konsekwencji wniosło wkład do dyskusji nad charakterem emisji brakteatów. Dzięki niemu wykazano również, że dopóki moneta ze śladami starszych przedstawień znana jest w jednym egzemplarzu, dopóty równie prawdopodobne jest uznanie jej za przebicie, jak i wtórne wykorzystanie stempla, ale z nowo wrytą treścią.

**KEYWORDS:** Poland, 12<sup>th</sup> century, Bolesław III Wrymouth, coin dies, secondary use, overstrikes, bracteates, oldest Polish bracteates

**SŁOWA KLUCZOWE:** Polska, XII w., Bolesław Krzywousty, stemple mennicze, recykling, przebicie, brakteaty, najstarsze polskie brakteaty

Some of the most easily recognizable coins of Bolesław III Wrymouth (1102–1138) are bracteates, which are the oldest Polish coins produced in this technique. Current understanding, in terms of the content of dies, divides these coins into two types (Fig. 1), examples of which were published for the first time in the 1840s.<sup>1</sup>

<sup>1</sup> They were first mentioned in the lists of Tadeusz Wolański's collections (Wolański 1847, pp. 6–7) and Jakob Reichel (Reichel 1842, p. 100, nos 49–50).

These bracteates depict an image of two figures: a kneeling man on the left, and a clergyman standing before him on the right, the latter's right hand raised over the supplicant's head (Fig. 1:b). Both persons are identified in the inscriptions as St. Adalbert of Prague<sup>2</sup> (S ADALBERTVS) and Bolesław (BOLEZLAV). Another type related to this series was first described in the literature in an anonymous note from 1934 (Fig. 1:a).<sup>3</sup> This type depicts a full-figure, frontal image of St. Adalbert of Prague in a liturgical robe, with the Gospel book in his left hand and the crosier in his right, all surrounded by the inscription SCS ADALBERTVS EPS & MA, i.e. *Sanctus Adalbertus episcopus et martyr*. This type is much rarer than the first one.<sup>4</sup>



Fig. 1. Bracteates of Bolesław III Wrymouth: a – type I; b – type II. Typology according to Kiersnowski 1959.

Source: a – National Museum in Warsaw (cyfrowe.mnw.art.pl, photo by Piotr Ligier), inv. no. 115856; b – aukcje.gndm.pl/pl/monety-boleslaw-iii-krzywousty-brakteat-protেকcyjny-ze-sloneczkiem/337574, access 21.03.2022; compiled by G. Śnieżko

The problems of the circumstances of emission, dating and iconography of bracteates have been discussed many times in the scholarly literature. Questions concerning the issuers and circumstances of emission were scarcely discussed in the 19<sup>th</sup> and early 20<sup>th</sup> centuries, when most scholars accepted Kaźmirz Stronczyński's theory linking the bracteates with Bolesław III Wrymouth's 1113 penance after blinding his older stepbrother Zbigniew during a struggle for power in Poland. The duke's atonement ended in Gniezno at the tomb of St. Adalbert of Prague.

<sup>2</sup> *Święty Wojciech Sławnikowic* in Polish and *svatý Vojtěch Slavnikovec* in Czech.

<sup>3</sup> Nieznany brakteat 1934.

<sup>4</sup> I noted 17 with one figure and 224 bracteates with duke and martyr (Śnieżko 2021a, p. 27). At the antiquarian auctions in recent years, there have been numerous additional pieces with St. Adalbert and the duke, and only one bracteate with the image of St. Adalbert of Prague alone (sold twice: on Antykwariat Numizmatyczny Michał Niemczyk's auction no. 30, item 37 and later on the Gabinet Numizmatyczny Damian Marciniak's auction no. 16). This even more clearly increases the disproportion between both types.

For this reason, K. Stronczyński called these coins *penitential* bracteates, a term that was adopted by subsequent generations of the researchers.<sup>5</sup> During this period, discussion focused instead on the character of bracteates. Initially bracteates were not considered to be coins in the sense of a means of payment, but rather as non-monetary amulets, devotional objects, dress ornaments<sup>6</sup> or *commemorative metal plates*.<sup>7</sup> Only from the end of the 19<sup>th</sup> century were they regarded as coins: initially commemorative,<sup>8</sup> and later currency<sup>9</sup> issued for non-economic reasons.<sup>10</sup>

The years after World War II saw a renewed focus on the bracteate question. In his article on the bracteate with the image of St. Adalbert *en face*, Zbigniew Wdowiszewski expressed the opinion that the coins were struck after finding the martyr's head in Gniezno in 1127.<sup>11</sup> This article generated a response from Ryszard Kiersnowski, who proposed a completely new interpretation of the chronology and issuing circumstances of bracteates. Believing that the German bracteates must be older, Kiersnowski concluded that Polish bracteates must have been minted after them, in the 1130s. In his view, the earliest issues were of the type depicting St. Adalbert of Prague alone (type I), while the later issues were of the type with the duke and the martyr (type II). He sought the circumstances of their issue in political events around the activity of archbishop of Magdeburg, Norbert of Xanten, following the 1133 subordination of the Polish ecclesiastical province by a bull of Pope Innocent II. Bracteates were supposed to be a Polish propaganda response, depicting St. Adalbert of Prague as a patron of the Polish state and church. The bracteates with duke and martyr expressed particular affinities for this saint, a concept that earned them the name of *protectives*.<sup>12</sup>

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<sup>5</sup> Wolański 1847, p. 7, footnote 1 with K. Stronczyński's comment on the bracteates' description by Tadeusz Wolański; see also Stronczyński 1884, pp. 69–70. And after him: Lelewel 1851, pp. 340–341; Hutten-Czapski 1871, p. 1, no. 4; Dannenberg 1898, p. 111; Zakrzewski 1905; Gumowski 1914, p. 25; Gumowski 1924, p. 62; Gumowski 1956, pp. 17–19, 22–23; Wdowiszewski 1959. M. Gumowski was even convinced that the bracteates were thrown around in Gniezno during the duke's public penance.

<sup>6</sup> Wolański 1847, p. 7, footnote 1 with K. Stronczyński's remarks; Lelewel 1851, pp. 340–341.

<sup>7</sup> Stronczyński 1884, pp. 69–70.

<sup>8</sup> Dannenberg 1898, p. 111; Gumowski 1914.

<sup>9</sup> Piwocka 1933a, p. V; Piwocka 1933b, p. 60, no. 14; Wdowiszewski 1959, p. 52; Rozenkranz 1975, p. 586; Garbaczewski 2018.

<sup>10</sup> Kiersnowski 1959; Suchodolski 1973, pp. 109–110, 122, 135; Suchodolski 1976 and supplement to the reprint of this article – Suchodolski 2017a; Nakielski 2015a, pp. 51–52.

<sup>11</sup> Wdowiszewski 1959.

<sup>12</sup> Kiersnowski 1959.

While R. Kiersnowski's general conclusions strongly influenced later research agendas,<sup>13</sup> problems concerning issuer identities, relative chronology, place of production or their role in circulation were recurrent points of discussion for many years. Important questions also surrounded the ecclesiastical nature of these issue (see below), as well as the reasons for their issue: Witold Garbaczewski, for example, regarded bracteates as a result of monetary reform connected with periodic recoinage.<sup>14</sup> Another question of importance is the dating of each type and their chronological order. Some scholars still consider these coins to be the oldest European bracteates.<sup>15</sup>

In this paper I will investigate and discuss these bracteate-series and provide evidence for traces of designs present on coins with two figures that are not related to the original dies used to strike them. This, I will argue, has methodological implications that are of broader interest in the context of die-studies and interpretations.<sup>16</sup>

The findings relate to “duke and martyr” bracteates (type II) struck from three dies.<sup>17</sup> On the first example (Fig. 2:a) there is a clear trace of the curved upper end of a crosier, with a nodus and a ball at the end of the crook, above the right hand of St. Adalbert. In addition, between the saint and the duke there is a fragment of a robe. In part of the legend with the name of Sławnikowic, between the letters L and E there is a fragment of a letter V, or possibly the lower part of an inverted A. On the second example there is a remnant of the curvature of the crosier above the right hand of the bishop, and two sharply finished and outwards-spreading wedge-shaped details are preserved in the lower part of the legend, above the letter D inside the beaded border (Fig. 2:c). On the third example, just under the duke's palms, there is a trace that resembles a sphere, which has two lines spreading out from it and running diagonally downwards (Fig. 2:f).

The presence of traces of older images on coins is usually taken as evidence for the overstriking of older pieces with new dies. However, in the cases described above, we are instead dealing with the recycling of Bolesław's III bracteate dies. In the three cases described above, the traces of older images are repeated on different coins struck from the same dies (examples in Fig. 2:b, d, e); it is evident, therefore,

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<sup>13</sup> Detailed overview of the current state of the research – Garbaczewski 2018, *passim*; Śnieżko 2021a, pp. 18–21.

<sup>14</sup> Garbaczewski 2018.

<sup>15</sup> Recently – Nakielski 2015, p. 52.

<sup>16</sup> I have already presented them in print (Śnieżko 2021a, pp. 135–143). This article is a modified, shortened and updated English version of the main conclusions on this problem.

<sup>17</sup> In terms of typological division, these are the bracteates of the variants: A.XXI.01, A.XXII.01 and B.I.01 – see Śnieżko 2021b, *Wykaz typów, podtypów, odmian i wariantów stemplowych*.

that these details were not associated with planchets, but were present on the dies themselves.<sup>18</sup>



Fig. 2. Bracteates of type II with traces of older images: a–b – die variant A.XXI.01;  
c–d – die variant A.XXII.01; e–f – die variant B.I.01.

Source: a (Warszawskie Centrum Numizmatyczne – hereinafter WCN 68/121, wcn.pl);  
b (WCN 142870, wcn.pl); c (WCN 69/148, wcn.pl); d (MNK VII -P-1502, in the collections of  
the National Museum in Kraków, photo by Paweł Czernicki); e (WCN 149508, wcn.pl);  
f (WCN 73/57, wcn.pl); compiled by G. Śnieżko

<sup>18</sup> Variant A.XXI.01 is represented by a total of 10 coins. Among them, seven were sold at the Warszawskie Centrum Numizmatyczne (hereinafter WCN): stationary auction no. 68, item 121 (68/121), the remaining ones at online auctions – items no. 101808, 130116, 130117, 142870, 168541 and 190520). Another two were offered by the Antykwariat Numizmatyczny Michał Niemczyk (hereinafter referred to as ANN): auction no. 12, item 22 and auction no. 16, session I, item 35 (specimen previously sold by the Gabinet Numizmatyczny Damian Marciniak – item no. 6172753462). The last example of this variant is stored in the Historical and Archaeological

Of course, there is a possibility that we are dealing with the mistakes of engravers, who, realizing that they had planned the surface of the matrices incorrectly, ground the dies with a file and engraved the images in a correct way. Such an error, however, would have to be repeated with great accuracy, covering a similar location of the same detail – curvature of a crosier – in relation to a newer, fully legible representation. It is hard to accept.

Therefore, I believe that the traces discussed above confirm the secondary use of older coin dies of another type in the issue of bracteates of type II.<sup>19</sup> This is the first such discovery in the history of Polish early medieval coinage.<sup>20</sup>

Inaccurate grinding of older images on two of the three registered dies permits their unequivocal identification with bracteates bearing a full-figure image of St. Adalbert of Prague.

However, the traces on the coins of variant B.I.01 are the least visible (Fig. 2:e, f). Their arrangement in the coin field suggests that they may form the right edge of the lower part of the liturgical robe of the saint, perhaps with the remnant of his right shoe. However, this example remains uncertain, because other elements of the older image have not remained on the die. More traces remain on the die of variant A.XXII.01, which clearly include the curved upper terminal of a crosier. The downwards extension of its staff terminates at one of the wedge-shaped details mentioned above (Fig. 3:e, f). The location of these wedges in relation to the crosier and each other identifies them as the tips of St. Adalbert's shoes from type I bracteates. On all six currently known dies of these coins, the lower part of the crosier is located just next to the martyr's left shoe.

The die of variant A.XXI.01 was ground most carelessly, thanks to which most traces from the original matrix were preserved. These include not only the elements of the image from the coin field, but also a fragment of the letter in the right part of the inscription along the edge. The large number of original details surviving on this die admits direct comparison with the six known dies of type I bracteates with martyr *en face*. An exact match was found with an isolated variant of a type I

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Museum in Ostrowiec Świętokrzyski under inv. no. 403/B/24. Variant A.XXII.01 consists of eight bracteates: five from the WCN auction (items 69/148, 72/100, 73/58, 74/21 and 168542), one sold via Allegro (auction no. 5080471090), one from the collections of the Museum of Archaeology and Ethnography in Łódź (inv. no. MAEŁ-N-A 10988) and another one from the National Museum in Kraków (inv. no. MNK VII-P-1502). Variant B.I.01 consists of 10 coins: nine from the WCN auction: 50/5, 73/57, 130121, 149508, 181879, 181881, 181883, 181886 and 190513 and one from ANN (no. 20–I/24).

<sup>19</sup> For the consultation and discussions on this subject, I would like to thank prof. Stanisław Suchodolski, prof. Mateusz Bogucki and MA Michał Zawadzki.

<sup>20</sup> M. Bogucki's discovery regarding denarii of Bolesław I the Brave of *PRINCES POLONIE* type and Mieszko II of II, 2 and II, 3 types is of a different nature, as it involves the improvement of the coin dies of the same type (Bogucki 2010).

bracteate (Fig. 3:a, d).<sup>21</sup> Superimposing these bracteates reveals traces of not only the crozier, episcopal robe, and the inverted letter A, but also the lower part of the initial cross in the legend, a fragment of a letter C that was recut into an L, and the lines of the inner and outer borders, which are exactly the same on the older and younger bracteates. Therefore, it can be said with utmost certainty that bracteates with the duke and martyr of variant A.XXI.01 were struck with a die that had been previously used to produce bracteates of type I, variant II.<sup>22</sup>



Fig. 3. Outline of traces of older images from bracteates of type II: a – bracteate of type II, variant A.XXI.01; b – bracteate of type I, variant II.01; e–f – bracteate of type II, variant A.XXII.01; c, d, f – outline of older details on dies. Source: a (WCN 68/121, wcn.pl); b, d (ANN 28/2111, niemczyk.pl); e (WCN 69/148, wcn.pl), c, f – drawing by G. Śnieżko; compiled by G. Śnieżko

<sup>21</sup> Variety no. II consisting of three pieces – see Śnieżko 2021b, *Wykaz typów, podtypów...*, typological table 231.

<sup>22</sup> In relation to the image from bracteates of type II, it was deflected by about 10 degrees to the right, which is why I arranged its picture like this in Fig. 3.

This strongly suggests a relative chronology for these types. The secondary use of reworked type I dies in the production of type II bracteates makes it reasonable to conclude that coins with a full-figure image of St. Adalbert of Prague predate the double figure coins. At the same time, it is also important evidence of their origin from the same mint, which calls into question any attempts to assign these coins to a mint other than the ducal. While the concept of episcopal (mainly Jakub of Žnin, archbishop of Gniezno is pointed) or ecclesiastical participation in the issuance of bracteates has been discussed for years,<sup>23</sup> there are currently no solid arguments for such an attribution. It is symptomatic that the argument for the ecclesiastical nature of this type of money concerns mainly bracteates depicting only the saint, while those with the image and name of Bolesław are either overlooked<sup>24</sup> or considered to be a ducal issue.<sup>25</sup> Setting aside the purely speculative and currently unevidenced proposals surrounding an ecclesiastical mint in Poland at the beginning of the 12<sup>th</sup> century,<sup>26</sup> it is intrinsically difficult to accept the idea that a completely innovative bracteate technique was simultaneously introduced to Poland in the production of coinages of two different issuers, who also happened to mint coins with striking stylistic similarities.<sup>27</sup> This would also contradict the evidence for the centralisation of minting during the reign of Bolesław III Wrymouth.<sup>28</sup> In addition, the continuation of coin production in the bracteate technique, most likely by Władysław II (1138–1146), seems to be confirmed by fragment of a unique coin from the early medieval cemetery in Brzeg, Poddębice county, Łódzkie Voivodeship.<sup>29</sup> It bears the image of an enthroned ruler and a partially preserved legend – DENA[RIVS ...]ZLAV. The issuer's name can be reconstructed in two ways:<sup>30</sup> as [BOLE]ZLAV with Bolesław III Wrymouth as the most likely candidate<sup>31</sup> or [VLODI]ZLAV, i.e. Władysław II.<sup>32</sup>

<sup>23</sup> Gumowski 1956, pp. 23–24; Rozenkranz 1975, pp. 595–596; Schmidt 1995, p. 187.

<sup>24</sup> They are not mentioned by Marcin R. Pauk (2010, pp. 550–552), who pays attention only to bracteates with martyr alone.

<sup>25</sup> Wdowiszewski 1959, p. 56; Rozenkranz 1975, p. 594; Schmidt 1995, p. 184.

<sup>26</sup> R. Grodecki took an unequivocal position against the possibility of existence of ecclesiastical issuers in Poland until at least 1138. Already at that time he emphasized that these theories are based solely on iconographic argumentation (Grodecki 2009, pp. 8–10). The first indisputably ecclesiastical coins appear in Poland at the earliest at the end of the 12<sup>th</sup> century (Suchodolski 1987, p. 67).

<sup>27</sup> M. Gumowski (1956, p. 24) considered the bracteates of both types "as half-ducal and half-bishop coins, allowing", that Bolesław III Wrymouth partially "restored" minting rights to the Church.

<sup>28</sup> Śnieżko 2021a, pp. 98, 145, 186–187, 218–219, 228, 232–233, 261–262, 267, 276.

<sup>29</sup> FMP III, p. 53, no. 11: 2\*; see Śnieżko 2021a, pp. 20–21, 52–53.

<sup>30</sup> It was pointed out by S. Suchodolski (2017a, p. 69, footnote 17).

<sup>31</sup> Mikołajczyk 1985; Nakielski 2015, pp. 33–34.

<sup>32</sup> Such attribution – Paszkiewicz 2012, p. 16 (Suchodolski 2017a, p. 72 agrees with him); Garbaczewski 2018, pp. 128–131.

I think that attribution to the Władysław II is more probable. Detailed analysis of the die manufacturing supports this conclusion, since the punching of entire letters in sans-serif forms were characteristic features of Władysław's coinage. However, for unknown reasons the production of bracteates was ceased for several decades.

In any case, the most important argument for the ecclesiastical nature of bracteate production, according to previous researchers, is the presence of the image of St. Adalbert on the dies.<sup>33</sup> However, a review of coins issued by monarchs and other secular issuers shows that the images and names of various saints were common on the dies of German,<sup>34</sup> Danish,<sup>35</sup> or Bohemian and Moravian royal coins.<sup>36</sup> As far as ecclesiastical coins are concerned, from around the middle of the 11<sup>th</sup> century the image or name of the church issuer became a more diagnostic mark of such ecclesiastical mintage. These elements can be seen on coins issued by clergy in the Holy Roman Empire,<sup>37</sup> in Bohemia and Moravia<sup>38</sup> as well as in Denmark.<sup>39</sup>

In case of Polish bracteates with St. Adalbert of Prague *en face*, the situation is different, as these coins do not contain any elements identifying the secular issuer. At the same time, there are also no criteria that allow us to recognize them as coins from an ecclesiastical issuer. This possibility is excluded not only by the above-mentioned examples of foreign coins with images of saints, but above all by examples from the monetary and sigillographic iconography of Bolesław III Wry-

<sup>33</sup> The most recent researcher to allow for the possibility of an ecclesiastical attribution for type I bracteates is M.R. Pauk (2010, pp. 551–552), who emphasizes interpretative problems surrounding the affiliation of these coins.

<sup>34</sup> See examples in B. Kluge (1991). Royal and imperial coins of Henry III (1039–1056): pp. 164 and 168 (St. Simon and Jude), p. 166 (St. Stephen), pp. 170 and 172 (Holy Trinity and Mother of God); Henry IV (1056–1106): p. 186 (St. Simon and Jude), pp. 188 and 190 (Mother of God), p. 190 (St. Boniface); Henry V (1106–1125): p. 192 (St. Simon and Jude). Coins of secular issuers: Count of Berg, Adolf II (died before 1093): p. 220 (St. Peter); Count of Friesland, Egbert II (1068–1090): p. 222 (St. Simon and Jude); Count of Katlenburg, Dietrich III: p. 226 (St. Simon and Jude).

<sup>35</sup> Hauberg 1900, e.g. Sweyn Estridsson: p. 216 and table VIII, no. 17 (Lamb of God), p. 216 and table IX (Virgin Mary with Child), p. 217 and table IX, no. 25 (Jesus Christ), p. 217 and table IX, nos 26–30 (Jesus Christ); Eric the Good: p. 229 and table XII, no. 3 (Lamb of God).

<sup>36</sup> On the denarii of Bohemian dukes from the 11<sup>th</sup> and 12<sup>th</sup> centuries, the image of St. Wenceslaus was particularly popular, later also St. Adalbert (Sejbal 1997, pp. 80, 83). On the other hand, on the coins of the duchies of Olomouc and Brno initially there was a reference to St. Peter, who, in the half of the 11<sup>th</sup> century, was replaced by St. Wenceslaus. On the coins of the duchy of Znojmo, however, we find the name of St. Nicholas – Sejbal 1997, pp. 83, 88–90, 95.

<sup>37</sup> Kluge 1991, pp. 68–70; Steinbach 2015, pp. 195–196.

<sup>38</sup> Sejbal 1997, pp. 92, 96–97; Videman, Paukert 2009, p. 337, no. 213 (issue with duke Wenceslaus Henry of Olomouc?) and pp. 338–339, no. 214 (Henry Zdík); Videman 2017.

<sup>39</sup> Moesgaard 2018, pp. 229–230.

mouth, where the image of St. Adalbert had already been used.<sup>40</sup> The image and name of this martyr, which was not previously a conventional Piast motif, therefore appears as an individual expression of Bolesław III Wrymouth.<sup>41</sup> We might speculate that the decision to place Adalbert's image on coin and seal dies during the reign of Bolesław III Wrymouth was dictated by contemporary needs, which do not preclude the duke's utmost reverence for this saint.<sup>42</sup>

Finally, the argument that type I bracteates were produced under ecclesiastical authority implies that type I and II bracteates were created in two different mints, a situation that is difficult to accept. The evidence for die recycling and stylistic similarities, combined with the scattered distribution of finds and unlikely coincidence of a completely innovative production technique, argue against this. Only one piece of a bracteate (and it is a two-figure one) is known from Greater Poland,<sup>43</sup> in comparison to several hundred from southern Poland.<sup>44</sup>

Despite this, we cannot completely reject the possibility that an ecclesiastical mint existed in Poland in the first half of the 12<sup>th</sup> century, examples of which are known in several neighbouring countries at the same time. However, there is no evidence that an ecclesiastical mint produced any of the bracteate types described here, or indeed any of the currently-known coin types dating to this period.

It is still necessary to address the question about the motives for the reuse of dies. Given the disclosure of three cases of die reuse, it seems most likely that this process was intended to save raw material, time, and work when compared to the preparation of matrices completely from scratch.<sup>45</sup> This, in turn, supports the thesis that die production constituted a "bottleneck" of minting, which could significantly affect its efficiency.<sup>46</sup>

In addition, the importance for numismatic research of the discovery of traces of die recycling should also be mentioned. With this interpretative possibility in mind, it is necessary to take a great deal of caution in considering a unique coin with traces of older images as a simple overstrike. Until further specimens struck with the same die are recorded, these traces can be associated with both the plan-

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<sup>40</sup> Coins – see Suchodolski 2012, pp. 397–402; seals – Suchodolski 2009; Hlebionek 2009, while this author attributed the bulls to Bolesław IV the Curly (p. 80), which, however, was questioned by S. Suchodolski (2017b, pp. 525–526).

<sup>41</sup> The division into typical and individual content was discussed by Z. Piech (1993, pp. 13–14).

<sup>42</sup> For example Piech 2001, pp. 16–17.

<sup>43</sup> From the early medieval cemetery in Dziekanowice, Gniezno county, Wielkopolskie Voivodeship – FMP I, p. 99, no. 33: 102\*–103\*. See also Śnieżko 2021a, pp. 247 and 250, no. 40 and Śnieżko 2021b, *Katalog znalezisk monet Bolesława III Krzywoustego...*, no. 40.

<sup>44</sup> I discuss this issue in detail in another publication – Śnieżko 2021a, pp. 135–143.

<sup>45</sup> Also M. Bogucki (2010, p. 182) believes that "Labour saving was undoubtedly a direct reason for" correcting the coin dies of Bolesław I the Brave and Mieszko II.

<sup>46</sup> Kiersnowski 1964, p. 165; similarly also Šmerda 1996, p. 15.

chet and the die with equal probability. Since the discovery of the recycling of bracteate dies is not the first example of the secondary use of dies in the Polish coinage of the early Middle Ages, it seems likely that similar examples will appear in the following years. In this respect, known coins with traces of older images or letters that have been previously considered to be overstrikes may have significant research potential.

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## NIE TYLKO PRZEBICIA. RECYKLING NAJSTARSZYCH POLSKICH STEMPLI BRAKTEATOWYCH

(Streszczenie)

Brakteaty Bolesława Krzywoustego to najstarsze polskie monety jednostronne. Obecnie znane dzielą się na dwa typy. Na jednym z nich przedstawiono frontalny, całopostaciowy wizerunek św. Wojciecha w szatach pontyfikalnych, z księgą Ewangelii i pastorałem (Fig. 1:a). Na drugim natomiast księżę klęczy przed św. Wojciechem (Fig. 1:b). Mimo wieloletnich badań i licznych prac różnych autorów, do niedawna nie udało się jednoznacznie rozstrzygnąć problematyki chronologii względnej monet obu typów czy charakteru ich emisji. Od lat w dyskusjach podnoszona jest bowiem możliwość kościelnego udziału czy wręcz jednoznacznie kościelnego charakteru produkcji brakteatów (wymieniany jest tu głównie abp gnieźnieński Jakub ze Żnina). Uwagi te dotyczą jednak monet jednopostaciowych. Odpowiedź na niektóre ze stawianych pytań, okazała się kryć na powierzchni monet. Otóż na okazach brakteatów dwupostaciowych wybitych trzema stemplami, ujawniłem ślady starszych przedstawień (Fig. 2). Wobec tego, że monety wszystkich wariantów stemplowych reprezentowane są przez więcej, niż jedną sztukę, a dostrzeżone detale pojawiają się na wszystkich w dokładnie tych samych miejscach, nie powstały one w rezultacie przebiccia, ale są śladami świadczącymi o wtórnym wykorzystaniu stempli. W dwóch z trzech przypadków widoczne detale udało się zidentyfikować z przedstawieniami z brakteatów jednopostaciowych, a w jednym nawet dokładnie wskazać monety jednopostaciowe wybite stemplem poddanym następnie recyklingowi (Fig. 3).

Odkrycie umożliwiło jednoznaczne rozstrzygnięcie chronologii względnej monet obu typów – starsze są brakteaty z frontálním przedstawieniem św. Wojciecha, a młodsze dwupostaciowe. Monety obu typów musiały powstać w tej samej mennicy, co wraz z argumentami ikonograficznymi wykorzystano do wskazania księżęcego charakteru ich emisji. Trzy ujawnione przypadki wskazują, że wtórne wykorzystanie stempli, na które po zeszlifowaniu nanoszono nowe przedstawienia, musiało pozwalać na zaoszczędzenie surowca, czasu i pracy względem przygotowania tłoka zupełnie od nowa.

Poza wkładem w dyskusję dotyczącą mennictwa Bolesława Krzywoustego, zaakcentować trzeba, że odkrycie to każe zachować dużą ostrożność w jednoznacznym interpretowaniu pojedynczych monet ze śladami starszych przedstawień jako przebić. Do czasu ujawnienia kolejnych egzemplarzy z tych samych stempli, równie prawdopodobne jest, że powstały one w rezultacie wtórnego wykorzystania starszego stempla, zaopatrzonego w nową treść. Z pewnością warto również zweryfikować pod tym kątem monety ze starszymi śladami, dotychczas uważane za przebite. Nie można wykluczyć, że niektóre z nich przyniosą nowe, zaskakujące, ale potrzebne i interesujące odkrycia.

Adres autora/The author's address:

dr Grzegorz Śnieżko

Institute of Archaeology and Ethnology

Polish Academy of Sciences

Al. Solidarności 105, PL 00–140 Warsaw, Poland

grz.sniezko@gmail.com

ORCID: 0000-0003-0107-4151



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ROGER SVENSSON

## **COST-SAVING MINTING TECHNOLOGY: RECURRENT OVERSTRIKING OF BRACTEATES**

**ABSTRACT:** Leaf-thin bracteate coins were minted for several hundred years during the Middle Ages. The existence of hundreds of small independent currency areas with their own mints in central, eastern and northern Europe and the strong link between bracteates and periodic recoinage explain the large number of bracteate types. A special minting technology linked to goldsmithing technology was required to produce the bracteates. A soft material was placed under a flan, and the motif was created by bending the flan rather than pressing the motif into the flan. This study analyzes how bracteate technology could save costs in the minting procedure compared to traditional coinage technology. The bending characteristic of the bracteates together with the flat hammering of old bracteates imply that the size of the flan remained almost unchanged after recurrent overstrikes. Thus, the bracteate technology saved one of the costliest steps in the minting procedure: the time-consuming production of the flan. In contrast, overstriking of biface coins using the traditional coin technology could only be performed a few times, since it caused a stepwise thinner and larger flan. The latter phenomenon explains the existence of biface half-bracteates.

**ABSTRAKT:** Brakteaty na cienkich krążkach wybijano w średniowieczu przez kilkadziesiąt lat. Funkcjonowanie w Europie Środkowej, Wschodniej i Północnej setek małych, niezależnych stref obiegu z ich własnymi mennicami oraz silne powiązania między brakteatami a renowacją monety wyjaśniają dużą liczbę typów pieniądza brakteatowego. Do ich produkcji niezbędna była specjalna technika mennicza nawiązująca do złotnictwa. Pod krążek podkładano miękki materiał, a relief uzyskiwano bardziej przez odcisnięcie, niż wbicie. W niniejszym studium przeanalizowano w jaki sposób technika brakteatowa mogła obniżać koszty produkcji w porównaniu do tradycyjnej techniki menniczej. Tłoczenie brakteatów na rozklepanej starej monecie powodowało, że średnica krążka niemal nie zmieniała się mimo kolejnych przebić. Dzięki technice brakteatowej unikano zatem jednego z najbardziej kosztownych etapów w produkcji menniczej: czasochłonnego wytwarzania krążków. Natomiast przebijanie monet dwustronnych z wykorzystaniem tradycyjnej techniki menniczej mogło zostać wykonane tylko kilka razy, ponieważ skutkowało tym, że krążek stawał się cieńszy i większy. To ostatnie zjawisko objaśnia istnienie dwustronnych półbrakteatów.

KEYWORDS: bracteates, minting technology, overstriking, bending, soft material, leaf-thin flan, goldsmith, half-bracteates

SŁOWA KLUCZOWE: brakteaty, technika mennicza, przebicia, odciskanie, miękki materiał, cienki krążek, złotnictwo, półbrakteaty

## 1. INTRODUCTION

In central, eastern, and northern Europe, approximately ten thousand types of uniface silver coins called bracteates were struck in the period 1140–1520.<sup>1</sup> Bracteates are not only the thinnest and most fragile coins in monetary history, but could also have an extraordinarily high artistic style – at least in the 12<sup>th</sup> century. To produce such fragile coins that could function as a medium of exchange in the market, a specific minting technology was required that was completely different from the traditional technology used to strike biface coins. Only one die was used, and a piece of soft material, such as leather or lead, was placed under a thin flan (planchet) so that the mirror image of the design on the obverse appeared on the reverse of the bracteates (Fig. 1).<sup>2</sup> The thin flan and the soft material link bracteates to traditional goldsmithing technology.<sup>3</sup>

The large number of bracteate types can be explained by the presence of hundreds of small independent currency areas with their own mints in central, eastern and northern Europe, as well as the strong link between bracteates and periodic recoinage: a monetary taxation system. Under periodic recoinage, old coins were frequently declared invalid and had to be exchanged for new ones based on publicly announced exchange fees and dates. Such recoinages were recurrent. In the 12<sup>th</sup> and 13<sup>th</sup> centuries, recoinage could occur once or twice per year in Germany and central Europe, and a common exchange fee was four old coins for three new

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<sup>1</sup> The Latin expression *bractea* (which means “thin piece of metal”) for these uniface coins was used for the first time in a document from 1368 (Höfken 1886:VI). At the end of the 17<sup>th</sup> century, the term “bracteates” began to be used for these uniface coins in scientific publications (Olearius 1694). The first bracteates were struck in Thuringia and Saxony-Meissen in the 1120s. However, a breakthrough for bracteates occurred in the 1140s. Bracteates in the form of *hohlheller* were minted as small change in Rhineland-Westphalia until the beginning of the 17<sup>th</sup> century.

<sup>2</sup> Kühn 2000, pp. 2ff. The diameter of bracteates varies from 10 to 50 mm, and the weight is between 0.05 and 1.00 g. Bracteates are only 0.05–0.20 mm thick, but they are often stabilized by a high relief. A common misunderstanding is that all uniface coins are bracteates. Uniface coins that have not been minted through the specific technology of using soft materials under a flan are not called bracteates.

<sup>3</sup> For further discussion, see section 3.3.



Fig. 1. A bracteate with a mirror image on the reverse. *Brunswick*, Duke Henry the Lion (1142–95); Ø 27 mm, scale 1.5:1

ones.<sup>4</sup> Bracteates were well suited for a system with frequent renewals.<sup>5</sup> First, the relatively large diameter of bracteates (up to 50 mm) made it possible to display various images on the coins, allowing valid and invalid coins to be quickly and reliably distinguished. Second, only one die was needed, and this die lasted longer than traditional dies.

There is also a third argument for why bracteates are closely linked to periodic recoinage. In the literature, it has been claimed that bracteates were more frequently overstruck than biface coins.<sup>6</sup> Minting traces from the bracteates themselves show that they were often overstruck.<sup>7</sup> Furthermore, coin hoards with bracteates contain flat-hammered bracteates that have still not been reminted.<sup>8</sup> In the bracteate hoard from Grünroda with ca. 1,500 bracteates, Schwinkowski particularly analyzes whether bracteates have been overstruck and if there are traces from an old type.<sup>9</sup> He finds such traces for more than 200 bracteates in the hoard.<sup>10</sup>

Time- and cost-saving overstriking would be especially practical if recurrent re-minting of coins occurred. However, nobody has ever explained or shown why bracteates were easier to overstrike than biface coins produced through traditional minting

<sup>4</sup> Kluge 2007, pp. 61ff; Röblitz 1986, p. 21. Both the frequency and the exchange fee of coin renewals varied across Europe; for more information, see Svensson (2016, pp. 1112ff).

<sup>5</sup> Svensson 2016, p. 1123

<sup>6</sup> Kluge 2007, p. 50.

<sup>7</sup> Dobras 2005, p. 9.

<sup>8</sup> Gaetgens 1957, plates 2–5; Buchenau, Pick 1928.

<sup>9</sup> Schwinkowski 1909.

<sup>10</sup> In the Grünroda hoard, Bohemian bracteates of King Ottokar I have been overstruck by bracteates issued by the Margraves of Meißen. However, only in 1 (!) case (of ca. 200), Schwinkowski could exactly identify the old type under the new type. For most cases, one needs a magnifier to identify overstrike traces.

technologies. In the present study, the main purpose is to explain why the characteristics of bracteates made them easier to overstrike than traditional biface coins. However, before analyzing overstriking, the differences between, as well as pros and cons of, the bracteate technology and the traditional minting technology must be discussed.

The study is organized as follows. A comparison between traditional coin technology and bracteate technology is presented in section 2. In section 3, the organization of work for bracteate minting and the link between bracteate and goldsmithing technology are discussed. Overstriking of bracteates and biface coins are analyzed in section 4. The final section concludes the discussion.

## 2. TRADITIONAL COIN TECHNOLOGY VS. BRACTEATE TECHNOLOGY

The left side of Fig. 2 shows traditional coin-striking technology. With traditional technology, both the lower and upper dies are normally engraved. However, to simplify comparison with the bracteate technology, in this picture, only the lower die is engraved, and a flat cylinder is used instead of an upper die. Two important observations for traditional coin-making are that, before the coin is struck, 1) the flan is thicker than the deepness of the engraved lower die, and 2) the flan is made of a softer material (silver) than the die. When the hammer hits the cylinder, the flan is compressed and fills the gap in the engraved lower die. Part of the force through the flan spreads in a horizontal direction. The result is a coin that is thinner and has a larger diameter than the original flan and a flat reverse. If an upper die is also used, both sides of the coin show a motive, with the same effect on the thickness and diameter of the coin.

On the right side of Fig. 2, bracteate technology is depicted. Both technologies use the same lower die, engraving and upper cylinder. However, the engraving is deeper than the thickness of the bracteate flan. Furthermore, a soft material, such as lead or leather, is placed between the thin flan and the cylinder. The silver flan is harder than the soft material. When the bracteate is struck, the soft material is compressed, and some of the force spreads in the horizontal direction. The soft material increases in diameter and becomes thinner.<sup>11</sup> If the hammer strike has enough power, the silver flan will bend and fill the gap in the engraved die. The thickness of the flan is unchanged.<sup>12</sup> Therefore, the diameter of the bracteate becomes smaller than that of the original flan. Since the flan is thinner than the deepness of the engraving, a mirror image of the engraving will appear on the reverse of the bracteate. Thus, in both technologies, it is the softest material (flan in traditional technology and soft material in bracteate technology) that becomes thinner and increases in diameter. In bracteate technology, the motif is not pressed into the flan. Instead, the bracteate gets its motif by the bending of the flan.

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<sup>11</sup> Kühn 2000, p. 2.

<sup>12</sup> Kühn 2000, p. 2.

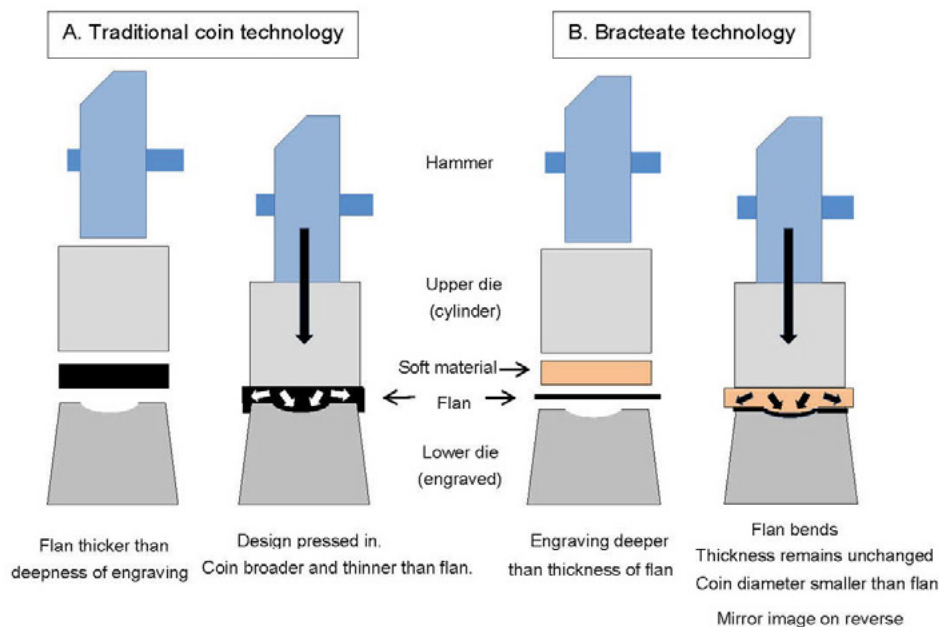


Fig. 2. Difference between traditional coin and bracteates technologies

### 3. ORIGIN AND ORGANIZATION OF BRACTEATE WORK

#### 3.1. A bracteate die lasts longer

As shown in Fig. 2, the lower die rather than the upper die is engraved when striking bracteates. This is intentional. Striking biface coins destroys the upper die more frequently than the lower one. It is the top part (which is not tempered) of the upper die where the hammer hits that is typically damaged. This damage occurs because of the impact of the hammer and the recoil upwards that follows. Many die-link studies from the Viking Age confirm that there are two to three upper dies for every lower die used to strike biface coins.<sup>13</sup> Thus, when striking bracteates, it is economical to use an engraved lower die and a flat cylinder as the upper die, as it is far cheaper to produce a new cylinder than an engraved die. This conclusion is also empirically supported by the fact that almost all preserved bracteate dies are lower dies.<sup>14</sup>

A lower bracteate die will last longer and can strike more coins than a lower die for biface coins for two reasons. First, the soft material cushions the hammer strike, and the recoil is smaller. Second, the thin silver flan and the soft material require a markedly less powerful strike. The cheap bracteate technology is therefore

<sup>13</sup> Malmer 2010, pp. 43ff.

<sup>14</sup> Svensson 2013, p. 128.

practical and economical if many coins must be struck in a short period. Thus, it is no surprise that the golden years of bracteate technology and periodic recoinage coincided, as mentioned in the introduction.

### 3.2. Organization of work

European bracteates were struck from the obverse with a negative die, i.e., the engraved die had a mirror image of the design.<sup>15</sup> The sequential organization of work when striking bracteates was similar to that of biface coins:<sup>16</sup>

1. The correct alloy of silver was created;
2. The silver was molded in forms or ingots;
3. The silver was hammered into rods with appropriate thickness;
4. The circular flan was punched or cut out from the rods;<sup>17</sup> and
5. Finally, the bracteate was struck (see right panel of Fig. 2).

In the German literature, it has been assumed that circular flans were cut out with a pair of scissors or punched out with a tool from the hammered silver rods in step 4.<sup>18</sup> However, waste materials from bracteate minting in Sweden and Norway tell another story: some bracteates were struck on the silver rod before they were punched out.<sup>19</sup> This procedure has not been confirmed for German bracteates.

Silver was the only precious metal used for bracteates until approximately 1500. However, it was not feasible to use 100 percent silver, since the bracteates would be too soft and would quickly wear down or bend once in circulation. A base metal such as copper or nickel was therefore mixed with the silver. German bracteates from the period 1120–1290 normally had a silver fineness of 85–95 percent.<sup>20</sup>

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<sup>15</sup> There are a few exceptions; some of the earliest German bracteates were struck from the reverse with a positive die.

<sup>16</sup> Kluge 2007, pp. 49ff.

<sup>17</sup> However, there were some variants of this procedure. Some bracteates were struck on squared flans, e.g., in Breisgau (southwestern Germany) and northern Switzerland. The squared bracteates were then given rounded edges, since the die was circular. An advantage was that it was easier to cut out squared flans than circular ones. However, a disadvantage was that bracteates on squared flans more easily cracked in the corners when in use.

<sup>18</sup> Kühn 2000, p. 13; Kluge 2007, p. 49. Jäggy and Schmutz (1998) suggest another method for the production of bracteate flans in the 14<sup>th</sup> century. The silver was molded in long rectangular ingots (“König”). These ingots were divided into small cubes of the necessary weight. The small silver cubes were then hammered out to perfect circular flans, and non-even circular parts were cut off. The problem with this method of producing flans is that it would have had a high production cost. For economic reasons, this method is therefore rejected. In the present paper, I take the opposite view, namely, that bracteates were produced because the technology was inexpensive. Thus, it is more likely that the silver was hammered out into large silver rods with the appropriate thickness.

<sup>19</sup> Gullbekk 1996, pp. 186ff; Golabiewski Lannby 2016, pp. 168–169.

<sup>20</sup> Bracteates of pure copper were struck in some mints in northern Germany (e.g., Rostock) in the 16<sup>th</sup> century. Today, bracteates made from gold are sold on the collector market, but they are regarded as modern forgeries because gold bracteates have never been found in any coin hoard.

Since silver is a soft metal, and the flans were leaf-thin (some as thin as 0.05–0.10 mm), bracteates were coined without warming up the flan.<sup>21</sup> Meding argues that annealing would probably destroy or bend the leaf-thin flan. A disadvantage with cold-hammered coins – especially if they are thin – is the risk of planchet cracks. Such cracks are common on medieval bracteates, particularly on those from Saxony and Thuringia with a thickness of 0.05–0.10 mm.

### 3.3. Links to goldsmithing technology

The first European bracteate coins were minted in Thuringia and Saxony-Meissen in the 1120s, but bracteates were not a new phenomenon. Indian bracteate coins were minted in the 7<sup>th</sup> and 8<sup>th</sup> centuries, but it is highly unlikely that the German mint masters of the Middle Ages were acquainted with them.<sup>22</sup> However, by the 12<sup>th</sup> century, the technique of punching designs in thin flans of precious metal against a soft material when producing jewelry bracteates had been known for several hundred years among goldsmiths and silversmiths in central and northern Europe.<sup>23</sup>



Fig. 3. Half-bracteate, where obverse and reverse designs are superimposed on each other.  
*Worms, Bishop Burchard II (1120–49); Ø 28 mm, scale 1.5:1*

At the end of the 11<sup>th</sup> century, half-bracteates began to be struck in Germany – thin, biface coins on which the obverse and reverse designs were superimposed (Fig. 3). W. Haupt and R. Besser, H. Brämer, V. Bürger argue that these

<sup>21</sup> Meding 2006, p. 48.

<sup>22</sup> Indian bracteates were relatively large, 50–60 mm in diameter, and weighed 5–6 g, considerably more than the German bracteates, which weighed at most 1.0 g. Further, Indian bracteates were struck with a positively engraved die from the reverse, in contrast to the German bracteates, which were struck with a negative (mirrored) die from the obverse.

<sup>23</sup> Jewelry bracteates were produced by goldsmiths in the 6<sup>th</sup> and 7<sup>th</sup> century in northern Europe. These ornaments were almost always made of gold and were not used as a regular means of payment. They were not struck with an engraved die; rather, the design was punched directly on the flan with punches or other tools. However, a soft material was placed under the thin flan of precious metal – exactly as was done when striking bracteate coins.

coins must have been struck with traditional coin technology in two rounds.<sup>24</sup> If both dies had been used in one round (as is normal for biface coins), many of these thin coins would have developed flan holes or cracked. On many German half-bracteates, the motif of one side clearly dominates the other side. This result can only occur if they are struck with two blows (the design of the second blow will dominate the first). However, it does not exclude that some half-bracteates were struck in one blow, since there exist also half-bracteates where both sides superimpose each other.

It has long been assumed that bracteates were direct successors of half-bracteates and that at some point, a mint master with knowledge of goldsmithing technology or assisted by a goldsmith simply decided to use only one die and a soft material to improve the design and make coinage more efficient. However, the German literature has not been able to explain why these badly struck half-bracteates existed.

An alternative explanation for why the first bracteates in Thuringia were minted has been presented by Kühn.<sup>25</sup> He argues that the first bracteates were minted by goldsmiths, since there was a lack of minting personnel in the growing local markets in Thuringia.<sup>26</sup> This problem may have been solved by several monasteries in Thuringia (for example, Pegau and Nordhausen) that stored relatively large deposits of silver and had goldsmiths available. These goldsmiths had never minted coins, but had a long tradition of engraving thin panels of precious metal using a soft material such as leather or lead under the panels.<sup>27</sup> Hoard evidence shows that the first bracteates in Thuringia were minted between ca. 1120 and 1130.<sup>28</sup> Furthermore, technical analysis shows that these early bracteates were likely struck by individuals with limited prior apprenticeship in coining. The earliest bracteates were experimental in nature. For example, the legend is retrograde, the main design has a relief that is higher than the surrounding circle of pearls, or they were struck with a positive die from the reverse.<sup>29</sup>

Irrespective of which explanation is true, the bracteates were minted with a technology similar to that used by goldsmiths. As in western Germany, in central and eastern Germany, there was a geographic currency constraint for bracteates. Thus,

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<sup>24</sup> Haupt 1974, pp. 19ff and Besser, Brämer, Bürger 2001, p. 52

<sup>25</sup> Kühn 1996, pp. 15ff. I have removed some inaccuracies existing in Kühn's publication, so his explanation has been slightly modified here.

<sup>26</sup> If the local markets were to work efficiently, coins were needed that could function as both a medium of exchange and a standard of value. However, the new towns struggled to find well-apprenticed mint personnel. In the beginning of the 12<sup>th</sup> century, there were only a few mints in Thuringia, and these were unable to satisfy the demand for coins in the region (Kühn 1996, p. 17).

<sup>27</sup> This manufacturing technique is similar to that used to decorate panels on reliquaries (Kühn 1996, p. 18).

<sup>28</sup> Kühn 1996, pp. 20ff. The first European bracteate was probably struck in Pegau ca. 1120–25 by Count Wiprecht von Groitzsch (also Sheriff of Pegau).

<sup>29</sup> Kühn 1996, pp. 26ff.

bracteates were from the beginning valid only in a limited, local circulation area. Notably, however, there is absolutely nothing in the historical record to indicate that the first bracteates were linked to periodic recoinage. On the contrary, based on the evidence of many die variants of specific issues, such coins seem to have circulated for relatively long periods.<sup>30</sup> Furthermore, coin hoards show that the earliest bracteates circulated for long periods<sup>31</sup> and that only a few bracteate types were issued during two decades (1120–1140).<sup>32</sup> However, the inherent fragility of bracteates was an endemic problem that forced the issuer to substitute new for damaged bracteates from the same issue.<sup>33</sup>

A breakthrough for bracteates occurred in the 1140s and 1150s, when hundreds of minting authorities in central, eastern and northern Germany realized that bracteates were well suited for periodic recoinage (see section 1). Many of the mints that started coining bracteates had never minted before. It was far easier to persuade people who had almost never seen coins before to use fragile bracteates (e.g., those in Thuringia and Saxony) than people in areas with stable biface coins (e.g., Rhineland and Westphalia). However, among the established mints, it was those that had earlier minted half-bracteates that continued to mint bracteates.<sup>34</sup>

#### 4. OVERSTRIKING OF BRACTEATES AND BIFACE COINS

Besides the engraving and production of the coin die, the production of the silver flans was the most expensive step in the minting procedure, since it involved several steps (see section 3.2). By overstriking old coins, the costly and time-consuming production of flans could be saved. In such case, old coins did not need to be melted down. The overstriking involves two steps. First, the old coin is hammered out and a new flan is created. Second, a new coin is struck on the new flan.

The left panel of Fig. 4 illustrates what happens when coins are overstruck multiple times with traditional minting technology. As shown in the left panel of Fig. 2, the finished coin is thinner and has a larger diameter than the original flan. However, when undergoing the first hammering out in Fig. 4, the flan also becomes thinner and expands in diameter. For each step – irrespective of whether it is flat

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<sup>30</sup> Röblitz 1985, pp. 14ff.

<sup>31</sup> Röblitz 1985, p. 16.

<sup>32</sup> Kühn 1996, pp. 20ff.

<sup>33</sup> Dobras 2005, p. 9.

<sup>34</sup> Examples of such mints are Halberstadt and Quedlinburg (Harz), Erfurt (Thuringia) and Hildesheim (southern Lower Saxony). Other mints in western Germany that had struck half-bracteates never began minting bracteates (Worms, Weinheim, and Speyer). The transition of a mint from minting biface coins, via half-bracteates, to bracteates could have taken decades. Sometimes, bracteates, half-bracteates and biface denarii were struck simultaneously.

hammering or striking a new coin – the flan becomes thinner and expands in diameter. In the end, the flan becomes so thin that it is hardly possible to produce a coin with an upper and a lower die without cracking the coin. This characteristic is exactly that of the biface half-bracteates. Thus, using a traditional coin technology, old coins can only be overstruck a few times. The appearance of two-sided half-bracteates in the second half of the 11<sup>th</sup> century is likely the result of a desire to reduce production costs by overstriking old coins. However, this attempt to save costs partly failed.

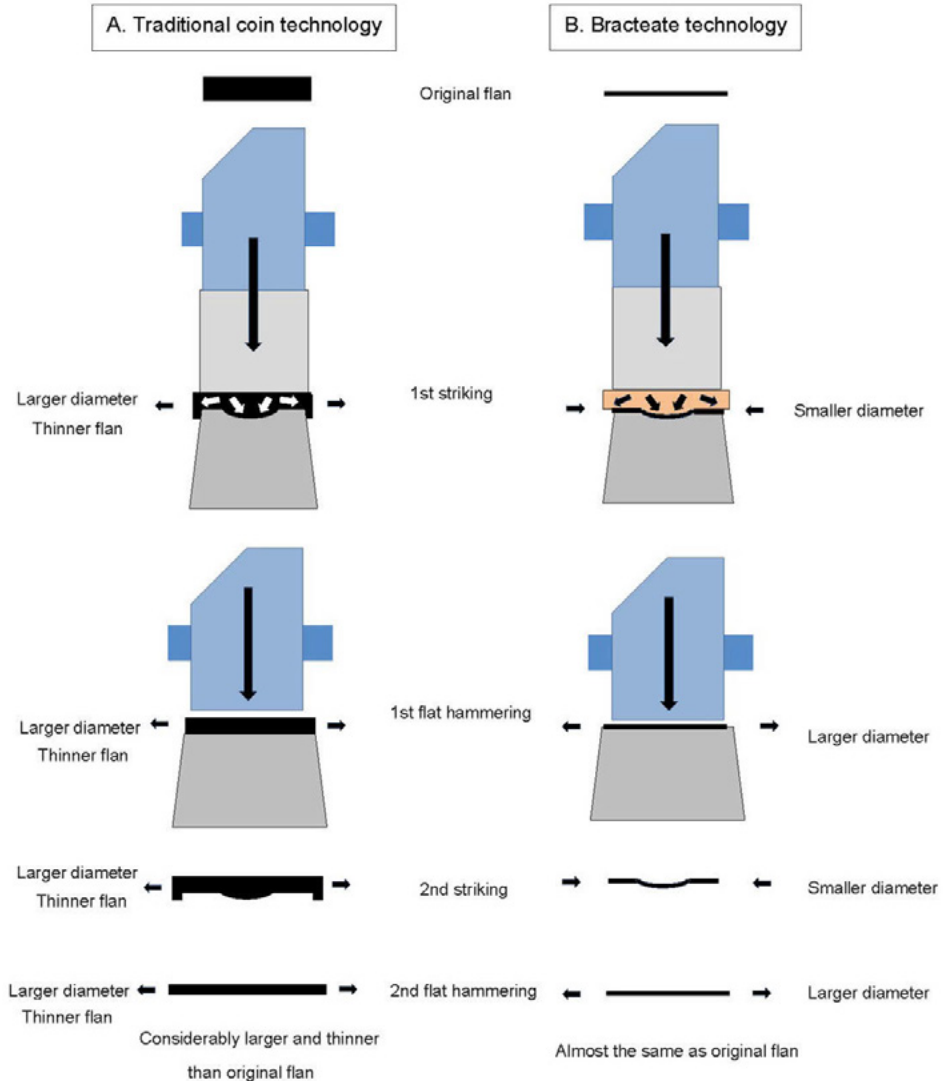


Fig. 4. Overstriking with traditional and bracteate technologies

In the right panel of Fig. 4, the effects of multiple overstriking of bracteates are depicted. As was shown in Fig. 2, the thickness of the flan is not affected when a bracteate is struck, since the flan bends and the diameter contracts. When the bracteate is hammered out, almost the same impacts apply as in the left panel; the diameter expands. Thus, the new flan has almost the same size as the original one. However, because the bracteate is so thin, a less powerful strike is needed to hammer out the old bracteate. Thus, the thickness of the flan is hardly affected.



Fig. 5. Overstruck bracteate; *Meissen/Freiberg* (Schwinkowski 480); Ø 42 mm, scale 1.5:1



Fig. 6. Overstruck bracteate; *Fulda* (Berger 2301); Ø 25 mm, scale 1.5:1

The procedure of striking and hammering out means that a bracteate can be overstruck multiple times. Metallurgy and the bending characteristic of bracteate technology explain why it is more efficient to overstrike bracteates than traditional biface coins. Since bracteates were not linked to periodic recoinage until the 1140s (see section 3.3), it is likely that the first bracteates were produced as a result of



Fig. 7. Overstruck bracteate; *Magdeburg* (Mehl 630); Ø 20 mm, scale 1.5:1

the failure of overstriking biface (half-bracteate) coins with the traditional minting technology. When goldsmith technology was used instead of a traditional coin technology, the flan remained nearly unchanged after multiple overstrikes.

As previously mentioned in relation to the Grünroda hoard, most empirical evidence for the overstriking of bracteates can be seen as traces of an old type in the background of the design. One often needs a magnifier to identify such traces. If the flat hammering of the old type, before re-striking, is well done, there will be no traces at all. However, there are also examples on overstruck bracteates where traces are distinct for the eye (see Figures 5–7). In these cases, the flat hammering has been incomplete.

## 5. CONCLUDING REMARKS

The previous literature has been aware that bracteates were more frequently overstruck than biface coins. The evidence for this practice includes flat hammered bracteates in coin hoards and traces of overstrikes on bracteates. However, nobody has explained why bracteates were easier to overstrike than biface coins produced through traditional minting technology. In this study, I have explained why the characteristics of bracteates – originating from goldsmith technology – make them easier to overstrike multiple times.

When coins produced through traditional technology are overstruck, the flan will be larger and thinner both when striking the coin and when hammering out the old coin to a new flan. After multiple overstrikes, the flan will expand in diameter and become so thin that it will crack. The final result will be a half-bracteate, where the obverse and reverse designs are superimposed. The previous literature has not explained why half-bracteates existed. In contrast, the bracteate technology implies that the design of the bracteate is created by bending the thin flan. The diameter becomes smaller than that of the original flan, and the thickness is not affected. When the old bracteate is hammered out, the flan expands again – becoming almost the same size as the original flan. This characteristic means that bracteates can be overstruck multiple times without altering the size of the flan.

The golden era of the bracteates – ca. 1140–1300 – is closely linked to periodic recoinage. The relatively large diameter of bracteates made it possible to display various images on the coins, allowing valid and invalid coins to be quickly and reliably distinguished. Furthermore, only one die was needed, and this die lasted longer than traditional dies. These factors explain why bracteates became so successful but cannot explain why the first bracteates in the 1120s were produced, since these early ones were not linked to *renovatio monetae*. The analysis in this study instead suggests that at the end of the 11<sup>th</sup> century in Germany, there was a desire to make minting production more efficient. Hammering out and overstriking old coins eliminated one of the costliest steps in the minting production – producing flans. However, this attempt partly failed, as the result was half-bracteates. Switching to a goldsmith technology and producing bracteates allowed for multiple overstrikes. This approach was particularly practical later, when coins were often reminted on a timely basis under periodic recoinage. The analysis of overstrikes in this study explains not only why the first bracteates in the 1120s were produced but also why half-bracteates were produced in the 11<sup>th</sup> and 12<sup>th</sup> centuries.

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## TECHNIKA MENNICZA OBNIŻAJĄCA KOSZTY PRODUKCJI: POWTARZANE PRZEBIJANIE BRAKTEATÓW

(Streszczenie)

Jednym z najbardziej kosztownych etapów produkcji menniczej była czasochłonna produkcja krążków. Tę drogą fazę można było pominąć dzięki przebijaniu starych monet. W dotychczasowej literaturze dostrzeżono, że w średniowieczu brakteaty były przebijane częściej od monet dwustronnych. Praktyki tej dowodzą rozklepane brakteaty w skarbach i ślady przebić rejestrowane na tych monetach. W niniejszym artykule ukazano dlaczego specyfika techniki brakteatowej czyniła ich wielokrotne przebijanie prostszym niż w przypadku monet dwustronnych.

Do produkcji brakteatów wymagana była specjalna technika mennicza nawiązująca do złotnictwa. Krążek umieszczano na miękkim materiale, a relief uzyskiwano bardziej przez jego odcisnięcie niż wbicie. Tłoczenie brakteatów na rozklepanej starej monecie powodowało, że średnica krążka niemal nie zmieniała się mimo kolejnych przebić. Natomiast przebijanie monet dwustronnych z wykorzystaniem tradycyjnej techniki menniczej mogło zostać wykonane tylko kilka razy, ponieważ skutkowało tym, że krążek stawał się stopniowo cieńszy i większy, przez co mógł pęknąć podczas wybijania. Efektem końcowym będą półbrakteaty, na których przedstawienia z awersu i rewersu przenikają na stronę przeciwną.

Złota era brakteatów – ok. 1140–1300 – ściśle wiąże się z renowacją monety. Stosunkowo duża średnica brakteatów umożliwiała nanoszenie różnorodnych przedstawień na monety, pozwalając na szybkie i pewne rozpoznanie monet ważnych i unieważnionych. Ponadto, do ich produkcji niezbędny był tylko jeden stempel, który też miał dłuższą żywotność od tradycyjnych tłoków menniczych. Czynniki te tłumaczą dlaczego brakteaty stały się tak popularne, ale nie mogą objaśniać dlaczego pierwsze brakteaty wybito w latach 20. XII w., skoro nie miały one jeszcze związku z *renovatio monetae*. W analizie zawartej w tym opracowaniu zasugerowano natomiast, że pod koniec XI w. w Niemczech, zaistniała potrzeba zwiększenia wydajności produkcji menniczej. Rozklepywanie i przebijanie starych monet eliminowało jeden z jej najdroższych etapów – wytwarzanie krążków. Próba ta jednak częściowo zakończyła się niepowodzeniem, ponieważ efektem były półbrakteaty. Przejście do techniki złotniczej i produkcja brakteatów umożliwiła wielokrotne przebijanie. Takie podejście praktyczne było szczególnie później, gdy monety często przebijano w czasach cyklicznej wymiany. Analiza przebić w niniejszym tekście objaśnia nie tylko dlaczego pierwsze brakteaty zostały wyprodukowane w latach 20. XII w., ale też dlaczego półbrakteaty wybijano w wiekach XI i XII.

Adres autora/The author's address:

prof. Roger Svensson

The Research Institute of Industrial Economics (IFN)

P.O. Box 55665, SE-10215 Stockholm, Sweden

roger.svensson@ifn.se

ORCID: 0000-0003-3377-8460



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ANDRIĬ KRYZHANIVS'KYĬ  
OLEG BAZAR  
VASYL' PAVLIV

### THE DOTTED I'S AND CROSSED T'S ON GALICIAN-RUTHENIAN COPPER COINAGE OF THE 14<sup>TH</sup> CENTURY<sup>1</sup>

**ABSTRACT:** In the 14<sup>th</sup> century, copper coins of Galician Ruthenia were minted at the Lviv mint, most of which can be easily attributed to dated issuers. However, among them there are coins of two types that arouse controversy. These are variants with a crown on both sides of the coin (*crown/crown* type) and a coin with two initials (*K/crowned L* type). Almost all researchers, with the exception of perhaps only Borys Paszkiewicz, date the coins of the *crown/crown* type to the period before 1370, when the Polish King Casimir III the Great ruled in Galician Ruthenia. The analysis of the dies and die-chains presented in the present article allow us to attribute the coins to Louis of Hungary and refer their issue to the years 1378–1382, as suggested by B. Paszkiewicz. So far, coins of the *K/crowned L* type were dated to the years of the reign of Louis of Hungary. However, the analysis of the material from hoards and the shape of the punch with letter L indicate that they were minted during the interregnum in Lviv, i.e. between the end of 1370 (the date of King Casimir's death) and October 1372 (when Władysław Opolczyk, who was appointed the governor of the Hungarian king, Louis in Galician Ruthenia, arrived in Lviv).

**ABSTRAKT:** W XIV w. w mennicy lwowskiej wybijano miedziane monety Rusi Halickiej, które w większości łatwo daje się przypisać emitentom, jak i ustalić czas ich powstania. Istnieją jednak wśród nich monety dwóch typów, które wzbudzają kontrowersję. Chodzi o wariant z wizerunkiem korony na obu stronach monety (typ *korona/korona*) oraz o monetę z dwoma inicjałami (typ *K/L pod koroną*). Niemal wszyscy badacze, za wyjątkiem bodaj jedynie Borysa Paszkiewicza, monety typu *korona/korona* datują na okres przed 1370 r., gdy w Rusi Halickiej panował król Polski Kazimierz Wielki. Przedstawiona w niniejszym tekście analiza stempli monet i łańcuchów ich połączeń, pozwoliła przypisać je Ludwikowi Węgierskiemu i odnieść

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<sup>1</sup> The authors express their sincere gratitude to Prof. Borys Paszkiewicz for valuable advice and assistance in editing the text.

emisję do lat 1378–1382, co zresztą sugerował B. Paszkiewicz. Natomiast monety typu *K/L pod koronę* datowano dotychczas na lata panowania Ludwika Węgierskiego. Jednak analiza materiału skarbowego oraz kształtu puncy L wskazuje, że zostały wybite w czasach bezkrólewia we Lwowie, tj. między końcem 1370 (data śmierci króla Kazimierza) a październikiem 1372 r. (przybycie do Lwowa Władysława Opolczyka mianowanego namiestnikiem króla węgierskiego, Ludwika, na Rusi Halickiej).

KEYWORDS: copper coins from the 14<sup>th</sup> century, Galician Ruthenia, Lviv Mint

SŁOWA KLUCZOWE: monety miedziane z XIV w., Ruś Halicka, mennica Lwów

The 14<sup>th</sup>-century copper coins of Galician-Ruthenia, minted in Lviv, are almost non-existent in finds. They were not deposited, like silver, and were not used in long distance trade, but were instead used for small payments on the market. Therefore, the study and dating of these coins has been based primarily on iconography, rather than hoards.

After all, these coins are not mentioned in archival documents. We do not even know what they were called in the 14<sup>th</sup> century. For this reason, different researchers have used different names to describe copper Galician-Ruthenian coins. Emeryk Hutten-Czapski called them *Denier (Pulo)*,<sup>2</sup> Antoni Ryszard called them *Denary halicko-ruskie miedziane* (Galician-Ruthenian copper deniers),<sup>3</sup> Kaźmirz Stronczyński – *Denarki miedziane* (small copper pennies).<sup>4</sup> In Russian studies, they were called *пуло (pulo)*, by analogy with copper coins minted in the Golden Horde. The name *пуло (pulo)* has been recently used by some Polish and Ukrainian researchers, but Polish scientist Borys Paszkiewicz considers it inappropriate. In his opinion, the name *denar* (denier) is also incorrect, as it seems to link copper Galician-Ruthenian coins to the Western European monetary tradition, whereas there were virtually no copper coins in Western Europe in the 14<sup>th</sup> century. For this reason, Paszkiewicz uses the neutral term *copper coins*.<sup>5</sup> The author of the first specialized study of the Lviv Mint of the 14<sup>th</sup>–15<sup>th</sup> centuries, Jan Stupnicki<sup>6</sup>, included the following copper coins, calling them *denary miedziane*:

- Coins of Casimir III the Great (two varieties)
- Coins of Vladislaus of Opole (two varieties)
- Coins of Louis of Hungary (three varieties). In addition to the *L/crown* variant, these include the *L/L* variant, as well as what was then the only known specimen of the *K/crowned L* variety.

<sup>2</sup> Hutten-Czapski 1880, p. 10.

<sup>3</sup> Ryszard 1886, pp. 12–13.

<sup>4</sup> Stronczyński 1885, pp. 32, 41.

<sup>5</sup> Paszkiewicz 2021a, pp. 91–100.

<sup>6</sup> Stupnicki 1865, p. 45.

Stupnicki considered the *L/L* copper coin to be an error of the moneyer, who used two obverses when minting the coin. In the same way, in his opinion, the *K/crowned L* copper coin resulted from a random combination of Casimir's and Louis' dies. Jan Stupnicki did not mention the *crown/crown* variant as it was unknown to him at the time.

As evidence of the rarity of Galician-Ruthenian coins at that time, the following observation can be made. When Jan Stupnicki's collection was sold in 1896 after his death, there were 63 silver Lviv coins and only 15 copper coins (*Kupfer-Denare*) among the offered lots of coins of the Lviv Mint of the 14<sup>th</sup>–15<sup>th</sup> centuries.<sup>7</sup>

In his five-volume *Catalogue de la collection des médailles et monnaies polonaises*, the famous numismatist Count Emeric Hutten-Czapski, owner of the largest collection of Polish coins at the time, gives copper Galician-Ruthenian coins high degrees of rarity from R4 to R8, although he was usually very meticulous while assessing the rarity of coins.

The situation with the copper coinage of Lviv has not changed much in a hundred years, and their number has not increased significantly. When compiling the 2007 catalogue of coins of the Lviv mint of the 14<sup>th</sup>–15<sup>th</sup> centuries, A. Kryzhaniv's'kyi was aware of 1,620 silver and only 124 Galician-Ruthenian copper coins of all variants.<sup>8</sup> It should be noted that at that time, Lviv coins were concentrated mainly in museums, and only few of them were in private collections.

Over the next decade, discoveries made by private searchers “armed” with modern metal detectors dramatically increased the corpus of Lviv coins. The updated catalogue from 2019 includes 6,675 silver and 645 copper coins.<sup>9</sup>

Many metrological indicators of copper coins became available for analysis. This enabled the vast majority to not only be dated, but also to calculate their parity in relation to silver money.<sup>10</sup> They were usually easy to attribute because they had the issuer's name on them.

The most difficult case concerned two coin variants that did not have such visible criteria. These are copper Galician-Ruthenian coins that depict crowns without ruler initials on both sides (*crown/crown* type), and coins that bear the initial K on the obverse and a crowned L on the reverse.

The vast majority of researchers and cataloguers date *crown/crown* type coins no later than 1370, i.e. the very time when Galicia was under the reign of the Polish King Casimir III the Great. Coins of this type were first published by E. Hutten-Czapski (Fig. 1). He gave this coin a very high degree of rarity, R7, and placed

<sup>7</sup> Egger 1896, pp. 9–10, nos 55–56, 63–64, 71.

<sup>8</sup> Kryzhaniv's'kyi 2007, pp. 169–170.

<sup>9</sup> Kryzhaniv's'kyi 2019, p. 93.

<sup>10</sup> Kryzhaniv's'kyi 2019, pp. 12–16.

its description among the coins of Casimir III the Great, but added: “it may also be from the era of Louis, King of Poland and Hungary”.<sup>11</sup>

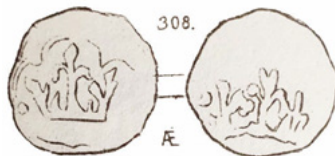


Fig. 1. Drawing of a copper coin of the *crown/crown* type from the E. Hutten-Czapski catalogue, scale 1.5:1

Since this time, the question of when copper coins with crowns on both sides were minted in Lviv – in the time of Casimir III, Louis of Hungary or, perhaps, Duke Vladislaus of Opole – has remained unanswered. Our Polish colleagues used to attribute these coins to Casimir III the Great. Most notably, this attribution was made by Edmund Kopicki in his four-volume catalogue *Ilustrowany skorowidz pieniędzy polskich i z Polską związanych*, with the note that the coin was known to him from the Hutten-Chapski collection.

Table 1. Dating of Lviv copper coins of the *crown/crown* type in specialized catalogues




Catalogue	Casimir III (by 1370)	1371–1372	Louis of Hungary 1379–1382	1382–1385
Hutten-Czapski 1880	+		+?	
Pieńkowski 1997	+			
Dutkowski 1998	+			
Kopicki 2003	+			
Kryzhanivs'kyi 2007	+			
Kryzhanivs'kyi 2019		+		+

According to another theory, cited by prof. Borys Paszkiewicz, these coins were issued during the reign of Louis of Hungary (1379–1382) and resulted from a mint error, similar to copper coins which depict the royal initials L in a quadrilobe on both sides.<sup>12</sup>

In the new catalogue from 2019, A. Kryzhanivs'kyi dated these coins to the transitional period of the Interregnum in Lviv between the end of 1370, the date of death of Polish King Casimir III the Great, and October 1372, when Vladislaus of Opole arrived to Lviv as a plenipotentiary royal governor of Hungarian

<sup>11</sup> Hutten-Czapski 1880, p. 10.

<sup>12</sup> Paszkiewicz 2010, pp. 327–356.

King Louis.<sup>13</sup> In addition to the attribution of “two-crown” coins to 1370–1372, the author suggested that some of the coins might have been minted much later, in Louis’ time or even after his death, in order to gain a mint profit from copper coinage.<sup>14</sup> The author singled out three different versions of the crown: there are two-crown coins with a standard crown on both sides (catalogue no. 51 – ) , coins that have a rectangular crown on at least one side (catalogue no. 50 – ) , and coins with a crown with outwards-twisted edges (catalogue no. 142 – ) . The latter were suggested by the author to have been minted after the death of Louis of Hungary.

Kryzhanivs’kyi noted that there are copper coins of this monarch with the initials L on the obverse and with the same crown with outwards-twisted edges on the reverse (catalogue no. 138). The author dated the two-crown coins with a rectangular crown to the time of the interregnum in Lviv. This conclusion was prompted by the discovery of a coin of Vladislaus of Opole coin bearing his initials on the obverse and the same rectangular crown on the reverse (catalogue no. 126). The author suggested that this was the first copper coin issued by Vladislaus of Opole, and its reverse die could have been used since the time of the Interregnum.

However, these are purely theoretical considerations. A study of hoards would offer the best way to verify these assumptions. Unfortunately, Galician-Ruthenian copper coins are virtually absent from hoards. The finds are mostly single accidental losses, not purposeful savings. But a happy exception happened in 2020: a hoard in the Busk Raion of Lviv Oblast’, on a tributary of the Poltva River, where a “two-crown” coin was found together with copper Galician-Ruthenian coins of the standard type of King Louis.<sup>15</sup> One of the crowns is rectangular, which does not support the dating of coins of the *crown/crown* type to 1371–1372. Instead, the hoard confirms Borys Paszkiewicz’s thesis about the later dating of the Lviv “two-crown” copper coins in the time of Louis.

Another argument that can be used for dating the issue of *crown/crown* copper coins is a die analysis, i.e. analysis of the scheme of combining their dies with the dies of coins that have the initials of the issuer. Today, thanks to the new discoveries of copper coins of Louis of Hungary, “pairs” have been found for all of the *crown/crown* type coins (Fig. 2: 2–3; Fig. 3).

<sup>13</sup> Kryzhanivs’kyi 2019, p. 33.

<sup>14</sup> Kryzhanivs’kyi 2019, pp. 35, 60.

<sup>15</sup> Kryzhanivs’kyi 2019–2020, pp. 11–13.



Fig. 2. Illustration of a die-links, compiled by Oleg Bazar. Coins of Louis of Hungary with crowns with outwards-twisted edges (coins 1 and 2) and a coin with a standard crown (coin 5) are die-linked along the *crown/crown* coins (coins 3 and 4). Photo of coin no. 5 from Warszawski Dom Aukcyjny (hereinafter WDA), Auction no. 15, item no. 70 (<https://onebid.pl/pl/monety-rrr-ludwik-wegierski-andegawenski-1379-1382-pulo-lwow/433623>), the remainder from Oleg Bazar's collection

Similarly, a die combination of two-crown coins, where one of the crowns is rectangular, can be found (Fig. 4; Fig. 5).

Based on these die combinations, the hypothesis of a “posthumous” coinage of Casimir III was not confirmed, suggesting that all coins of the type *crown/crown* should be attributed to the era of Louis of Hungary (1379–1382).

What of the coins of type *L/L*?

The die-chain (Fig. 7) demonstrates that the dies with a standard crown are linked with those of the outwards-twisted edges. Thus, *L/L* type coins should also be definitely attributed to the era of Louis of Hungary.

Now let us consider the number of dies used to strike copper coins of *L/L* type. To do this, we need to compare their dies shown in Fig. 6 with the dies of other similar coins that were found on the Internet (Fig. 8).

Studying the dies of type *L/L* copper coins from Fig. 8 we can conclude that coins nos 1, 2, 3, 4, 6 and 8 were minted with an identical pair of dies. One side of coin no. 5 (left side in the Fig. 8: 5) also coincides with one of the dies of the above coins. Coin no. 7 is struck from different dies, which have no analogies among the above. Similarly, the right side of coin no. 5 from Fig. 8 is minted with a different die (it differs from the other with three pellets under the initial).

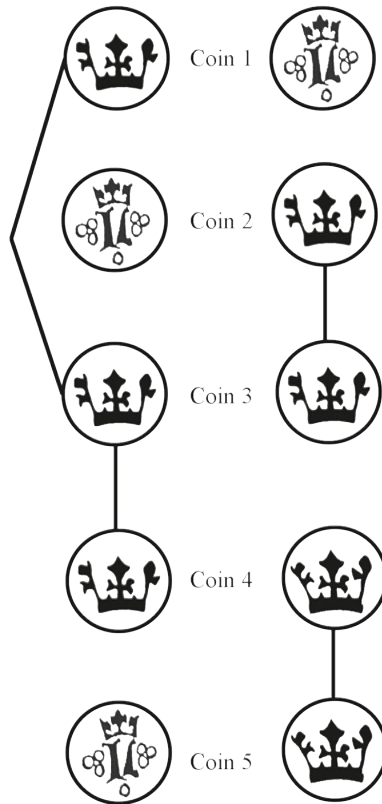


Fig 3. Die-chain of coins from Fig. 2

Thus, for minting seven copper coins of *L/L* type, five different dies with the initials were used, which somewhat undermines the thesis of their random combination instead of using a die with a crown.

And what about the *crown/crown* type coins? One can easily see that even more dies were used to strike them (Fig. 9).

An analysis of the six *crown/crown* coins from Fig. 9 shows that three different dies with rectangular crowns, three with standard crowns, and two with outwards-twisted edges were used.

If the time of issue of Galician-Ruthenian *crown/crown* copper coins can be considered fixed – all of them were minted in the era of Galician subordination to the Hungarian crown – the large number of dies used requires explanation. After all, in case of the accidental error, this number should be minimal. Let us first consider five dies for minting eight pieces of *L/L* type coins.



Fig. 4. Illustration of die-links, compiled by Oleg Bazar. Coins of Louis of Hungary with standard crowns (coins 1 and 2) and coins with a rectangular crown (coin 9) are die-linked along the *crown/crown* coins (coins 3–8). Photos of all the coins are from Oleg Bazar's collection

Seven coins of the *L/L* type, namely coins nos 1, 2, 3, 4, 5, 6 and 8 from Fig. 8 were minted using probably a common lower die (pictured left). Six of them (nos 1, 2, 3, 4, 6 and 8) were also struck with a common upper die, and only one, no. 5, was minted using another upper die. Instead, the coin no. 7 is distinguished by another pair of dies. It turns out that *L/L* type coins appeared twice and separately, when instead of the lower die, which should have been engraved with the image

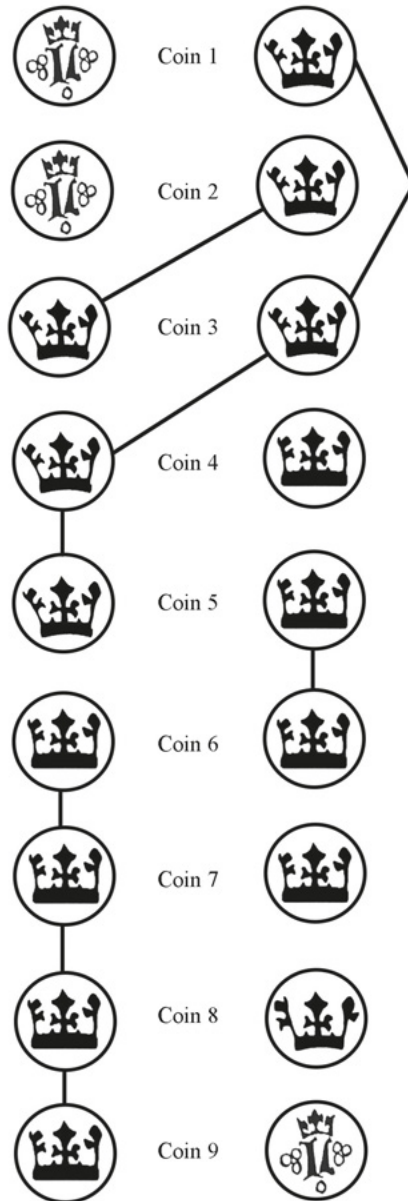


Fig. 5. Die-chain of coins from Fig. 4

of the crown, a die with the initial was used too. As for the *crown/crown* coins, there were at least three such cases, which seems rather strange. For example, coins no. 1, 2 and 3 were minted with different pairs of dies, coins no. 4 and 5 can be assigned to one of the dies used to strike coin no. 2, and coin no. 6 – to coin no. 3.



Fig. 6. Illustration of die-links, compiled by Oleg Bazar. King Louis' coins of the type *L/L* (coins 1, 3 and 4) are die-linked with standard coins of Louis (coins 2 and 7), with crown with outwards-twisted edges Louis coin (coin 6) and coins *crown/crown* with different types of crowns (coins 5 and 8). Photo of coin no. 3 from WCN, online Auction no. 100823, the remainder from Oleg Bazar's collection

From this it can be concluded that such a possible incidence of connecting two reverse dies on one coin (instead of the traditional pairing the obverse and reverse dies) occurred three times. Except that then there was a fairly simple form of the lower and upper dies, which allowed them to be easily confused. This is, of course, not impossible. Obviously, in order to verify such an explanation, it is necessary to more carefully test the technology with which these coins were minted. One can suppose that this combination was intentional when the mass issue of copper coins lacked different obverse and reverse dies, and "at hand" were only the same type of dies.

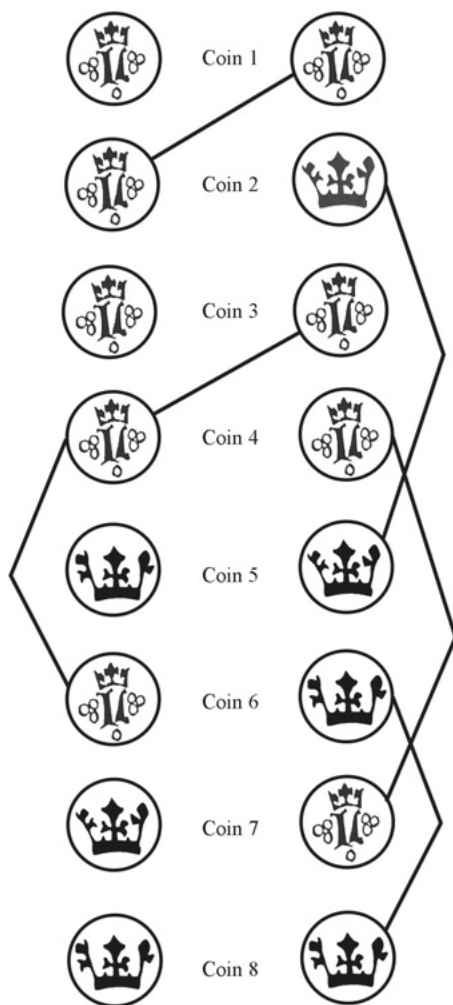


Fig. 7. Die-chain of coins from Fig. 6

We need to pay attention to one more thing. *Crown/crown* type coins with crowns with outwards-twisted edges are significantly heavier (average weight 1.14 g for four known coins) than coins with other crown variants (0.93 g for 13 studied coins). It can be assumed that they were minted in different periods. When could this be? The average weight of Louis' of Hungary standard type coins (with the king's initials on the obverse), minted in 1379–1382, is also 0.93 g. This suggests that these coins were struck at the same time as Louis' of Hungary standard type coins.



Fig. 8. Coins 1–4 and 8 are copper coins of the *L/L* type, chosen from the Internet by Vasyl Pavliv, coins 5–7 from Fig. 6 by Oleg Bazar



Fig. 9. Variants of *crown/crown* type coins

The issue of Galician-Ruthenian copper coins after the reign of Louis of Hungary took place during the rule of Vladislaus of Opole in Lviv in 1386. It will be recalled that Vladislaus was the ruler in Galicia in 1372–1378 and in 1386. Vladislaus's of Opole copper coins of 1386 differed noticeably from his earlier copper coins struck in 1372–1378, and had a much higher weight (1.05 g vs. 0.86 g). One

might suggest that by increasing the weight of copper coins in 1386, attempts were made to strengthen the circulation of copper coins in the daily market, allowing for the release of precious silver for important transactions, including international trade. This was more important than getting income from minting copper coins. The situation was different during the reign of Casimir III and in the first period of Vladislaus of Opole reign (1372–1378), when the Lviv mint could generate considerable income from copper coinage.<sup>16</sup>

We can assess whether or not the increase in the weight of Galician-Ruthenian copper coins occurred before 1386, i.e. in the time of Louis of Hungary, by means of a histogram representing the number of these coins at a gradation of 0.1 g (Fig. 10). We clearly see two peaks on the histogram. The first peak is between 0.8 g and 1.0 g, which also corresponds to the weight of the main group of the copper *crown/crown* type coins with the standard and rectangular crowns. Another peak appears between 1.1 g and 1.2 g, and corresponds with the weight of the copper *crown/crown* type coins with a crown with twisted edges.

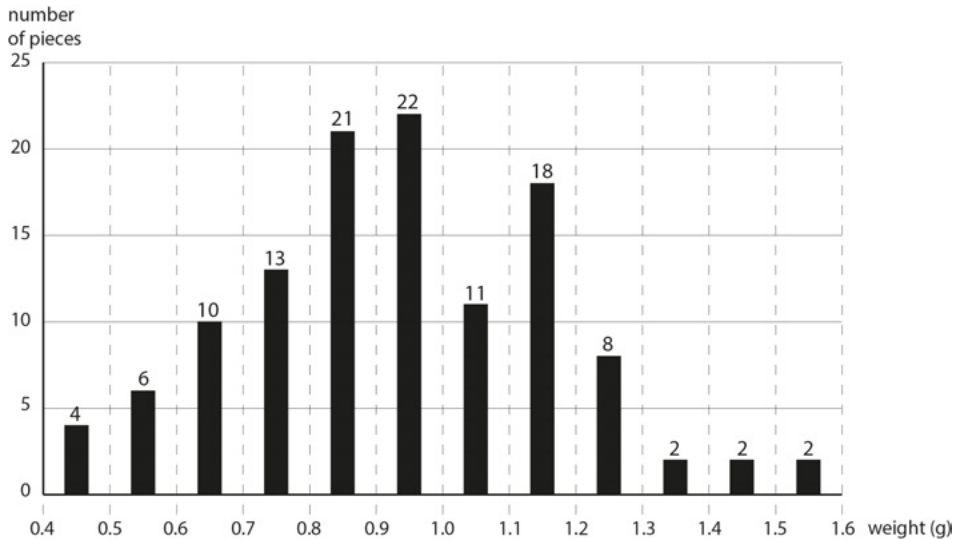


Fig. 10. Histogram of the weight of copper Galician-Ruthenian coins of Louis of Hungary (0.1 g gradations)

The second peak – between 1.1 g and 1.2 g – may suggest that the transition to the minting of heavier copper coins at the Lviv mint occurred in the last 1–1.5 years of Louis of Hungary’s reign.<sup>17</sup>

It is also possible that some standard type Louis’ copper coins (with the initial), as well as two-crown with outwards-twisted edges coins continued to be minted

<sup>16</sup> Kryzhaniv’s’kyi 2019, pp. 31–34.

<sup>17</sup> Kryzhaniv’s’kyi 2019, p. 35.



Casimir III struck in 1363–1370, no. 46, a fairly common variant 2B.<sup>21</sup> Another coin also has the initial of Casimir III (K) on the obverse, but on the reverse under the crown there is a small letter, either K or L – respectively the initials of Polish King Casimir III, or Hungarian-Polish King Louis of Hungary – or even the letter R. The weight of this coin is 1.17 g. Unfortunately, the coin is poorly preserved which does not allow us to determine definitely which letter it is.



Fig. 11. Copper coins from the Busk hoard (2021). On the right is a type of coin with the initial K on the obverse and the probable letter L under the crown on the reverse, scale 1.5:1

It is unlikely that this letter is an R. The letter R appears on the copper coins of Casimir III the Great, but only in combination with the letters k, R and P for *Kazimiri Regis Polonie*, and never separately. The letters P and R are also never separate on the Galician-Ruthenian coins. If we consider it the letter k, then it is a coin no. 48 of variant 2r from Kryzhanivs'kyi's catalogue. If we assume that this is the letter L for the Hungarian and Polish King Louis, then A. Kryzhanivs'kyi believes that this coin (type 2Д, no. 49 in the catalogue) was made in 1371, after the death of Casimir III the Great in 1370. At that time, Poland and Galicia came under the rule of King Louis of Hungary. At the same time, Galicia, which under Casimir III the Great was the personal possession ("dominion" of the king), became part of the personal possessions of King Louis of Hungary. To govern Galicia, Louis of Hungary appointed his plenipotentiary governor, Duke Vladislaus of Opole, who arrived in Lviv only in October 1372 and began minting coins with his initial W. During this time, the Lviv mint could issue copper coins with two initials. And the reason for this was again a great income generated by base metal coinage.<sup>22</sup>

Comparison of the dies of the newly found coin with similar ones from the collection of the Lviv Historical Museum (inventory number H-35) and from the collection of the National Museum in Krakow (inventory number MNK VII-P-2617) (Fig. 12; Fig. 13), both being relatively well preserved, suggests that the reverses of all three coins are die-identical.

<sup>21</sup> Kryzhanivs'kyi 2019, pp. 105–106.

<sup>22</sup> Kryzhanivs'kyi 2019, pp. 29–30.



Fig. 12. Galician-Ruthenian copper coin from the Lviv Historical Museum (inventory number H-35), scale 1.5:1



Fig. 13. Galician-Ruthenian copper coin from the National Museum in Krakow (inventory number MNK VII-P-2617), scale 1.5:1

The letter on the reverse of the coins from the collection of the Lviv Historical Museum and the National Museum in Krakow can be confidently read as the letter L. A similar form – with a curved right letter stem (actually a serif), thinner at the top – can be found on Central European coins in the late Middle Ages, such as the Hungarian coins of King Louis I (Fig. 14, 15). The punches of this letter are especially similar on Silesian coins (Fig. 16), on which the curved right stem of the letter also has various protrusions (including the third and sixth versions in the upper and lower rows), quite similar to coins from the Lviv and Krakow museums.<sup>23</sup>

Unfortunately, other coins of this type, offered at auctions, are poorly preserved which does not allow us to state definitely which letter it is (photo of eight reverses was chosen from the Internet by Vasyl Pavliv):

In Fig. 17:1–2 the letter resembles L, the same as in the coins from the Krakow and Lviv museums, in Fig. 17:4 – clearly the letter κ, in Fig. 17:3, 5, 6 and 7 probably L, but not so clearly as in Fig. 17:1–2. In the case of Fig. 17:8, it is difficult to say anything.

Comparing the dies of copper coins of this type, we can be left with two options. Either the die with the clear letter K was degraded during the minting to such a vague shape that it resembles the letter L, as we can clearly observe on coins from the Lviv and Krakow museums, or there are two different dies.

<sup>23</sup> The authors express their sincere gratitude to Prof. Borys Paszkiewicz for information and providing scanned copies.



Fig. 14. Golden florin of Louis I of the indefinite mint, 1353–1375  
(Lengyel 2013, pp. 50–51, no. 5/5), scale 1.5:1



Fig. 15. Silver coin of Louis from the Mint of Buda, 1366–1382  
(Lengyel 2020, pp. 122–123, no. 25/45/3), scale 1.5:1



Fig. 16. Punches of the letter L from the inscription M O L on the obverse of the hellers of the Oleśnica Duchy, minted in Oleśnica, ca. 1430–1449 (Paszkievicz 2021b, p. 33, Ryc. 1–7)

The only thing that can be confirmed at present is that this version of the coin cannot be attributed to the era of Louis of Hungary. Moreover, there is no reason to consider it a random combination of two dies with the initials of Casimir III the Great and Louis of Hungary. First of all, there is no known variant of the Galician-Ruthenian copper coin of Louis of Hungary, displaying a small initial under a large crown. What then can the small letter L mean? An interesting observation and a new look at this issue was expressed by prof. B. Paszkiewicz: in this case, a small letter does not represent the name of Louis, but something else – maybe



Fig. 17. Photo of reverses of copper coins with the letter L or K under the crown, selected from the Internet

even the name of the city of Lviv.<sup>24</sup> The final attribution of Galician-Ruthenian copper coins with K and the crown with small L below should be postponed until more such coins in good condition are found.

As for the coins of the *crown/crown* type, the die links presented in the article allow us to confidently attribute them to the era of the Hungarian reign in Galicia – the period of Louis I's reign and, perhaps, in a certain period after his death.

In summary, Lviv copper coins can be considered as an exceptional phenomenon in coinage. Copper coins were not minted in other mints that operated in the 14<sup>th</sup> century on the territory of Ukraine – Kyïv, Lutsk or Podolia. This is despite the fact that they were in close proximity to the area of the Golden Horde, where there was a powerful tradition of copper coinage in monetary circulation.<sup>25</sup>

The sole exceptions are copper coins with the legend ЮРЪЇСВЪ, the minting of which, according to most researchers, took place in Belz. According to B. Paszkiewicz, the issue of copper coins in Belz should be considered as a response to the needs of the local small coin market after the cessation of copper coins in Lviv during the reign of Władysław II Jagiełło. In his opinion, copper coinage of Galicia and Volhynia might have been influenced by the Byzantine monetary system. Given the aforementioned absence of copper minting in Kyïv and Podolia, one can agree that the idea of copper coinage was borrowed from the Byzantine Empire.

<sup>24</sup> Borys Paszkiewicz, personal communication.

<sup>25</sup> Paszkiewicz 2021a, pp. 97–98.

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## KROPKA NAD I W BADANIACH MONET MIEDZIANYCH RUSI HALICKIEJ Z XIV WIEKU

(Streszczenie)

Miedziane monety Rusi Halickiej wybijane we Lwowie w XIV w., niemal nie występują w znaleziskach. Dlatego też studia i datowanie tych monet opierają się przede wszystkim na ikonografii, a nie na analizie skarbów.

Autor pierwszego specjalistycznego opracowania mennicy lwowskiej XIV–XV w., Jan Stupnicki zamieścił opisy monet miedzianych, przypisując większość z nich poprawnie do kolejnych emitentów, tj. Kazimierza Wielkiego, Władysława Opolczyka i Ludwika Węgierskiego. Wśród nich wymienił znaną wówczas w jednym egzemplarzu monetę typu *K/L pod koroną*. Uznał ją za powstałą w wyniku błędu mincerza, który przypadkowo połączył stemple monet Kazimierza i Ludwika.

Jan Stupnicki nie wspomina o typie *korona/korona*, który był wówczas jeszcze nieznanym. Po raz pierwszy taka moneta została opublikowana przez E. Hutten-Czapskiego, który nadał jej bardzo wysoki stopień rzadkości R7, a opis umieścił wśród monet Kazimierza Wielkiego, dodając jednak: „może również sięgać czasów Ludwika, króla Polski i Węgier”.

Od tego czasu właściwie bez odpowiedzi pozostaje pytanie, kiedy we Lwowie bito miedziane monety z przedstawieniem korony na obu stronach (typ *korona/korona*) – za Kazimierza Wielkiego, Ludwika Węgierskiego czy może księcia Władysława Opolczyka? Badacze zazwyczaj przypisują te monety Kazimierzowi Wielkiemu. Według innej wersji, cytowanej przez polskiego uczonego prof. Borysa Paszkiewicza, zostały one wyemitowane za panowania Ludwika Węgierskiego w latach 1379–1382 i emisja ta była defektem menniczym, to znaczy przypadkowym połączeniem dwóch stempli rewersów (podobnie jak monety miedziane, które po obu stronach przedstawiają inicjały króla L w czterofukowej obwódce, czyli sparowanie stempli dwóch awersów).

Są to jednak rozważania czysto teoretyczne. Wszystkie założenia najlepiej weryfikuje analiza skarbów. Niestety, miedzianych monet halicko-ruskich w skarbach praktycznie nie ma. W większości występują one jako znaleziska przypadkowe, zapewne zguby, a nie jako celowo zgromadzone pieniądze.

W 2020 r. doszło jednak do odkrycia skarbu w rejonie buskim obwodu lwowskiego, w dopływie rzeki Pełtwi. W jego składzie zarejestrowano monetę z wyobrażeniem dwóch koron wraz z miedzianymi halicko-ruskimi monetami Ludwika standardowego typu (z inicjałem). Zdezaktualizowało to datowanie monet typu *korona/korona* na lata panowania Kazimierza Wielkiego. Zamiast tego skład skarbu potwierdził tezę prof. B. Paszkiewicza

o późniejszym datowaniu emisji we Lwowie w czasach Ludwika Węgierskiego miedzianych monet z dwoma koronami.

Innym argumentem przemawiającym za takim datowaniem może być analiza połączeń stempli monet typu *korona/korona* ze stemplami monet, które z jednej strony posiadają inicjały emitenta. Takie łańcuchy, sporządzone przez autorów, wyraźnie umieszczają monety z dwoma koronami w latach 1378–1382: wszystkie łączą się bowiem ze standardowymi monetami Ludwika Węgierskiego.

Na histogramie wagi standardowych monet Ludwika Węgierskiego o rozstępie 0,1 g wyraźnie widać dwa piki. Jeden pomiędzy 0,8 g a 1,0 g, co odpowiada również wadze głównej grupy miedzianych monet typu *korona/korona*. Kolejny szczyt mieści się między 1,1 a 1,2 g i odpowiada już wadze miedzianych monet typu *korona/korona* z innym przedstawieniem korony, a mianowicie z koroną o wywiniętych na zewnątrz krawędziach. Możliwe, że po śmierci Ludwika Węgierskiego, nadal wybijano pod jego stemplem niektóre miedziane monety typu standardowego (z inicjałem), a także monety typu *korona/korona* z koroną o wywiniętych krawędziach.

Szczegółowych analiz wymagają również miedziane monety Rusi Halickiej innego typu, charakteryzującego się dużym ukoronowanym inicjałem K na awersie i małą literą L pod dużą koroną na rewersie (nadal typ *K/L pod koroną*).

Taka moneta była znana Janowi Stupnickiemu, który podał, że została ona wybita za czasów Ludwika Węgierskiego. Na tej samej monecie Emeryk Hutten-Czapski odczytał pod koroną literę R zamiast litery L i przypisał ją Kazimierzowi III.

I znów na ratunek przychodzi odkrycie w 2021 r. w jednej ze wsi obwodu lwowskiego (dokładnej lokalizacji nie udało się ustalić) miedzianych monet Rusi Halickiej, z których jedna to standardowa moneta Kazimierza Wielkiego, a inna reprezentuje typ *K/L pod koroną*.

Niestety stan zachowania interesującej nas monety jest fatalny, co nie pozwala jednoznacznie określić, o jaką literę chodzi. Wersja, że to litera R jest mało prawdopodobna. Litery takie znajdują się bowiem na miedzianych monetach Kazimierza Wielkiego, ale tylko w kombinacjach liter k, r i p, tj. *Kazimiri Regis Polonie*, a osobno litery p lub r na żadnym z wariantów miedzianych monet halicko-ruskich nie występują.

Porównanie nowo odnalezionej monety z podobnymi ze zbiorów Lwowskiego Muzeum Historycznego (nr. inw. H-35) oraz ze zbiorów Muzeum Narodowego w Krakowie (nr. inw. MNK VII-P-2617), które są w stosunkowo dobrym stanie, sugeruje, że rewersy wszystkich trzech monet są identyczne. Z dużym prawdopodobieństwem literę na rewersie monet ze zbiorów Lwowskiego Muzeum Historycznego i Muzeum Narodowego w Krakowie można uznać za literę L. Podobną formę, o zakrzywionej prawej nóżce, cieńszej u góry – znajdujemy na monetach środkowoeuropejskich późnego średniowiecza, takich jak węgierskie monety króla Ludwika. A szczególnie podobieństwo wykazuje do liter ze stempli monet śląskich, na których zakrzywiona prawa nóżka również ma różne występy, podobnie jak monety z lwowskiego i z krakowskiego muzeów.

Niestety inne monety tego typu, które wystawiono na aukcjach są w niezadowolającym stanie zachowania, co nie pozwala na jednoznaczną identyfikację litery. Na niektórych przypomina ona L, tak samo jak na monetach z muzeów krakowskiego i lwowskiego, na innych prawdopodobnie L, ale nie tak wyraźnie, w jednym przypadku literę k, a jeszcze w kolejnym w ogóle trudno o jakikolwiek odczyt.

Porównując stemple monet miedzianych, możemy przyjąć dwie możliwości. Albo w czasie bicia stempel z wyraźną literą K zdegradował do takiego stopnia, że odczyt jest niejasny i tylko przypomina literę L, jak na monetach z muzeów lwowskiego i krakowskiego, albo są to dwa różne stemple.

Jedyne co można teraz powiedzieć – monet tego typu nie można przypisać panowaniu Ludwika Węgierskiego. Co więcej, nie ma powodów, aby uważać je za przypadkową kombinację dwóch stempli z inicjałami: Kazimierza Wielkiego i Ludwika Węgierskiego. Nie ma przecież znanej odmiany miedzianej halicko-ruskiej monety Ludwika Węgierskiego, na której widniałby mały inicjał pod dużą koroną.

Co zatem może oznaczać mała litera L? Ciekawą obserwację i nowe spojrzenie na ten problem wyraził prof. B. Paszkiewicz: w tym przypadku mała litera nie oznacza imienia Ludwika, a coś innego – może nawet nazwę miasta Lwowa. Ostateczne przypisanie miedzianych halicko-ruskich monet typu *K/L pod koroną* należy odłożyć do czasu, gdy poznamy więcej takich monet w dobrym stanie zachowania.

Adresy autorów/The authors' addresses:

Andrii Kryzhaniv's'kyi  
independent researcher  
Lviv, Ukraine  
kryandriy@gmail.com

Oleg Bazar  
independent researcher  
Kyiv, Ukraine  
brakteat@gmail.com

Vasyl' Pavliv  
independent researcher  
Lviv, Ukraine  
levko1960@gmail.com

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TOMASZ MARKIEWICZ

## **COPPER SHILLINGS OF KING JOHN CASIMIR FROM 1659–1666 IN THE CONTEXT OF HOARDS**

**ABSTRACT:** This article deals with the issue of King John Casimir's copper shillings struck in 1659–1666, emerging from the analysis of the structure of large shilling hoards in relation to the contents of mint reports. It was conducted on the basis of representative, newly-described finds from Idźki-Wykno and Rokitno, as well as previously published deposits, encompassing more than 59,000 coins. On this basis, the global production volume of shillings was estimated along with the share of individual mints. These values prompt a response to the accusations of mintage abuse levelled against Tytus Livius Boratini. However, another premise emerged from the initial analysis of false shillings that helps to date hoards of copper shillings.

**ABSTRAKT:** Artykuł podejmuje problematykę miedzianych szelągów Jana Kazimierza z lat 1659–1666, która wyłania się z analizy struktury dużych szelężnych skarbów skonfrontowanych z treścią sprawozdań menniczych. Dokonano jej w oparciu o reprezentatywne, nowo opracowane znaleziska – z Idziek-Wykna i Rokitna oraz wcześniej publikowane zespoły, które gromadzą łącznie ponad 59 tys. monet. Na tej podstawie oszacowano globalne rozmiary produkcji szelągów wraz z udziałem w niej poszczególnych mennic. Wartości te skłoniły do ustosunkowania się wobec kierowanych pod adresem Tytusa Liwiusza Boratinię oskarżeń o nadużycia mennicze. Natomiast ze wstępnej analizy fałszywych szelągów wyłoniła się kolejna przesłanka pomocna w datowaniu skarbów tych monet.

**KEYWORDS:** copper shillings, *boratynki*, coin hoard, John Casimir

**SŁOWA KLUCZOWE:** szelągi miedziane, boratynki, skarby monet, Jan Kazimierz

The disasters that fell upon the Commonwealth of Poland and Lithuania, including the Chmielnicki's Uprising (1648–1658), the conflict with Russia (1654–1667) and the Swedish invasion (1655–1660), resulted in the economic ruin of the state. Left unpaid for a long time, a rebellious army soon demanded the payment of the overdue millions in soldier's wages. However, the treasury was empty, and, in view of the impoverish-

ment and depopulation of the country, the attempt to collect an appropriate amount from taxes was doomed to fail. Under these circumstances, in the late 1650s, the circles of power became convinced that the Commonwealth of Poland and Lithuania could only be saved from looming catastrophe by the production of undervalued copper shillings, counted in millions of zlotys. The official exchange rate given to them – 90 shillings = 1 *złoty* – made their production the primary source of state income.<sup>1</sup>

The author and the most important implementer of this project was an outstanding scientist in the field of mathematical and physical sciences, experienced in monetary matters, distinguished in service to the court and Commonwealth of Poland and Lithuania: Tytus Liviusz Boratini (1617–1681), The Grand Treasurer of the Crown, Jan Kazimierz Krasieński, signed a contract with Boratini for the issuance of 1 million *złoty* in crown shillings on 2 July 1659.<sup>2</sup> This was soon followed by a contract for the production of 1 million *złoty* in Lithuanian shillings authorised by the administrator of the Lithuanian Treasury, Adam Maciej Sakowicz.<sup>3</sup>

The place of production for the Polish (Crown) and Lithuanian coins was Boratini's mint at the castle in Ujazdów near Warsaw. The first crown shillings were struck there on 19 November 1659<sup>4</sup>, while Lithuanian ones were most probably struck in May 1660.<sup>5</sup> It is possible that the mint in Kraków, where some of the contracted amount of crown shillings were struck, also started its activity in 1659. Production ceased in Ujazdów after the completion of the mintage on 2 June 1661, and most probably ceased in Kraków during the same month.<sup>6</sup> However, it soon turned out that the lease fee paid by Boratini in the amount of 720,000 *złoty* was not enough to meet the financial needs of the state, and above all to pay the overdue soldier's pay.<sup>7</sup> Unable to find another means of generating the necessary income in a short time, Boratini was again asked to multiply the wealth of the Crown treasury. At the same time, Andrzej Jerzy Horn from Gdańsk offered his services to Lithuania area. Following a one-year break, the activity of the Crown and Lithuanian mints began in 1663 and lasted until 1666, overshadowed the achievements of previous years.<sup>8</sup>

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<sup>1</sup> Szelągowski 1902, p. 246; Rybarski 1939, pp. 390–391; Niemirycz 1979, pp. 6–7; Stefańczyk 2010, pp. 67–73; Dziewanowski-Stefańczyk 2020, pp. 5, 77–78.

<sup>2</sup> Hniłko 1909, pp. 178–179; Hniłko 1921; Wojtulewicz 2006, p. 18; Wolski 2016, pp. 12–13, 18–21; Dziewanowski-Stefańczyk 2020, pp. 52–53.

<sup>3</sup> Janušonis 1975, pp. 98–99.

<sup>4</sup> Rybarski 1939, pp. 392–393; Janušonis 1975, pp. 97–99; Wolski 2016, pp. 24–25.

<sup>5</sup> This date is given by Cezary Wolski, referring to the royal rescripts cited by Tadeusz Korzon – Wolski 2016, p. 25, footnote 41, pp. 329–330.

<sup>6</sup> Wolski 2016, pp. 161, 317.

<sup>7</sup> Janušonis 1975, pp. 98–99.

<sup>8</sup> More on this subject: Zagórski 1854, p. 55; Szelągowski 1902, p. 258; Rybarski 1939, pp. 395–397; Janušonis 1975, pp. 101–104, 113–115; Dziewanowski-Stefańczyk 2010, pp. 81–86; Wolski 2016, pp. 44, 49–52, 54–58, 61, 162.

According to official accounts and minting reports, between 1659 and 1666 more than 17,477,000 *złoty* in Crown and Lithuanian shillings were struck, which in practice meant the introduction of over 1 billion 570 million 92 thousand copper coins into circulation. This issue is summarised in the table below, in which the mints managed by Andrzej Jerzy Horn are highlighted in italics.<sup>9</sup>

Table 1. The mintage of the Crown and Lithuanian shilling, taking into account the mints and the periods of their operation. Based on Janušonis 1975 and Wolski 2016

Minting period 1659–1661					
Mint	Amount	Number of coins	% of total		
<b>Crown shillings</b>					
Ujazdów (19.11.1659–30.06.1661)	817,708 zł 20 gr	73,593,780	4.69	5.73	
Kraków (1659–09.1661)	182,291 zł 20 gr	16,406,250	1.04		
<b>Lithuanian shillings</b>					
Ujazdów (1660–06.1661)	1,000,000 zł	90,000,000	5.73	<b>11.46</b>	
<b>Minting period 1663–1666</b>					
<b>Crown shillings</b>					
Ujazdów (7.04.1663–7.11.1665)	6,691,882 zł 25 gr 14 denarii	602,269,458	38.36	<b>88.54</b>	
<b>Lithuanian shillings</b>					
Vilnius 4.06.1664–30.12.1666	4,492,719 zł 5 gr	404,344,725	25.75		
Brest 4.12.1665–16.12.1666	2,674,135 zł	240,672,150	15.33		
<i>Oliwa</i> 19.07–10.11.1663	460,391 zł 6 gr	41,435,208	2.64		
<i>Kaunas</i> 17.10.1665–15.01.1667	448,648 zł 6 gr 1 den.	40,378,338	2.57		
<i>Malbork</i> 5.03.1666–8.10.1666	677,700 zł 14 gr 11 den.	60,993,042	3.88		
<b>In total</b>	<b>17,445,477 zł 7 gr 8 den.</b>	<b>1,570,092,951</b>	<b>100.00</b>		

<sup>9</sup> During the preparation of the table, I used the list prepared by Grzegorz Śnieżko in his unpublished master's thesis, for which I would like to sincerely thank the Author – Śnieżko 2011, p. 14. A slight difference in between the issued amounts in the work of G. Śnieżko and this statement requires a brief explanation. It results from the adjustment of the Ujazdów mint's mintage from 1663–1666 (1,000 *złoty* in plus), resulting from the aggregation of the amounts of contact *ex Senatus Consulto* from 13 X 1664 quoted by R. Rybarski (it should be 2,132,618 *złoty* 24 groschen 13.5 den. [denarii]) – Rybarski 1939, p. 526, Tabl. V; See. Wolski 2016, p. 162; In turn, I considered the value given in two of the three reports published by S. Janušonis as more probable – Janušonis 1975, pp. 109–111. However, these are minor changes, which do not affect the analysis.

According to official data, 44.1% of output was in Crown coins, while 55.9% was in Lithuanian coins. Coins from 1663–1666 (88.54%) clearly predominate over the coins from 1659–1661 (11.46%). At the same time, it is not difficult to notice that the output of Horn's mints – 9.1% – is definitely lower than Boratini's workshops' output – 90.9%.

The introduction into circulation of hundreds of millions of copper shillings and undervalued silver *złoty* (1663–1667), with a real value of 12 instead of 30 groschen, together with a concurrently reduced content of silver in low and medium denominations by about 30%, resulted in profound transformations in the structure of the currency.<sup>10</sup> Hoards hidden in the 1660s and on the verge of the 1670s illustrate the disappearance of Sigismund III Vasa's money (1587–1632).<sup>11</sup> The percentage of coins of this ruler usually reaches several or a dozen percent.<sup>12</sup> However, the deposits of this period, in which the coins of the first Vasa predominate, were most likely shaped by the thesaurisation of money of a recognized specie standard by the population.<sup>13</sup> After 1670, coins of this ruler practically dropped out of circulation, and the role of the Polish silver coin was overtaken by the money of John Casimir and John III Sobieski (1674–1696) until the end of the century. Dictated by economic rules, and contrary to the intentions of the legislators, the division into bad and good money created two parallel and separate trends of circulation for copper and silver,<sup>14</sup> the remnants of which are numerous but essentially specie-homogeneous hoards of silver or copper coins.

<sup>10</sup> Mikołajczyk 1980, pp. 32–35.

<sup>11</sup> Mikołajczyk 1975, pp. 231, 234–235.

<sup>12</sup> Pomeranian Voivodeship: Gdańsk IV (after 1668) – 8%; Kujawsko-Pomorskie Voivodeship: Radziejów (after 1671) – 5.9%; Wielkopolskie Voivodeship: Kalisz – surroundings (after 1668) – 1.4%; Rybka (after 1662) – 1.6%; Opolskie Voivodeship: Kowale (after 1663) – 12.1%; Łódzkie Voivodeship: Masłowice (after 1663) – 5.3%; Świętokrzyskie Voivodeship: Kielce II (after 1666) – 1%; Podkarpackie Voivodeship: Tarnów I (after 1663) – 4.7%; Krzemienica (after 1667) – 7%; Zbydniów (after 1672) – 0.7%; Lubelskie Voivodeship: Górka Lubartowska (after 1667) – 2.1%; Niebrzegów (after 1660) – 14.5%; Czemierniki II (after 1661) – 18.7%; Sitnik (after 1666) – 9%; Mazowieckie Voivodeship: Węgrów (after 1666 or half of the 18<sup>th</sup> century) – 5.7%; Jadów (after 1660) – 6.3%; Białe Figle (after 1666) – 5.1%; Kawęczyn (after 1666?) – 21.5%; Ślubowo (after 1668) – 4.3%; Podlaskie Voivodeship: Sejny (after 1666?) – 3.7%. The calculations were based on: Męcłewska, Mikołajczyk 1991.

<sup>13</sup> A significant percentage of Sigmund III Vasa's coins is recorded, among others, in several hoards stored in the National Museum in Lublin: Zaliszcze (after 1661) – 75%, Puchaczów (after 1662) – 76.4% and Milejów (after 1664) – 88.2%.

<sup>14</sup> Żabiński 1983, pp. 57–58.

## THE SIGNIFICANCE OF FINDS

Previous analyses of the structure of finds of John Casimir's copper shillings in the light of contemporary reports and mint accounts have drawn some conclusions, and identified new problems, relating to these coins.<sup>15</sup> In this context, insights from newly-recorded representative hoards are of particular importance: the Idźki-Wykno find,<sup>16</sup> and two recently published finds from Rokitno.<sup>17</sup> The significance of these hoards reflects the progress of knowledge since the publication of finds from Przasnysz<sup>18</sup> and Terespol,<sup>19</sup> which means that we are now able to more precisely explore the meaning of the finds in relation to contemporary reports and mint accounts. Establishing a relationship between these sources forms the basis for a broader attempt to estimate the scale of shilling production, both globally and in relation to individual mints and years. It also makes it possible to form an opinion on the malpractices that Tytus Liviusz Boratini was alleged to have committed in the mints. In addition, analysis of false shillings from these finds offers new insights into the dating of hoards.

Before comparing the official output of shilling mints with hoard evidence, it is necessary to stress that the following calculations are based only on coins deemed authentic. Shillings from the hoards Rokitno I and Rokitno II, with illegible mint markings or dates, were identified on the basis of the characteristic features of the dies. This principle was applied, for example, to the products from the Vilnius mint, whose date (1666) was indicated on the basis of a horizontally located shield with a double cross in *Pogoń*<sup>20</sup>. It should be noted that the results were estimated by considering shillings with unidentified mints and/or issue dates, which were divided according to the calculated probability principle,<sup>21</sup> since relying solely on fully recognized copies would lead to misrepresentations. The legitimacy of this assumption is demonstrated by the example of the Crown shillings issued in 1659–1665. There were 223 specimens of these coins in Rokitno I and 530 in Rokitno II, the exclusion of which would result in a significant underestimation of the Ujazdów mint – a particular problem, since problems of chronological identification, at least in relation to the minting periods 1660–1661 and 1663–1666, do

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<sup>15</sup> Mikołajczyk 1979; Mikołajczyk 1983; Sinchuk 1998; Sinchuk 2010.

<sup>16</sup> Śnieżko 2011.

<sup>17</sup> Markiewicz 2020.

<sup>18</sup> Niemiryecz 1973a.

<sup>19</sup> Lewczuk 1983.

<sup>20</sup> Coat of arms of Lithuania.

<sup>21</sup> A similar principle was also adopted by Ivan Sinchuk (1990, p. 62).





there was a proportionally larger issue of coins from Ujazdów in 1659–1661 than suggested by written sources.

On the other hand, the sum of the Crown shillings from the Kraków mint is consistent with the accounting balance, but only on the doubtful assumption that other mints did not exceed the reporting amounts. The relatively evenly distributed malpractices in the statistical summary are balanced, showing apparent compliance with the mint bookkeeping. The summed-up surplus of the Crown and Lithuanian shillings from the Ujazdów mint (1659–1661), around 2.68%, does not therefore directly determine the level of overproduction.

Table 4. Percentage of John Casimir's copper shillings in the context of written sources (A) and in hoards: Idźki-Wykno (I-W), Rokitno I (RI) and Rokitno II (RII), Przasnysz (P), Terespol (T)

Mint	A	I-W	RI	RII	P	T		
	%							
<b>1659–1661</b>								
<b>Crown shillings</b>								
Ujazdów 1659–1661	4.69	6.68	6.22 (+1.54)	7.39	5.36 (+0.68)	6.39	7.00	6.17
Kraków 1659–1661	1.04	(+0.95)*	1.17 (+0.13)	(+1.67)	1.02 (-0.02)	(+0.66)	(+1.27)	(+0.44)
<b>Lithuanian shillings</b>								
Ujazdów 1660–1661	5.73	6.96 (+1.23)	6.98 (+1.25)	6.69 (+0.96)	7.42 (+1.69)	6.95 (+1.22)		
<b>1663–1666</b>								
<b>Crown shillings</b>								
Ujazdów 1663–1665	38.36	34.36 (-4.00)	36.05 (-2.31)	35.57 (-2.79)	35.54 (-2.82)	35.95 (-2.41)		
<b>Lithuanian shillings</b>								
<i>Oliwa</i> 1663**	2.64	2.23 (-0.41)	2.28 (-0.36)	2.49 (-0.15)	2.46 (-0.18)	2.09 (-0.55)		
Vilnius 1664–1666	25.75	31.04 (+5.29)	29.39 (+3.63)	30.27 (+4.52)	40.01 (-1.07)	48.84 (+1.31)		
Brest 1665– 1666	15.33	12.55 (-2.77)	12.24 (-3.09)	12.43 (-2.90)				
<i>Kaunas</i> 1665–1666	2.57	5.69 (+3.12)	5.32 (+2.75)	5.79 (+3.22)	7.21 (+4.64)			
<i>Malbork</i> 1666	3.88	0.48 (-3.40)	0.35 (-3.53)	0.38 (-3.50)	0.37 (-3.51)			

\* Difference in the percentage of coins in the find and the value resulting from the reports and mint books

\*\* In italics – mints led by Andrzej Jerzy Horn

old Crown dies from 1659–1661 does not explain the scale of the disproportion between the content of mint reports and the hoards.

In addition to the already stated surplus of coins from 1659–1661 and the deficit of Crown shillings from 1663–1665, Table 4 provides information on the structure of Lithuanian shillings. In case of mints managed by Tytus Liwiusz Boratini, we can observe the over-representation of coins of the Vilnius mint in hoards (Fig. 4) – 3.63–5.29%, as well as an under-representation of coins from the Brest mint (Fig. 5) – -2.77–3.09%.<sup>24</sup> It is worth noting that the surplus of coins from Vilnius are most pronounced in 1666, and clearly correlate with the deficiencies in Brest (see Tab. 5). This phenomenon was already noticed by Ivan Sinchuk, interpreting it as evidence of the use of Vilnius dies at the Brest mint. It is worth to remember that Sinchuk was the first researcher to assign the TLB subtype shillings with a small HKPL monogram to the Brest mint, stating that they account for 2/3 to 3/4 of its entire production.<sup>25</sup> The use of Vilnius dies in Brest was undoubtedly the result of the movement of the staff between Boratini's mints. These connections are indicated by the hybrid Vilnius-Brest minting, underlined by Cezary Wolski, and the reproduction at Brest of shilling designs known from the Ujazdów mint from 1660–1661 – especially the reverses. This was connected with the migration of part of the staff from the closed Ujazdów mint (7.11.1665) to the mint opened at Brest (4.12.1665).<sup>26</sup> The use in Brest of dies identical to the mint in Vilnius took place primarily in 1666. This is clearly demonstrated by the discrepancies, which are stated in Table 5, between the official mintage and the representation of coins in the last year of activity of these mints.

A similar correlation occurs between the shillings of the GFH–Deer subtype, attributed to the Kaunas mint, and GFH–HKPL, attributed to Malbork; the former shows a surplus – 2.75–4.64%, and the latter a deficit – -3.40–3.53%. Following Ivan Sinchuk, this correlation can be interpreted as evidence of the use of dies with GFH–Deer markings in Kaunas and Malbork.<sup>27</sup> Based on Table 5, it should be assumed that about 40% of these coins with the date of 1666 were created in Kaunas, and the remaining 60% in Malbork. Thus, they constitute about 90% of the total production of the latter mint. On the other hand, the over-representation in the finds of the GFH–Deer subtype with the date of 1665 may, in part, result from

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<sup>24</sup> For the collection of shillings in hoards: Idźki-Wykno, Rokitno I and Rokitno II (37,294 copies): Vilnius Mint – 4.59% *in plus*, Brest Mint – 2.90% *in minus*. The nature of the studies of hoards from Przasnysz (Niemirycz 1973a) and Terespol (Lewczuk 1983) does not allow for this observation. Moreover, in the study of the find from Terespol, the Crown and Lithuanian shillings are ranked only according to the year of striking, so Lithuanian coins from 1665–1666 cannot be attributed to the mints.

<sup>25</sup> Sinchuk 1987b, p. 76; Sinchuk 1998, pp. 156–157. In turn, in Polish literature, Grzegorz Śnieżko, already on the basis of an analogy with the shillings from the Ujazdów mint (1660–1661) – Śnieżko 2011, p. 27.

<sup>26</sup> Wolski 2016, pp. 483–484.

<sup>27</sup> Sinchuk 1998, p. 157; Śnieżko 2011, p. 29; Niziołek 2016, p. 13.

using dies from the previous year in Kaunas and Malbork in 1666.<sup>28</sup> In the case of the GFH-HKPL subtype shillings dated 1666, it seems likely their relatively low mintage – about 6,930,000–7,315,000 copies – is the result of the production at the Malbork mint only.<sup>29</sup> This is suggested by the date on the coins, which coincides with the date of opening the mint in Malbork. We can assume that they were struck at the beginning of the operation of this mint, while it was still striving to distinguish its products from the Kaunas shillings. In summary: the GFH-Deer type with the date of 1665 can be attributed to Kaunas (Fig. 6), the GFH-Deer type with the date of 1666 to Kaunas and Malbork (Fig. 7), and the 1666 shillings with GFH-HKPL marking to Malbork (Fig. 8).

In turn, the clear surplus of coins from the Ujazdów mint dated 1659–1661 in the hoards (see Tab. 4) allows us to assume that the amount of the contract was significantly exceeded. This seems all the likely because of the deficit of the Crown shillings dated 1663–1665, as well as estimates of summed-up mints in Kaunas and Malbork and separately in Oliwa.

The issue of the credibility of mint reports is studied in Table 5, which compares the percentage of coins in hoards, from individual mints and years, with estimates taken from written sources. The ratio of these values, although not a precise measure, indicates the relationship between the declared and the actual mint output.<sup>30</sup>

Some indications in Table 5 raise questions and require verification in hoards. This applies to Lithuanian shillings from the Kaunas mint dated 1665 in the Przasnysz hoard, as well as several estimates from the Terespol hoard: Crown shillings dated 1663 and 1664, Lithuanian shillings from the Oliwa mint dated 1663 (Fig. 9), and coins from the Vilnius mint dated 1664.

If the values in Table 5 reflected the actual proportions between the output of the shilling mints and the accounts and reports of their operations, it seems likely that in 1659–1661 Tytus Liwiusz Boratini had exceeded the contract for the Crown shillings by about 21% and for the Lithuanian shillings by 26%. The

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<sup>28</sup> The problem is discussed by Ivan Sinchuk, although only in the context of the Kaunas mint – Sinchuk 1998, p. 157.

<sup>29</sup> Calculated on the basis of the percentage (0.385%) of GFH-HKPL shillings in the collection of 34,529 shillings in the hoards: Idźki-Wykno, Rokitno I, Rokitno II, Przasnysz and the estimate of global mintage, presented later in the article. Ivan Sinchuk admitted the possibility that the GFH-HKPL coins could be: a) the result of joint production of Kaunas and Malbork, b) the creation of one of the mentioned mints, c) counterfeiting – Sinchuk 1998, p. 158; Cezary Wolski, in turn, drew attention to the stylistic analogies between the GFH-Deer and GFH-HKPL shillings from 1666, which are “a visible confirmation of the travels of the engravers of dies and mintmasters’s between mints belonging to the same manager”. Wolski 2016, p. 84.

<sup>30</sup> We also provide our own calculations of the material collected by Ivan Sinchuk (Sinchuk 1998; Sinchuk 2010a). Crown shillings: 1659–1661 – 7.51%; 1663–1665 – 36.50%. Lithuanian shillings: 1660–1661 – 7.51%; Oliwa – 2.25%; Vilnius and Brest – 43.10%; Kaunas and Malbork – 3.15% [sic].

surplus in the Vilnius mint in 1664–1665,<sup>31</sup> however, would amount to 4%, and in the combined Vilnius and Brest mints in 1666 it would reach 3%.<sup>32</sup> In turn, the deficit in relation to the documented amounts is -12% in the case of Lithuanian shillings from the Oliwa mint, -7% in the case of Crown shillings from the Ujazdów mint (1663–1665), and -6% in the case of Lithuanian shillings from the combined Kaunas and Malbork mints.<sup>33</sup>

There is no doubt, however, that the deficits of coins from Ujazdów, Oliwa, Kaunas and Malbork are only apparent, and are in fact an unbalanced reflection of significant excesses in output at the aforementioned mints. In other words, the number of shillings from the mints with the lowest indicators brings us closer to the point where the hoard evidence is consistent with mint bookkeeping. Such a possibility should be considered in the context of Lithuanian shillings from the Oliwa mint and the Crown shillings from Ujazdów from 1663–1665.<sup>34</sup>

Shillings from Oliwa constitute 2.36% of coins in the hoards from Idźki-Wykno, Rokitno and Przasnysz, as well as in the hoards analysed by Ivan Sinchuk,<sup>35</sup> corresponding with 89.39% of the total indicated in contemporary reports (2.64%). The volume of coins put into circulation from this mint was influenced by the four-month period of its operation and the likely legitimacy of the objections levelled against Horn, which indicated his tardiness and inability to intensify production.<sup>36</sup> Given that the total number of 41,435,208 coins presented in the report corresponds to 2.36% of the coins put into circulation, we can estimate that the entire mintage

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<sup>31</sup> From the activity of the Vilnius Mint we omit the indications for the year 1666, when in Brest mint also used the same dies as in Vilnius. This practice in 1665 in Brest is not supported by data in Table 5.

<sup>32</sup> On the basis of 18,647 shillings from the hoards: Idźki-Wykno, Rokitno I, Rokitno II and the already cited studies by I. Sinchuk.

<sup>33</sup> Own calculations based on the studies on the aforementioned hoards and the works by I. Sinchuk (Sinchuk 1998; Sinchuk 2010a), carried out on a sample of 34,529 to 59,566 shillings – depending on the substantive usefulness of the studies.

<sup>34</sup> We exclude the mints in Kaunas and Malbork from the considerations, because in our opinion the vast majority of Malbork's shillings were struck with the same dies as the coins in Kaunas. For this reason, we do not take into account the Brest mint, in which we assume the use of dies characteristic for the Vilnius factory in 1666.

<sup>35</sup> Sinchuk 1998; Sinchuk 2010a.

<sup>36</sup> The mint contract concluded on 23 May 1663 obliged Andrzej Jerzy Horn to struck, within two years, coins for the amount of 5,818,754 *złoty* 21 groschen. It was a huge challenge to generate 2 million *złoty* in income during the first six months of operation, necessary to settle the first instalment of the outstanding military debt. Horn did not meet these expectations, and the inspection of the mint carried out by the administrator of the Lithuanian treasury, the Vilnius bishop, Jerzy Białozor, pointed out his tardiness. The end of the mint's functioning was brought by accusations directed at Horn by Crown officials, especially the treasurer, Jan Kazimierz Krasieński. On 10 November 1663, the mint was closed, and its organiser was sentenced to 2 years in prison (Janušonis 1975, pp. 101–102; Wolski 2016, pp. 49–50).

Table 5. Percentage of copper shillings from 1659–1666 by mints and years in the light of written sources (A) and finds: Idźki-Wytkno (I-W), Rokitno I (RI) and Rokitno II (RII), Przasnysz (P), Terespol (T)

Mint	Year	A	I-W	RI	RII	P		T	
						%			
<b>1659–1661</b>									
<b>Crown shillings</b>									
Ujazdów	1659	0.09	0.14	0.23 (263)	0.07 (82)	0.09	0.08		
	1660	2.48	3.48	2.95 (119)	7.39 (129)	6.39 (111)	7.00 (122)	2.11	
								6.17 (108)	
	1661	2.12	3.06	3.04 (143)	2.93 (138)	3.55	3.98		
1659- 1661	1.04	**	1.17 (112)	1.02 (98)	**	**	**		
<b>Lithuanian shillings</b>									
Ujazdów	1660	5.73	0.78	0.82	6.98 (122)	0.85	6.69 (117)	7.42 (129)	0.99
	1661		6.19	6.96 (121)	6.16	5.84	6.45	5.96	6.95 (121)
<b>1663–1666</b>									
<b>Crown shillings</b>									
Ujazdów	1663	9.12	8.03 (88)	8.21 (90)	9.14 (100)	7.78 (85)	5.33 (58)		
	1664	15.23	15.15 (99)	16.13 (106)	36.05 (94)	35.57 (93)	35.54 (93)	19.07 (125)	
								35.95 (94)	
1665	14.01	11.19 (80)	11.71 (84)	11.71 (84)	10.34 (74)	11.55 (82)			

Mint	Year	Lithuanian shillings							T
		A	I-W	RI	RII	P	T		
		%							
Oliwa	1663	2.64	2.23 (84)	2.28 (86)	2.49 (94)	2.46 (94)	2.09 (79)		
	1664	4.79	6.63 (138)	5.35 (112)	6.71 (140)	4.95 (103)	9.36 (195)		
Vilnius	1665	11.83	11.03 (93)	11.80 (100)	10.56 (89)	40.01 (97)			
	1666	9.13	13.38 (147)	12.24 (134)	13.00 (142)	35.06 (97)	48.84 (103)		
Brest	1665	1.38	1.11 (80)	1.26 (91)	1.43 (104)	42.70 (104)			
	1666	13.95	11.44 (82)	10.98 (79)	11.00 (79)	39.48 (92)			
Kaunas	1665	0.47	1.56 (332)	1.14 (242)	1.61 (342)	3.31 (704)			
	1666	2.10	4.14 (197)	4.18 (199)	4.18 (199)	3.91 (186)	7.58 (117)		
Malbork	1666	3.89	0.48 (12)	0.35 (9)	0.38 (10)	0.37 (10)			

\* Percentage of coins in hoards in relation to the value resulting from reports and mint accounts

\*\* Included in the mint in Ujazdów

of copper shillings in 1659–1666 amounted to approximately 1,755,729,000 pieces.<sup>37</sup> In order to assess the accuracy of this calculation, it is necessary to prove that there were not significantly more shillings struck in Oliwa than were disclosed in contemporary reports.

However, the previously mentioned underestimation of the Crown shillings from 1663–1665 may be the effect of the lesson that Tytus Liwiusz Boratini received in the course of the court battle in 1661–1662, during which he was cleared of all the charges of embezzlement. However, he could not erase the bad fame that adhered to both him and the copper coinage. Boratini secured himself against repeated accusations with a provision in the contract of January 1663, which referred to the appointment of a controller in the Crown Mint responsible for supervision and preventing abuse, in the person of Krzysztof Michał Rupniowski – the Kraków tribune and the deputy speaker of the Lviv Mint Committee, who was obliged to submit an accounting report on the mint operation to the Sejm.<sup>38</sup>

In the collection analysed by us, the Crown shillings from the Ujazdów mint from 1663–1665 constitute 35.40%, which corresponds to 92.28% of the value resulting from the reports (38.36%). This distribution for individual years is illustrated in Table 6.

Table 6. Percentage of Crown shillings from the Ujazdów mint from 1663–1665 in the reports and in the sets: Idźki-Wykno, Rokitno I, Rokitno II, Przasnysz

Date	Percentage of Crown shillings from 1663–1665	
	according to the reports	in hoards
1663	9.12	8.24 (90.35)*
1664	15.23	16.17 (106.16)
1665	14.01	10.99 (78.46)

\* The ratio of the percentage of shillings in the analysed set and in the reports

We estimate the total mintage of copper shillings based on the indications of Crown coins from 1663 at almost 1,738,000,000 pieces. In turn, the inclusion of coins from 1665 shows that it could reach the level of 2,001,000,000.<sup>39</sup> This value indicates the upper limit of the possible mintage. At the same time, we can

<sup>37</sup> This value, taking into account the underestimated indication from Terespol, would be 2.32%, and the calculation of the mintage would amount to over 1,785,000,000 copies.

<sup>38</sup> Szelągowski 1902, pp. 53–55; Mikołajczyk 1979, p. 66; Wolski 2016, pp. 32, 43–44.

<sup>39</sup> According to the calculation: 1663 – 100 x (143,191,500) / 8.24; 1665 – 100 x (219,915,628) / 10.99. However, also taking into account the study by Ivan Sinchuk – Sinchuk 2010a (excluding the hoard from Przasnysz), the mintage calculated according to the indication of 1663 would amount to almost 1,755,000,000 and according to 1665 to 2,036,000,000.

admit the possibility, already expressed by Ivan Sinchuk, that some coins struck in 1665 were made using dies dated to the previous year.<sup>40</sup> At the same time, taking into account the percentage of shillings from the Oliwa mint and from the mint in Ujazdów from 1663, we can estimate that the entire production from 1659–1666 amounted from 1,800,000,000 to 1,900,000,000 pieces, leaning more towards the latter, higher value. Therefore, it would be 100,000,000 higher than the one calculated by Andrzej Mikołajczyk.<sup>41</sup> We take this spread as the basis for an estimate of the output of mints producing the Crown and Lithuanian shillings (Table 7).

Table 7. The list of booked mintage with estimated number of coins struck in mints, based on hoards: Idźki-Wykno, Rokitno I, Rokitno II, Przasnysz

Mint	Mintage according to reports		Estimated actual mintage		Potential surplus of the mintage		
	number of coins	%	number of coins	%	number of coins	Amount of <i>złoty</i> *	%
<b>1659–1661</b>							
<b>Crown shillings</b>							
Ujazdów, Kraków	90,000,030	5.73	122,760,000– 129,580,000	6.82	32,759,970– 39,579,970	364,000 439,777	36.40– 43.98
<b>Lithuanian shillings</b>							
Ujazdów	90,000,000	5.73	127,800,000– 134,900,000	7.10	37,800,000– 44,900,000	420,000– 498,889	42.00– 49.89
<b>1663–1666</b>							
<b>Crown shillings</b>							
Ujazdów	602,269,458	38.36	637,200,000– 672,600,000	35.40	34,930,542– 70,330,542	388,117– 781,450	5.80– 11.68
<b>Lithuanian shillings</b>							
Oliwa	41,435,208	2.64	43,380,000– 45,790,000	2.41	1,944,792– 4,354,792	21,609– 48,387	4.69– 10.51
Vilnius, Brest	645,016,875	41.08	747,000,000– 788,500,000	41.50	101,983,125– 143,483,125	1,133,146– 1,594,257	15.81– 22.24
Kaunas, Malbork	101,371,380	6.46	121,860,000– 128,630,000	6.77	20,488,620– 27,258,620	227,651– 302,874	20.21– 26.89
<b>In total</b>	<b>1,570,092,951</b>	<b>100</b>	<b>1,800,000,000– 1,900,000,000</b>	<b>100</b>	<b>229,907,049– 329,907,049</b>	<b>2,554,523– 3,665,634</b>	-----

\* Rounded to 1 *złoty*

<sup>40</sup> Sinchuk 2010a, p. 174.

<sup>41</sup> Mikołajczyk 1979, pp. 66–67; Mikołajczyk 1983, p. 106.

As a result, in 1659–1666, about 230–330 million shillings above the norm were struck. The vast majority of these coins left the mints in 1663–1666 (69.31–74.39%). This sum is mainly formed by Lithuanian coins from the Vilnius and Brest mints (43.49–44.36%) and the Crown coins from the Ujazdów mint (15.19–21.32%), and to a much lesser extent by Lithuanian coins from Kaunas and Malbork (8.26–8.91%) and Oliwa (0.85–1.32%). The remaining part was minted in Ujazdów in 1659–1661 (25.61–30.69%), using Crown dies (12.00–14.25%) and Lithuanian dies (13.61–16.44%).

The calculations, therefore, show that the actual output of Crown and Lithuanian shillings from 1659–1666 ranged from 20,000,000 to 21,111,000 *złoty*, and was higher than the declared amount by 2,554,523–3,665,634 *złoty*.

The output of Crown and Lithuanian shilling mints was estimated by Andrzej Mikołajczyk more than 40 years ago. He based his estimations on a representative number of 30,229 legible coins, derived from individual finds and hoards – described in publications in a way that allows their use in statistical research. His findings have been accepted and frequently appear in the literature on the subject. For this reason, they merit attention and discussion. Mikołajczyk stated that 54.15% of his sample consisted of Lithuanian shillings, while 45.85% were Crown shillings. He also noted that 44.72% of all coins were made with Lithuanian dies from 1663–1666. Drawing on S. Janušonis's calculations for the Lithuanian coins dated 1663–1666, Mikołajczyk concluded that the amount of 8,942,662 *złoty* constitutes 44.72% of the total output. On the basis of this calculation, 1% corresponded to approximately 200,000 *złoty*. As a result, the percentage of 8.2% of Crown shillings and 9.4% of Lithuanian shillings from the years 1659–1661 in the analysed sample determined their mintage – 1,640,000 and 1,880,000 *złoty* respectively. This meant exceeding the limit in the first minting period by slightly more than 1,500,000 *złoty* (75%), and the introduction of an additional 137,000,000 coins into circulation. On the other hand, the mintage of Crown shillings from 1663–1665 (36.096%) was to reach 7,219,200 *złoty*, resulting in a surplus of 527,000 *złoty* (7.9%). On this basis, the total production of the Crown and Lithuanian mints was estimated at about 20,000,000 *złoty*, that is 1,800,000,000 coins.<sup>42</sup>

These calculations raise concerns. They result from an incorrectly summed amount of output of the Lithuanian mints from 1663–1666, which in fact is higher by over 189,000 *złoty* and amounts to 8,753,594 *złoty*, and from the assumption that this sum constitutes 44.72% of the total mintage. This would be an appropriate measure if the reporting values corresponded to the actual situation, or the exceedances were proportional. No less doubts arise from the statistical data provided by Andrzej Mikołajczyk, concerning the proportion of Crown and Lithuanian shillings in chronological sequence, which are fundamentally different from our

<sup>42</sup> Mikołajczyk 1979; Mikołajczyk 1983.

estimates. The credibility of the latter is supported by a considerable statistical sample – nearly 60,000 coins – and relatively small deviations in value.

Table 8. Comparison of calculations by Andrzej Mikołajczyk with the content of hoards

Shillings	Mikołajczyk	I-W	RI	RII	P	T	Sinchuk *
	%						
Crown	45.9 (45.0)**	41.0	43.4	41.9	42.6	42.1	44.0
Lithuanian	54.1 (55.0)	59.0	56.6	58.1	57.4	57.9	56.0
Crown 1659–1661	8.2 (8.3)	6.7	7.4	6.4	7.0	6.2	7.5
Lithuanian 1660–1661	9.4 (9.6)	7.0	7.0	6.7	7.4	7.0	7.5
Crown 1663–1665	37.6 (36.7)	34.4	36.1	35.6	35.5	36.0	36.5
Lithuanian 1663–1666	44.7 (45.3)	52.0	49.6	51.4	50.1	50.9	48.5

\* Excluding the isolated hoard from Przasnysz

\*\* Author's own calculations on the basis of the study by A. Mikołajczyk – excluding the Crown shillings dated 1662, 1666 and the Crown and Lithuanian shillings dated 1667 and 1668

The greatest consistencies with A. Mikołajczyk's calculations occur in the representation of Crown shillings from 1663–1665, while deviations in other categories are unlikely to be related to the numismatic material.<sup>43</sup>

The excess output of Boratini's mints in 1659–1661 were therefore lower (39.20–46.93%) than previously thought (75%). This does not change the fact that, in the light of the material analysed, the court's decision to acquit Boratini were not entirely just. Abuse is unlikely to occur without the knowledge of such an efficient administrator and entrepreneur, and even if that held true, we must remember that Boratini was responsible for fulfilling the terms of the contracts.<sup>44</sup>

So far, these abuses have been considered only in the context of Boratini's activity in the first minting period, for which he was officially accused by 24 members of the Chamber of Deputies. This reflects the assumption, reinforced by the results of A. Mikołajczyk, that most of the overproduction of shillings occurred in 1659–1661. The excesses in the later period were expected to be insignificant, especially in terms of output (7.8%). This picture needs correcting. We need to also note that abuses took

<sup>43</sup> Especially that the list of A. Mikołajczyk also includes the hoard from Przasnysz.

<sup>44</sup> In the context of political and economic reality of the Polish-Lithuanian Commonwealth, this issue is discussed by Bartosz Dziewanowski-Stefańczyk – Stefańczyk 2010, pp. 89–95; Dziewanowski-Stefańczyk 2020, pp. 86–105.

place in Andrzej Jerzy Horn's mints, where about 10% (9.11–10.23%) of excessively minted shillings were produced. This value, corresponding to the share of Horn's mints in global production (9.18%), is more-or-less proportional to the excess production recorded at Boratini's mints.

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A separate issue is the legitimacy of the accusations made against Boratini for non-compliance with the mint rate, which required minting 300 copper shillings from the Kraków pound (403.72 g). This was achieved on the basis of the *al marco* rule, which allowed for differences in weight between individual coins. Therefore, the average arithmetic weight of shillings struck from the weight unit should be 1.345 g.

As Ivan Sinchuk noted, the actual average mint rate of Lithuanian shillings from 1663–1666 can be determined with great precision thanks to preserved documents, in the form of reports and mint accounts, and especially the report of the Grand Treasurer of Lithuania, Hieronim Kirszensztejn.<sup>45</sup> Its usefulness results from the fact that it records the volume of over-produced shillings, over-struck from pounds of copper flans, which are omitted in Boratini's reports. These are termed *zbysz* and *przybysz* in the source. On this basis, I. Sinchuk calculated that the average weight of Lithuanian shillings of the TLB–HKPL subtype from 1664–1666 was 1.304 g, while the average weight of the GFH–Deer subtype was 1.279 g. However, Sinchuk gave an unreliable weight for the GFH–Wieniawa variant (1.182 g) on the basis of the Oliwa mint report,<sup>46</sup> which is negated by coin evidence. The correct weight can be calculated at 1.320 g.<sup>47</sup> Stasys Janušonis has also discussed the issue of *zbysz*, indicating the percentage of coins in individual mints that were minted above the standards permitted by the ordinances. In this manner, Oliwa produced between 1.25 and 3.6% above the norm, in Vilnius – 2.8%, in Brest – 2.6%, in Kaunas – 5.4%, and in Malbork – 4.2%. S. Janušonis drew an interesting conclusion that “A. J. Horn was twice as dishonest as T. L. Boratini”.<sup>48</sup>

Verification of metrological extrapolations from written sources can be undertaken on the basis of shillings gathered in hoards. This analysis must be undertaken with the reservations expressed by I. Sinchuk concerning the non-combination of coins from hoards that vary in the degree of preservation, or were buried at different times, or were subject to different physical conditions after deposition.<sup>49</sup>

<sup>45</sup> Documents were published by Stasys Janušonis – Janušonis 1975.

<sup>46</sup> Sinchuk 1987a, pp. 29–30.

<sup>47</sup> Similar results of Author's own calculations: Vilnius – 1.309 g, Brest – 1.310 g, Kaunas – 1.278 g, Malbork – 1.291 g.

<sup>48</sup> Janušonis 1975, p. 104. Similar results of Author's own calculations: Vilnius – 2.7%, Brest – 2.6%, Kaunas – 5.2%, Malbork – 4.1%.

<sup>49</sup> Sinchuk 1987a, p. 29.

Table 9. Mean weight of shillings in hoards (grams)

Mint	Idźki-Wykno	Rokitno I	Rokitno II
<b>1659–1661</b>			
<b>Crown shillings</b>			
Ujazdów and Kraków 1659–1661	1.29 (345)*	1.252 (220)	1.249 (542)
<b>Lithuanian shillings</b>			
Ujazdów 1660–1661	1.30 (381)	1.245 (239)	1.242 (640)
<b>1663–1666</b>			
<b>Crown shillings</b>			
Ujazdów 1663–1665	1.27 (1774)	1.234 (1044)	1.223 (2940)
<b>Lithuanian shillings</b>			
Oliwa 1663	1.27 (126)	1.260 (78)	1.223 (238)
Vilnius 1664–1666	1.27 (1066)	1.243 (1006)	1.220 (2883)
Brest 1665–1666	1.28 (599)	1.271 (421)	1.240 (1182)
Kaunas 1665–1666	1.25 (286)	1.222 (182)	1.223 (534)
Malbork 1666 (GFH–HKPL)	1.29 (27)	1.245 (12)	1.134 (36)

\* Number of coins

The visible weight discrepancies of shillings in hoards result from the chronology of deposits, to which we will return. At this point, we can only say that Rokitno II was hidden shortly after 1695, Rokitno I at the beginning of the fourth quarter of the 17<sup>th</sup> century, and Idźki-Wykno in the 1670s, the latter's coins surviving in an intact condition until their discovery in 1969.<sup>50</sup> For these reasons, the hoard from Idźki-Wykno offers particularly valuable evidence for the actual minting rate of the shillings, especially in relation to the Crown mints, which were not included in the report of treasurer Kirszensztejn. As for the remaining hoards, the average weight of the coins confirm the general pattern. From this evidence, it is apparent that the heaviest coins are the Crown and Lithuanian shillings from the first minting period (1659–1661) and Lithuanian shillings from the mint in Brest. The hoards from Idźki-Wykno and Rokitno I also included Oliwa shillings and the GFH–HKPL variant attributed to Malbork. However, the small number of these coins in the hoards does not give a representative sample. The coin from Kaunas are the lightest, although

<sup>50</sup> Śnieżko 2011, pp. 2–3.

this is also a common feature for coins struck at Ujazdów (1663–1665), Oliwa and Vilnius in Rokitno II.

The weight of Lithuanian shillings in the hoard from Idźki-Wykno is slightly lower than the reported values described by treasurer Kirszensztein and the Oliwa mint documents. For individual mints, these relations are as follows: Vilnius – 1.27:1.309 g; Brest – 1.28–1.310 g; Kaunas and Malbork – 1.26:1.285 g; Oliwa – 1.27:1.320 g. Assuming that the actual mint rate of Lithuanian shillings presented in the treasurer's report are correct, it is difficult to solve the question of whether the loss in weight of coins in the hoard from Idźki-Wykno should not be greater than by 2.0–3.8%.

While *zbysz* is included in the reports on the activities of mints managed by Andrzej Jerzy Horn, the amount of money struck above the norm is not mentioned in the reports of the mints run by Boratini in Vilnius and Brest. Meanwhile, the conversion of overstruck copper pounds into a monetary amount implies that the minting regulations were followed there. However, both the aforementioned report of the Lithuanian treasurer and the metrology of the coins themselves contradict this. In addition, based on the report on the activities of the Crown mints in Kraków and Ujazdów in 1659–1661 quoted by Roman Rybarski, it can be suggested that coins produced there were struck according to the prescribed rate of 300 shillings from the Kraków pound. Certainly, the potential exceedances there were among the lowest, which can no longer be said about the mint in Ujazdów in 1663–1666. Based on the coins, the mintage rate applied there was the same as in Vilnius. We assume that the amount of mintage in Ujazdów reported by Boratini does not include *zbysz*, as is the case in Vilnius and Brest.

Therefore, we can conclude that about 302 shillings in 1659–1661, 308 in Ujazdów (1663–1665) and in Vilnius, and 306 in Brest and Oliwa were minted from the Kraków copper pound, while the highest number was 314 shillings in Kaunas and Malbork.

The reports on the activity of mints, supplemented with the calculated amounts of *zbysz* in the mints of Tytus Liwiusz Boratini, are significantly balanced in the statistical summary and therefore do not affect the findings above.<sup>51</sup>

#### COUNTERFEITING IN THE CONTEXT OF HOARD CHRONOLOGY

The problem of counterfeits of John Casimir's copper shillings in hoards requires further in-depth research.<sup>52</sup> At this point, we will limit ourselves to only a few observations concerning the chronology of hoard finds.

<sup>51</sup> Estimated *zbysz* in the years 1659–1661: Lithuanian shillings – 6,666 *złoty* (0.67%), Crown shillings – 6,666 *złoty* (0.67%); in 1663–1665: Crown shillings – 178,450 *złoty* (2.67%). From the report of treasurer Hieronim Kirszensztein: mint in Vilnius (1664–1666) – 125,864 and 0.24 *zł* (2.80%); mint in Brest (1665–1666) – 72,430 and 0.27 *zł* (2.71%).

<sup>52</sup> Currently, the only known study that focuses on this issue and is not of a contributory nature is the work of Grzegorz Śnieżko – Śnieżko 2012.

It is well-known that counterfeiters working out of specialist workshops and primitive factories did not abandon their activities after the shilling mints ceased operating in 1666. Over time, therefore, the share of counterfeit shillings in currency gradually increased, as evidenced by the contents of coin hoards. This phenomenon was noticed by Wojciech Niemiryecz, who observed that hoards hidden before 1666 do not contain counterfeits, while in slightly younger sets the percentage of products from illegal workshops does not exceed 2%.<sup>53</sup> In the Idźki-Wykno hoard, deposited in the 1670s, 2.24% of shillings were false.<sup>54</sup> However, counterfeits respectively made up 8.0 and 9.8% of coins in two hoards buried several decades after the 1670s at Przasnysz (after 1703, approx. 1710) and Terespol (after 1711).<sup>55</sup> For this reason, the 2.72% of false shillings in the Rokitno I hoard and 5.75% in the Rokitno II hoard<sup>56</sup> allow us to assume that the first hoard was formed in the last quarter of the 17<sup>th</sup> century, while the second hoard was assembled at the turn of the 17<sup>th</sup> and 18<sup>th</sup> centuries. Given the percentage of false coins, it seems likely that Rokitno I, which closes with shillings dated 1666, was deposited a little later than the hoard from Idźki-Wykno. In the case of the Rokitno II find, the very good state of preservation of three Leopold I kreuzers dated 1695 suggests that the hoard was hidden shortly after that date. Indirectly, this is also suggested by a lower percentage of false coins than in the finds from Przasnysz and Terespol. The shillings gathered in the first hoard from Rokitno seem to be less worn out, and the calculated average weight slightly exceeds the coins in the Rokitno II set – 1.242 g compared to 1.226 g. Therefore, we can conclude that Rokitno I was deposited about 20 years earlier than Rokitno II.

In addition to the key elements dating these aforementioned hoards, we can identify another factor that has not yet been mentioned in the literature. It stems from the structure of false shillings in the hoards, or more precisely the occurrence in their group of a separate type of false coins, most likely created in Berzaune near Riga in 1667–1669 under the initiative of Hans Dreiling. Crown and Lithuanian shillings were falsified there. The most frequently reproduced pattern of these shillings is Lithuanian, with the letters TLB under the king's head and the

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<sup>53</sup> Niemiryecz 1973a, p. 110; Niemiryecz 1973b, p. 104; Niemiryecz 1983, pp. 87–88. Ivan Sinchuk also noticed that – Sinchuk 2010b, p. 21.

<sup>54</sup> Among the 5,804 John Casimir's shillings, there are 130 false ones – Śnieżko 2011, pp. 33, 39; Śnieżko 2012, pp. 199, 206.

<sup>55</sup> Przasnysz – Niemiryecz 1973a, pp. 109–110. I added 96 copies of so-called *horse with long legs* type (incl. *king with prominent lips*) to the 1,286 false shillings found by W. Niemiryecz – see Śnieżko 2011, pp. 40–41) – hence the result of 8.0%; Terespol – Lewczuk 1983, without page numbering. A similar percentage of counterfeits (8.93%) was also found by Ivan Sinchuk in a representative hoard of copper shillings (6,635 copies) in the town of Likówka in the district of Grodno – Sinchuk 1990, p. 62.

<sup>56</sup> Markiewicz 2020, tab.3, pp. 274, 277.

monogram HKPL on the reverse (Fig. 10–13).<sup>57</sup> In well-identified and catalogued hoards from Idźki-Wykno (0.96%) and Rokitno (0.74 and 1.00%), *the king with prominent lips* type accounts for 0.94% of shillings.<sup>58</sup> We can estimate the total mintage of these coins at about 18,700,000 copies.<sup>59</sup> The introduction of approximately 19,000,000 false coins into circulation at the end of the 1660s, a context in which other illegal centres started their activity, ensured that the products from Riga had a significant share in the total number of false shillings for some time. This variant constitutes 43.1% of all false shillings in the Idźki-Wykno hoard, 27.1% in the Rokitno I hoard, and 16.8% in the Rokitno II hoard. This is another indication of the early dating of the Idźki-Wykno hoard, and supports the relative chronology of the two Rokitno hoards. At the same time, the frequency of these coins in hoards buried in the third and fourth quarters of the 17<sup>th</sup> century proves the relatively early activity of this workshop, and supports its identification with Hans Dreiling’s Riga workshop.



Fig. 1<sup>60</sup>. *Polish Crown*, John Casimir, shilling, 1660, Ujazdów Mint. Copper; 15.3–16.0 mm; 1.370 g; Inv. No. N/11194/ML

<sup>57</sup> The author of the allegation about the false origin of these coins, connected with the scandal of Hans Dreiling, Riga councillor, is Ivan Sinchuk – Sinchuk 1988, pp. 19–20; Sinchuk 2010b, p. 21; Sinchuk 2017–2018, p. 66. See Śnieżko 2012, pp. 209–210; Wnęk 2013, pp. 174–177; Niziołek 2016, p. 15.

<sup>58</sup> 96 copies of these coins were found in the hoard from Przasnysz – only Lithuanian TLB-HKPL coins, defined by Wojciech Niemirydz as “a horse with long legs”. I suppose that in the Przasnysz some part of them were not recognised. It is impossible that such a large deposit would not include the less frequent fakes of Crown or Lithuanian shillings of Ujazdów or Kaunas type. In this context, the small hoard of 292 copper shillings from the Połock district in the Vitebsk region in Belarus (hidden after 1754), described by Ivan Sinchuk, in which 25 fakes were found, including eight of the *king with a prominent mouth* type – 2.74% of the team and 32% of the false ones is different – Grimalauskaite, Sinchuk 2019, pp. 66–68.

<sup>59</sup> Assuming that the mintage of the official shilling mints reached 1,900,000,000 coins.

<sup>60</sup> Author of photographs no. 1–2, 4–13: Bartłomiej Lenard, no. 3 – Piotr Maciuk.



Fig. 2. *Grand Duchy of Lithuania*, John Casimir, shilling, 1661, Ujazdów Mint. Copper; 15.8–16.2 mm; 1.520 g; Inv. No. N/71123/ML



Fig. 3. *Polish Crown*, John Casimir, shilling, 1664, Ujazdów Mint. Copper; 15.4–15.9 mm; 1.002 g. Inv. No. 3435



Fig. 4. *Grand Duchy of Lithuania*, John Casimir, shilling, 1664, Vilnius Mint. Copper; 15.9–16.2 mm; 1.430 g; Inv. No. N/11194/ML



Fig. 5. *Grand Duchy of Lithuania*, John Casimir, shilling, 1666, Brest Mint. Copper; 15.1–15.6 mm; 1.409 g; Inv. No. N/71123/ML



Fig. 6. *Grand Duchy of Lithuania*, John Casimir, shilling, 1665, Kaunas Mint. Copper; 15.6–16.0 mm; 1.307 g; Inv. No. N/11194/ML



Fig. 7. *Grand Duchy of Lithuania*, John Casimir, shilling, 1666, Kaunas or Malbork Mint. Copper; 15.8 mm; 1.701 g; Inv. No. N/71123/ML



Fig. 8. *Grand Duchy of Lithuania*, John Casimir, shilling, 1666, Malbork Mint. Copper; 15.6–16.0 mm; 1.335 g; Inv. No. N/71123/ML



Fig. 9. *Grand Duchy of Lithuania*, John Casimir, shilling, 1663, Oliwa Mint. Copper; 16.0–16.5 mm; 1.345 g; Inv. No. N/11194/ML



Fig. 10. Counterfeited Lithuanian shilling, type *king with prominent lips* TLB–HKPL, with date 1666. Copper; 15.3–15.6 mm; 1.405 g; Inv. No. N/71123/ML



Fig. 11. Counterfeited Lithuanian shilling, type *king with prominent lips* TLB–Korwin, with date 1666. Copper; 15.2–15.5 mm; 1.125 g; Inv. No. N/11194/ML



Fig. 12. Counterfeited Lithuanian shilling, type *king with prominent lips* TLB–Jeleń, with date 1666. Copper; 15.2 mm; 1.308 g; Inv. No. N/11194/ML



Fig. 13. Counterfeited Crown shilling, type *king with prominent lips*, with date 1666. Copper; 15.5 mm; 1.117 g; Inv. No. N/11194/ML

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## MIEDZIANE SZELĄGI JANA KAZIMIERZA Z LAT 1659–1666 W KONTEKŚCIE SKARBÓW

(Streszczenie)

Postęp badań nad małymi miedzianymi szelągami Jana Kazimierza z lat 1659–1666 odsłonił perspektywę rozwiązania i nowego spojrzenia na szereg zagadnień związanych z tymi monetami. Trudna do przecenienia w tym jest zasługa litewskiego badacza Stasysa Janušonisa, który w połowie lat 70. XX w. opublikował nieznane rachunki i sprawozdania z działalności litewskich mennic szelężnych z lat 1663–1667. Materiał ten, wraz z upowszechnionymi jeszcze przed II wojną światową przez Romana Rybarskiego rachunkami mennic koronnych z lat 1659–1665, posłużył Andrzejowi Mikołajczykowi w 1979 r. do przeprowadzenia analizy porównawczej 30 229 szelągów z treścią źródeł pisanych. Wykazała ona, że Tytus Liwiusz Boratini w latach 1659–1661 przekroczył kontrakty o około 76% , wybijając tym samym ponad normę szelągów na kwotę około 1 520 000 zł. Suma ta, wraz z proporcjonalnie mniejszym przekroczeniem w latach 1663–1666, upoważniła Andrzeja Mikołajczyka do wyznaczenia globalnego nakładu szelągów na kwotę około 20 000 000 zł, czyli 1 800 000 000 tych monet. Na osobną uwagę zasługują prowadzone od lat 80. badania Iwana Sinczuka. Skonfrontował on wymowę sprawozdań mennicznych z 29 200 szelągami, zgromadzonymi w 17 skarbach. Stwierdzoną nadwyżkę monet z lat 1659–1661 próbował tłumaczyć używaniem starych stempli w drugiej kampanii menniczej (1663–1666). Tak też wyjaśniał rozbieżności w ramach roczników koronnych i litewskich szelągów. Stwierdził chociażby, że nadwyżka szelągów koronnych z 1664 r. wynika z wybijania monet z tą datą zarówno w 1663, jak i w 1665 r. Tezy te są dyskusyjne. Do najważniejszych i podzielanych obecnie ustaleń Iwana Sinczuka należy wyodrębnienie spośród szelągów litewskich grupy monet bitych przez Boratinię w Brześciu (1665–1666). Charakteryzuje je mały monogram HKPL pod Pogonią. Wariant ten wyróżnia stylistyczna zależność rewersu z szelągami z mennicy ujazdowskiej (1660–1661), na którą zwrócił uwagę Grzegorz Śnieżko, przypisując te monety do mennicy brzeskiej. Jednocześnie analiza struktury skarbów doprowadziła Iwana Sinczuka do wniosku, że część szelągów wybito w Brześciu takimi samymi stemplami, jak w Wilnie. Badacz ten ustalił również fakt, że szelągi podtypu GFH–Jeleń z datą 1666 produkowane były zarówno w Kownie jak i w Malborku. Podtypu GFH–HKPL z datą 1666 nie zdecydował się on jednoznacznie przypisać do którejś z wymienionych mennic, dopuszczając nawet ewentualność fałszerstwa.

Do ponownego spojrzenia na miedziane szelągi przez pryzmat sprawozdań i rachunków menniczych skłania nowo opracowany materiał w postaci reprezentatywnych skarbów, rozpoznanych w oparciu o aktualny stan badań. Mowa o znalezisku z Idziek-Wykna i dwóch skarbach z Rokitna, które uzupełnione o zespoły z Przasnysza i Terespoła oraz zgromadzony przez Iwana Sinczuka materiał z 16 skarbów (bez Przasnysza) tworzą zbiór ponad 59 tys. monet. Ze względu na merytoryczną wartość opracowań jego pełne wykorzystanie nie zawsze było możliwe. Warto też dodać, że znaleziska poddaliśmy przeliczeniom, aby jak najbardziej przybliżyły stan faktyczny.

Już wstępne rozpoznanie materiału numizmatycznego wykazuje, że wszystkie znaleziska notują więcej szelągów litewskich, aniżeli podają źródła pisane. W całym analizowanym zbiorze jest to różnica 1,4% (tabela 2). Kolejnym istotnym stwierdzeniem jest fakt nadwyżki szelągów z lat 1659–1661 o 2,68%, na którą składa się 1,21% monet z Orłem i 1,47% z Pogonią. Równolegle na lata 1663–1666 notujemy deficyt, który tworzą przede wszystkim monety koronne – 2,56% (tabela 3). Stąd wniosek, że nadwyżka monet z Pogonią w znaleziskach jest pochodną proporcjonalnie zwiększonej ich produkcji zarówno stemplami z lat 1660–1661, jak i w okresie następnym. Natomiast fakt nadreprezentacji monet z lat 1659–1661 w skarbach wskazuje na proporcjonalnie większą, w stosunku do deklarowanego nakładu, emisję w tych latach. Uważamy, że ewentualnego przekroczenia nakładu w pierwszym okresie menniczym o ponad 40% (tabela 7) nie można wytłumaczyć ewentualnym eksploataowaniem starych stempli podczas drugiej kampanii menniczej (1663–1666).

Dalsze zestawienia wymowy źródeł pisanych z reprezentacją monet z poszczególnych mennic w skarbach wykazały dodatnie i ujemne różnice od sprawozdawczego nakładu (tabele 4 i 5). W przypadku zakładów litewskich prowadzonych przez Boratiniego w Wilnie (+2,75–3,22%) i Brześciu (-3,40–3,53%), naprowadziły nas one do wypowiedzianego wcześniej przez Iwana Sinczuka twierdzenia, że część szelągów w mennicy brzeskiej wybito takimi samymi stemplami jak w Wilnie. Z kolei korelacja pomiędzy szelągami podtypu GFH–Jeleń – przypisywanego mennicy kowieńskiej (+2,75–3,22%), i GFH–HKPL – atrybuowanego do Malborka (-3,40–3,53%), dowodzi, zgodnie z twierdzeniem Iwana Sinczuka, używania w Kownie i Malborku w 1666 r. stempli GFH–Jeleń. Uważamy, że około 40% tych monet z datą 1666 powstało w Kownie, a pozostałe 60% w Malborku. Stanowią one tym samym około 90% całej produkcji tej mennicy. Szelągi podtypu GFH–HKPL przypisujemy jednoznacznie do Malborka. Podpowiada to data na monetach, zbieżna z czasem uruchomienia mennicy. Przypuszczamy, że wybito je na początku funkcjonowania tej wytwórni, gdy dążono jeszcze do wyróżniania jej produktów od szelągów z Kowna. Uznaniu tych monet za wytwory zarówno Kowna i Malborka przeczy stosunkowo nieznaczny nakład – w granicach 6 930 000–7 315 000 egzemplarzy, który był najprawdopodobniej efektem produkcji jednego zakładu.

Dodatnie odchylenia reprezentacji w skarbach koronnych i litewskich szelągów z mennicy ujazdowskiej (1659–1661) – odpowiednio 21 i 26%, wileńskiej (1664–1665) – 4%, wileńskiej i brzeskiej (1666)–3%, nie oznaczają wprost skali przekroczeń oficjalnego nakładu, tak samo, jak stwierdzone deficyty szelągów litewskich z mennicy oliwskiej – 12%, szelągów koronnych z mennicy ujazdowskiej (1663–1665) – 7% oraz szelągów litewskich w zsumowanych zakładach w Kownie i Malborku – 6%, nie świadczą o wybiciu mniejszej kwoty od tej stwierdzonej w dokumentach menniczych. Wychodząc

z tego założenia przyjęliśmy, że niedobory są tylko pozorne i w rzeczywistości stanowią niebilansowane odbicie przekroczeń nakładów w innych mennicach. Przyjęliśmy, że mennice o najwyższych wskaźnikach deficytu przybliżają nas do punktu, w którym zachodzi zgodność wymowy skarbów z mennicą księgowością. Taką ewentualność rozpatrzyliśmy w kontekście litewskich szelągów z mennicy oliwskiej oraz koronnych z Ujazdowa (1663–1666). Na tej podstawie oszacowaliśmy globalny nakład mennic szelężnych w granicach od 1 800 000 000 do 1 900 000 000. Z wybitych ponad normę około 230–330 milionów szelągów zdecydowana większość opuściła mennice w latach 1663–1666 (69,31–74,39%). Składają się na nią przede wszystkim litewskie szelągi z mennicy wileńskiej i brzeskiej (43,49–44,36%) oraz koronne z Ujazdowa (15,19–21,32%), a w znacznie mniejszym stopniu – monety litewskie z Kowna i Malborka (8,26–8,91%) oraz z Oliwy (0,85–1,32%). Pozostała część wybito w Ujazdowie w latach 1659–1661 (25,61–30,69%), pod stemplem koronnym (12,00–14,25%) oraz litewskim (13,61–16,44%). Nadużycia te rozpatrywane były dotąd w kontekście działalności Boratiniego w pierwszym okresie mennicznym, za którą został postawiony w stan oskarżenia. Towarzyszyło temu domniemanie, wzmożone wynikami badań Andrzeja Mikołajczyka, że przeważająca część nadprodukcji mennic szelężnych przypadła na lata 1659–1661.

Przekroczenia w mennicach dotyczyły także przepisanej ordynacją stopy menniczej, nakazującej wybijanie 300 szelągów z krakowskiego funta miedzi. Szacujemy, że z tej jednostki wagowej wybijano: 302 koronne i litewskie szelągi w Ujazdowie (1659–1661), 306 w Brześciu i Oliwie, 308 w Ujazdowie (1663–1665) i w Wilnie, a najwięcej – bo 314 szelągów, w Kownie i Malborku.

Procentowy udział w zbiorze fałszywych szelągów osobnego typu podrobionych monet w skarbach, określanych od charakterystycznego portretu Jana Kazimierza terminem *król z wydatnymi ustami*, wybitego w nakładzie około 19 000 000 egzemplarzy najprawdopodobniej z inicjatywy rajcy ryskiego Hansa Dreilinga w latach 1667–1669, stanowi dodatkowe kryterium wskazujące na czas ukrycia depozytów. W zespole z Idziek-Wykna – datowanym na lata 70. XVII w. – typ ten stanowi 43,1%, w ukrytym niedługo później Rokitno I 27,1%, a w zdeponowanym nieznacznie po 1695 r. Rokitno II tworzy on już tylko 16,8% całej populacji fałszywych szelągów.

Adres autora/The author's address:

dr Tomasz Markiewicz

National Museum in Lublin

Zamkowa 9, PL 20–117 Lublin, Poland

t.markiewicz@mnwl.pl

ORCID: 0000-0001-6813-947X

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PETR VOREL

## THE FUNCTION OF THE THALER IN DETERMINING THE EXCHANGE RATES OF EUROPEAN CURRENCIES IN THE SECOND HALF OF THE 16<sup>TH</sup> CENTURY

**ABSTRACT:** The author summarizes the origin and development of the thaler since its emergence in Central Europe in the 1520s to the general spread of the term “thaler” for large silver coins in the 1540s as well as the attempts to replace the thaler with another type of coin in the Roman-German Empire under the Second and Third Imperial Coin Order. The year 1566 was a major turning point. The “imperial thaler” was redefined in metrological terms and the collection of custom duties in the North Sea straits was regulated, which (instead of gold coins) continued to be collected in silver thalers. This move spurred the expansion of the thaler coins in those countries of continental Europe that used the North Sea trade route. At that time, the thaler also became the equivalent for mutual conversions of the most important monetary systems. This is evidenced by the exchange rates from the end of the 16<sup>th</sup> century from Hamburg. In them, the “imperial thaler” serves as a tool for the mutual conversion the seven major currencies used in the North Sea and Baltic trade areas (the Lübeck mark, the Hamburg pound, the Antwerp pound, the Amsterdam pound, the imperial Rhine gulden, the Lisbon milreis and the Polish gulden).

**ABSTRAKT:** Autor zwięźle podsumowuje genezę i rozwój talara od jego pojawienia się w Europie Środkowej w latach 20. XVI w. po powszechne rozprzestrzenienie się terminu „talar” na określenie dużej, srebrnej monety w latach 40. XVI stulecia, jak też próby zastąpienia w cesarstwie rzymsko-niemieckim talara monetą innego typu Drugą i Trzecią Cesarską Ordynacją Menniczą. Najważniejszym punktem zwrotnym był rok 1566. „Talar imperialny” został na nowo zdefiniowany pod względem metrologii, jak też uregulowano pobór ceł w cieśninach Morza Północnego, które (zamiast monet złotych) nadal pobierano w srebrnych talarach. To posunięcie pobudziło ekspansję monety talarowej w krajach Europy kontynentalnej korzystających ze szlaku handlowego Morza Północnego. W tym czasie, talar stał się także jednostką obrachunkową najważniejszych systemów monetarnych. Świadczą o tym kursy walut z końca XVI w. z Hamburga. „Talar imperialny” służy w nich jako narzędzie do przeliczania siedmiu najważniejszych walut używanych na obszarach handlowych Mórz Północnego i Bałtyckiego (marka lubecka, funt hamburski, funt antwepski, funt amsterdamski, cesarski gulden reński, lizboński milreis i polski złoty).

**KEYWORDS:** coin, thaler, currency, 16<sup>th</sup> century, Europe

**SŁOWA KLUCZOWE:** moneta, talar, pieniądz, XVI w., Europa

The thaler was the principal circulating silver coin of early modern Europe. The basis for its emergence and spread lay originally in the silver resources of Central Europe in the first half of the 16<sup>th</sup> century: the Habsburg Tyrol, the Saxon and Bohemian side of the Ore Mountains (Erzgebirge) and the ore-bearing Harz mountains in central Germany.<sup>1</sup> However, the thaler retained its position as the main European silver coin even later, when, from the second half of the 16<sup>th</sup> century, the European financial system began to be influenced by the large-scale supply of Spanish colonial silver from the newly established mines in the area of present-day Bolivia and Mexico,<sup>2</sup> and when the European silver mining industry itself ceased to be profitable due to low cost-effectiveness.

This fact is seemingly illogical. Why did the silver thaler become the universal means of payment in early modern Europe, when the most important powers of the second half of the 16<sup>th</sup> century (Spain, France and England) chose different metrological parameters and completely different names for their heavier silver coins (peso, piastra, écu, crown)? The thaler was not supposed to fulfil this role in the Roman-German Empire either. The two Habsburg brothers, emperor Charles V (1519–1556) and Ferdinand I (1556–1564), had completely different intentions for the imperial monetary system, and the silver thaler was not to play a part in them. How is it then possible that by the end of the 16<sup>th</sup> century, the silver thaler was the pillar of international exchange rates, and that in the commercial world, it simplified the transfer of financial assets from the Portuguese currency to the imperial Rhenish guilder or the Polish currency?

Not even the most detailed collector catalogues recording contemporary thaler minting can answer these questions; only a broad, interdisciplinary analysis can, taking into account the wider economic and political context. Even though the thaler originated in Central Europe, its use in the Baltic maritime trade, i.e. in the area of Scandinavia, northern Germany and Poland, was crucial for its later functioning.

The circumstances of the origin of the large silver coins of the thaler type are, of course, well known. The first large-scale issue of these coins was made in 1486 by Archduke Sigismund of Habsburg, using silver from the Tyrol. This was a major innovation, and it aimed to supply the money market with coins containing enough silver to equal the market price of the then-dominant imperial gold coin, the so-called Goldgulden. This simplified the accounting of debt repayments that the Archduke was obliged to pay to Italian merchants in Goldgulden. For this reason, these silver coins were called “guldiners”, even though they did not contain any gold.

But this was the fundamental problem of all the silver predecessors of the thaler, whether minted in Tyrol, Switzerland or Saxony. All of these silver coins were linked by their silver content to the imperial Goldgulden, as the

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<sup>1</sup> Vorel 2013, pp. 5–26.

<sup>2</sup> Pieper 1992, pp. 77–98.

regulations for their production clearly state. Therefore, the silver content of these coins varied, as it depended on the current exchange rate of gold to silver. This was slightly different in each country and, moreover, at that time it was changing quite rapidly (in favour of silver) in connection with the beginning of Spain's massive importation of gold from Latin America. This is why none of these older versions of silver guldiners from the late 15<sup>th</sup> and early 16<sup>th</sup> centuries became the metrological standard, and did not influence European money circulation on a wider scale.

Things changed only in the second decade of the 16<sup>th</sup> century, when the highly profitable mining of newly-discovered silver resources began on the Bohemian side of the Ore Mountains, in the area of the present-day city of Jáchymov. This was such a profitable business activity that the mining of silver in Jáchymov became the subject of a power struggle in the wider political arena between the Wettins of Saxony (who made considerable initial investments to initiate silver mining and metallurgical processing), Emperor Maximilian I (who was the guardian of the minor Bohemian king Louis Jagiello and claimed decision-making powers in these matters on his behalf) and the Bohemian Estates, who sought to gain control over the mining and export of metallurgical silver so that the proceeds of these activities could be used to pay the debts of the Bohemian king.<sup>3</sup>

The situation was resolved only by the death of Emperor Maximilian I (†1519). The Bohemian Diet then very quickly adopted a resolution (on January 9, 1520), which permitted the export of newly-mined Jáchymov silver in coined form only. The reasons were fiscal. Monetization enabled basic control over the amount of silver processed, and ensured its taxation in favour of the Bohemian Chamber (that is, the repaying of sovereign debts). Since most of these exports went directly across the border to Saxony (as investment repayments and business profits), the Saxon silver guldiner, produced according to the metrological standards of 1505, was approved by the Bohemian Estate's Diet as the metrological model for the new Bohemian coin. This link naturally made it easier to integrate the new Bohemian coins into the wider European precious metals market, for which Leipzig in Saxony was an important centre.<sup>4</sup> For the new coins supplied to the market from Bohemia's Jáchymov, the merchants in Leipzig used the term "guldiner-groat from Jáchymov" (German: *Joachimsthaler Guldengroschen*), shortened as "Thaler" or "tolar". However, this was originally only a designation for a specific type of silver coins supplied to the market, not a general designation for large silver coins. In this German environment, the coins were still called guldiner.

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<sup>3</sup> Vorel 2019a, pp. 49–60.

<sup>4</sup> Nemeškal, Vorel 2010, pp. 33–46.

However, the Bohemian thaler had two major advantages:<sup>5</sup>

It was metrologically stable for several decades, and maintained its silver content at the level set by the Bohemian Estate's Diet in 1520. It was the first coin of this type that did not depend on fluctuations in the price of gold against silver. While the Saxon silver guldiner, which was originally a metrological model for the Bohemian thaler, saw its silver content decrease, no change of parameters was possible in Bohemian mints without the consent of the Diet. Therefore, not even Habsburg King Ferdinand I, after his election to the Bohemian throne in 1526, could reduce the silver content of the Jáchymov thalers, although he sought to do so to unify the Bohemian and Austrian currencies. The Bohemian estate community insisted on adhering to the original metrological parameters of the thalers, as decided by the Bohemian Diet in 1520: They were to retain their fineness (14 lots 16 grains = 93.055% Ag) and their weight (1/8 Erfurt mark = 29.3275 g). This did not change for more than a quarter of a century, until 1547. This long-term metrological stability was a quality that no other silver coins could compete with in the commercial world of the time.

The second advantage of the new Bohemian coin was its availability on the market. The Jáchymov miners and associated foreign trading companies, which dealt with transactions with precious and non-ferrous metals (including the Augsburg Fuggers), could not export silver from Bohemia in any other physical form than minted coins. Therefore, the vast majority of the newly mined Jáchymov silver was monetarized into the physical form of thalers, which were then exported in large quantities to foreign markets. As a result, the term "thaler" (Czech: *tolar*), originally referring only to a specific Bohemian coin, gradually over the course of two decades became a general term for all large silver coins of high purity, around 4 cm in diameter and weighing approximately 30 grams.<sup>6</sup>

The use of the general term "thaler" for large silver coins is documented in the records of various estates or thesaurized cash from the second half of the 1530s. However, it does not first appear in this form in official imperial documents until the early 1540s, when it is used to describe a coinage privilege for the city of Bremen in 1541.<sup>7</sup> On an imperial level, during the failed negotiations that were to lead to the creation of a general imperial currency, large silver coins were still called "guldiner". However, when the exchange rates of the local currencies of territorial imperial princes were negotiated in advance of the Grand Imperial Army's Hungarian campaign in 1542,<sup>8</sup> there are already explicit mentions of thalers as general silver coins, regardless of their issuers. The only exception were the

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<sup>5</sup> Vorel 2011, pp. 1778–1782.

<sup>6</sup> Vorel 2020, pp. 193–188.

<sup>7</sup> Hirsch 1754, no. 200, pp. 301–302.

<sup>8</sup> Vorel 2019b, pp. 935–991.

“genuine” Jáchymov thalers (Fig. 1) which, due to their higher silver content, were granted a higher purchasing power (70 kreutzers) than all other “German” thalers (68 kreutzers) in May 1542.<sup>9</sup>



Fig. 1. *Kingdom of Bohemia*, Ferdinand I, undated thaler from beginning of 1540s, Jáchymov mint. Silver; 38.0 mm; 28.949 g. Numismatic Collection of East Bohemia Museum Pardubice ([www.vcm.cz](http://www.vcm.cz)), inv. no. N241.73, photo by author

By this time, “thaler” meant any large silver coin in Central Europe, thus creating a three-tiered system of marking coins by their approximate value, i.e. small coins (penny, pfennig); medium value coins (groat, Groschen) and large silver coins (thaler). The exact value was then specified by their description, i.e. what kind of penny or groschen it was. This meant it was possible to determine whether or not the coin was valid at all and, if so, what its purchasing power was in a given country.

On the other hand, small coins and, at that time, even groschen coins, had their purchasing power determined by legal provision, bringing their issuers a certain profit derived from the difference between the price of their precious content and their officially determined purchasing power. This procedure was the prerogative of the holder to the right of coinage, usually the ruler. Silver thaler coins, however, were a so-called “common” coin – that is, a commercial coinages, whose face value corresponded with their intrinsic precious metal content. In Central Europe at that time, the group of “common coins” included the traditional medieval coins with a standardised gold content (Ducats and Goldgulden) and, newly, silver thalers.

In the local currencies of the imperial territorial princes and in other European countries, the thaler became an increasingly popular means of payment. It gradually came into use in ordinary payments, widening its original remit as a silver trade coin. While in the early 1520s, the purchasing power of the silver thaler was still too great for everyday money circulation, within two decades the thaler coinages became more and more accessible for urban and rural areas due to their mass production, which was still provided by Europe’s own silver metallurgical production, and the gradual increase in prices.

<sup>9</sup> Becher 1838, vol. II, no. 15, pp. 22–14; Vorel 2014, pp. 379–401.

The fundamental economic impetus for the significant rise in the prices of real estate and landed property, which in Central Europe is documented in the early 1540s (i.e. before the mass importation of overseas silver, which is traditionally associated with the beginning of the so-called “price revolution”), was the general political pressure to reduce the maximum interest rate on Christian credit. This step was taken gradually by most countries in the region with the apparent aim of reducing the cost of servicing sovereign debts. Within the Habsburg realms, this step was taken in 1543, when the maximum interest rate was reduced from 10% to 6% by political decision.<sup>10</sup> This move brought about a temporary collapse of the credit market (few were willing to lend at low interest) and a subsequent rapid rise in the price of aristocratic dominions, serf farms and any other productive facilities, as the standard market price of this type of property was derived from its profits. A one-off significant reduction in the interest rate therefore decreased people’s interest in bond investments, increased demand for real estate and created strong pressure on the development of business activities of the landed gentry. The coincidence of these economic trends also brought an increased demand for higher-value currency, which the silver thaler matched perfectly.

The period of continuous economic development in Central Europe, where thaler-type silver coins gradually assumed an important place in European monetary circulation, ended in the second half of the 1540s. A political milestone was the so-called Schmalkaldic War of 1546–1547 between the imperial-papal alliance on the one hand and the German Lutheran opposition united in the so-called Schmalkaldic League, on the other. The economic milestone was the discovery of highly-metallic silver ores in Potosí, Bolivia, and the technological mastery of its extraction and processing into metallurgical silver<sup>11</sup> that could be exported to Europe (1545). Although Emperor Charles V himself did not have significant silver mining resources in Europe, during the second half of the 1540s, he had the majority of this precious metal available in Europe, thanks to overseas imports.<sup>12</sup> Thus, he also had (unlike in previous decades) the raw materials to carry out a major coinage reform, which could have had a great economic impact thanks to the existence of the Spanish-Imperial personal union. Silver thalers were to be replaced by another type of coinage.

Emperor Charles V won the first phase of the long-lasting conflict with the Lutheran opposition and for five years (1547–1552) became (as he believed) the unlimited ruler of the Roman-German Empire. His power, however, was not as great as he had anticipated. In northern Germany, the war continued after the Battle of Mühlberg, where the Saxon Elector John Frederick II, leader of the opposition Schmalkaldic League, was captured. Even on the political level, Emperor

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<sup>10</sup> Vorel 2021a, pp. 177–187.

<sup>11</sup> Szaszdi 1981, p. 167, tab. VII *Gold and Silver Production – America 1501–1610 per weight and value (official rate)*.

<sup>12</sup> Cipolla 1996, p. 54; Walter 2003, pp. 241–256.

Charles V did not manage to enforce the major reforms he had sought at the two Imperial Diets held at Augsburg in 1547–1548 and 1550–1551.<sup>13</sup>

However, during these Diets, the Emperor succeeded in temporarily implementing his idea of a new common imperial currency. The preparatory assemblies provide a good illustration of the extent to which thaler coins were already in circulation at that time. A fairly detailed overview is given in a report drawn up for Emperor Charles V in Nuremberg in 1551 by representatives of the various German regions. Here, they are discussed directly in the preamble, “...thalers are the largest silver coins circulating in the territory of the Roman-German Empire...” (“...die Thaler alß die höchste silber Münzen in Reich teutscher Nation gangbahr...“).<sup>14</sup> In fact, this document gives the first general definition of what should be understood as a “normal” thaler: Coins with a purity of at least 14 lots (87.5% Ag) and of such a weight that eight pieces weigh just under one Cologne mark (233.856 g)

This relatively loose definition covered most thaler coins that were being produced in the Roman-German Empire and in other countries ruled by the Habsburgs. They had a value of 68 kreutzer. The Commission then named four cases of thalers minted in Germany that were of lower purity. They were given a value ranging from just 53 to 63 kreutzer. Swedish, Danish, Polish and Swiss coinages were described as “foreign”. Nonetheless, they were also called thalers as they were “...silver pieces that compares in size to the thaler...” (“...Silberen Stuck, welche den thalern in ihrer Größ gleich...“).<sup>15</sup> The purity of Scandinavian and Polish thalers had not been ascertained, so no value was proposed in the imperial currency; Swiss thalers (Schaffhausen, Basel and coins minted jointly by the cantons of Uri, Schwyz and Unterwalden) were valued at 64 or 65 kreutzer.

The Emperor, however, had a different idea of the form of the new imperial currency, into which the silver thaler (i.e. the “common” coin with variable purchasing power) did not fit. Charles V wanted to transform the Roman-German Empire into a centrally controlled state, and for this he needed a monetary instrument that he could control himself. The Second Imperial Minting Ordinance of 1551, proposed by the Emperor (Fig. 2), was designed to do away with the then common two-tier monetary system (“current” coins with local validity and the generally accepted “common” thaler coins) and to unify the silver coinages into a single and unchanging denominational series. The new main imperial silver coin was thus to be the “Imperial Guldiner” with a fixed face value of 72 kreutzers, which was embossed directly on the coin (Fig. 3). The already produced silver thalers were to circulate for some time with their original purchasing power (68 kreutzers), but new ones were not to be produced on imperial territory any longer.

<sup>13</sup> Vorel 2021b, pp. 352–354.

<sup>14</sup> Hirsch 1754, p. 335.

<sup>15</sup> Hirsch 1754, p. 340.

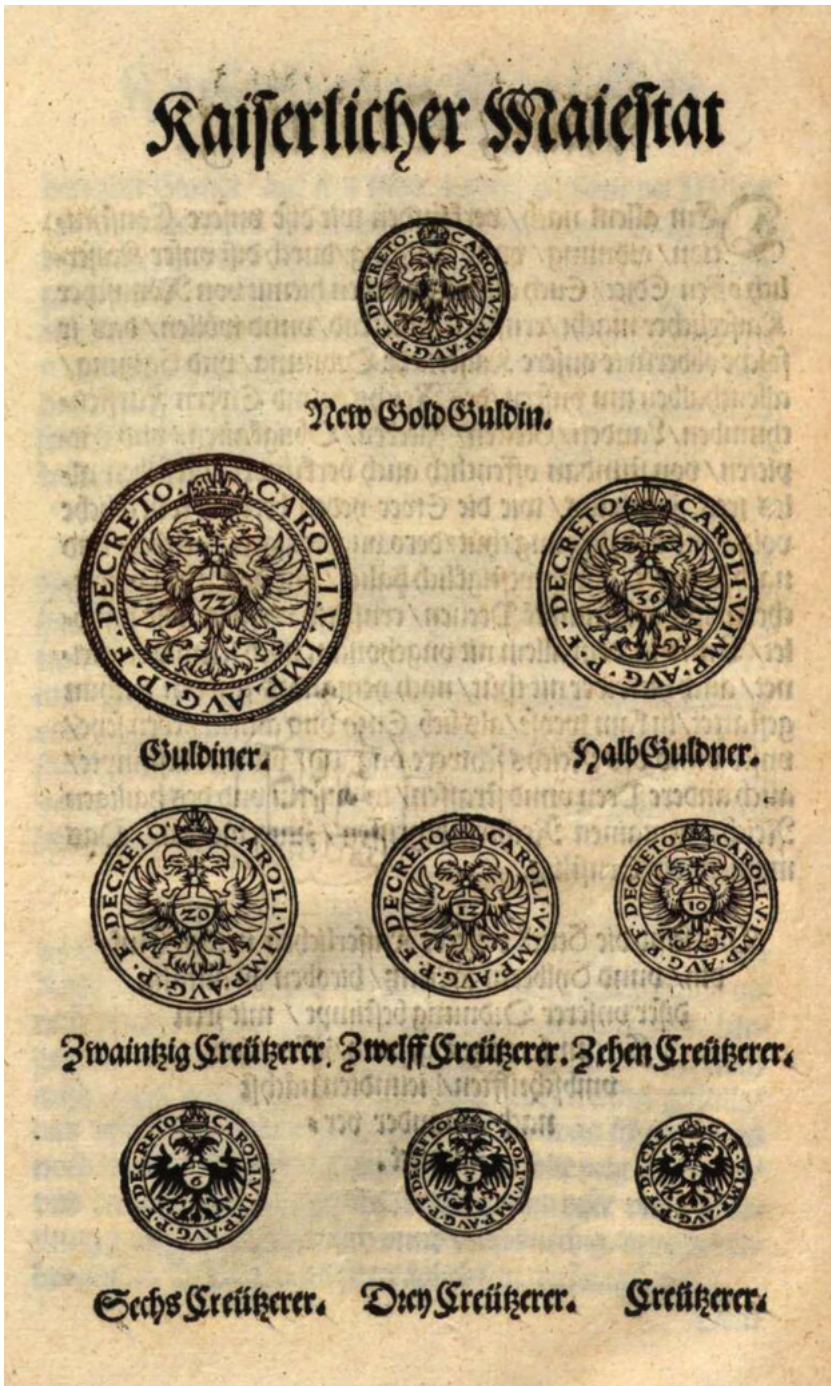


Fig. 2. Third Imperial Minting Ordinance from 1551: an appendix depicting the newly introduced imperial coins. Österreichische Nationalbibliothek Wien, sign. 28. E. 36



Fig. 3. *Tyrol*, Ferdinand I, Imperial Guldiner = 72-kreutzer, 1556, Hall in Tirol mint. Silver; 39.65 mm; 31.012 g. Numismatic Collection of East Bohemia Museum Pardubice ([www.vcm.cz](http://www.vcm.cz)), inv. no. N241.5726, photo by author

This unusual and, from an accountancy perspective, rather impractical value (72 kreutzers) was higher than the silver content of the older thalers would have indicated. The latter were “undervalued” by two kreutzers in relation to the newly introduced imperial coins, i.e. to 97.15% of the real price of silver. The difference was not too great, but if this imperial currency reform had been universally implemented (which it was not), the older and higher quality thalers would have quickly disappeared from circulation, replaced by imperial coins.

The “72” denomination would also have made it easier to gradually link the imperial currency with the Spanish monetary system, whose main thaler-type silver coin was the 8-real (real de a ocho, peso). The following interconnection of the two monetary systems was to create an easy conversion (Spanish real = 9 kreutzers of the imperial currency), which would be particularly advantageous to the Spanish Empire.<sup>16</sup> This would have greatly simplified the ability for Emperor Charles V to use Germany’s economic potential for its expansionary policy in the Mediterranean, where it repeatedly clashed with France and the Ottoman Empire.

However, the plans of Emperor Charles V for world domination soon came to nothing and after another, this time unsuccessful, military conflict with the Lutheran opposition in the Empire (1555), the Emperor was forced to abdicate the imperial throne and had to flee Germany. Thus Charles’ “Imperial Guldiner” of 72 kreutzers disappeared into the imaginary abyss of history as well. The agreement on the new internal confessional organization of the empire (the so-called “Peace of Augsburg” of 1555) had already been concluded with the Lutheran opposition by Charles’s younger brother, King Ferdinand I, who took over the government of the empire (as acting king of Rome and representative of the Emperor) immediately after the Emperor’s flight to Spain.

One of the first political measures taken by the new Roman Emperor immediately after his election by the Electoral College in 1558 was the approval of

<sup>16</sup> Eltz 2005, pp. 60–62, 859–884; Vorel 2009, pp. 175–178; Volckart 2017.

the Third Imperial Minting Ordinance of 1559.<sup>17</sup> The plans for this new imperial currency did not include the silver thaler either. The older kreutzer coins remained valid, but the main imperial coin was to be the silver guldiner with a denominated value of 60 kreutzers (Fig. 4). By this, Ferdinand I actually wanted to establish the Austrian monetary system as the general standard in the empire.<sup>18</sup> This model had at least the advantage that the new silver guldiner corresponded in its purchasing power to the main imperial monetary unit (Rhenish guilder = 60 kreutzers). Even the Third Imperial Minting Ordinance did not anticipate the long-term existence of silver thalers, which were to be gradually replaced in monetary circulation by the new kreutzer system.



Fig. 4. Tyrol, Ferdinand I, Rhenish guilder = 60-kreutzer, 1560, Hall in Tirol mint. Silver; 37.45 mm; 24.467 g. Coin Collection of East Bohemia Museum Pardubice ([www.vcm.cz](http://www.vcm.cz)), inv. no. N241.5715, photo by author

The problem, however, was that within the confessionally and politically fragmented Roman-German Empire, Emperor Ferdinand I had no instruments of power at his disposal to enforce compliance with the Third Imperial Minting Ordinance. Thus, even this imperial law was accepted after 1559 by only a relatively small group of issuers politically linked to the Habsburgs.<sup>19</sup> Even though the question of a common imperial currency became a regular item on the agenda of the Imperial Diets until the end of the 16<sup>th</sup> century, most of the imperial princes, cities and other issuers did not respect the imperial coinage regulations and continued to produce their own local coins and silver thalers of various metrological parameters.

But that was the weakness of the thaler coinages of the time: there was no fixed metrological standard, and for a long time no agreement was possible at the imperial level, when both emperors (Charles V and Ferdinand I) advocated a different

<sup>17</sup> Hirsch 1754, vol. I, no. 212, pp. 344–365.

<sup>18</sup> Newald 1883.

<sup>19</sup> Vorel 2006, p. 126, Map 7: *Issuers of silver coins minted in compliance with the Third minting order of 1559.*

model of a common imperial currency, which was advantageous particularly for the Habsburgs.

A fundamental change took place after the death of Emperor Ferdinand I. His son and successor Maximilian II was more accommodating in imperial affairs than his two predecessors, so more problems could be resolved during his reign. The resumption of war with the Ottoman Empire at the beginning of Maximilian's reign forced the monarch to seek financial support from the imperial estates, and he was basically indifferent to what physical form the money would have. He himself no longer actively sought to introduce an imperial currency.

In the end, economic criteria, not political will, decided which silver coin would be the main currency. This was decided by the trading networks operating in the North Sea and the Baltic Sea, which followed the tradition of the medieval Hanseatic League.

The Scandinavian countries and the coastal areas of northern Germany and Poland did not have their own sources of metallurgical silver, but obtained the precious metal through trade.<sup>20</sup> Their monetary development was not influenced by the Habsburgs' efforts to unify their monetary systems; northern Germany was not controlled by Charles V even after the Schmalkaldic War. Their monetary development therefore more closely reflected the real needs of the commercial world of the time. The traditional currency system of the medieval Hanseatic League still prevailed in the North German and Scandinavian areas at the beginning of the 16<sup>th</sup> century, with the silver mark being the largest denomination, containing about two-thirds of the precious metal compared to the thaler. However, the Lübische Mark could not compete for long with the rapid rise of the thaler as the trade coin in the early 1520s. The silver thaler gradually became the standard in this area as well, and individual issuers adapted the physical form of the newly introduced coins to it.

The demand for payment in silver thalers was particularly influenced by Denmark, which in 1566 made a radical change in the tariff rates in the Sunda Strait. This strategically important canal, connecting the North Sea and the Baltic Sea, was used by merchant ships of all companies (especially English and Dutch) wishing to conduct profitable business in the Baltic or Russia, or to import grain or industrial semi-finished products (crucial for ship-building) transported by the Elbe, Oder or Vistula rivers from the inland to port cities. Instead of the former payment in gold, based on the number and type of ships passing through, Denmark introduced a new system that considered the specific tonnage, and required payment in silver thalers.<sup>21</sup> This was also logical for commercial reasons, as the farther east one went, the greater the purchasing power of silver against gold. As a result of this measure,

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<sup>20</sup> North 1989, pp. 57–63.

<sup>21</sup> Krüger 1994, pp. 187–208.



Fig. 5↑→. Saxon valuation table of 1572: example of evaluation of less valuable tolars. The standard Imperial Thaler had a higher value, i.e. 24 groats of Saxonian currency or 32 schillings of Lübeck currency. Stürmer 1572, pp. 30–31

Landtgraff zu Leuchtenberg,



Administrator des Stiftes Münster  
vnd Osnabruck.



Mansfeldisch.



the demand for silver thaler coins increased.<sup>22</sup> Moreover, as additional coins came into circulation, the “northern route” assumed an increasingly important role in the distribution of export silver to Eastern Europe<sup>23</sup> and onwards on to Asia.<sup>24</sup>

The growth in the supply of silver on the European precious metals market was also significantly affected by the financial problems of Spain, which was the most important importer of precious metal at that time.<sup>25</sup> Despite the ever-increasing supply of silver, Spain maintained for a long time a formal gold/silver exchange rate of 1:10.61.<sup>26</sup> Maritime imports were, however, no longer completely under Spanish control, and a significant proportion of Spanish colonial silver entered the European market through other channels at much lower prices. After the outbreak of the Spanish-Dutch War in 1566, it was no longer realistic to artificially keeping the price of silver high on the Spanish side, and its official price was reduced by 14%. This impulse also significantly contributed to the expansion of the production of thaler-type coins. The two parts of the former Habsburg Netherlands, divided since 1566 into a Spanish part and rebel provinces, gradually became the main area for the production of silver thaler coins in Europe.<sup>27</sup> The long war in the Netherlands also created an increased demand for the supply of military goods, for which both sides in the conflict were able to pay with silver thalers, produced in large quantities from imported silver.<sup>28</sup>

Germany quickly responded to these changes by adopting the so-called Amendment to the Third Imperial Minting Ordinance in 1566. It was only this document that set the metrological standard, as it introduced the “imperial thaler” as a silver coin with a silver purity of 14 lots 4 grains (88.9% Ag) and a weight of 1/8 of a Cologne mark (29.232 g).<sup>29</sup> This was an important step, as only such a clear definition allowed the “imperial thaler” to express the purchasing power of other silver coins in circulation. For this purpose, the various local monetary circuits within the empire produced so-called “valuation tables”, which were also published in print as an aid to merchants and accountants. The Saxon valuation table of 1572,<sup>30</sup> for example (Fig. 5), achieved considerable popularity and spread, as the main route for the export of grain and other goods from Central Europe to the coastal trading centres was through Saxony along the Elbe.

<sup>22</sup> Nathorst-Böös 1976, pp. 128–129.

<sup>23</sup> North 1998, pp. 403–413; Dmitrieva 2006, pp. 12–35.

<sup>24</sup> Prakash 2004, pp. 167–168; Mathee 2006, p. XX (Map 4).

<sup>25</sup> Hamilton 1970, p. 42, tab. 3 *Total Decennial Imports of Fine Gold and Silver*; Menzel 2004, pp. 5–14; TePaske 2007, p. 266.

<sup>26</sup> Hamilton 1970, p. 71.

<sup>27</sup> Vorel 2009, pp. 223–228.

<sup>28</sup> North 1989, pp. 57–63.

<sup>29</sup> Hirsch 1754, vol. II, no. 18, pp. 25–30.

<sup>30</sup> Stürmer 1572, pp. C3–D4.

However, the clear metrological anchoring of the “imperial thaler” was not only important for these regional market networks, but also for long-distance international trade. Through the silver “imperial thaler” it was also possible to determine the current exchange rates between the various major European currency systems. At the end of the 16<sup>th</sup> century, the silver standard was more suitable for these purposes than the gold standard, as the price of silver was less subject to regional variations and fluctuations than gold.

How these calculations were made is shown by a rare surviving print of the exchange rates of the most important currency systems used in the Baltic trade area as of January 1, 1595, published for the use of merchants in Hamburg.<sup>31</sup> It shows the exchange rates of the seven currency systems (Lübeck, Hamburg, Antwerp, Amsterdam, Imperial, Portuguese and Polish), converted by means of the “imperial thaler” as follows: 33 Lübeck shillings = 35 Polish groats = 66 Hamburg pfennigs = 74 imperial kreutzers = 90 Antwerp denarii = 92 Amsterdam denarii = 330 Portuguese reis.

Similar simple “rate sheets” were probably routinely drawn up at the time for the use of the large financial chambers, but they were information material with short-term value, as exchange rates changed rapidly. The fact that the Hamburg exchange rate table was published in print is testimony to the exceptional importance of the city in the system of trade networks of the time: If there was not much demand for such information, there would have been no point in publishing the exchange rates in print; it would have been enough to copy them by hand.

This partial figure from the Hamburg Stock Exchange of 1595 also illustrates very aptly how the role of the “imperial thaler” had evolved in the three decades since its metrological anchoring in 1566. The exact kind of thaler (Fig. 6) was not at all important for the mutual conversion of the monetary systems, because the international



Fig. 6. *Kingdom of Bohemia*, Rudolf II, thaler, 1580, Jáchymov mint. Silver; 42.0 mm; 28.59 g. Coin Collection of East Bohemia Museum Pardubice ([www.vcm.cz](http://www.vcm.cz)), inv. no. Nr. N.241.428, photo by author

<sup>31</sup> Goessen 1595.

market counted on the “imperial thaler” as a normative unit with a certain silver content. According to this monetary standard, the current market price of the “imperial thaler” was converted in the various currencies and compared with each other. The older printed valuation surveys, which were a very practical tool for traders immediately after 1566, had lost their informational value by the end of the 16<sup>th</sup> century. Their issuers were unable to respond quickly to changes in the commercial world of the time. The widespread valuation table, repeatedly published by Adam Berg in Munich, resembles more of a precursor to collector's catalogues of 16<sup>th</sup>-century German thaler coins rather than an up-to-date trade manual.<sup>32</sup>

On the other hand, it is clear that the creator of the Hamburg exchange rate sheet (Fig. 7a–b) did not work with the “thaler” as a virtual monetary unit of account, as this term was commonly used in accounting documentation in the Habsburg Empire and in the surrounding countries at that time (1 thaler = 70 kreutzer of imperial currency = 35 groats of Polish currency = 30 white groats of Bohemian currency). The Hamburg Stock Exchange assessed the fair market value of the physically circulating silver coins, which (to distinguish them from the monetary numerical unit of the same name) were referred to as “broad thalers”.

From these accounting sources, we can also deduce why the Polish-Lithuanian Commonwealth did not proceed to mass-produce its own silver thalers during the last third of the 16<sup>th</sup> century,<sup>33</sup> even though the raw material (silver obtained through trade) was abundant in the country.<sup>34</sup> The reasons were mainly economic. While the other monetary systems of the region gradually weakened (in the imperial currency the thaler strengthened from 68 kreutzers in 1566 to 74 kreutzers in 1595), the Polish currency maintained a stable exchange rate of 35 groats for a thaler. Why was Poland able to buy silver thalers relatively cheaper (in terms of domestic currency) than neighbouring countries on the European market at the end of the 16<sup>th</sup> century?

The explanation for this seemingly illogical development is found in the broader context of export links.<sup>35</sup> At the end of the 16<sup>th</sup> century, silver thaler coins were exported in large quantities to the territory of Russia and the Ottoman Empire, where silver had a higher purchasing power than in Western and Central Europe. Silver thalers, however, did not circulate in these countries, but were imported under a state-controlled forced buyout scheme.<sup>36</sup> The silver thus obtained was remonetized at a profit into small silver government coins (Russian kopecks and Turkish akçe).<sup>37</sup> However, both Russia and the Ottoman Empire accepted as do-

<sup>32</sup> Berg 1597.

<sup>33</sup> Dutkowski 2005, pp. 182–196.

<sup>34</sup> Mączak 1972, p. 39.

<sup>35</sup> Samsonowicz 2004, pp. 135–153.

<sup>36</sup> Öztürk 2002, pp. 692–704.

<sup>37</sup> Spasskij 1962, p. 56; Pamuk 2004, p. 234.

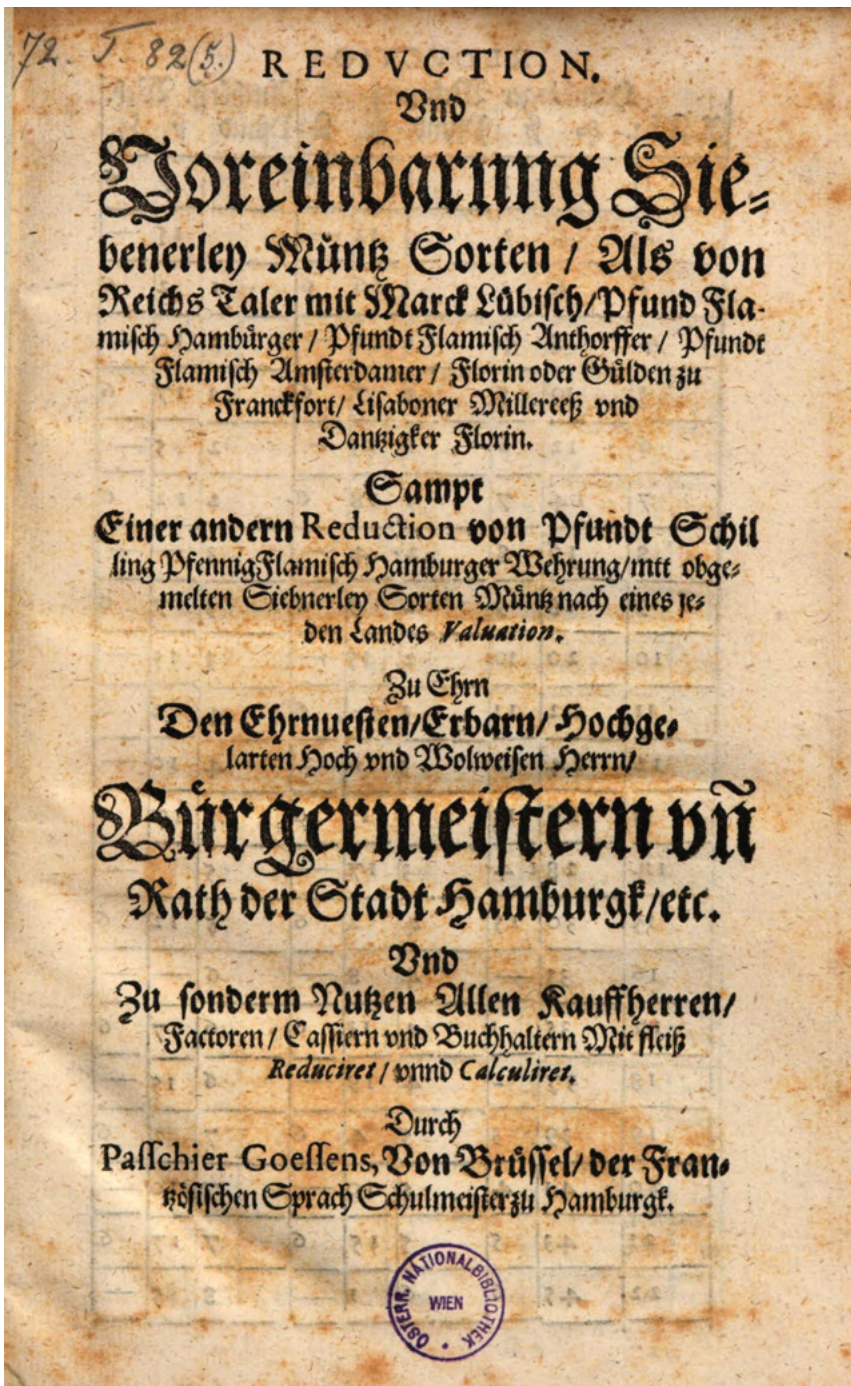


Fig. 7a. Front page of Hamburg exchange rate sheet from 1595. Österreichische Nationalbibliothek Wien, sign. 72. T. 82. (5)

REDUCTIO						PRIMA.											
Hamburgr Wehrung			Antwerff. Weh.			Amsterd. Wehr.		Franck. W. Lysff. Weh.		Danck. W.							
N. Tha.	q	ß	Pfund	ß	q	Pfund	ß	q	℞	Kreuz.	Wille	Kopf.	℞	Groß.			
1	2	1		5	6		7	6		1	14		330	1	5		
2	4	2		11			15			2	28		660	2	10		
3	6	3		16	6		1	2	6		3	42		990	3	15	
4	8	4		1	2		1	10			4	56		1320	4	20	
5	10	5		1	7	6		1	17	6		6	10	1	650	5	25
6	12	6		1	13			2	9			7	14	1	980	7	
7	14	7		1	18	6		2	12	6		8	18	2	1310	8	5
8	16	8		2	4			3				9	22	2	1640	9	10
9	18	9		2	9	6		3	7	6		11	6	2	2970	10	15
10	20	10		2	15			3	15			12	20	3	3300	11	20
11	22	11		3		6		4	2	6		13	24	3	3630	12	25
12	24	12		3	6			4	10			14	28	3	3960	14	
13	26	13		3	11	6		4	17	6		16	2	4	4290	15	5
14	28	14		3	17			5	5			17	16	4	4620	16	10
15	30	15		4	2	6		5	12	6		18	30	4	4950	17	15
16	33			4	8			6				19	44	5	5280	18	20
17	35	1		4	13	6		6	7	6		20	58	5	5610	19	25
18	37	2		4	19			6	15			22	12	6	5940	21	
19	39	3		5	4	6		7	2	6		23	26	6	6270	22	5
20	41	4		5	10			7	10			24	40	6	6600	23	10
21	43	5		5	15	6		7	17	6		25	54	6	6930	24	15
22	45	6		6	1			8	5			27	8	7	7260	25	20

Fig. 7b. Hamburg exchange rate sheet from 1595, p. AIV-AII. Österreichische Nationalbibliothek Wien, sign. 72. T. 82. (5)

mestic legal tender even some foreign coins of medium value which they did not produce themselves. The Polish silver triple groat belonged to this group.<sup>38</sup>

During this period, it was more profitable for European trading companies to import current Polish coins directly to the territory of Russia and the Ottoman Empire (in the latter's case, this mainly concerned the regions in the Balkans), which increased demand and maintained a strong exchange rate of the Polish currency against silver thalers. This was also helped by the specific economic model that operated in some Polish mints. In addition to the direct purchase of silver for the production of government coinages, they also allowed for the "custom" production of coins. In this

<sup>38</sup> Mikołajczyk 1986, p. 69, fig. 3: *Flow of the Polish silver coins to the South and East onto the lands of the Ottoman Empire and Ottoman allies*; Sahillikoğlu 2004, pp. 115–142; Vorel 2018, pp. 29–42.

process, silver supplied by the customer was monetised into the desired form for a set fee (derived from the weight of the processed metal). It is then logical that in view of the specifics of the Russian and Turkish markets, Dutch merchants had their silver minted in Polish coastal mints (in Gdańsk, for example)<sup>39</sup> not into commercial thalers, but into triple groat coins, as they made major profit by exporting them directly to Russia and the Balkans.

The silver “imperial thaler” continued to play its role as a general measure of value in the 17<sup>th</sup> century as well.<sup>40</sup> As with all precious-metal trade coins, the market price of silver thalers rose gradually as local currencies depreciated over time. It is this relationship between the market price of metrologically stable commercial “common” coins and local monetary systems that allows us to analyse long-term inflationary trends as well as singular financial crises, whether they involved a general rise in the price level (so-called price revolution) or were the result of wartime conflicts.

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<sup>39</sup> Kizik 2004, pp. 51–76.

<sup>40</sup> Vorel 2013, pp. 82–94.

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## FUNKCJA TALARÓW W USTALANIU KURSÓW WALUT EUROPEJSKICH W 2. POŁOWIE XVI WIEKU

(Streszczenie)

Autor pokrótce podsumowuje genezę i rozwój talara od jego powstania w Europie Środkowej w latach 20. XVI w. do ogólnego rozszerzenia terminu „talar” na duże srebrne monety w latach 40. XVI w. Wyjaśnia to, dlaczego lokalne określenie srebrnych monet czeskich, bitych od 1520 r. w Jáchymovie (talary), było później używane jako ogólne oznaczenie wszystkich dużych srebrnych monet o wysokiej czystości. Starsze monety typu talarowego z przełomu XV i XVI w. nie mogły mieć znaczącego wpływu na obieg pieniądza, ponieważ były niestabilne metrologicznie. W połowie lat 40. XVI w. srebrne talary były już powszechnym składnikiem obiegu pieniężnego w Europie Środkowej i Północnej. Jednak cesarz Karol V i jego brat Ferdynand I promowali inny model wspólnej waluty cesarskiej. Na mocy cesarskich ordynacji menniczych z 1551 i 1559 r. guldiner cesarski (72-krajcarowy), a później guldiner reński (60-krajcarowy) wprowadzono jako powszechną cesarską srebrną monetę. Te srebrne monety o stałej sile miały zastąpić starsze talary w obiegu. Ich siła nabywcza, wynikająca z zawartości srebra, była zmienna, ponieważ odzwierciedlała zarówno stopniową inflację, jak i zmiany ceny złota w stosunku do srebra. Habsburgowie nie byli jednak w stanie wymusić politycznie centralnie regulowanej ogólnokrajowej waluty. Na dużych obszarach północnej Europy i Skandynawii, gdzie skuteczność cesarskich ordynacji menniczych nie sięgała, talary stały się standardową formą handlu srebrem. Ważnym kamieniem milowym dla dalszego rozwoju talara srebrnego jako powszechnie akceptowanej waluty był rok 1566, kiedy Dania wprowadziła nowy system poboru ceł w Cieśninie Sundajskiej. Miały one być nadal opłacane nie złotymi monetami, lecz srebrnymi talarami. W tym samym czasie cena rynkowa srebra w Hiszpanii gwałtownie spadła, więc na rynku było mnóstwo monet. Cesarstwo rzymsko-niemieckie również zareagowało na ten rozwój, uchwalając w 1566 r. poprawkę do ordynacji menniczej, która określała srebrnego „talara cesarskiego” o ściśle określonych parametrach metrologicznych. Choć krok ten nie ujednolicił zawartości srebra we wszystkich typach monet talarowych, „cesarski talar” (jako precyzyjnie wyrażona ilość srebra) służył jako ekwiwalent wartości przy ustalaniu kursów walutowych na międzynarodowym rynku walutowym. Autor dokumentuje to wynikami badań kursów walut z Hamburga z 1595 r., które zawierają wzajemne przeliczenia siedmiu walut używanych w szerokim obszarze handlowym Morza Północnego i Bałtyckiego (marka lubecka, funt hamburski, funt antwepski, funt amsterdamski, cesarski gulden reński, lizboński milreis i polski złoty). Pod koniec XVI w. polski pieniądz była główną walutą w handlu międzynarodowym, chociaż Rzeczpospolita Obojga Narodów nie była wówczas wiodącym producentem srebrnych monet talarowych. Specyficzna pozycja ówczesnego pieniądza polskiego wynikała z faktu, że mała polska srebrna moneta trzygroszowa (trojak) została w pełnej wartości przyjęta jako wspólna waluta w Imperium Osmańskim i Rosji. Dla międzynarodowych firm handlowych korzystniej było więc eksportować polskie trojaki do Europy Wschodniej i na Bałkany, co

zwiększyło popyt na monety polskie. W związku z tym srebrne talary jako towar handlowy można było pod koniec XVI w. kupić na rynku europejskim za polskie monety taniej niż za inne waluty używane na obszarze handlowym Morza Bałtyckiego.

Adres autora/The author's address:

prof. PhDr. Petr Vorel, CSc.

Faculty of Arts and Philosophy

University of Pardubice

Studentská 95, CZ 532 10 Pardubice, Czech Republic

petr.vorel@upce.cz

ORCID: 0000-0002-6452-479X

