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# TYPICAL FEATURES OF A ROMAN IMPERIAL DENARIUS HOARD FROM THE CHERNYAKHIV CULTURE TERRITORY – THE CASE OF THE SKYPCHE HOARD FROM UKRAINE

**Abstract:** The hoard found in 2018 at Skypche in the western region of Ukraine included seventy Roman denarii of the 1st and 2nd century AD (Trajan to Commodus) and a presumably silver ring. The hoard is typical for the territory of Ukraine occupied in the later phases of the Roman period and the Migration period by the people of the Chernyakhiv culture identified with a federation of Gothic and non-Gothic peoples under the Gothic leadership. Among the coins in the hoard was one barbarian imitation of a Roman denarius and seven denarii weighing of less than 2 g identified initially as of official issue. Some of the lightweight denarii could be copies of Roman denarii. It is not unlikely that these copies were manufactured within the Barbaricum.

**Keywords:** *Roman coins, Roman Imperial denarii, barbarian imitations, coin hoard, Chernyakhiv culture.*

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The group of seventy Roman denarii and a ring made of a silver-coloured metal was published on the Ukrainian metal-detector community internet forum “Violity” in mid-February 2019<sup>1</sup> complete with 16 photographs of the finds<sup>2</sup>. In March the coins were sold off

<sup>1</sup> A part of the present article concerning a barbarian imitation of Roman denarius reports on the results of research completed within the *Imagines Maiestatis: Barbarian Coins, Elite Identities and the Birth of Europe* (IMAGMA) Project No. 2014/15/G/HS3/04583, led by Professor Aleksander Bursche, conducted at the Institute of Archaeology of the University. Another part of this article concerning denarii subaerati and copies of Roman denarii reports on the results of research completed within the *Barbarian Fakers. Manufacturing and use of counterfeit Roman Imperial denarii in East-Central Europe in antiquity* Project No. 2018/31/B/HS3/00137, led by Dr. Arkadiusz Dymowski, conducted at the Institute of Archaeology of the University of Warsaw, financed from the resources of the National Science Centre, Poland.

<sup>2</sup> <https://forum.violity.com/viewtopic.php?p=12739262> (access: 05.08.2019).

DOI: 10.14795/j.v7i1\_SI.491

ISSN 2360 – 266X

ISSN-L 2360 – 266X

at an auction on that same forum.<sup>3</sup> However, before this happened one of the authors of the present article had been able to gain access to the coins, photograph, measure and weight them, and carry out a metallographic analysis. Information about the circumstances of the discovery of this assemblage was also obtained.

As reported by its finder, the hoard was discovered nearby the rural locality of Skypche, Gorodok raion, Khmelnytskyi Oblast (see map 1) in the second half (autumn?) of 2018 during amateur metal-detecting, on a wooded slope. The coins were resting in clayey soil but the earth between them was of slightly darker colour. The coins and the ring were collected from an area of approximately 1 metre, from a depth of ca. 0.15–0.4 m. No traces of a possible container were found. If made of organic material it might not have survived to our day; perhaps the darker earth mentioned in the report represented its remains.

The hoard included 69 denarii, struck – according to an initial assessment – in the official mint at Rome, and a barbarian imitation of a Roman denarius (see table 1 and figs. 1-4). The denarii were issues of five emperors: Trajan (4) Hadrian (3), Antoninus Pius (24 specimens, incl. posthumous issues for Faustina I – 5, Marcus Aurelius – 2, and Faustina II – 2), Marcus Aurelius (28 specimens, incl. issues for Antoninus Pius – 2, Faustina II – 5, Lucius Verus – 2, Lucilla – 1, Commodus – 2) and Commodus (10). The earliest coin in the hoard was a denarius of Trajan struck in AD 100 (RIC 37), the latest – three denarii of Commodus from AD 187-188 (RIC 162, 164).

It is traditional to attribute hoards and single finds of Roman Imperial denarii and their imitations recorded in Ukraine to the Chernyakhiv culture. Its sites and the territory within its range have yielded a great number of Roman denarii.<sup>4</sup> A Chernyakhiv culture

<sup>3</sup> For a total of around seven thousand Ukrainian hryvnias, the equivalent of ca. 240 euro, at the National Bank of Ukraine exchange rate of March 2019.

<sup>4</sup> Cf. MYZGIN 2013, 221.

site closest to the findspot indicated by the finder of the hoard would be one found about 4 km away, but in scholarly literature there is also a reference to a Chernyakhiv culture settlement identified on the grounds of the village of Skypche itself,<sup>5</sup> thus, very close to the reported location.

The region where the hoard was discovered is one with a remarkably large number of sites identified with the Chernyakhiv culture.<sup>6</sup> The process of its formation is thought to have started in precisely this area – between the Smotrych River and other left-hand tributaries of the Dniester, and the upper reaches of the Southern Bug.<sup>7</sup> A crucial role in this process was played by the Wielbark culture people who had arrived in the region in early 3<sup>rd</sup> century AD or its first half<sup>8</sup> having migrated en masse from what today is northern and eastern Poland. Some researchers additionally recognize evident influence of the Przeworsk culture,<sup>9</sup> as well as a contribution from a Late Sarmatian and Late Scythian groups.<sup>10</sup> A crucial role in the development of the Chernyakhiv culture was played by the participation of its men in Gothic wars. However, the culture is understood to take its final form in the age of Constantine the Great, i.e. approximately during the first three decades of the fourth century.<sup>11</sup> At this time, everywhere on its vast territory – from the Romanian regions of Muntenia and Transylvania in the west, to the drainage of the Seym in Russia in the north-east, and from the region of Volyn in the north to the north-western Black Sea coast in the south – its principal attributes take form, e.g., building construction design, burial rite and portable inventory (pottery, clothing, weapons etc.). The final stage of

<sup>5</sup> MAKHNO 1962, 54; VINOKUR et al. 1984, 33; HUTSAL et al. 2011, 53.

<sup>6</sup> Cf. MAGOMEDOV 2001, 205, fig. 2.

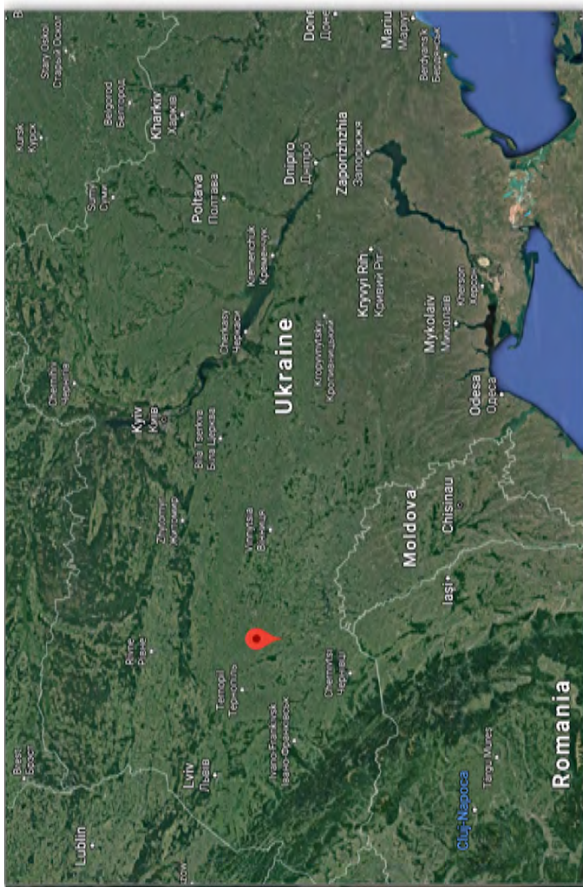
<sup>7</sup> MAGOMEDOV 2001, 139; SCHCHUKIN 2005, 132.

<sup>8</sup> MAGOMEDOV 2001, 115-118; SHAROV 2011, 338.

<sup>9</sup> MAGOMEDOV 2001, 118-119.

<sup>10</sup> GEY 2001-2002, 296-314; MAGOMEDOV 2001, 120-124.

<sup>11</sup> MAGOMEDOV 2001, 141-143.



**Map 1.** Findspot of the Skypche hoard (source: Google Map).

the Chernyakhiv culture coincides with the first half of the fifth century, possibly as far as around AD 450 – the age of Hunnic domination in East and Central Europe, and mass migration of East Germanic peoples to the territory of the Roman Empire.

On the territory of the Chernyakhiv culture Roman coins are one of the most frequently encountered categories of Roman imports.<sup>12</sup> Almost every category of Roman coin of the Imperial period is represented: 1<sup>st</sup> and 2<sup>nd</sup>-century denarii (68%), antoniniani (7%), 3<sup>rd</sup>-century provincial coins (12%) and an appreciable number of 4<sup>th</sup>-century bronze issues (5%).<sup>13</sup> By analogy, most of the Roman coin hoards are denarius hoards. In Ukraine alone (with the exception of the Black Sea coast), jointly with the Skypche hoard, at least 95 of Imperial denarius hoards have been recorded. When it comes to the number of coins, the denarius hoards recovered on the Chernyakhiv culture territory are hoards of between 100 and 300 coins. The hoard from Skypche is classified by K. Myzgin to his intermediate group – Roman coin hoards containing between 50 and 200 coins.<sup>14</sup> The closest geographically to the Skypche hoard is a small assemblage of denarii (19 coins, Titus to Commodus), found near the rural locality Verbichna,<sup>15</sup> ca. 2-3 km to the north-west of the site of the discovery of the Skypche hoard.

The chronological pattern of the hoard from Skypche is typical for the Chernyakhiv culture territory. This is a hoard type D in the classification system of A. Dymowski and K. Myzgin.<sup>16</sup> In principle, hoards of Imperial denarii found in this region, similarly as in most other regions of the Barbaricum, are made up entirely or almost entirely of coins of late issued between the late reign of Nero

(54-68) and early years of Septimius Severus (193-211). As noted quite a while ago, hoards found in the Barbaricum which fit this chronological framework may be grouped by their chronological pattern.<sup>17</sup> The latest pattern characterizes hoards with a later chronological structure closed by the latest coins of Septimius Severus in the classification of Aleksander Bursche,<sup>18</sup> which correspond to *forward-looking* hoards of Septimius Severus of Richard Reece,<sup>19</sup> which correspond to the type D hoards. Such hoards predominate in the territory occupied by the Chernyakhiv culture (and on the island of Bornholm), and at the same time account for a significant part of hoards found on the territory of the Wielbark and the Przeworsk cultures, and on the Swedish islands of Gotland, and presumably, Öland.<sup>20</sup> Other than the Baltic Sea islands, this territory now lies in Poland, Ukraine, Moldova, western Belarus and south-western Russia, described by A. Dymowski and K. Myzgin as the Przeworsk–Wielbark–Chernyakhiv–Baltic zone of the influx and redistribution of Roman coins. It is important to note that the geographic distribution of hoards type D in the areas indicated (except for the Baltic Sea islands) coincides with the later and late Roman period range of these three archaeological cultures (see map 2). Hoards type D have come to light, although in a much smaller number, in other areas of the Barbaricum, more notably, in north-western Germany and in the Great Hungarian Plain.<sup>21</sup> In principle, hoards type D contain denarii which are characterized by heavy use-wear and a lack or a very small number of denarii earlier than Trajan, exactly as is the case of the Skypche hoard. A. Dymowski and K. Myzgin separated type D hoards into sub-types - D-1,<sup>22</sup>

<sup>12</sup> Their number as published in 2013 was 26 000: 3000 coins from single and collective finds and 23000 coins from 183 hoards (MYZGIN 2013, 218). At present, the Roman coins finds recorded in this area number at least 100 000 specimens.

<sup>13</sup> MYZGIN 2018, 87.

<sup>14</sup> MYZGIN 2010, 9.

<sup>15</sup> KROPOTKIN 1961, 84, no. 1121.

<sup>16</sup> DYMOWSKI/MYZGIN 2014, 50-52.

<sup>17</sup> Most notably on this subject, Richard Reece (REECE 2003a; REECE 2003b; REECE 2008) and Aleksander Bursche (BURSCHE 1994).

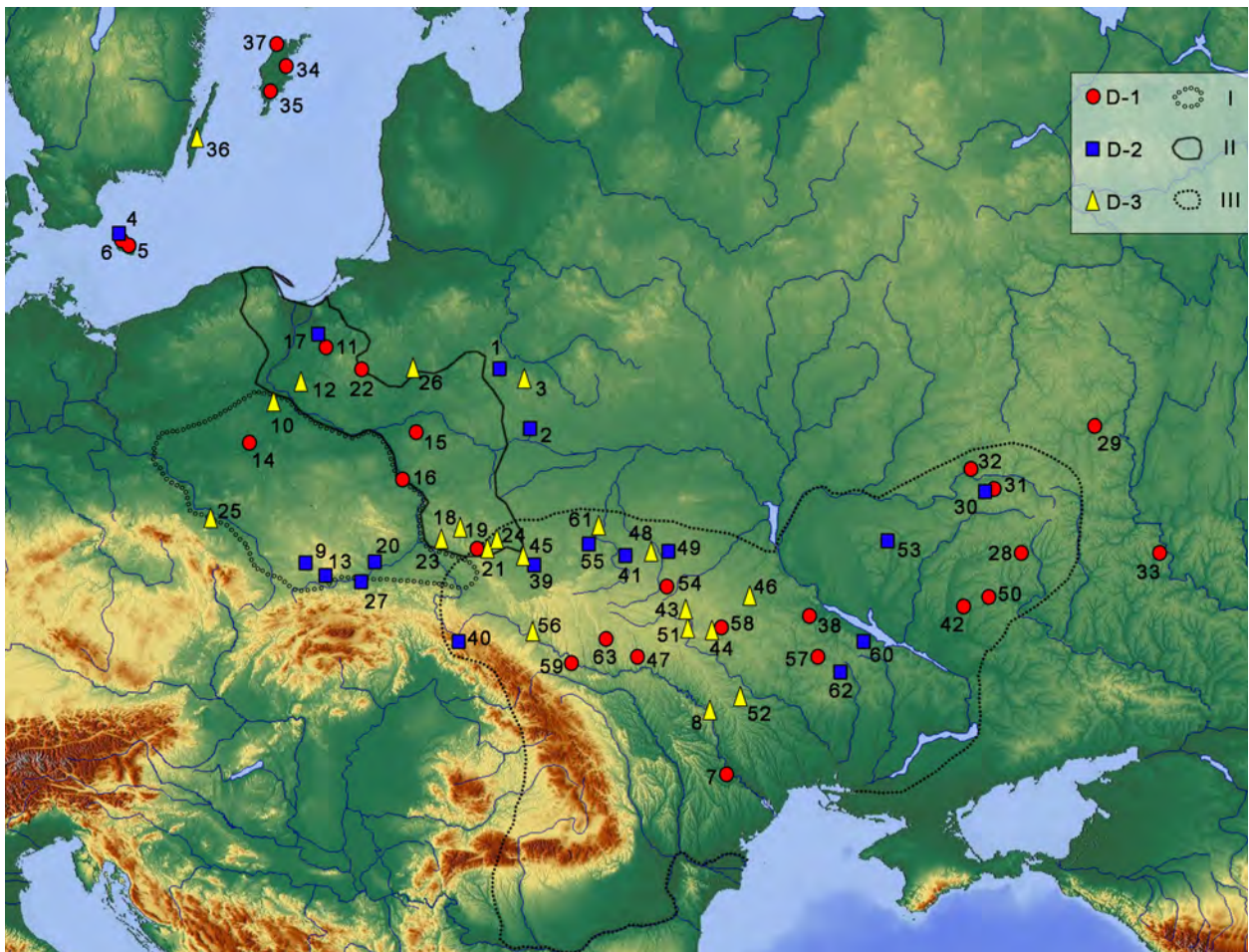
<sup>18</sup> BURSCHE 1994, 471-473, 481-483.

<sup>19</sup> REECE 2008, 69-70; cf. REECE 2003a, 283-288.

<sup>20</sup> DYMOWSKI/MYZGIN 2014, 53-54, 67-69.

<sup>21</sup> DYMOWSKI/MYZGIN 2014, 53-54, 69.

<sup>22</sup> Usually over 60% coins struck under Antoninus Pius and Marcus Aurelius, at least 5% coins up to Trajan and at least 10% coins up to Hadrian. As a rule the latest



**Map 2.** Geographic distribution of hoards type D (only the territories of present day Poland, Belarus, Ukraine, Russia, Moldova and the Baltic islands have been mapped, with the exception of the Black Sea coast and the Caucasus region) in comparison to territorial range of the Wielbark, Przeworsk and Chernyakhiv archaeological cultures in the later and late Roman period (after DYMOWSKI/MYZGIN 2014, 60, with additions of the authors): I – the Przeworsk Culture area; II – the Wielbark Culture area; III – the Chernyakhiv Culture area; 1 – Alekshycy, BY; 2 – Malech, BY; 3 – Volkovysk (environs), BY; 4 – Robbedale, DNK; 5 – Smørenge, DNK; 6 – Udmarken, DNK; 7 – Bendery 2, MD; 8 – Solonceni, MD; 9 – Dąbrowno, PL; 10 – Gąski, PL; 11 – Gierłoż, PL; 12 – Golub-Dobrzyń, PL; 13 – Jerzmanowice 2, PL; 14 – Łąd, PL; 15 – Liw, PL; 16 – Podzamcze, PL; 17 – Półwieś, PL; 18 – Romanów, PL; 19 – Ruszczyzna, PL; 20 – Skrobaczów, PL; 21 – Swaryczów, PL; 22 – Szczytno (environs), PL; 23 – Tokary, PL; 24 – Wilków, PL; 25 – Wrocław, PL; 26 – Zbójna, PL; 27 – Malkowice, PL; 28 – Belgorod, RU; 29 – Kazaki, RU; 30 – Pimenovo, RU; 31 – Priamitsyno, RU; 32 – Sevenki, RU; 33 – Verkhnij Karabut, RU; 34 – Anga, Boters, SE; 35 – Havdhem, Havor, SE; 36 – Hulterstad, SE; 37 – Lummelunda, Kams, SE; 38 – Babychy, UA; 39 – Borochoyche, UA; 40 – Borynya, UA; 41 – Chernytsya; 42 – Chutove, UA; 43 – Hlins'k, UA; 44 – Lipovets, UA; 45 – Luchytsi, UA; 46 – Mazepyntsi, UA; 47 – Nova Ushytsia, UA; 48 – Novograd-Volyns'kyj, UA; 49 – Novooleksandrivka, UA; 50 – Ohultsi (Kut), UA; 51 – Pereorky, UA; 52 – Pishchanka (Peschanka), UA; 53 – Rohyntsi, UA; 54 – Romanivka (Stara Romanivka), UA; 55 – Rubche, UA; 56 – Sarnyky (Sarnky Gorni), UA; 57 – Turiya 2, UA; 58 – Ul'yanivka, UA; 59 – Ustechko, UA; 60 – Viytove (Voytove), UA; 61 – Zbuzh, UA; 62 – Velyka Severynka, UA; 63 – Skypche, UA.

D-2<sup>23</sup> and D-3,<sup>24</sup> marked respectively by a late, \_\_\_\_\_  
 coins are Septimius Severus.

<sup>23</sup> As sub-type D-1, but less than 5% coins up to Trajan and at least 10% coins up to Hadrian; over 60% (up to over 80%) coins struck under Antoninus Pius and Marcus Aurelius.

<sup>24</sup> As sub-type D-2, but less than 10% coins up to Hadrian; over 60% (up to over 90%) coins struck under Antoninus Pius and Marcus Aurelius.

later and the latest chronological pattern. These sub-types may, although need not, could be useful for identifying hoards of a relatively late, later, or a very late date of deposition.<sup>25</sup> The find from Skypche is a typical hoard assigned to sub-type D-1 (see fig. 5), its deposition – given its chronological pattern

<sup>25</sup> DYMOWSKI/MYZGIN 2014, 51.

and heavily worn coins – hypothetically of a late date, in the late Roman period or even, the Migration period.<sup>26</sup>

All the coins belonging to the hoard from Skypche were in a very poor condition, with heavily worn surfaces. Their average weight is around 2.5 g. Only two coins weigh a little over 3 g. (see table 1), and seven others weigh less than 2 g, which fact is discussed at more length in the coming section. The total weight of all the coins from the hoard, including the imitation, is 156 g.

Analysis of alloy content using the XRF method<sup>27</sup> revealed a high silver content for all seventy coins usually ranging from 90 to 96 % (see table 2). Only three coins had a silver content of less than 90 %: a denarius of Antoninus Pius (for Marcus Aurelius) (see table 2, no. 28: 85.8 % Ag, 4.1 % Zn and 7.4 % Cu), a denarius of Marcus Aurelius (see table 2, no. 37: 89.8 % Ag, 8.8 % Cu, 1.3 % Pb) and a denarius of Marcus Aurelius (for Faustina II) (see table 2, no. 52: 89.6 % Ag, 7.7 % Cu, 2.5 % Pb).

From a numismatic standpoint all the coins are typical for Roman 1<sup>st</sup> and 2<sup>nd</sup> century coinage. The only exception is a rarely encountered type, Commodus RIC 75 note (see table 1, no. 65). This denarius has a variant obverse legend ending in BRIT,<sup>28</sup> absent on most coins of this type. Also remarkable is the image and legend on one of the denarii of Marcus Aurelius (see table 1, no. 48). In this specimen the reverse legend corresponds to type RIC 354 (legend ends in COS III PP, the design is identifiable as type RIC 352 (Roma standing left, holding Victory and sceptre). The description of the type RIC 354 in Volume III of the *Roman Imperial Coinage* must be incorrect: Roma standing is described as seated. The same error is observed on the Online Coins of Roman

<sup>26</sup> Cf. DYMOWSKI/MYZGIN 2014, 50-51.

<sup>27</sup> The X-ray fluorescence analysis with a portable spectrometer SPRUT was carried out at the Metals and Semiconductor Physics Department of the National Technical University “Kharkiv Polytechnic Institute”. Incidentally, this is the first Ukrainian hoard to have alloy content established for all its coins.

<sup>28</sup> RIC III, p. 374, note 75.

Empire web page where in the photographs of two denarii of Marcus Aurelius, type RIC 354, Roma is standing but the description is “Roma seated”.<sup>29</sup>

Another denarius of Marcus Aurelius (no. 41, RIC 228) is remarkable for having 27 notches on its reverse at the level of the legend and the border. The tool used had a wedge-sectioned blade (perhaps the tip of a knife?). Scored on the heavily worn border, between 2 and 7 o'clock, the notches divide it into sectors, creating an impression that they are meant to represent the letters of the circumferential legend. Elsewhere the notches were made on the letters of the legend on the COS, on the thunderbolt held by Jupiter and his head. As yet we found no close analogies to similar cut-marks on any coin recovered in the Barbaricum or on the territory of the Roman Empire. It is not wholly clear on which side of the frontier they were made. The precision of execution suggest that the coins was scored for some special reason (e.g., to “restore” the worn legend) by an inhabitant of the Empire, who spoke Latin and understood the sense of the inscription. On the other hand, the very fact that the coin was discovered outside the frontier in a hoard next to a barbarian imitation, makes it likely that for some reason the notches were made by a barbarian, perhaps to make the denarius more similar to the less worn coins with a still legible reverse legend.

A ring of silver-hued metal (presumably silver or a silver-rich alloy) found with the coins, has a diameter of 10 mm and a weight of 1.03 g (see fig. 4). With on direct access to this object its other details must remain unknown. This is one of the reasons we find it hard to indicated analogies for this find. To judge from its photograph included in the first publication of the hoard on the *Violity* website it can hardly be an earring or an element of a buckle. If the coins had indeed been placed in a leather or a cloth container the ring could be an element which attached it to the belt or of its fastening.

<sup>29</sup> [http://numismatics.org/ocre/id/ric.3.m\\_aur.354](http://numismatics.org/ocre/id/ric.3.m_aur.354) (access: 05.08.2019).

One coin in the Skypche hoard was determined as a barbarian imitation of a Roman Imperial denarius.<sup>30</sup> Imitative denarii in hoards found in the Barbaricum, including the territory of the Chernyakhiv culture, are discussed in detail elsewhere.<sup>31</sup> Here let us only note that out of more than five hundred denarii hoards recorded in the Barbaricum, more than seventy included imitations of denarii of Flavian, Nerva-Antonine and Severan emperors (confirmed or likely). These hoards range from small, numbering little over a dozen coins, to large, containing over a thousand denarii. The percentage of imitative denarii in hoards vary greatly. Nevertheless, as a rule the number of imitations in hoards is small; most often, a single coin, and several specimens at most. Quite exceptionally, a hoard included several dozen denarius imitations, but as yet no assemblage of this sort is known from the Chernyakhiv culture territory. When it comes to their geographical range, hoards with imitations are found in almost every area of the Barbaricum where denarius hoards are in evidence. Fifteen such assemblages have been recorded on Chernyakhiv territory, the Skypche hoard not included.<sup>32</sup>

However, we have to stress that within the Barbaricum the territory of the Chernyakhiv culture decidedly shows the highest number of finds of Imperial denarius imitations, estimated at several thousand specimens,<sup>33</sup> as compared to the pools recorded in Poland, north-western Germany, the Great Hungarian Plain and on the islands of Gotland and Öland of several dozen each.<sup>34</sup> However,

<sup>30</sup> In the definition used for the purpose of the *Imagines Maiestatis: Barbarian Coins, Elite Identities and the Birth of Europe* (IMAGMA) Project, barbarian imitations of Roman imperial coins are coins and coin-like objects modelled on Roman imperial or provincial coins, or inspired by them, made by Barbarians (Continental Europe), excluding post-Roman minting activity.

<sup>31</sup> DYMOWSKI/MYZGIN 2019a – in press.

<sup>32</sup> DYMOWSKI/MYZGIN 2019a – in press.

<sup>33</sup> These assessments are based chiefly on the material amassed by Oleg Anokhin. See ANOKHIN 2015; ANOKHIN 2019; cf. DYMOWSKI/MYZGIN 2019a – in press; DYMOWSKI/MYZGIN 2019b – in press.

<sup>34</sup> STRIBRNY 2003; DYMOWSKI 2019b; LIND 2018. Cf.

the problem is that for a vast majority of imitative coins recovered in Ukraine, Moldova and western Russia we have no data about the context of discovery. Even if it is reasonable to expect the denarius imitations to feature more frequently in hoards found on Chernyakhiv territory than elsewhere in the Barbaricum, at present we have no evidence to confirm this supposition. Nevertheless, in view of the geographic distribution of these finds it appears obvious that the main production centre of denarii imitating issues of Flavian, Nerva-Antonine and Severan emperors was the territory settled by the Chernyakhiv people.<sup>35</sup> Given the dating of the emergence of the Chernyakhiv culture to the period approximately AD 200-250, the production and use of Roman Imperial denarii imitations in the region can be dated at the earliest to the first half of the third century.<sup>36</sup> This dating dovetails with findings from the numismatic analysis of Imperial denarii imitations. According to observations made quite a while ago, some denarius imitations with portraits of second-century emperors have a reverse design modelled on third-century denarii,<sup>37</sup> while, more recent studies identified die-links between imitations modelled on second-century denarii and imitations modelled on late third-century aurei.<sup>38</sup>

Definitely the most interesting aspect of the occurrence of denarius imitations found in hoards, and outside hoards, are the many die-links identified between imitations recovered in different, often quite distant locations. Until recently, particularly thanks to the publications of Volker Zedelius<sup>39</sup>, Karlhorst Stribrny<sup>40</sup> and Lennart Lind,<sup>41</sup> there was an

DYMOWSKI/MYZGIN 2019a – in press; DYMOWSKI/MYZGIN 2019b – in press.

<sup>35</sup> DYMOWSKI/MYZGIN 2019a – in press; DYMOWSKI/MYZGIN 2019b – in press.

<sup>36</sup> MYZGIN 2013, 223.

<sup>37</sup> LIND 1988, 113; STRIBRNY 2003, 60.

<sup>38</sup> ANOKHIN 2018, 32-35; cf. DYMOWSKI/MYZGIN 2019a – in press; DYMOWSKI/MYZGIN 2019b – in press.

<sup>39</sup> ZEDELIOUS 1974, 46.

<sup>40</sup> STRIBRNY 2003, 51-67.

<sup>41</sup> LIND 1988, 117-118.

awareness of direct die-links between denarius imitations found in the Great Hungarian Plain and their finds from north-western Germany, Poland and Scandinavia (Gotland and Öland). The vast pool of Ukrainian and Moldovan finds amassed for the most part by Oleg Anokhin,<sup>42</sup> taken in conjunction with the sorted much more modest assemblage from of Swedish<sup>43</sup> and Polish finds,<sup>44</sup> led to the recognition of further direct die-links between Gotland and Ukraine, Poland and Ukraine, Poland and the Baltic Sea islands (Gotland and Bornholm), north-western Germany and Ukraine, and Great Hungarian Plain and Ukraine. Certainly, most of the die-links were recognized within the pool of coin finds from Ukraine. The die-links between denarius imitations were recorded both within large die-chains which include several and even several dozen coins, and smaller chains, of two or a little more than two coins. The larger die-chains published to date are the SALVS AVGVSTI group,<sup>45</sup> the Hulterstad-Uggårda group,<sup>46</sup> the CERES

<sup>42</sup> These materials were made public as an internet catalogue of barbarian Roman coin imitations from Ukrainian and Moldovan finds (ANOKHIN 2019). Originally, O. Anokhin would record and publish online the photographs of imitative coins from Ukrainian and Moldovan finds successively as they were being catalogued. With time he limited the materials made available online only to the imitative types, no longer publishing further coins of these same types that he recorded (i.e., struck with the same pair of dies). In 2015 he published the amassed material in a monograph available only in digital form (ANOKHIN2015). This book includes e.g. photographs of 1080 types of Roman silver imitations of Roman coins, a vast majority denarii of the Antonine emperors found in Ukraine and in Moldova. After 2015 O. Anokhin continued adding on his website the imitative types newly recorded in Ukraine and in Moldova. By July 2019 this record included 1568 types of imitative Roman silver coins, a vast majority of them denarii of Antonine emperors, and 381 types of imitative Roman gold coins. The right to the full database containing photographic images of all the coins recorded by O. Anokhin (i.e., coins that had been published online and unpublished coins of the same type) was bought in 2018 by the University of Warsaw.

<sup>43</sup> LIND 2018.

<sup>44</sup> DYMOWSKI 2019b – in press.

<sup>45</sup> STRIBRNY 2003, 51-67.

<sup>46</sup> LIND 1988, 117-118; LIND 2007, 53-57.

group,<sup>47</sup> the VENVS VICTRIX group<sup>48</sup> and the ONAV group.<sup>49</sup> The last group is at present the largest of those listed here. This complex die-chain includes 166 denarius imitations (some of them probably subaerati) and 5 aurei imitations, most likely originating from the same workshop. At the same time, the ONAV Group is at present the only of the five named here, made up of coin types not recorded outside Chernyakhiv culture territory.

The imitation denarius found at Skypche does not fit at present any of the large die-chains named earlier. Worse still, we are unable to indicate any die-link for this coin, or for any other coin found outside the territory of the Chernyakhiv culture. However, we have found a die-link for the reverse die of the Skypche denarius in a coin find from the Khmelnytskyi Oblast published by O. Anokhin.<sup>50</sup> It forms part of a die-chain which includes 10 coin types coins listed in the catalogue of O. Anokhin (each type represented by one specimen; see fig. 6) - nine denarius imitations and a single gold specimen which appears to be an imitative aureus. In his catalogue O. Anokhin described the die-links in this chain but without proposing to name it. Given the presence of the NNN which is often encountered on these coins in their barbarized legends we propose to name the chain “the NNN Group”. Having found another die-link for the imitation from the Skypche hoard, this time for its obverse, to a different denarius imitation type published by O. Anokhin<sup>51</sup>, we can now add a twelfth coin to the die-chain of the NNN Group (see fig. 6). The last of the named types is known from three specimens, one of them – to judge by its photograph – a denarius subaeratus<sup>52</sup> (see fig.

<sup>47</sup> DYMOWSKI 2019a – in press; cf. LIND 2008, 10-13.

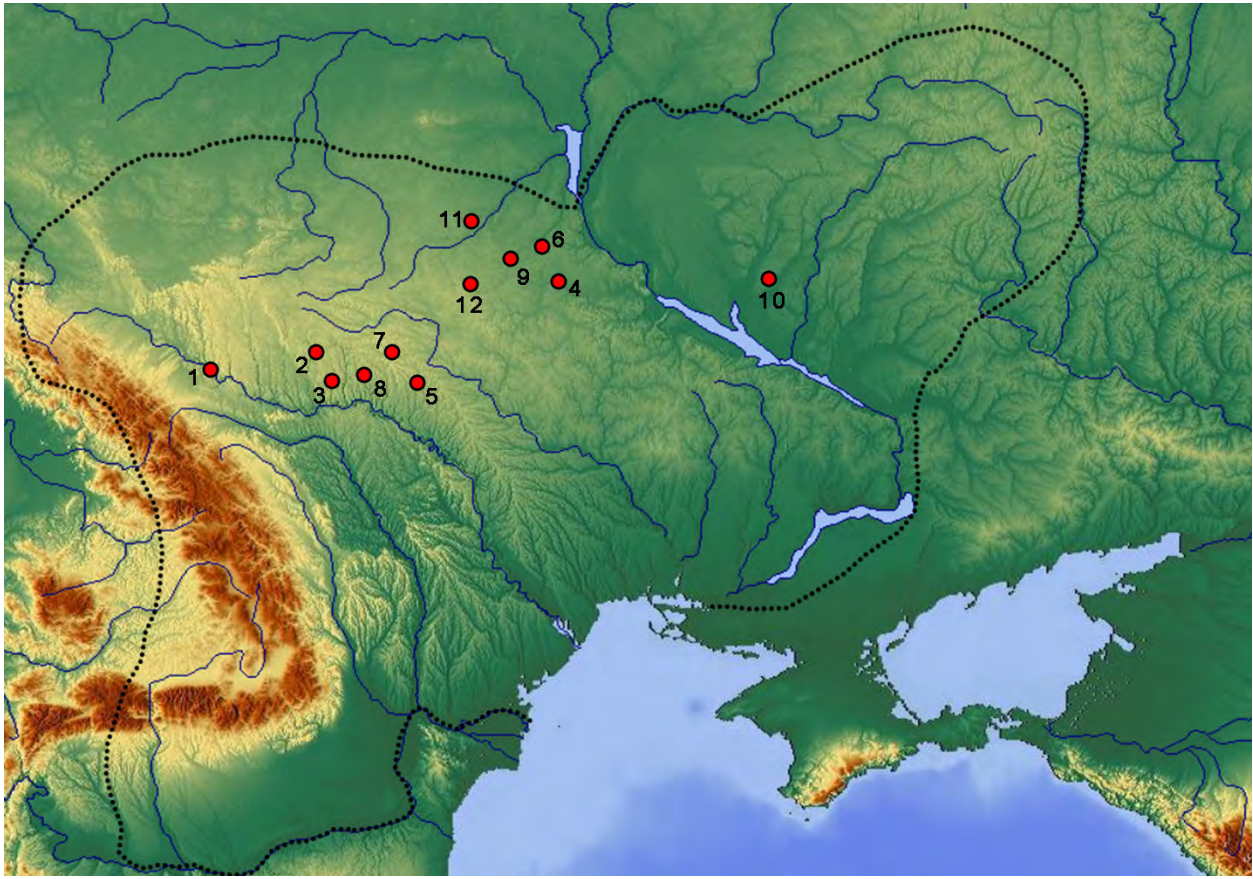
<sup>48</sup> DYMOWSKI 2019b – in press.

<sup>49</sup> ANOKHIN 2018, 32-35. O. Anokhin did not propose a name for the group he had described. The name ONAV Group was put forward by A. Dymowski and K. Myzgin (DYMOWSKI/MYZGIN 2019b – in press).

<sup>50</sup> ANOKHIN 2019, no. 483 (silver).

<sup>51</sup> ANOKHIN 2019, no. 60 (silver).

<sup>52</sup> No. 60 in the catalogue of O. Anokhin (ANOKHIN 2019). The photograph of the coin (see fig. 7), found in the Vinnytsia Oblast in Ukraine, is taken from



**Map 3.** Geographic distribution of barbarian imitations of Roman Imperial denarii assigned conclusively to the NNN Group: 1 – Tlumach (environs); 2 – Skypche; 3 – Blishchanivka; 4 – Kiev District (approx.); 5 – Sharhorod (environs); 6 – Kiev District (approx.); 7 – Bar (environs); 8 – Nova Ushytsia (environs); 9 – Popelnya (environs); 10 – Khorol (environs); 11 – Zhytomyr District (approx.); 12 – Kazyatin (environs).

7). All coins currently assigned to the NNN Group were recovered in Ukraine (see maps 3 and 4). Except for the imitation denarius from Skypche all of them appear to be stray finds, at least we have no data to show that they could be elements of hoards.

Let us pass to the coins included in the NNN Group. Of five obverse dies identified in this die-chain three were modelled on the obverse type with a beardless emperor; for two of them the likely prototypes are coins of Domitian<sup>53</sup>, for one of them – of Trajan<sup>54</sup>. Two other obverse dies<sup>55</sup> are modelled on coins of the bearded Antonine emperors. Such a high

the database of O. Anokhin and was not published previously.

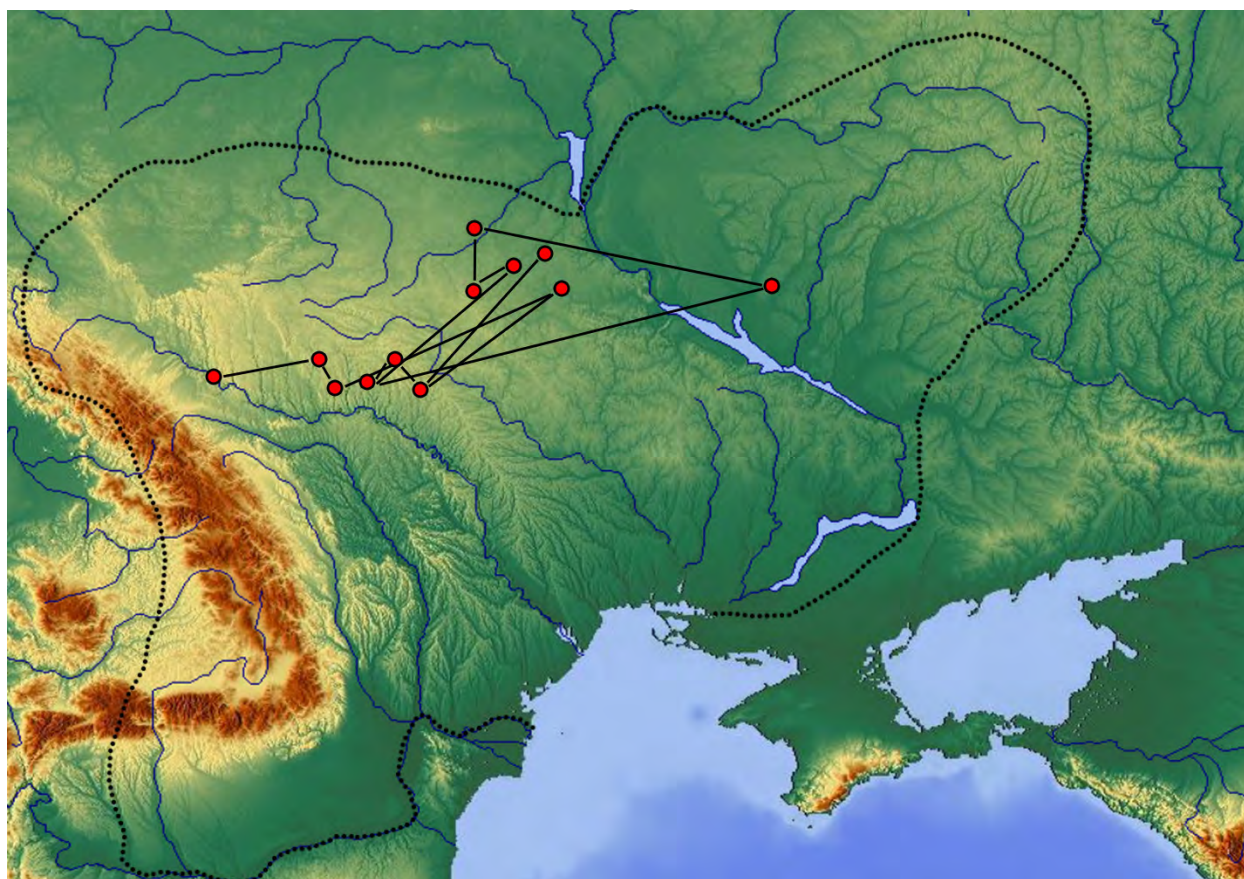
<sup>53</sup> Obverses of coins listed in the catalogue of O. Anokhin (ANOKHIN 2019) as nos. 484, 500, 565, 1165 (silver) and 344 (gold).

<sup>54</sup> ANOKHIN 2019, nos. 664, 1514 (silver).

<sup>55</sup> ANOKHIN 2019, nos. 7, 60, 579, 1173 (silver) and a coin from the Skypche hoard.

proportion of coins modelled on the relatively early denarii types (Domitian and Trajan) is unexpected. If we take into account all the recorded barbarian imitations of Flavian, Nerva-Antonine and Severan denarii, the portraits of bearded emperors are observably more common than portraits of men without beards. The degree of barbarization (including imperial portraits) on the coins in the NNN Group is relatively low, similarly as is the extent of the barbarization of letters in the legends. On the other hand the letters in the legends do not combine to form any recognizable (even if garbled) phrases, or individual words or abbreviations. Often encountered are strings formed by the same letter, e.g., NNN, GG, SS. It is likely that the designs were transferred using a mechanical process from the original coins to the so called transfer-dies, the legends carved “by hand” or with a punch.<sup>56</sup> As was

<sup>56</sup> See STRIBRNY 2003, 62-66; STANNARD 2011, 59-76.



**Map 4.** Geographic distribution of barbarian imitations of Roman Imperial denarii assigned conclusively to the NNN Group and their die-links.

mentioned earlier, the die-chain of the NNN Group includes a possible subaeratus as well as a gold imitative coin (presumably a hybrid with on it obverse a portrait of Domitian and a reverse taken from a second- or a third-century coin, *Hilaritas* type). Their presence makes the NNN Group similar to the ONAV Group, although the latter appears to include a much larger number of possible subaerati. The next similarity between ONAV and NNN groups – and this was mentioned earlier – is that the coins in these two groups so far have no analogies in the pool of finds from outside the territory of the Chernyakhiv culture. To explain this circumstance in the case of the ONAV Group, A. Dymowski and K. Myzgin have suggested that the (re)distribution of Roman denarii between different regions of the Barbaricum, including the export of their imitations from the territory of the Chernyakhiv culture to the west (e.g. to Poland) and north (to Scandinavia) extended only to good quality silver. At the same time,

the circulation of imitation subaerati would have been limited only to exchange on the Chernyakhiv culture territory.<sup>57</sup>

It appears from the unpublished records in the database of O. Anokhin that he suspected – probably based on the style of the images and legends – that the die-chain we name the NNN Group has ties to four other die-chains and to several coins with no recognized die-links. In our assessment the suspicions of a O. Anokhin are justified, at least to no mean extent. Especially that one of the coins singled out by O. Anokhin<sup>58</sup> is an imitation which has an obverse struck with the same die as a denarius in the hoard from Skypche. Thanks to the newly identified die-link currently we can assign this coin conclusively to the NNN Group (see fig. 6). Thus hypothetically, besides to the five coin types (one recognized in three coins, the remainder in one coin each) without

<sup>57</sup> DYMOWSKI/MYZGIN 2019a – in press.

<sup>58</sup> ANOKHIN 2019, no. 60 (silver).

confirmed die-links,<sup>59</sup> we can add to the NNN Group four die-chains. The first chain includes as many as 19 coin types<sup>60</sup> (represented by 34 coins in all), therefore, more than the chain which includes coins assigned to NNN Group in a conclusive manner. The three other die-chains are smaller, and include respectively, six<sup>61</sup> (nine coins in all), four<sup>62</sup> and two coin types<sup>63</sup> (which in the two latter die-chains are represented by single coins). All these coins are imitative denarii. To judge only by their photographs, none of them can be suspected of being subaerati. Similarly as with coins assigned conclusively to the NNN Group, all of the coins linked tentatively with this group were recovered on Chernyakhiv culture territory, in Ukraine and Moldova. Thus, perhaps what we have here is a large group of denarius and aurei imitations which includes at least ca. 40-50 types. It could be attributed to a hypothetical workshop presumably operated on the territory of modern Ukraine. There is this reservation however, that the die-links, and not less so, the similarity of the style of execution of the dies are not sufficient evidence to assign the coins to one workshop. Thanks to the technique of mechanical die transfer it would have been possible to copy imitative coins made in a different workshop very similar to the prototypes.<sup>64</sup>

Last but not least to be discussed is the extraordinary feature of the Skypche hoard signalled earlier. Not less than seven of 69 coins of official issue in this hoard, or over 10%, weight less than 2 g. (nos. 1, 16, 19, 22, 48, 62, 66). Two of these coins – a Trajan and a Commodus denarius, nos. 1 and 62. respectively – are marked by extreme wear, which may have caused this substantial weight loss. However, the other lightweight

<sup>59</sup> ANOKHIN 2019, nos. 70, 174, 253, 640, 791 (silver).

<sup>60</sup> ANOKHIN 2019, nos. 52, 72, 80, 228, 278, 290, 352, 355, 435, 511, 512, 542, 592, 694, 823, 1032, 1324, 1375, 1439 (silver).

<sup>61</sup> ANOKHIN 2019, nos. 21, 56, 811, 812, 1202, 1347 (silver).

<sup>62</sup> ANOKHIN 2019, nos. 226, 410, 813, 1186 (silver).

<sup>63</sup> ANOKHIN 2019, nos. 411, 926 (silver).

<sup>64</sup> See DYMOWSKI 2019a – in press; DYMOWSKI/MYZGIN 2019b – in press.

coins are not sufficiently worn to explain the considerable depletion of their metal. For instance, a denarius of Antoninus Pius (no. 19) weighing 1.57 g. (almost 2 g below the hypothetical weight of a regular denarius) has a very high and distinct relief, and a fully legible legend. The preservation of another Antoninus Pius denarius (no. 16) is even better, but its weight is a mere 1.84 g. The low weight of these denarii cannot be explained away by heavy wear, or by any cleaning and conservation treatment methods (most certainly they were not subjected to treatment using a direct electric current such as electrolysis, etc.).

Coins of less than 2 g in weight have been observed in other hoards found on the territory of the Chernyakhiv culture but mostly their low weight is due to their very poor preservation. It was so with the hoard found at Pimenovo in Russia,<sup>65</sup> and with the hoard found at Nova Ushytsia in Ukraine.<sup>66</sup> Similar coins are known also e.g. from Poland and Sweden but they make up a much smaller percentage than in the hoard from Skypche. To compare, let us consider two hoards found in Poland of very heavily worn coins. In the hoard found at Tokary (sub-type D-3) out of 432 denarii of official issue a single only one weight less than 2 g,<sup>67</sup> in the one found at Nowy Drzewicz (sub-type C-3) out of 1171 of the recorded denarii of official issue 15 had a weight of below 2g.<sup>68</sup> The case of hoards found on Gotland is similar. Of these a vast majority are sub-types C-3 and D-1 containing very heavily worn coins. The largest number of coins weighing less than 2 g was in the hoard from Sigdes, Burs parish – 10 specimens out of 491 official denarii. In contrast, none of 1387 denarii of official issue recorded in the great hoard found at Sindarve, Hemse parish, has a weight of less than 2 g.<sup>69</sup>

At present it is hard to find an explanation for the low weight of some denarii

<sup>65</sup> MYZGIN/RADJUSH 2016, nos. 81, 165.

<sup>66</sup> MAIARCHAK 2016, nos. 2, 31, 57.

<sup>67</sup> KUNISZ 1985, 219-232.

<sup>68</sup> KRZYŻANOWSKA 1976, 18-84.

<sup>69</sup> LIND 1981, 13-100.

found at Skypche. If we proved that their method of production was casting this would suggest their barbarian origin, but we have no proof either way. In Ukraine copies of denarii,<sup>70</sup> cast in copper-based alloys account for a large number of finds. Also recorded in this region are the remains of several workshops which manufactured copies of this description.<sup>71</sup> However, if we base on their appearance then probably the method of manufacture of all the lightweight denarii in the hoard from Skypche was by striking, and – this is confirmed by the metallographic analysis – have a high silver content. On the other hand we may assume that these coins were copies struck by barbarians using dies obtained with the die-transfer method, similarly as copies of Roman Republican denarii manufactured in Dacia.<sup>72</sup> For example, the lightweight denarius of Antoninus Pius mentioned earlier (no. 16) was almost definitely struck, although the style of the portrait and the lettering, including the obvious double-strike on its obverse, seem to depart somewhat from the norm observed in coins of official issue.

To conclude, the small and, it might seem,

<sup>70</sup> According to A. Dymowski and K. Myzgin, the difference between imitation and copy is founded in manufacturing ways. The production process of copies consists of the mechanical transfer of obverses and reverses from the original coin. The copies do not bear any traces of correcting the images and/or legends at any stage of the technological process (e.g. making a casting mould, coin die, etc.). In their opinion, any differences or interference in the images/letters on the coin, which is understood as a copy, must have been unintentional and have resulted from the imperfection of the used technology. On the other hand (barbarian) imitations are coins struck or cast with dies or moulds, which were produced having an original coin as a model, either by creating (e.g., engraving) “by hand”, or as a result of the mechanical transfer (also with the use of hubs and piece-punches) of the images and legends from the original coin, which were then intentionally modified. When analyzing a coin, which is a product of a barbarian workshop, one has to bear in mind the most important difference between imitation and copy, which is the fact, that in case of imitation images and legends are barbarized to a varying extent. There are no such traces of barbarization on copies. DYMOWSKI/MYZGIN 2019a – in press. A similar approach has been used by scholars in case of Dacian copies and imitations of Roman republican denarii; cf. LOCKYEAR 2007, 155-158.

<sup>71</sup> NADVIRNIAK/POHORILETS' 2018, 19-21.

<sup>72</sup> See e.g., LOCKYEAR 2007, 155-158.

rather typical denarius hoard recovered on the territory of the Chernyakhiv culture not only has added to our understanding of the barbarian imitations of Roman Imperial denarii, but also furnished evidence to prompt a hypothesis concerning the production within the Barbaricum of copies of Roman Imperial denarii in silver. This problem definitely requires further studies.

Translated by Anna Kinecka

## REFERENCES

ANOKHIN 2015

Anokhin, O. V., *Fal'shivomonetnistvo u varvarskikh plemën na territorii sovremennoï Ukrainy i Moldovy. Katalog varvarskikh podrazhaniï*, Dnepropetrovsk.

ANOKHIN 2018

Anokhin, O. V., Do pytannya chasu karbuvannya ta obigu varvars'kykh nasliduvan'. In: Aktual'ni problemy numizmatyky u systemi special'nykh galuzej istorychnoi nauky: trezhy dopovidej V Mizhnarodnoi naukovo-praktychnoi konferencii, 21-22 chervnya 2018 r., Medzhybizh-Pereyaslav Khmel'nyc'kyi-Kropivnyc'kyi-Kyiv, 35-38.

ANOKHIN 2019

Anokhin, O. V., Katalog varvarskikh podrazhniï rimskim monetam: <http://barbarous-imitations.narod.ru>. Accessed 11 July 2019.

BURSCHE 1994

Bursche, A., Die Markomannenkriege und der Zufluß römischer Münzen in das Barbaricum. In: H. Friesinger, J. Tejral, A. Stuppner (eds.), *Markomannenkriege. Ursachen und Wirkungen*, Brno, 471-485.

DYMOWSKI 2019a

Dymowski, A., The CERES Group of Barbarian Imitations of Roman Denarii, *The Numismatic Chronicle* 179 – in press.

DYMOWSKI 2019b

Dymowski, A., The Problem of the Presence of Barbarian Imitations of Roman Imperial Denarii in the Lands of Present-day Poland. An Attempt at a Balance, *Notae Numismaticae-Zapiski Numizmatyczne XIV* – in press.

DYMOWSKI/MYZGIN 2014

Dymowski, A./Myzgin, K., Inflow and redistribution of Roman Imperial denarii in the area of Przeworsk, Wielbark and Chernyakhiv cultures and in the Baltic islands in the light of chronological structure of coin hoards, *Notae*

- Numismatica-Zapiski Numizmatyczne* IX, 39-69.
- DYMOWSKI/MYZGIN 2019a  
Dymowski, A./Myzgin, K., „Wspólna waluta” Barbarzyńców? Barbarzyńskie naśladownictwa denarów rzymskich z okresu Cesarstwa w skarbach znalezionych w Europie Środkowej, Wschodniej i Północnej. In: *Archeologie barbarů 2018: Zbraně a jejich nositelé*, Brno – in press.
- DYMOWSKI/MYZGIN 2019b  
Dymowski, A./Myzgin, K., *Barbarian Imitations of Roman Imperial Denarii*. In: *Imitatio delectat*, Heidelberg – in press.
- GEY 2001-2002  
Gey, O.A. Problema vydeleniya skifosarmatskih ehlementov v chernyahovskoj kul'ture, *Stratum plus* 4, 2001-2002, 296-314.
- HUTSAL et al. 2011  
Hutsal, A.F. / Yakubows'kyy, V.I. / Mikhal'chyshyn, I.R. *Arkheolohichna spadshchyna Khmelnyts'koyi oblasti*. Kyiv.
- KROPOTKIN 1961  
Kropotkin, V.V. Klady rimskih monet na territorii SSSR (Svod arheologicheskikh istochnikov, Vyp. G. 4-4). Moskva. 1961.
- KRZYŻANOWSKA 1976  
Krzyżanowska, A., *Skarb denarów rzymskich z Drzewicza*, Wrocław.
- KUNISZ 1985  
Kunisz, A., *Znaleziska monet rzymskich z Małopolski*, Wrocław.
- LIND 1981  
Lind, L., *Roman denarii found in Sweden*, 2. *Catalogue. Text*, Acta Universitatis Stockholmiensis. Stockholm Studies in Classical Archaeology 11:2, Stockholm.
- LIND 1988  
Lind, L., *Romerska denarer funna i Sverige*, Stockholm.
- LIND 2007  
Lind, L., A group of barbarous Roman denarii represented in Sweden and Hungary (and Germany and Britain?). In: M. Andersen, H. W. Horsnæs, Chr. Moesgaard (eds.): *Magister Monetæ*. Studies in Honour of Jørgen Steen Jensen. Copenhagen, 53-58.
- LIND 2018  
Lind, L., *Imitations of Roman Denarii found in Sweden, Roman Denarii. Hoards and Stray Finds in Sweden*, 2018:1 (Stockholm, Numismatic Institute).
- LOCKYEAR 2007  
Lockyear, K., *Patterns and process in late Roman Republican coin hoards, 157-2 BC*, British MAKHNO 1960  
Makhno, E.V. Pamiatniki chernyahovskoj kul'tury na territorii USSR. Materialy i issledovaniya po arkheologii SSSR 82, 1960, 9-83.
- MAGOMEDOV 2001  
Magomedov, B. *Chernyahovskaya kul'tura. Problema ehtnosa*. Lublin.
- MAIARCHAK 2016  
Maiarchak, S.P. Klad rimskikh denariev iz Novoy Ushytsy na Podolii (Ukraina, Srednee Podnestrov'e), *Materialy po arkheologii i istorii antychnogo i srednevekovogo Kryma* 8, 2016, 563-578.
- MYZGIN 2010  
Myzgin, K. *Antychni monety na pam'yatkakh cherniakhivs'koyi kul'tury. Avtoreferat dySSERTacyi na zdobuttya naukovogo stupenya kandydata istorychnych nauk*. Kyiv.
- MYZGIN 2013  
Myzgin, K., *Rimskie monety v areale chernyakhovskoj kul'tury: problema istochnikov postupleni*, *Stratum plus. Anthropology and Archaeology* 4, 2013, 217-233.
- MYZGIN 2018  
Myzgin, K. Finds of Roman provincial coins on the territory of Eastern Europe: Balkan cities mintage. In: V. Ivanišević, B. Borić-Brešković, M. Vojvoda (eds.): *Proceedings of the International Numismatic Symposium "Circulation of the antique coins in Southeastern Europe"*, Viminacium, Serbia, September 15th to 17th, 2017. Belgrade, 2018, 87-103
- MYZGIN/RADJUSH 2016  
Myzgin, K. / Radjush, O. A Hoard of Roman Denarii and a Silver Belt Set from Pimenovo (Kursk Oblast', Russian Federation), *Notae Numismaticae-Zapiski Numizmatyczne* XI, 2016, 167-198.
- NADVIRNIAK/POHORILETS' 2018  
Nadvirniak, O. / Pohorilets', O. Pro deyaki aspekty lokalizaciyi centriv vyrobnyctva t.zv. „lytych” denariyiv I-III st. n.e. na terenach poshyrennya chernyakhivs'koyi spil'noty. In: Kotsur, V.P. (ed.) *Aktual'ni problemy numizmatyky u systemi specil'nych haluzey istorychnoyi nauky. Medzhybizh/Pereyaslav-Khmel'nyts'kyy/Kropivnyts'kyy/Kyiv*, 2018, 17-21.
- REECE 2003a  
Reece, R., *Coins and Frontiers: The Falkirk*

- hoard reconsidered (1980). In W. Hanson and L. Keppie (edd.), *Roman Frontier Studies 1979*, 119-29, BAR Int 71, Oxford, 1980. In: *Roman Coins and Archaeology. Collected Papers, Collection Moneta - 32*, Wetteren, 277-282.
- REECE 2003b  
 Reece, R., The „normal“ hoard (1981). In C. Carcasonne and T. Hackens (edd.), *Statistique et Numismatique*, 299-308, PACT V, Strasbourg, 1981. In: *Roman Coins and Archaeology. Collected Papers, Collection Moneta - 32*, Wetteren, 283-288.
- REECE 2008  
 Reece, R., Roman silver goes abroad. In: A. Bursche, R. Ciołek, R. Wolters (eds.), *Roman Coins outside the Empire. Ways and Phases, Contexts and Functions, Collection Moneta - 82*, Wetteren 2008, 59-73.
- SHAROV 2011  
 Sharov, O.V. Rannyaya faza chernyahovskoj kul'tury, *Stratum plus* 4, 2011, 321-340.
- SHCHUKIN 2005  
 Shchukin, M.B. *Gotskij put': goty, Rim i chernyahovskaya kul'tura*. Sankt-Peterburg.
- STANNARD 2011  
 Stannard, C., Evaluating the monetary supply: were dies reproduced mechanically in Antiquity? In: F. de Callataÿ (ed.), *Quantifying Monetary Supplies In Greco-Roman Times*, Bari, 59-79.
- STRIBRNY 2003  
 Stribrny, K., *Funktionsanalyse barbarisierter, barbarischer Denare mittels numismatischer und metallurgischer Methoden. Zur Erforschung der sarmatisch-germanischen Kontakte im 3. Jahrhundert n. Chr.*, Studien zu Fundmünzen der Antike 18, Mainz am Rhein.
- VINOKUR et al. 1984  
 Vinokur, I.S. / Gutsal, A.F. / Peniak, S.I. *Dovidnyk z arkeolohiyi Ukrayiny. Khmelnyts'ka, Chernyvets'ka, Zakarpats'ka obl.* Kyiv.
- ZEDELIUS 1974  
 Zedelius, V., *Spätkaiserzeitlich-Völkerwanderungszeitliche Keramik und römische Münzen von Laatzen, Ldkr. Hannover*. Hildesheim, Materialhefte zur Ur- und Frühgeschichte Niedersachsens 8, Hildesheim.



**Fig. 1.** Coins from the Skypche hoard. Numbers correspond to the numbers in Table 1.



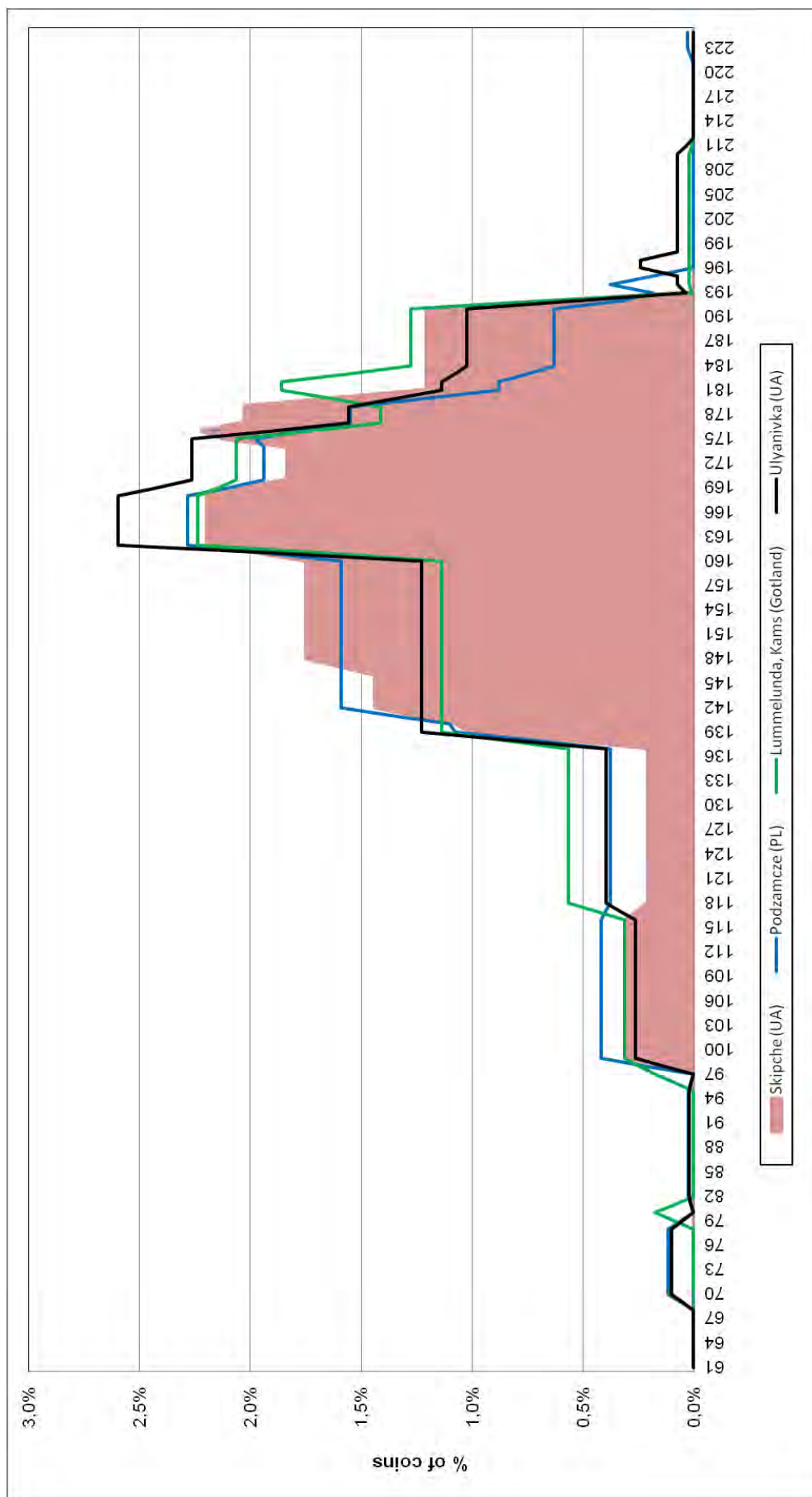
**Fig. 2.** Coins from the Skypche hoard. Numbers correspond to the numbers in Table 1.



**Fig. 3.** Coins from the Skypche hoard. Numbers correspond to the numbers in Table 1.



**Fig. 4.** Coins and a ring from the Skypche hoard. Numbers of coins correspond to the numbers in Table 1.



**Fig. 5.** Chronological pattern of the Skypche hoard compared to some sub-type D-1 hoards: Podzamcze (Poland), Lummelunda, Kams (Gotland), Ulyanivka (Ukraine).

**Fig. 6.** Scheme of die-links within the NNN Group (An-7, An-60, etc. correspond to numbers assigned to coin types in the catalogue of O. Anokhin (ANOKHIN 2019); except for the photograph of the coin from the Skypche hoard, all photographic images are from the O. Anokhin database owned by the University of Warsaw; not to scale).





**Fig. 7.** A possible denarius subaeratus from the NNN Group, found in the Vinnytsia Oblast in Ukraine (photo from the O. Anokhin database owned by the University of Warsaw; not to scale).

**Table 1.** List of coins from the Skypche hoard.

NO	RIC	YEARS, AD	MINT	WEIGHT, GR	SIZE, MM	AXES
1	37	100	ROME	1.89	16X16	5
2	121	103-111	ROME	2.69	17X18	6
3	122	103-111	ROME	2.82	17X18	5
4	353	114-117	ROME	2.8	16X18	5
<b>HADRIAN</b>						
5	77	119-122	ROME	2.41	16X17	5
6	80	119-122	ROME	2.48	17X18	6
7	338	134-138	ROME	2.54	18X18	7
<b>ANTONINUS PIUS</b>						
8	37	139	ROME	2.45	17X17	7
9	64	140-143	ROME	2.27	16X17	6
10	129	145-161	ROME	2.61	16X18	11
11	136	145-161	ROME	2.85	16X16	12
12	162	147-148	ROME	2.79	17X18	6
13	167	147-148	ROME	2.25	16X17	6
14	175	148-149	ROME	3.2	17X18	6
15	178	148-149	ROME	2.93	16X16	6
16	200	150-151	ROME	1.84	16X16	6
17	201	150-151	ROME	2.38	19X19	12
18	204	151-152	ROME	2.66	17X17	12
19	205	151-152	ROME	1.57	16X17	5
20	231	153-154	ROME	2.39	16X17	5
21	231	153-154	ROME	2.65	16X16	5

NO	RIC	YEARS, AD	MINT	WEIGHT, GR	SIZE, MM	AXES
22	251	155-156	ROME	1.82	16X16	6
<b>ANTONINUS PIUS: DIVA FAUSTINA I</b>						
23	346B	141	ROME	2.86	17X18	7
24	358	141	ROME	2.92	16X17	5
25	370	141	ROME	2.66	16X17	7
26	384A	141	ROME	2.39	16X18	8
27	394A	141	ROME	2.63	17X16	6
<b>ANTONINUS PIUS: MARCUS AURELIUS</b>						
28	424A	140-144	ROME	2.59	16X17	7
29	429B	145-160	ROME	2.36	17X17	6
<b>ANTONINUS PIUS: FAUSTINA II</b>						
30	502	145-161	ROME	2.13	16X16	6
31	507	145-161	ROME	2.9	17X18	5
<b>MARCUS AURELIUS: DIVUS ANTONINUS PIUS</b>						
32	429	161	ROME	3.32	16X17	6
33	432	161	ROME	2.72	17X17	12
<b>MARCUS AURELIUS</b>						
34	51	161-162	ROME	2.71	16X17	6
35	67	162-163	ROME	2.26	16X16	5
36	126	164-165	ROME	2.63	16X17	7
37	171	166-167	ROME	2.65	18X19	6
38	207	167-168	ROME	2.6	17X17	12
39	207	167-168	ROME	2.66	16X16	7
40	209	168-169	ROME	2.63	16X18	6
41	228	170-171	ROME	2.2	17X18	11
42	252	171-172	ROME	2.64	17X18	12
43	261	171-172	ROME	2.74	17X16	12
44	261	171-172	ROME	2.62	17X18	12
45	286	173-174	ROME	2.16	18X18	11
46	290	173-174	ROME	2.58	17X17	7
47	327	175	ROME	2.65	16X17	12
48	354	175-176	ROME	1.73	18X14	12
49	359	175-176	ROME	2.58	17X17	12
<b>MARCUS AURELIUS: FAUSTINA II</b>						
50	686	161-174	ROME	2.37	16X14	1
51	688	161-175	ROME	2.85	17X18	5
52	689	175	ROME	2.52	16X18	12
53	714	161-176	ROME	2.47	16X16	7
54	174	161-176	ROME	2.23	16X17	5

NO	RIC	YEARS, AD	MINT	WEIGHT, GR	SIZE, MM	AXES
<b>MARCUS AURELIUS: LUCIUS VERUS</b>						
55	463	161	ROME	2.57	16X17	6
56	505	163	ROME	2.36	17X17	12
<b>MARCUS AURELIUS: LUCILLA</b>						
57	759	164-180	ROME	2.45	19X16	1
<b>MARCUS AURELIUS: COMMODUS</b>						
58	653	177-178	ROME	2.9	17X18	11
59	666	179	ROME	2.23	16X19	12
<b>COMMODUS</b>						
60	13A	181	ROME	2.44	16X17	12
61	43	182	ROME	2.31	17X17	6
62	45	182	ROME	1.85	16X18	12
63	67	183	ROME	2.11	17X18	7
64	74	183-184	ROME	2.35	16X17	5
65	75NOTE	183-184	ROME	2.28	17X17	12
66	108	184-185	ROME	1.83	17X18	6
67	162	187-188	ROME	2.93	17X16	1
68	164	187-188	ROME	2.07	16X17	12
69	164	187-188	ROME	2.45	16X17	5
<b>IMITATION</b>						
70	—	—	—	2.97	17X18	3

**Table 2.** Results of XRF metallographic analysis of the coins from the Skypche hoard

No	Cu	Zn	Ag	Au	Pb	Pd
1	6.639±0.225%		91.648±0.684%		1.713±0.147%	
2	3.485±0.169%		95.084±0.677%	0.145±0.151%	1.286±0.134%	
3	6.152±0.213%	0.283±0.057%	92.209±0.671%	0.506±0.124%	0.856±0.129%	
4	4.898±0.159%		93.23±0.661%	1.038±0.122%	0.835±0.126%	
5	6.439±0.212%		92.012±0.656%	0.307±0.175%	1.241±0.132%	
6	6.885±0.216%		90.292±0.647%	0.617±0.117%	2.205±0.152%	
7	3.154±0.164%		95.097±0.679%	0.479±0.126%	1.269±0.133%	
8	5.425±0.198%	0.114±0.097%	91.944±0.658%	1.504±0.134%	1.430±0.137%	
9	3.673±0.1174%		94.880±0.684%		1.447±0.138%	
10	3.917±0.179%		93.920±0.685%		2.163±0.156%	
11	4.250±0.182%		94.517±0.671%	0.454±0.128%	0.779±0.128%	
12	4.519±0.189%		93.605±0.683%		1.876±0.149%	
13	6.547±0.216%		92.994±0.661%		0.458±0.152%	
14	3.922±0.175%		94.545±0.666%		1.534±0.138%	
15	5.835±0.204%		93.245±0.657%		0.919±0.127%	
16	3.671±0.175%		95.397±0.686%		0.678±0.132%	
17	4.954±0.190%		93.665±0.658%		1.187±0.129%	
18	4.032±0.175%		93.181±0.663%	0.373±0.151%	1.286±0.142%	
19	4.606±0.189%		92.369±0.673%		1.911±0.149%	1.114±0.165%
20	4.180±0.180%		94.017±0.668%		1.803±0.144%	
21	5.742±0.210%	0.247±0.058%	92.191±0.685%	0.854±0.123%	0.967±0.131%	
22	2.037±0.143%		96.465±0.697%	1.010±0.125%	0.489±0.148%	
23	6.910±0.223%		92.092±0.665%	0.164±0.292%	0.834±0.128%	
24	3.890±0.176%		95.334±0.675%		0.777±0.128%	
25	4.095±0.182%		93.547±0.682%		2.358±0.160%	
26	3.641±0.176%		94.935±0.692%	0.365±0.148%	1.059±0.132%	
27	3.004±0.161%		95.704±0.683%	0.079±0.032%	1.214±0.133%	
28	7.482±0.224%	4.188±0.139%	85.872±0.639%	1.183±0.127%	1.274±0.134%	
29	6.203±0.205%		92.651±0.642%	0.324±0.163%	0.822±0.125%	
30	5.057±0.1190%		92.453±0.653%	0.257±0.262%	2.234±0.152%	
31	3.82±0.172%		94.567±0.664%	0.678±0.118%	0.935±0.127%	
32	4.132±0.179%		94.453±0.668%	0.298±0.185%	1.117±0.130%	
33	6.359±0.211%		91.169±0.655%	0.258±0.248%	2.214±0.154%	
34	3.132±0.159%	2.050±0.103%	90.439±0.667%	2.308±0.156%	2.071±0.152%	
35	4.203±0.180%		93.946±0.668%	0.467±0.126%	1.383±0.135%	
36	5.300±0.200%		94.079±0.673%		0.621±0.133%	
37	8.847±0.249%		89.848±0.665%		1.305±0.136%	
38	3.504±0.169%		95.067±0.678%		1.371±0.137%	
39	3.924±0.175%		91.060±0.657%	0.451±0.126%	1.044±0.127%	3.521±0.144%

No	Cu	Zn	Ag	Au	Pb	Pd
40	3.528±0.166%		93.932±0.665%	0.438±0.129%	2.103±0.150%	
41	5.891±0.204%		92.160±0.653%		1.949±0.146%	
42	3.511±0.171%		95.292±0.683%	0.487±0.126%	0.710±0.129%	
43	4.086±0.182%		94.543±0.685%		1.371±0.137%	
44	2.824±0.162%		96.011±0.703%		1.166±0.135%	
45	3.914±0.175%		95.073±0.671%		0.856±0.127%	
46	4.460±0.187%		94.094±0.678%	0.243±0.309%	1.203±0.133%	
47	3.407±0.168%		95.421±0.676%	0.270±0.227%	0.902±0.128%	
48	4.714±0.188%		93.754±0.668%	0.101±0.029%	1.431±0.136%	
49	4.711±0.192%		93.640±0.682%	0.083±0.036%	1.565±0.142%	
50	5.491±0.198%		93.662±0.657%		0.847±0.126%	
51	6.254±0.215%		91.334±0.673%	0.470±0.127%	1.942±0.151%	
52	7.728±0.231%		89.605±0.656%	0.096±0.048%	2.572±0.163%	
53	5.704±0.203%		92.495±0.660%		1.801±0.144%	
54	5.521±0.206%		93.271±0.680%	0.280±0.206%	0.928±0.130%	
55	2.946±0.159%		96.039±0.161%		1.015±0.129%	
56	5.392±0.2010%		93.474±0.669%	0.063±0.022%	1.070±0.130%	
57	4.015±0.175%		94.566±0.662%		1.419±0.135%	
58	3.889±0.176%		93.566±0.675%	0.300±0.182%	2.245±0.156%	
59	5.491±0.203%		94.000±0.670%		0.509±0.143%	
60	4.062±0.178%		94.906±0.671%		1.032±0.129%	
61	3.396±0.169%		95.194±0.690%	0.454±0.130%	0.955±0.130%	
62	3.755±0.171%		94.935±0.667%		1.310±0.133%	
63	3.001±0.160%		94.376±0.678%	0.175±0.462%	2.448±0.160%	
64	3.632±0.178%		95.291±0.703%	0.024±0.006%	1.053±0.134%	
65	4.227±0.184%		93.863±0.684%		1.910±0.150%	
66	4.803±0.189%		93.601±0.666%		1.597±0.140%	
67	4.311±0.181%	0.196±0.060%	91.965±0.664%	0.859±0.119%	2.669±0.164%	
68	3.082±0.167%		96.006±0.702%		0.912±0.125%	
69	3.485±0.159%		95.086±0.633%	0.335±0.156%	1.094±0.123%	
70	3.653±0.169%		93.964±0.667%	0.362±0.145%	2.021±0.149%	

