

## SOME REMARKS ON THE COINING METHODS OF MEDIEVAL MOLDOVAN ISSUES

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**Rezumat:** *In articolul de față vor fi discutate metode de batere a primelor monede moldovenești. Pe baza unor exemplare din domnia lui Petru I (cca 1375-1391) vor fi ilustrate metode și procedee folosite în procesul dat.*

**Abstract:** *Based on examples the article at hand will discuss methods and technology used for coining the first Moldovan issues which were minted during the reign of Peter I (circa 1375-1391).*

**Cuvinte-cheie:** *matrițe monetare, metode de batere, groși moldovenești, Petru I Mușat.*

**Key-words:** *Coin dies, methods of coining, Moldovan Groats, Peter I Mushat.*

Researchers often pose the question of how coins were made<sup>1</sup>. Nevertheless, only few studies on coining methods exist which focus on the issues of the principalities which were consolidated in eastern and southern-eastern Europe in the 14th century. Therefore, they are absent from Wallachian (Țara Românească) and Moldovan (Țara Moldovei) numismatics. There is only one exception – an article by Rumanian private collector Traian Bița. His article attends to the coin hoard of Scobinți and includes some observations about the minting process of the first Moldovan coins<sup>2</sup>. On the other hand the process of coining Red Russian issues, which influenced the creation and development of the Moldovan ones, was covered in full detail by Ukrainian scholar Nikolaj Kotljar<sup>3</sup>. Influenced by these studies we decided to exactly illustrate some methods and processes applied to the coining of the first Moldovan issues which were minted by Peter I Mushat (circa 1375-1391)<sup>4</sup>.

We decided to analyse his coins for several reasons. First, they are most representative on an iconographic level, were issued in large quantities and are well-preserved. At the same time the coins, which were first issued by Peter I for the Moldovan state, exhibit a less orderly development in the minting process including combinations of techniques, faults, flaws and other imperfections.

Unfortunately, the Moldovan sources of that period neither reveal the process of minting, nor do they describe the functioning of the monetary workshops or the number of people involved in the procedure. Not even the monetary dies were kept. Therefore, the only source available for the reconstruction of the minting process are the coins themselves.

Let us first analyse the images on both sides of Peter I's coins.

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<sup>1</sup> For the methods of minting Russian coins see Spasskij, 1955, pp. 220-262; Spasskij, 1970, pp. 99-101; Kalinin, 1977, pp. 37-49; Mel'nikova, 1989, pp. 11-13; Gajdukov, 1993, pp. 5-8 etc.; for those minted by the Bulgarian states see Mushmov, 1924, pp. 14-22; for Polish coins see Suchodolski, 1959, pp. 23-40 and many others. The information can also be found in the Ph. Grierson's and V.M. Potin's works: Grierson, 1975; Potin, 1993, pp. 161-170.

<sup>2</sup> Bița, 1984, pp. 311-312.

<sup>3</sup> Kotljar, 1967, pp. 92-101.

<sup>4</sup> In our study we also used some numismatic sources obtained through the bilateral project „Archaeological and numismatic evidence for contacts between the populations of Hungary and Moldova from the 9<sup>th</sup> - 16<sup>th</sup> century (from the period of the Hungarian Conquest till the formation (founding?) and development of the Moldovan state)” conducted by the Moldovan and the Hungarian Academy of Sciences. Its project number is NKM-12/2016. Furthermore, we had the opportunity to study coin emissions from the hoard of Buruienesti which was found in the Piatra-Neamț district (preliminarily published by Elena Petrișor, cf. Petrișor, 1980-1982, pp. 171-183).



Fig. 1.

On the one side there is a coat of arms featuring a heraldic shield with three bars in the first and *fleur-de-lis* (of various number) in the second part, as well as the raised circular legend SI MOLDAVIENSIS (or variants) framed by two pearl / dot circles.

The other side exhibits a coat of arms – a bull's head with some heraldic elements (a star between the horns as well as a rose and a crescent at either side of the head) and the raised circular legend SIM PETRI WOIWODI (or variants) again framed by two pearl / dot circles (fig. 1).



Fig. 2.

*Bull's head.* The bull's head itself is provided with all necessary elements: horns, ears, eyes etc. Its shape can differ from one coin type to another (cf. fig. 2a și 2b-c) or it is identical, exemplifying the use of the same punch (fig. 2b-c). There are exceptional cases in which the bull's head is lacking one or both ears (cf. fig. 2d, e and f).



Fig. 3.

*Heraldic elements* (rose and crescent on either side of the head). These heraldic elements are placed in different positions, at a certain distance and in a certain angle to the head (fig. 3a-c), sometimes they are even reversed (cf. fig. 3a and 3b). In exceptional cases they are positioned over the bull's head (fig. 3c-d).



Fig. 4.

*Bull's head and heraldic elements*. The heraldic elements placed left or right to the bull's head can belong to different types; one of them is a five pointed rose (fig. 4a) which can be replaced by a *fleur-de-lis* flower (fig. 4b-c). The stalk of the flower sometimes exists (in this case there are more scratches on the edges) (fig. 4b-c), or it is missing (fig. 4d).



Fig. 5.

*Heraldic shield*. The shields are carried out in different ways (cf. fig. 5), often with proportionate, carefully engraved edges (fig. 5a, d), but sometimes also clumsily and less accomplished with some scratches on the edge (visible on the side bar of the shield) (fig. 5b, f). There are also cases where one of the shield's sidebars is missing (fig. 5e). The three bars can also have different forms. The *Fleurs-de-lis* in the second part of the shield also show a variety of styles. They are arranged vertically in one or two lines (fig. 5a, c, d) and sometimes feature a slant either to the right or to the left (cf. fig. 5b and f). At times they are positioned over the sidebars of the shield (fig. 5c-d, f). At other times they are reversed which can be observed by looking at the flowers placed on the left and right side of the shield (fig. 5a-b). In addition, there are also exceptions where one flower is missing (fig. 5d) or another is added (fig. 5f).





Fig. 6.

*The legends.* Sometimes, some letters are missing in the legends (fig. 6a), are interchanged with the following letter (fig. 6b) or placed in a different / reversed order (fig. 6c-d). There are instances where some letters which are reserved for the obverse legend, are used for the revers legend and vice versa (fig. 6e-f). Furthermore, also corrections of misplaced elements exist, for example letters placed over other letters (fig. 7a) or heraldic elements placed over letters (fig. 7b). Moreover, we can attest some cases, in which one letter was incorrectly replaced by another, for example, an L was placed instead of an N (fig. 5e), an R instead of an S (fig. 5f), a T instead of an M (fig. 7c), a D reversed instead of an E (fig. 8c), an R reversed instead of an A (fig. 6d, 7c) and so on. In these instances only the shape of the new letter suggested the right, respectively the former one.



Fig. 7.

*Pearl / dot circles.* The two circles consist of pearls or dots of different forms and their shapes often depend on the talent of the respective master. The circles are basically round, but in order to avoid a duplication with other elements or letters, they are sometimes fashioned less proportionally round. This is especially the case when the central element (the shield or bull's head) is too big and affects the circle which results in missing pearls (fig. 8a-c).

*Pellet / globule.* The pellet / globule was often described as an element placed in the front of the bull's head and as being a part of it (cf. fig. 2b-c, 3a, 4a, 7a), but we have many examples where the pellet is not situated in the front of the head, but in other areas (fig. 2f, 3b, 4c, 7b). In fact, it always marks the middle of the pearl / dot circle and, as part of the process of making coin dies, does not belong to the image itself.

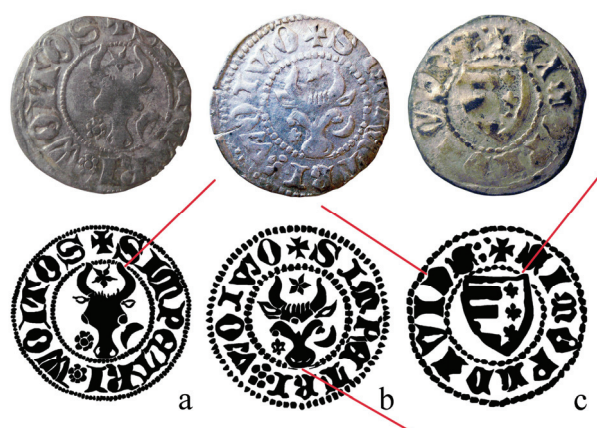


Fig. 8.

On basis of the presented material we can attest, that the coin dies for the Moldovan issues were made in a certain way. The design was not cut into the dies (with some exceptions), instead punches for each element were used<sup>5</sup>. Thus, a reference point was set into the middle of the die which was accompanied by two faint circular lines with different diameters. The circles divided the main frame of the die and were most likely only indicated by thin preliminary lines (their traces can be seen on some coins, cf. fig. 4d). It is likely that in the next step the inner circle was filled by applying a punch for the bull's head followed by the heraldic elements – a star between the horns, a crescent and a rose. It is probable that a separate punch existed for the shield with bars, since this is the only way to account for the duplication of the image on some coins (cf. fig. 5a, 6e). However, we accept the possibility that some highly skilled masters may have cut the shield with bars directly into dies. What the *fleur-de-lis* flowers are concerned there existed separate punches and they were applied one after the other, until the shield was covered with the intended number of flowers.

In the next production stage the circular legend was created which was composed of letters and elements. The starting point was a cross. Sometimes, letters were omitted, at times errors occurred and in parts letters covered up other, misplaced letters. It seems that, depending on the remaining space at the end of the inscription, the legends were abbreviated (cf. fig. 2b-c, 3a-b, 4a, 4c, 5c etc.) or completed with some heraldic elements (cf. fig. 2a, 3c-d, 4b, 4d, 5b etc.). Only after that step the die was “filled up” with all necessary elements, the pearls / dots were cut to cover the preliminary thin circles.

Therefore, the process of creating coin dies in 14th-century Moldova consisted of two main methods: punching and engraving.

The punches can be divided into two categories:

- Basic punches with a special purpose, for example the complete bull's head (with horns, ears<sup>6</sup> and eyes);
- Simple punches with a universal character which were used several times or even for the same pair of dies, such as punches for letters, stars, crosses, roses, crescents, dots and so on. Due to their frequent use they were prone to damage and destruction. Sometimes, they were replaced by other punches of identical shapes or by others of the same form.

<sup>5</sup> POANSÓN (punches) is a (cone – or triangular-shaped) tool built from a bar of steel or other metal with an engraved end (in positive) which was used for pressing shapes into metal objects. It was used for the manufacture of coin dies or medals etc. For more information see <https://dexonline.ro/definitie/poanson>

<sup>6</sup> In exceptional cases the bull's head appears only with one ear or even without any ears. This happened, most likely, because of a lack of attention by the master. Therefore, the hypothesis that the absence of the ears can be considered a secret mark of the master (argued by Katiușa Pârvan, cf. Pârvan, Constantinescu, 2003-2005, p. 226, 244) has no basis.

Unfortunately, we do not know how medieval Moldovan punches looked like, since none of them have survived. Nevertheless, we possess a punch from a period of the Golden Horde which was recently presented at a Numismatic Conference in Chisinau. This punch had been found in the village of Ivancea which is located in the Orhei region of the Republic of Moldova. It is made of bronze (copper), measures 3.6 cm and has a diameter of 1.6 cm. It dates back to the period of Mongol domination in the Prut-Dniester region and features an engraved Arabic inscription on one of its ends. According to Eugen Nicolae, who presented the punch at the conference, it was either used in the manufacture of jewellery or in the preparation of patterns with Arabic inscriptions<sup>7</sup>.

Punches were commonly used in medieval jewellery workshops, for example one of the methods of making pieces of jewellery, especially for Russian hinge bracelets, was punching. Punches served for the making of decorative elements of a small shape such as roses, half-spheres, pseudo-granules and so on<sup>8</sup>.

After the creation of the dies the process of the hammering the coins was the same in neighbouring countries of that period<sup>9</sup>. Sheets of a certain thickness were produced from silver ingots by hammering which were then cut into long stripes with shears<sup>10</sup>. In the next step blanks were cut from these strips using circular stamps of certain diameters. It is most likely that the blanks were heated subsequently and hammered again in order to restore flexibility to the metal. Afterwards the blanks were given some radial cracks, as can be seen on the edges of the coins<sup>11</sup> (as well as on contemporary ones, like Czech, Polish and Red Russian coins and so on). Probably, the blanks were also treated with acid (either a mixture of salt and tartaric acid or diluted nitric acid), to give them a shining silvery surface, to conceal, at least for a time, the character of a good silver coin<sup>12</sup>.

After this preparation the blanks were hammered using the two dies, the punch (the upper one) and the staple or standard (the lower one)<sup>13</sup>. Despite the lack of clear evidence, it is possible that the engraved image of a punch die was heated for a better impact on the coin blanks. Such a method had been established in the 11th century for English dies<sup>14</sup>.

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<sup>7</sup> Nicolae, 2016, pp. 31-32.

<sup>8</sup> Kalashnikova *et al.*, 2016, p. 281.

<sup>9</sup> Kotljar, 1967, pp. 93-96.

<sup>10</sup> In the early issues approximately 200 silver coins with an average weight of 1 gram and a silver content of ca. 90% were produced from a silver ingot which had a weight of 206 grams on average (cf. Boldureanu, 2015, p. 18; Iliescu, 1980, p. 87).

<sup>11</sup> Kotljar, 1967, pp. 94-95.

<sup>12</sup> Grierson, 1975, p. 107.

<sup>13</sup> Grierson, 1975, p. 101.

<sup>14</sup> Archibald *et al.*, 1995, pp. 163-208. See also Grierson, 1975, p. 109.

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## ABBREVIATIONS

BSNR – Buletinul Societății Numismatice Române, București

CN – Cercetări Numismatice, București

MA – Memoria Antiquitatis, Piatra-Neamț

MCSEE – Monedă și comerț în Sud-Estul Europei, Sibiu

MIA – Materialy i issledovaniya po arheologii SSSR, Moscova // Материалы и исследования по археологии СССР, Москва

NC – The Numismatic Chronicle, London

*Stratum plus* – Stratum plus, Sankt-Petersburg, Chişinău, Odesa, Bucureşti

*TGE* – Trudy gosudarstvennogo Ermitazha, Leningrad // Труды Государственного Эрмитажа, Ленинград

*WN* – Wiadomości Numizmatyczne, Warszawa

### ABBREVIATIONS FOR INSTITUTIONS

CNBAR – Cabinetul Numismatic, Biblioteca Academiei Române, Bucureşti.

CMJN – Complex Muzeal Judeţean Neamţ, Piatra-Neamţ.

CMNM – Complexul Muzeal Naţional „Moldova”, Iaşi.

MNM – Magyar Nemzeti Múzeum, Budapest, Ungaria.

MMB – Muzeul Municipiului Bucureşti, Bucureşti.

MNIR – Muzeul Naţional de Istorie a României, Bucureşti.

### IMAGE CAPTIONS

Fig. 1. Peter I, Groat. N. Docan collection. CNBAR, inv. 387/16689 (9677).

Fig. 2. Peter I, Groat: a – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/1447; b – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/50; c – I. Dobóczy collection. MNM, inv. 105/1887.I.73; d – coin hoard of Moldova *passim*, 1970. CMNM, inv. 3804/96; e – MMB, inv. 136377, EN 12870; f – single find on Dneprovskoe-2, 2009-2010. Private collection, Ukraine (Dergaciova, 2012, pp. 151-161, no. 15).

Fig. 3. Peter I, Groat: a – coin hoard of Buruieneşti, 1985. CMJN, inv. 548/74; b – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/231; c – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/488; d – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/159.

Fig. 4. Peter I, Groat: a – Alessandrescu collection. MNIR, inv. 233788 (Pârvan, Constantinescu, 2010, p. 144, no. 18); b – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/314; c – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/731; d – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/1055.

Fig. 5. Peter I, Groat: a – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/41; b – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/806; c – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/1502; d – Alessandrescu collection. MNIR, inv. 233786 (Pârvan, Constantinescu, 2010, p. 144, no. 12); e – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/1429; f – coin hoard of Buruieneşti, 1985. CMJN, inv. 548/185.

Fig. 6. Peter I, Groat: a – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/757; b – I. Dobóczy collection. MNM, inv. 105/1887.I.116; c – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/627; d – MMB, inv. 136457, EN 12950; e – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/364; f – coin hoard of Buruieneşti, 1985. CMJN, inv. 548/157.

Fig. 7. Peter I, Groat: a – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/21; b – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/260; c – Alessandrescu collection. MNIR, inv. 233855 (Pârvan, Constantinescu, 2010, p. 150, no. 63).

Fig. 8. Peter I, Groat: a – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/1521; b – coin hoard of Buruieneşti, 1985. CMJN, inv. 521/120; c – I. Dobóczy collection. MNM, inv. 105/1887.I.160.