TYPOLOGY AND CHRONOLOGY OF BEADS FOUND WITHIN THE FOENI SARMATIAN NECROPOLIS (TIMIŞ COUNTY)

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Beads constitute the most abundant element of outfit, when considering Sarmatian graves of ancient Banat region[1]. Beads are nearly always present in female graves, while their frequency in male graves is sensibly lower. Their presence, in great numbers, may be explained chiefly by the multiple functionalities these artifacts could have.

Attested by their discovery in graves around the neck and chest regions, beads were worn as neck adornments, part of necklaces. Combinations of these can be therefore extremely varied in terms of material, shape, colour, decoration or layout[2]. Unfortunately, the recovery of original bead layout is mostly hindered by lack of consideration, during the excavation, of this aspect or neglected by the recording system.

A feature of female outfit, beads may be part of bracelets or earrings, often sewed on clothes (in the area of the hem, cuffs or collar), but also on belts, bags or foot gear, as decoration of clothes and part of accessories[3]. Beads, especially large ones, may have been used as buttons, spindles, amulets and even swordpendants, when speaking of male graves[4]. It has been determined that, particular to the 2nd and 3rd centuries AD, in Sarmatian graves of the Don river region, there had been the custom of attaching beads to sword handles, a custom that occurred to a lesser extent in the sites of the Panonnian space or in the Banat[5]. In such cases, semi-precious materials are used (chalcedony, amber, rock crystal) instead of glass, an issue which reinforces the idea of use as amulets or symbols by warriors[6]. In the Eastern Sarmatian area, use of beads in adorning the horse's bridle, inhumed alongside with its rider, has also been witnessed[7].

Just in the case of beads made of expensive materials (gilded beads, amber, semi-precious stones, etc.) we can affirm that they could reflect a social, military or political status, and only by comparison with the already existing inventory. The great majority of cases, beads are, though, elements constant to the dress of Sarmatian Jazyges. Especially beginning with the 1st third of the second century AD, beads occur in graves in large numbers. Until the end of the third century

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[2] Tempelmann – Maczyńska 1985, p. 137 identifies, for the Central European barbarian space, three methods of classifying these necklaces: 1. necklaces of single-type beads; 2. necklaces of beads of various types (in terms of thickness, colour, shape, material, etc.); 3. necklaces of beads and other adornments, usually metal pendants.

[3] Vaday/ Istvánovits/ Kulcsár 1989, *passim*; Istvanovits/ Kulcsár 2001, *passim*; Vörös 2003, p. 150.

[4] Tempelmann – Maczyńska 1985, p. 145.

[5] For example: Vizejdia necropolis (Vaday 1986);Tiszalök-Rázompuszta (Istvánovits/Kulcsár/Carnap – Bornheim 2006); Törökszentmiklós/Surján, Újtelep (Vaday 1989); Hajdúdorog/Szállásföldek (Sőregi 1935); vezi, Kulcsár/ Carnap – Bornheim 2006, p. 101 – 105 for extra bibliography.

[6] Krosigk 2005.

[7] See Benea, 2004, p. 266, and related bibliography.

– the beginning of the fourth AD, similar patterns are found; after that, due to influence from new populations coming from the east, other types of beads make their appearance[8].

Approximately 1,600 beads originate from within the Foeni necropolis (to which a few hundred fragmentary beads must be added), varying widely in colour and shape – over 70–80% of bead types existent in the Sarmatian area West of the Carpathians. Presently, beads have been found in eight of the 18 graves excavated from the necropolis, graves dated, according to the funerary inventory, between the end of 2nd century and the first half of the 3rd century AD[9].

In the realization of the classification of Foeni finds, I have used typologies proposed by E. M. Alekseeva[10], D. Benea[11], M. Tempelmann – Maczyńska[12] and A. H. Vaday[13] for the various areas of the Roman Empire and *Barbaricum*, typologies which I have adapted for the particularities of the site in question. Hence, beads discovered within the Foeni Sarmatian necropolis have been classified by their original material (glass, limestone, carnelian, coral, amber and bone), colour (monochromatic or polychromatic), dimensions, shape and decoration (when existent).

In terms of raw material, beads from opaque monochromatic glass are dominant, being followed, at a considerable distance, by those made of limestone, carnelian and more expensive material[14], a state generally found in Sarmatian Jazygian necropoleis. It should be noted that bone beads occurs in a lower percentage, possibly due to their friability, instead of originally being less common.

Regarding monochromatic beads, from opaque glass, there have been identified 11 bead typologies, of various geometrical shapes[15]: round and flat (type I), cylindrical, with a circular or hexagonal profile (type II), hexagonal (type III), prismatic with smoothed corners (type IV), globular (type V), truncated bicone (type VI), bicone (type VII), hexagonal and flat (type VIII), with a rectangular profile (type IX), "melon"-type (type X), "sandwich"-type (type XI). Statistically, globular types are overwhelmingly dominant, approximately 87%, the frequency of others, from glass, occurring in a percentage of 0.1–3%[16].

After comparing these beads with those found in workshops from Tibiscum, I have found perfect similarities in terms of type, colour and dimensions. Therefore, the monochromatic beads from Foeni could have been imported from this commercial centre, afterall the latter being fairly close to the necropolis.

These artifacts are not self-sufficient absolute dating. Based on the stratigraphy of Tibiscum workshops putting in context the funerary inventory to Sarmatian and Central European graves, some chronological guidelines could be provided. I have also used in this chronological approach the funerary complexes of Foeni, in particular, graves with beads, and artifacts of an accurate dating.

Thereby, beads of types I and VII are the earliest, analogues of them being found in Workshop 1 from Tibiscum, belonging to the occupation surface dates to the period of Marcus Aurelius[17]. Among Sarmatian funerary findings of the Szolnok County, A. H. Vaday fits round and flat

[8] Vaday 1989, p. 377.
[9] Tănase/Mare 2000; Grumeza, 2011.
[10] Alekseeva 1975.
[11] Benea 2004.
[12] Tempelmann – Maczyńska 1985.
[13] Vaday 1989.
[14] Pl. II,1.
[15] Pl. I.
[16] Pl. II, 2.
[17] Benea 2004, p. 227, p. 237.

beads to earlier phases of Sarmatian chronology[18], while biconic types (VII) are dated exclusively in necropoleis of the 3rd and 4th centuries AD[19]. Biconic beads, of blue colour are, similar to situation within the Foeni necropolis, dominant in the Central European space. They appear in one grave dated in B2 (70 – half of 2nd century AD), and prevail in C1b – C3, being worn till the 5th century AD[20].

Also among the earlier specimens produced in Tibiscum is type II A, which belongs to the production of Workshop 1 in the period after the Marcomannic Wars (end of 2nd century – beginning of 3rd)[21]. These specimens are also dated in necropoleis of the 2nd century in the Sarmatian space, occurring up to the Hunnish period[22]. Within the Central European Barbaricum, type II A keeps the same dating (C2–D), while not being present in necropoleis of the 2nd century[23].

Types II B and III are absent in early Sarmatian necropoleis of Szolnok County[24]. In the Central European space, M. Tempelmann Maczyńska includes type III in the same category with type IX (more accurately, the group XII, of long beads with four or more edges), peculiar to Wielbark and West Baltic cultures, but also to the Prezeworsk culture and dates it starting with B2/C1 (by C1–C2 reaching their peak); their production and wear ends by period D (beginning / middle of the 4th century – middle of 5th century)[25].

Prismatic beads (type IV) are very numerous within Workshop 1 of Tibiscum, probably due to demand on barbarian market. They are present in large numbers not only when speaking of the Sarmatian space, but also in the Central European one. Dating is common to both areas: from the 2nd century to the 4th/5th century AD[26]. In terms of the production of Workshop 1 (of Tibiscum), prismatic beads are attested in occupation surfaces subsequent to the Marcomannic Wars and until the closing of the workshop, up to the 4th century[27].

Beads of type V are most numerous within the Foeni necropolis. The statistics are similar to the situation of Pannonian Sarmatia and Central European spaces. In both areas, globular types (particularly those of opaque glass) occur from the 2nd century up to the period of the Late Empire / Hunnish era[28]. Beads of this type witness the same spread in terms of quantity and colour choices. They were attested at Workshop 1, Surface A (dated to the first half of 2nd century), as well as in Structure 1, Room 3 (on all occupation surfaces of the workshop) and in Workshop 2 of Building VII (dated to the period of Septimius Severus)[29]. Beads of type VIII have been dated similarly throughout the whole period of time in which the Workshop 1 of Tibiscum had functioned[30] and have been attested in Sarmatian necropoleis of Szolnok County during the 2nd and 3rd centuries[31].

The type VI is represented in female graves from Foeni especially by beads manufactured out of white paste, homogenous, raw and well smoothed, identical to those found within Workshop

[18] Vaday 1989, p. 103.
[19] Vaday 1989, p. 103.
[20] Tempelmann – Maczyńska, 1985, p. 31.
[21] Benea 2004, p. 227.
[22] Vaday 1989, p. 103.
[23] Tempelmann – Maczyńska, 1985, p. 39.
[24] Vaday 1989, p. 103.
[25] Tempelmann – Maczyńska, 1985, p. 35.
[26] Tempelmann – Maczyńska, 1985, p. 38 (group XIV); Vaday 1989, p. 103.
[27] Benea 2004, p. 233.
[28] Vaday 1989, p. 103; Tempelmann – Maczyńska, 1985, p. 27 (group I, types 1- 12 – piece of about 1 cm in diameter).
[29] Benea 2004, p. 234.
[30] Benea 2004, p. 238.
[31] Vaday 1989, p. 103.

2 (Building VII) of Tibiscum and dated to the 2nd and 3rd centuries[32]. In Szolnok County necropoleis, they are present for a long period of time, starting with the 2nd century and ending with the Hunnish era[33]. They are not frequent to graves of the later area and moreover, type VI is also rare in terms of Preszeworsk and Wielbark cultures – no more than six attested specimens as of 1985 – and is associated to an earlier period of the empire[34].

The so called "melon"-type (Gerippte/Melonenfoermige Perlen) of beads had been in fashion for a long time, findings of such ranging from the 2nd century until the Hunnish era, within the Panonnian Sarmatian space[35] and from the 1st century until the period of the Late Empire, when speaking of the Central European space[36]. Pieces of type XI (Sandwich type/Segmentierte Perlen) are typical only to the Late Empire and to the early times of the migrations of the same Central European space[37], without any particular dating in what pertains the Sarmatian world.

With regard to polychromatic beads, made out of opaque glass – as an archaeological presence, they are rare in Sarmatian sites, but also in Roman areasa of production. This is a situation we do encounter in the case of the Foeni necropolis, where we only have 18 pieces, classified, in terms of decoration, under four types: globular beads of blue-green colour, with incised stripe-shaped motifs/*Achterfoermigerline*[38], globular, inlaid with floral decorations/ *Rosettenmuster*[39], of red or green colour, multicoloured globular beads, with chequered pattern decorations/*Schachbrettmuster*[40] and truncated bicone beads of blue colour and zigzag pattern/ *Zikzagverziehrung*[41]. By comparison with monochromatic beads, dating these types brings more exact results. In his study regarding Sarmatian material from the Szolnok County, A. H. Vaday includes beads with inlaid decorations to the material of the 2nd century AD (while some variants do also appear in 3rd century AD) and *Millefiori* (mosaic) beads to the 2nd and 3rd century AD[42]. D. Benea concludes, based on the stratigraphy of Tibiscum workshops, to similar datings, except for globular beads of blue-green colour and incised stripe-shaped motifs, which she considers to belong to the 3rd and 4th centuries AD[43].

For the Central European barbarian world, M. Tempelmann Maczyńska counts beads with floral decorations as part of typology of mosaic beads (XXIII, 362, a, h). This type is dated likewise to the Dacian or Pannonian space (C1–C2), with the greatest concentration upon the Lower and Middle Elbe[44]. Inlaid beads, with chequered pattern decorations are a bit earlier (from B2 to C2), while pieces with white stripe incisions (*Gestreifte Perlen*) are a characteristic of the 3rd and 4th centuries AD[45].

Carneolian, amber, coral or limestone beads may not distinguish but a few shapes. If, in the case of limestone and carneolian pieces, three distinct typese have been observed (flat hexagonal, cilindrical with a circular profile and in "barrel" shape/ *tonnenförmige Perle*, respectively prismatic with smoothed corners, with a rectangular profile and cilindrical with a circular

[32] Benea 2004, p. 199, p. 236.
[33] Vaday 1989, p. 103.
[34] Tempelmann – Maczyńska, 1985, p. 32 (group V).
[35] Vaday 1989, p. 103.
[36] Tempelmann – Maczyńska 1985, p. 42 (group XVIII/ 155, 158).
[37] Tempelmann – Maczyńska 1985, p. 35.
[38] Pl. III, 6.
[39] Pl. III, 5.
[40] Pl. III, 7.
[41] Pl. III, 8.
[42] Vaday, 1989, p. 104.
[43] Benea, 2004, p. 241.
[44] Tempelmann – Maczyńska 1985, p. 58 – 59.
[45] Tempelmann – Maczyńska 1985, p. 53, p. 60.

profile), in the case of amber and coral pieces, one may identify only one type: globular beads, respectively, forked ones – depending on the natural shape of the coral[46]. Dating carneolian prismatic beads, with smoothed corners, amber or coral beads, is rather loose, for they are present in both early Sarmatian material and late Sarmatian–Hunnish period[47]. Within the Workshop 1 of Tibiscum, carneolian beads have been manufactured simultanously with those out of coral, between the 3rd and the 4th centuries AD[48]. A loose dating also happens in terms of amber beads, of circular shape and diameter of aproximately 1 cm (group XXX, Tempelmann – Maczyńska, 1985). First examples to appear in the Barbaricum happen during B1 (1st century AD) and are to occur until Late Empire[49].

From grave M 8 of the Foeni necropolis there have originated an additional eight glass beads covered with golden foils, made by using the "Sandwich" technique and laid out in groups of two, three or four[50]. These types were common in the Barbaricum, being placed chronologically, according to M. Tempelmann – Maczyńska, in stages B1–B2/C2[51]. When speaking of Tibiscum, the aforementioned category enters production within the layers following the restorations in the period after the Marcomannic Wars[52]. In terms of Sarmatian graves from the Carpathian Basin, these beads are very rare[53].

Considering the recovered funerary inventory (in particular, fibulae and belt parts), the Sarmatian necropolis of Foeni dates from the end of the 2nd century – the first half of the 3rd century AD[54], a time period which coincides with the timeframe of most bead types described above. The graves M 2 and M 14 are illustrative for the chronology and for the bead combinatorics within the necropolis.

In the grave M 2, a round plate fibula (*Dosenförmigefibel)* has been found, dated between the end of the 2nd century and the middle of the 3rd century AD[55]. From the same grave, a number of 398 beads had been harvested, the majority of the being grouped within the lower area of the deceased (the lower part of the garment?), being placed simetrically, seven rows on each side. The first row was comprised out of orange beads, the second – out of red beads, the third – out of white beads, the fourth – out of green beads, the fifth – out of red beads and the sixth – out of green ones, all of the same globular *type V*; the seventh row consisted out of prismatic carneolian beads[56]. The latter rows were continued by other pieces, either of globular or prismatic types, but without a chromatic sequency being respected in all cases. Of the same funerary context comes a bracelet made of glass beads (types I, V, VII), a limestone bead (type C3) and a pendant.

Even more bead associations are found in grave M 14. The 447 pieces were placed in the neck-chest area, on the right side of the body, and in the area of the ankles. It is possible that the beads were sewn on the dress of the young defunct. Their combinations are extremely varied. We have, hence, beads of monochromatic glass (types I, II A, B, III, IV, V, VI, VII, IX), polichromatic glass (with the following decorations: *Achterförmigerline, Rosettenmuster, Zickzackverzierung,*

[46] Pl. III, 3 a.
[47] Vaday 1989, p. 104, p. 106.
[48] Benea 2004, p. 243 – 244.
[49] Tempelmann – Maczyńska 1985, p. 65.
[50] Pl. IV, 9.
[51] Tempelmann – Maczyńska 1985, p. 64–65 (group XXIX 387 b).
[52] Benea 2004, p. 245.
[53] Vaday 1989, p. 106.
[54] Tănase/Mare 2000; Grumeza 2011.
[55] Grumeza 2011, p. 187.
[56] Pl. IV, 1–2.

Schachbrettmuster), beads of limestone (type C1), of coral and of amber[57]. Based on the box shape fibula found on the chest of the deceased, the grave has been dated by the end of the 2nd century – middle of 3rd century AD[58].

Various analogies exist with regard to the comination mode (typologically speaking) and to the wearing of these accessories, in the Sarmation environment of the Banat, at Banatski Depostovac – *Pape föld*[59], *Kollinger kertek*[60], Crvena Crkva –*Zoltán Brickyard*[61], Deszk [62], Kiszombor, *Graveyards A, B* [63], Klárafalva – *Köszégháza, graveyard B*[64], Lovrin[65], Pančevo *Vojlovica – Rafinerija 21*, Vrsac – Dvorište Eparhije Banata)[66] etc.

Beads get in territories dwelled by Sarmatian Jazigians through trade. In the Roman provinces, beads did not play such an important role in female or male dress as they did in the *Barbaricum*. Finding beadmaking workshops, outlet points or routes followed by ancient merchants from Pannonia or Dacia, towards the spaces dwelled by Sarmatians rises challenging aspects. For certain also had the trade a military character, since important centres were in military outposts on the *limes*. By allowing border trade, in the reach and under control of forts, Romans could appoint the location and the period of markets[67].

Provincial Roman glass workshop are known relatively, while those to produce beads are even less. E. M. Alekseeva distinguishes two types of glass workshops: those to produce glass and those to produce pots. But then, while in glassware workshops simple, monochromatic beads could have been made, only highly specialized workshops could produce complexly decorated, multicoloured beads[68].

The closest *officinae* to the so-called "Jazigian space" are those from the military vicus of Tibiscum, of whose production was focused mainly, during the 2nd to 4th centuries AD, to the barbarian market. Monochromatic beads, of frosted glass, but also carneolian or coral ones were produced with predilection[69]. Placed in the South-West of Roman Dacia, merchants setting forth from here had several access opportunities towards the Tisa-Danube interfluve region[70]. Another commercial route would start from Porolissum and head to the northern *Barbaricum*. Beadmaking workshops probably also existed at this point, and a great part of the production could also had been exported to the Jazigian area, by the roads cutting the Tisa plain[71].

According to E. A. Rikman, at least a part of Cerneahov culture beads were of local provenience[72]. It is supposed the fact that there had existed *officinae* in East European *Barbaricum* (itinerant *officinae* ?) at Komarovo, on the Dniester, and at Abidnia – present-day Belarus[73]. Production of beads within the Sarmatian Jazigian space is possible, at least when speaking of

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[57] For extra information, see Grumeza 2011, p. 192 şi pl. IV, 3–4.
[58] Grumeza 2011, p. 187.
[59] Párducz 1940, p. 261–262.
[60] Párducz 1940, p. 262 – 263.
[61] Milleker 1906, p. 266; Párducz 1931, p. 81.
[62] Párducz 1950, p. 147.
[63] Párducz 1950, p. 138 – 143.
[64] Párducz 1950, p. 143–144; Párducz 1951, p. 24.
[65] Párducz 1950, p. 149.
[66] Baraćki 1961, p. 137–141; Dautova – Ruševljan 1989–1990, p. 87.
[67] Vaday 1989, p. 189.
[68] Tempelmann – Maczyńska 1985, p. 132.
[69] Benea 2004, p. 249; Benea 2008, p. 135 –136.
[70] Benea 2004, p. 248.
[71] Gudea/ Bajusz 1982, p. 23–38.
[72] Rikman 1975, p. 163, *apud* Tempelmann – Maczyńska 1985, p. 133.
[73] Tempelmann – Maczyńska 1985, p. 133.

monochromatic globular types, found in large numbers in almost all funerary contexts. Such craft knowledge should not surprise, since fibula-making workshops have been previously found in the Sarmatian space, at Tiszaföldvár[74], and even in the case of Tibiscum – raw material was brought by import, or produced in glass workshops of Ulpia Traiana Sarmizegetusa[75].

Stocks of amber could have been gathered along the southern shores of the Baltic Sea and, to a lesser extent, inland[76]. Centres of amber proccessing are attested at Köln and Aquileia, but also in the *Barbaricum* – there are known at least four centres, at Kujavien, Warszawa and Świlcza (present-day Poland)[77]. Within Tibiscum workshops there is no evidence of amber or limestone bead production, these types being, probably, brought to the territory of the Banat from Pannonia Inferior or from the northern regions of the empire[78]

Therefore, with respect to the Foeni necropolis, imports originate from three distinguishable bead-producing *officinae*: those of Dacia, from Tibiscum (the origin of the most important imports), a barbarian workshop proccessing amber brought from the northern space and a third workshop, also centred on producing limestone beads. Similar situations – literally, bead imports from multiple *officinae* – may also be encountered in other cases: the late necropolis from Aradac[79], or recently discovered Sarmatian necropoleis within the new Arad–Timişoara motorway section[80]. Furthermore, having in mind the aspect of the little weight, modest dimensions and their demand, we could also take into account their provenance as from remote workshops.

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Plates:

Pl. I Types of monochrome glass beads from Foeni necropolis

Pl. II 1, Distribution of beads by material; 2, Distribution of glass beads (by types)

Pl. III Types of beads

Pl. IV 1, 2, Grave 2 from Foeni (detail of the lower part of the dress; a – beads; b – cup; c – bone fragment); 3, 4, Grave 4 from Foeni

Pl. V 1, 3, Beads from grave 14; 2, Beads from grave 18; 4, Beads from grave 15 (Foeni necropolis)

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Vörös 2003	=	G.Vörös, A ruhák aljának gyöngyözése a Madaras-Halmok szarmata temető sírjaiban (statisztika – tipológia), in *Móra Ferenc Múzeum Évkönyve Szeged – Studia Archaeologica*, IX, 2003, p. 145–150.

TIPOLOGIA ŞI CRONOLOGIA MĂRGELELOR DESCOPERITE ÎN NECROPOLA SARMATICĂ DE LA FOENI (JUD. TIMIŞ)

(Rezumat)

Mărgelele reprezintă piesele de costum cele mai numeroase în mormintele sarmaţilor de pe teritoriul Banatului antic. Ele sunt aproape mereu prezente în mormintele feminine şi într-o mai mică măsură în cele masculine. Prezenţa mărgelelor în număr mare se poate explica, în primul rând, prin funcţionalităţile multiple pe care aceste piese le puteau avea.

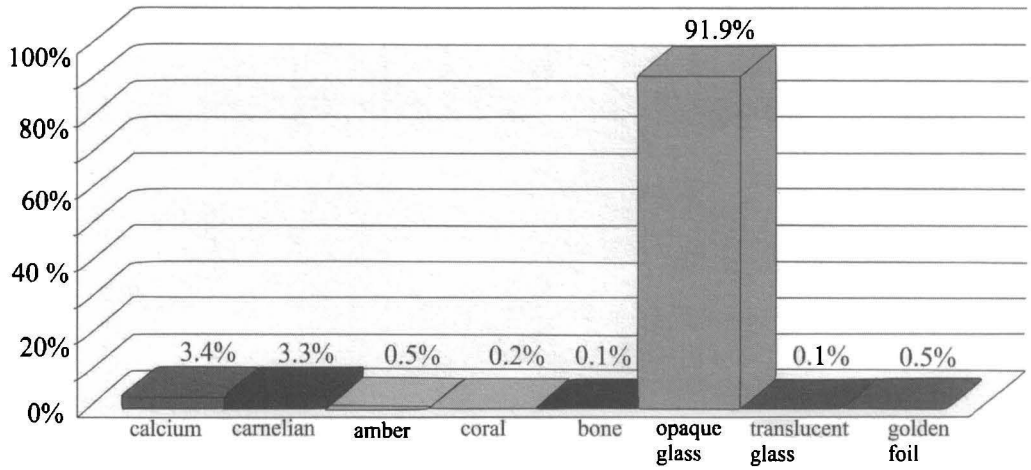
Din cadrul necropolei sarmatice de la Foeni provin aproximativ 1600 de mărgele (la acest număr se adaugă şi câteva sute de fragmente) cu multe culori şi forme, întâlnindu-se în jur de 70 – 80% dintre tipurile de mărgele existente în spaţiul sarmatic, de la vest de Carpaţi. Din necropolă au fost dezvelite, până în prezent, 18 morminte, datate, pe baza inventarului funerar, în secolele II – prima jumătate a secolului III p. Chr.

Din punct de vedere al materiei prime, domină statistic mărgelele din sticlă opacă monocromă, la o distanţă considerabilă, urmând cele din calcar, carneol şi materii prime mai scumpe, situaţie general întâlnită în cadrul necropolelor sarmatice iazyge (Pl. II/1). În ceea ce priveşte mărgelele monocrome, din sticlă opacă, avem în cadrul necropolei 11 tipuri de mărgele, de diferite forme geometrice (Pl. I).

În cazul necropolei de la Foeni avem importuri de la trei *officinae* diferite, producătoare de mărgele: cele din Dacia de la Tibiscum (cele mai importante importuri), un atelier barbar care prelucra chihlimbarul venit din spaţiul nordic şi un al treilea atelier axat şi pe producerea de mărgele din calcar. Putem lua în considerare şi faptul ca aceste mărgele să provină din ateliere aflate la distanţe considerabile, deoarece vorbim de piese uşoare, de dimensiuni reduse şi extrem de căutate în lumea sarmatică.

TIP		DIMENSIUNI		CULOARE								FORMĂ
		L_{max} mm	D/I mm	ALB	VIŞIN.	PORTO.	ROŞU	VERDE	ALBAST.	VIOLET	AURIU	
I = I Benea 2004 VIII.I Vaday 1989		7,5 – 10,5	7,6 - 11,3	x				x	x			
II A = II.a Benea 2004/ III.2.a Vaday 1989 II B = II.b Benea 2004/ IV.2.a Vaday 1989	A B	10,3 - 16,5	2,8- 5,9	x				x	x			
III = III Benea 2004 = V.2.b. Vaday 1989		5-10,6	4,5- 10,6				x	x				
IV = IV Benea 2004 = V.2.a Vaday 1989		9 – 11,5	4,2- 7,7				x	x	x	x		
V = V Benea 2004 = I.1.a Vaday 1989		3 – 8.2	5.3 - 11,6	x	x	x	x	x	x		x	
VI = VI Benea 2004 = II Vaday 1989		6,2 – 12,6	4,6 – 6,7	x					x			
VII = VIII Benea 2004 =VI.1Vaday 1989		3,1 – 4, 2	4,9 – 7.1						x			
VIII = IX Benea 2004 = IV.2.b Vaday 1989		10 -10,4	5.5 – 5,8	x				x				
IX B = XI Benea 2004 = I.1 Vaday 1989	A B	4,1 -11,2	4,5 – 6.7	x			x					
X =X Benea 2004 = I.2.b Vaday 1989		6,6	9.7	x								
XI = XVII Benea 2004 = VIII.b Vaday 1989		7,7 - 7,8	8,9- 10.3	x								

Pl. I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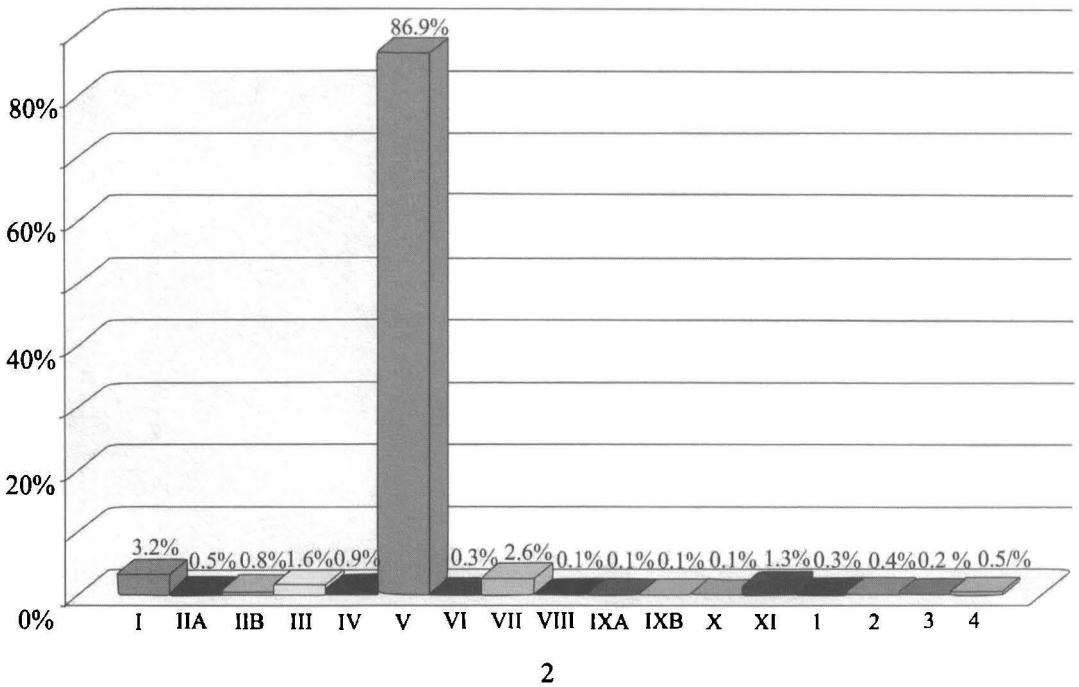
80%
60%
40 %
20%
0%
91.9%
3.4%
3.3%
0.5%
0.2%
0.1%
0.1%
0.5%
calcium
carnelian
amber
coral
bone
opaque glass
translucent glass
golden foil

1


80%
60%
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86.9%
3.2%
0.5%
0.8%
1.6%
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0.1%
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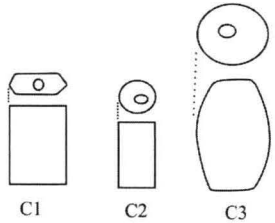
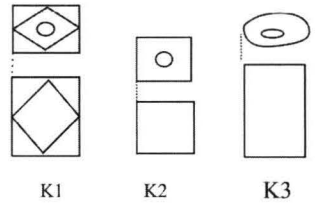
0.3%
0.4%
0.2 %
0.5/%
I
IIA
IIB
III
IV
V
VI
VII
VIII
IXA
IXB
X
XI
1
2
3
4

2

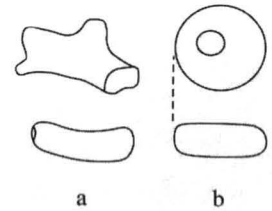
Pl. II



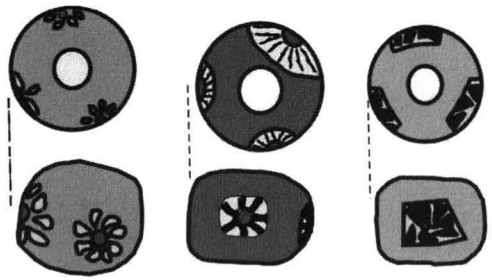
1. Calcium beads



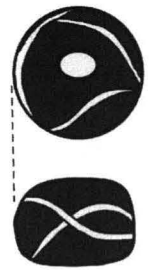
2. Carnelian beads



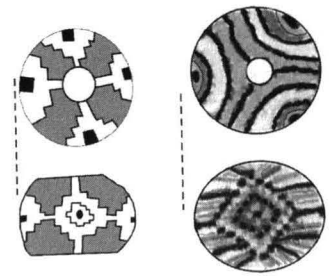
3. Coral (a) and amber beads (b)



5. Beads with *Rosettenmuster*
= XV/1 Benea 2004
= XXIII 362 a, h Maczyńska 1985

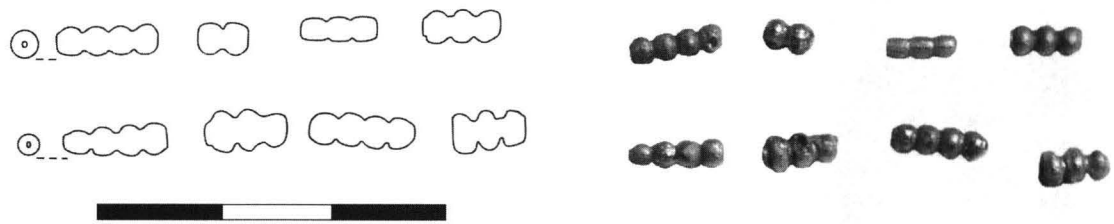


6. Bead with *Achterförmigerline* = XIV
Benea 2004 = 266 a Maczyńska 1985

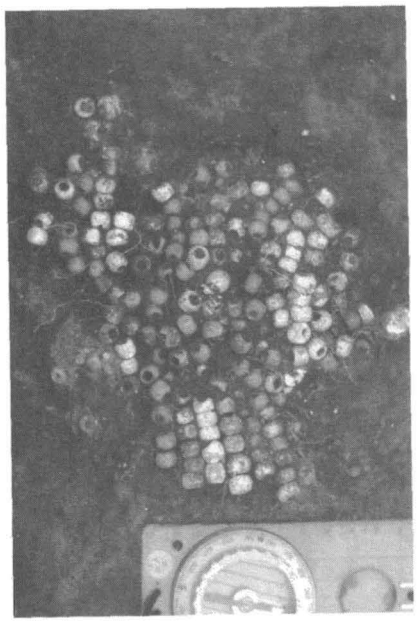


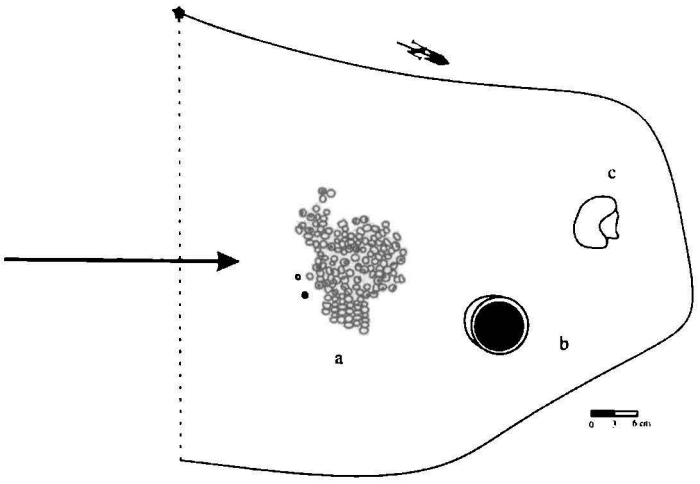
7. Beads with *Schachbrettmuster* =
XV/2 Benea 2004 =~ 366 c, e
Maczyńska 1985

8. Beads with
Zickzackverzierung

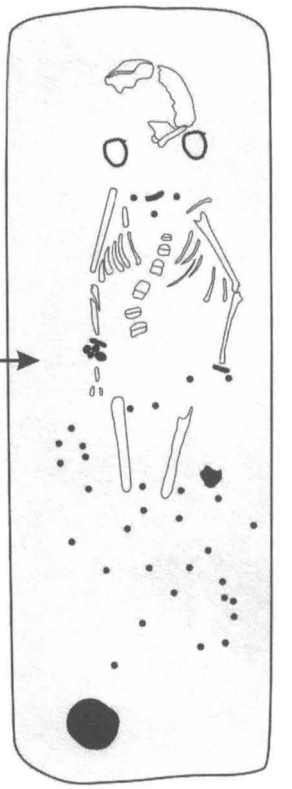


9. „Sandwich" beads (with golden foil)



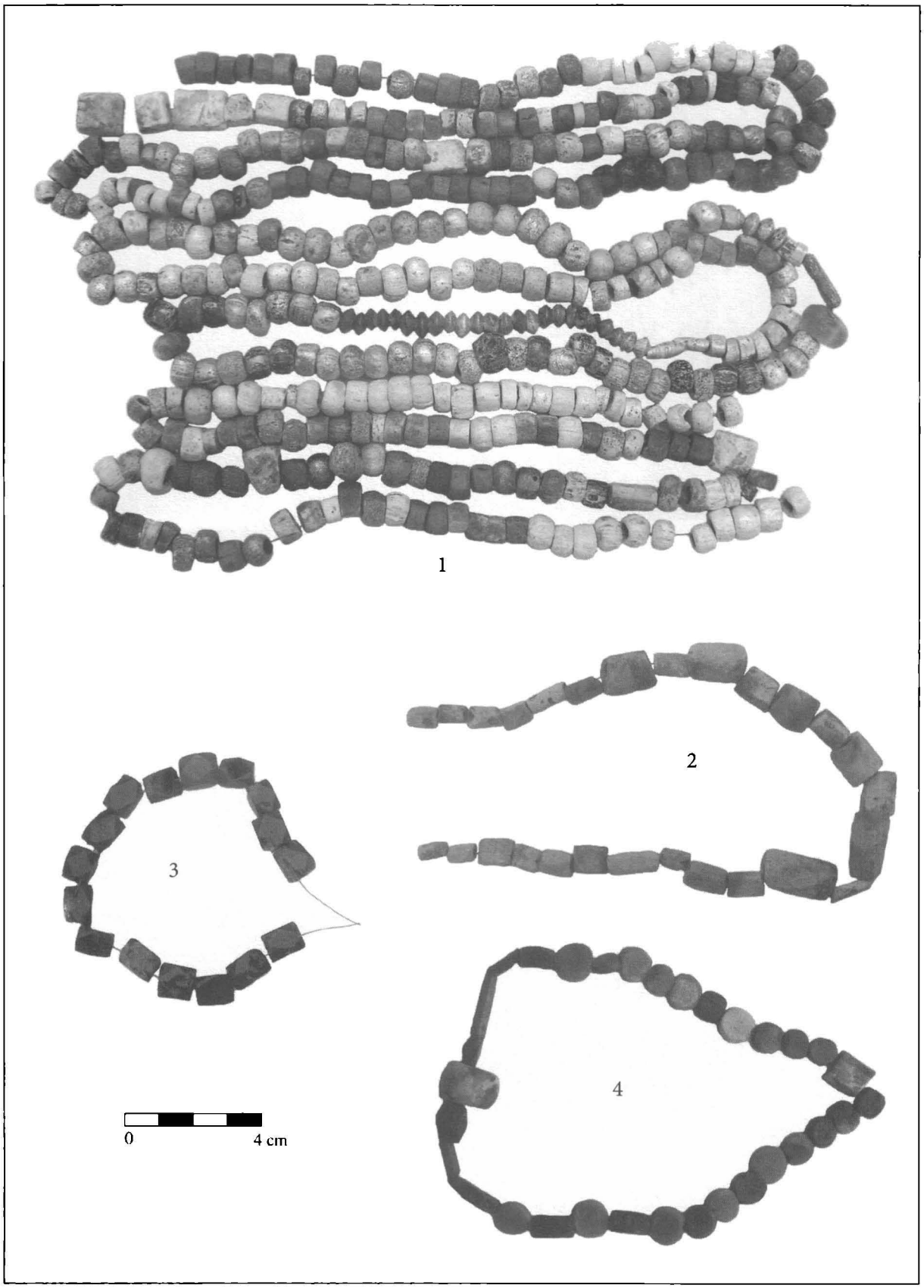


1 2



3 4

Pl. IV



Pl. V